

## Home Automation and Smart Metering

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Product

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 [hawkboard.org](http://hawkboard.org)

See page 5

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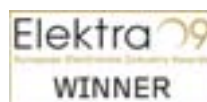
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## WELCOME TO SELECT

### Design with the best



Home Automation and Smart Metering technologies are used everyday to enhance our lives. New technologies have made automating the home and monitoring our energy usage both affordable and accessible. Touch screens, high performance processing and networking, wireless communications and sensor equipment have given us the ability to control our home environments better than ever before. We are now able to stream movies or music in any room, control temperature settings, programme alarms and operate equipment anywhere in the home. In some cases this is even possible remotely through our phones and PDAs!

The visibility and transparency that Smart Metering brings can be combined with the management of Home Automation to offer unprecedented control over our energy usage. The two can be combined to make systems such as heating and air conditioning operate at optimum times of the day, or could be used to detect motion in a room to help save energy usage and money. Electronics equipment can also be programmed to operate whilst cheaper electricity tariffs are active, again saving money as well as relieving pressure on the national energy grid.

In this issue of Select, we look at a wide range of home automation products including MCUs, DSPs, Zigbee components and modules, peripheral devices and test equipment. On page 4 we feature home automation and smart metering devices including suitable processor and DSP development tools from a range of leading manufacturers - ST, Microchip, Cypress Semiconductor Texas Instruments and Analog Devices.

Also featured inside, see innovative new products from leading manufacturers including Energy Micro, Innovate Software Solutions, Jennic and Bridgelux.

Get involved in the latest Home Automation and Smart Metering debates online at [www.element-14.com](http://www.element-14.com). Your chance to read, review and collaborate on a range of exciting topics. The solutions are out there, you just haven't registered yet...

Yours sincerely

Quintin Komaromy  
Marketing Director - Farnell Europe

**"Home Automation  
and Smart Metering  
technologies are used  
everyday to enhance  
all of our lives"**

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## CONTENTS

### TECHNOLOGY FIRST

|                                                   |    |
|---------------------------------------------------|----|
| <b>Home Automation &amp; Smart Metering Focus</b> | 4  |
| <b>Development Tools &amp; Embedded ICs</b>       |    |
| Development Tools & ICs                           | 6  |
| <b>Optoelectronics</b>                            |    |
| Opto Lighting                                     | 12 |
| <b>Analogue ICs</b>                               |    |
| Analogue ICs                                      | 20 |
| <b>Discretes</b>                                  |    |
| Diodes                                            | 23 |
| Mosfets & Transistors                             | 24 |
| <b>Passives</b>                                   |    |
| Capacitors                                        | 25 |
| Inductors                                         | 26 |
| <b>Electromechanical &amp; Connectors</b>         |    |
| Connectors                                        | 27 |
| Electromechanical                                 | 31 |
| Automation                                        | 32 |
| <b>Soldering &amp; Tools</b>                      |    |
| Stations, Irons & Fume Extraction                 | 34 |
| Hand Tools                                        | 36 |
| <b>Test &amp; Power</b>                           |    |
| Power Supplies                                    | 39 |
| Test & Measurement                                | 41 |
| Batteries                                         | 45 |
| <b>Cable &amp; Electrical</b>                     |    |
| Cable & Wire                                      | 46 |
| Cable Accessories                                 | 48 |
| Marking & Labelling                               | 50 |
| Electrical Accessories                            | 51 |
| Lighting                                          | 52 |
| Security                                          | 53 |
| <b>Electromechanical &amp; Connectors</b>         |    |
| Connectors                                        | 54 |
| Electromechanical                                 | 55 |
| Automation                                        | 57 |
| <b>Soldering &amp; Tools</b>                      |    |
| Soldering Consumables                             | 58 |
| Hand Tools                                        | 60 |
| Storage                                           | 62 |
| <b>Chemicals, Adhesives, Health &amp; Safety</b>  |    |
| Chemicals & Adhesives                             | 63 |
| Health & Safety                                   | 66 |

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## 32-bit ARM Cortex-M3 Microcontrollers



The LPC13xx devices are ARM Cortex-M3-based microcontrollers for embedded applications featuring a high level of integration and low power consumption. The ARM Cortex-M3 is a next generation core that offers system enhancements such as enhanced debug features and a higher level of support block integration. The LPC13xx devices operate at CPU frequencies of up to 70MHz. The ARM Cortex-M3 CPU incorporates a 3-stage pipeline and uses a Harvard architecture with separate local instruction and data buses as well as a third bus for peripherals. The ARM Cortex-M3 CPU also includes an internal prefetch unit that supports speculative branching. The peripheral complement of the LPC13xx includes up to 32KB of flash memory, up to 8KB of data memory, USB Device (LPC134x only), one Fast-mode plus (Fm+) I2C interface, one UART, four general purpose timers, and up to 42 general purpose I/O pins.



| Pins/Pkg | Series  | Flash (kB) | RAM (kB) | I/O Lines | Freq (MHz) | Operating Temperature | Mfrs. List No. | Order Code      | 1+   | 10+  | 100+ | 250+ |
|----------|---------|------------|----------|-----------|------------|-----------------------|----------------|-----------------|------|------|------|------|
| 33/HVQFN | LPC1300 | 8          | 4        | 28        | 72         | -40°C to +85°C        | LPC1311FHN33   | <b>176-2575</b> | 1.50 | 1.23 | 0.90 | 0.86 |
| 33/HVQFN | LPC1300 | 16         | 4        | 28        | 72         | -40°C to +85°C        | LPC1342FHN33   | <b>176-2579</b> | 2.20 | 1.80 | 1.32 | 1.26 |
| 48/LQFP  | LPC1300 | 32         | 8        | 42        | 72         | -40°C to +85°C        | LPC1313FBD48   | <b>176-2577</b> | 2.60 | 2.13 | 1.56 | 1.49 |
| 33/HVQFN | LPC1300 | 32         | 8        | 28        | 72         | -40°C to +85°C        | LPC1313FHN33   | <b>176-2578</b> | 2.20 | 1.80 | 1.32 | 1.26 |
| 48/LQFP  | LPC1300 | 32         | 8        | 42        | 72         | -40°C to +85°C        | LPC1343FBD48   | <b>176-2580</b> | 3.30 | 2.70 | 1.98 | 1.88 |
| 33/HVQFN | LPC1300 | 32         | 8        | 28        | 72         | -40°C to +85°C        | LPC1343FHN33   | <b>176-2581</b> | 2.70 | 2.21 | 1.62 | 1.54 |

## CC2500/CC2550 Development Kit

The **CC2500/CC2550DK** development platform supports evaluation, development and prototyping. The user can test range and transfer data from one PC to another using the kits, straight out of the box, enabling the user to workout product fit for the intended application. The **CC2550EM** contains the CC2550 chip and all the necessary external components, a 26MHz crystal with +/-10ppm initial tolerance and +/-10ppm temperature drift in the range 0 to + 50°C. The load capacitors used are 16pF. A 56kΩ 1% resistor is used to set up a biasing current for the CC2550. The components connected to the RF pins of the CC2550 match to 50 Ohms.

### CC2500/CC2550DK Includes:

- 2x Evaluation Boards
- 1x CC2550 Evaluation Module
- 2x CC2500 Evaluation Modules
- Cables and Antenna

### CC2550EM Includes:

- 2x Evaluation Modules
- Antenna

| Mfrs. List No.  | Description                      | Order Code      | Price Each |
|-----------------|----------------------------------|-----------------|------------|
| CC2500-CC2550DK | Development Kit, CC2500-CC2550DK | <b>124-8465</b> | 435.66     |
| CC2500EMK       | Evaluation Module Kit, CC2500EMK | <b>124-8476</b> | 83.91      |

## MSP430-449STK2 MPS430F449 Starter Kit / Development Board



### Features:

- MCU: MSP430F449
- JTAG connector
- RS232 connector
- RS232 interface circuit with Tx, Rx signals
- Dallas touch button port
- Frequency input
- LCD custom display
- LED status
- 4x buttons
- Buzzer
- 2x AA 1.5 V Battery holder
- 32 768 Hz oscillator crystal
- 8MHz crystall oscillator
- TEST pin pull-down
- RST/NMI pin pull-up
- Power supply filtering capacitor
- Extension headers for µC pins

| Mfrs. List No. | Description             | Order Code      | Price Each |
|----------------|-------------------------|-----------------|------------|
| MSP430-449STK2 | Starter Kit / Dev Board | <b>177-6329</b> | 59.95      |

## MCP3901 Eval Board for 16-bit MCU



The MCP3901 ADC Evaluation Board for 16-Bit MCUs system provides the ability to evaluate the performance of the MCP3901 dual channel ADC. It also provides a development platform for 16-bit PIC based applications, using existing 100-pin PIM systems.

### Features:

- Dual ADC MCP3901 output display using Serial comms to PC Software Interface
- Simultaneous 4ksps @ 90dB SINAD, top speed 55ksps performance on dual MCP3901 channels
- System and ADC performance analysis through graphical PC tools
- Robust hardware design with analog grounding and analog/digital separation
- PICTail Plus connectors for Explorer-16 daughter board compatibility

| Mfrs. List No.  | Description                       | Order Code      | Price Each |
|-----------------|-----------------------------------|-----------------|------------|
| MCP3901EV-MCU16 | MCP3901 Eval Board for 16-bit MCU | <b>177-1314</b> | 50.00      |

## STM8L101-EVAL Evaluation Board



The STM8L101-EVAL is composed of two boards:

- An STM8L1/L2 motherboard called MB709 which includes all peripherals which are connected to the MCU on the daughterboard. The motherboard connects to the daughterboard via two 36-pin connectors.
- An STM8L1 daughterboard called MB710 which has an STM8L101 MCU and a STICE connector.

The motherboard and daughterboard are a complete development platform for STMicroelectronics' STM8L101 microcontroller with comparator, I2C, SPI, USART and SWIM debugging support.

The full range of hardware features on the motherboard helps users to evaluate all peripherals (MicroSD card™, USART, IrDA®, EEPROM, LCD, for example) and develop your own applications.

| Mfrs. List No. | Description      | Order Code      | Price Each |
|----------------|------------------|-----------------|------------|
| STM8L101-EVAL  | Evaluation Board | <b>177-5395</b> | 88.89      |

## Digital Multimeter

### Tektronix DMM4020



H = 88mm, W = 217mm, D = 297mm



The Tektronix DMM4020 5.5 digit bench multimeter offers a broad range of functions in one easy-to-use instrument. You can also use the DMM4020 to measure frequency, and to perform continuity and diode tests. This allows you to replace your counter, continuity tester, and DMM with one versatile instrument, saving bench space and cost.

**DMM4020 Includes:** Meter, TL710 test leads, spare line fuse, statement of cal practices, Warranty statement, Safety and Installation Guide, Connectivity Installation Manual, CD-ROM with user manual (English, French, Italian, German, Spanish, Simplified Chinese, Traditional Chinese, Korean, Russian, Japanese), RS-232 to USB Adapter Cable, National Instruments LabVIEW SignalExpress™ Tektronix Edition, Limited Edition Software. Euro and UK power cords.

| Mfrs. List No.     | Description                        | Order Code      | Price Each |
|--------------------|------------------------------------|-----------------|------------|
| DMM4020            | Digital Multimeter                 | <b>177-1901</b> | 496.00     |
| <b>Accessories</b> |                                    |                 |            |
| TL725              | SMD Test Tweezers, 2 X 4 Wire Ohms | <b>177-1904</b> | 66.00      |
| 196-3520-00        | Test Leads, Standard TL710         | <b>177-1907</b> | 22.00      |
| TL705              | Test Leads, Precision, 2X4 Wire    | <b>177-1908</b> | 50.00      |
| Y8846S             | Rackmount Kit, Single              | <b>177-1909</b> | 96.00      |
| Y8846D             | Rackmount Kit, Dual                | <b>177-1910</b> | 96.00      |

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## MCP3905 Evaluation Boards



1578434



1578435

Mfrs. List No.  
MCP3905EV  
MCP3905RD-PM1

Supported Devices  
MCP3905  
MCP3905

Description  
MCP3905 Energy Meter Evaluation Board .....  
MCP3905 Energy Meter Reference Design.....

| Order Code | Price Each  |
|------------|-------------|
| 157-8434   | 1+<br>57.69 |
| 157-8435   | 34.62       |

### MCP3905RD-PM1

A stand-alone low-cost energy meter that can act as either a stand alone energy meter, or as the analog front end design for LCD MCU-based meters. This design is specified with an energy measurement error of 0.1% typical across 1:500 dynamic range for high accurate energy meter designs and is compliant with EMC requirements per energy metering standards IEC62053 and legacy IEC61036, IEC1046 and IEC687.

## F2812 eZdsp Starter Kit



The TMX LF2812 eZdsp™ is a stand alone module that lets evaluators examine certain characteristics of the TMS320F2812 digital signal processor (DSP) to determine if this DSP meets their application requirements. This module has a single chip parallel port to JTAG scan controller. Therefore the module can be operated without additional development tools such as an emulator. Furthermore, the module is an excellent platform to develop, demonstrate, and run software for the TMS320F2812 processor.

| Mfrs. List No. | Description             | Order Code | Price Each |
|----------------|-------------------------|------------|------------|
| TMDSEZD2812    | F2812 eZdsp Starter Kit | 174-8909   | 275.22     |



## Hawkboard

OMAP-L138 (ARM 9 C674X Floating Point DSP)



Hawkboard is an open community board mainly designed to provide to the community a feature rich & economical solution based on TI's OMAP L138 processor. With a wide range of peripheral support, this board is an ultimate tool for digital media & storage applications.

The OMAP L138 offers an integrated ARM9 and a TI DSP. Its low power consumption level opens this system to a large range of Embedded & industrial applications.

### Features:

- OMAPL 138 applications processor ( ARM 926 & C674X floating point DSP)
- 128MB low-power DDR2 RAM
- 128MB NAND flash
- USB 2.0 high-speed on-the-go port
- Ethernet
- SATA
- Composite Video In
- VGA
- SD/MMC
- Stereo audio in/output
- JTAG header
- UART
- I2C, SPI, VPIF, LCDC, Ecap, GPIO, PRU expansion header
- Power via USB or alternate jack

| Mfrs. List No. | Description | Order Code | Price Each |
|----------------|-------------|------------|------------|
| ISSPLHAWK      | Hawkboard   | 178-9013   | 73.69      |

## CY8CKIT-007 PSoC 3 Precision Analog Voltmeter Demo Kit



The CY8CKIT-007 PSoC® 3 Precision Analog Voltmeter Demo Kit highlights the broad precision analog capabilities of the PSoC 3 architecture. The kit showcases a PSoC 3 device as a single-chip voltmeter, using an onboard 20-bit Delta Sigma Analog-to-Digital Converter (ADC) to measure the voltage from the included test leads and onboard thermocouple while directly driving an LCD. With the kit, designers can use pre-configured op amp, ADC and analog mux components in the PSoC Creator™ Integrated Development Environment (IDE) to quickly and easily design industrial sensors, consumer sensors, glucose meters and other analog applications.

| Mfrs. List No. | Description                                | Order Code | Price Each |
|----------------|--------------------------------------------|------------|------------|
| CY8CKIT-007    | PSoC 3 Precision Analog Voltmeter Demo Kit | 178-1126   | 63.82      |



## Blackfin® BF518F EZ-Board™ & EZ-KIT Lite®



The Blackfin® ADZS-BF518F-EZBRD evaluation board provides developers with a low-cost platform for initial evaluation of the ADSP-BF512/F, BF514/F, BF516/F, BF518/F Blackfin processors via an external JTAG emulator or standalone debug agent board. The EZ-Board also supports uClinux®.

Note: To debug you must have a Debug Agent Board or Emulator. The EZ-Board has an expansion interface that allows for modularity with different EZ-Extender boards.

The Blackfin® ADZS-BF518F-EZLITE provides developers with a cost-effective method for initial evaluation of the ADSP-BF512/F, BF514/F, BF516/F, BF518/F Blackfin Processors via a USB-based, PC-hosted tool set. With this EZ-KIT Lite, users can learn more about the Analog Devices (ADI) ADSP-BF518F hardware and software development, and quickly prototype a wide range of applications.

The EZ-KIT Lite includes an ADSP-BF518F Blackfin Processor desktop evaluation board along with an evaluation suite of the VisualDSP++® development and debugging environment, including the C/C++ compiler, assembler, and linker. The evaluation suite of VisualDSP++ is designed to be used with the EZ-KIT Lite only.

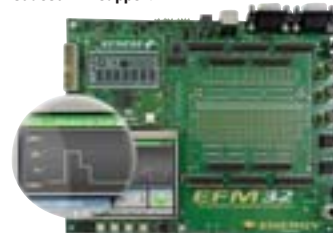
The EZ-KIT Lite also comes with a standalone debug agent board that is removable to allow a user to plug-in an external emulator.

| Mfrs. List No.     | Description                | Order Code | Price Each |
|--------------------|----------------------------|------------|------------|
| ADZS-BF518F-EZBRD  | EZ-Board Evaluation Board  | 175-8264   | 215.61     |
| ADZS-BF518F-EZLITE | EZ-KIT Lite Evaluation Kit | 175-8265   | 328.39     |



## EFM32 Gecko Development Kit

Includes EFM32G890F128 MCU plug-in board with 160 segment LCD. Reduced EBI support.



The EFM32 Gecko Development Kit is a platform for rapid prototyping of ultra low power microcontroller applications. It consists of a mother board, a replaceable MCU-board and a prototyping-board, along with a comprehensive software development environment.

The development kit contains a unique Advanced Energy Monitoring (AEM) system that allows designers to have full control over their application's energy consumption. Combined with the possibility to isolate the motherboard's components not relevant for the end application, designers can optimize all variables that will make their application as energy efficient as possible.

### Features:

- Advanced Energy Monitoring
- Real-time, accurate energy and power profiling
- User interface with joystick, switches, and potentiometer
- EXP32 expansion port, 2x RS232, IrDA, Memory Card
- Large EXP32 prototyping module
- 32 KB evaluation compiler versions

| Mfrs. List No. | Description                 | Order Code | Price Each |
|----------------|-----------------------------|------------|------------|
| EFM32-G8XX-DK  | EFM32 Gecko Development Kit | 179-0957   | 246.84     |



## MBED Prototyping Modules



The mbed module is a new community-based embedded development tool featuring the NXP LPC1768 or LPC2368 microcontroller. It allows the user to create, compile, and download embedded software for NXP's LPC series of MCUs using a browser-based GUI. There is no software to install - everything is online, even the compiler.

**mbed** **NXP**

New

### Features:

- 40-pin DIP, 0.1" pitch
- Programmed via USB
- 60MHz ARM, 32KB RAM, 512KB flash
- Ethernet, USB slave
- 2xSPI, 2xI2C, 3xUART, 1xCAN
- GPIO, 6xPWM, 6xADCs, 1xDAC
- C++ libraries and toolchain

| Mfrs. List No | Description                              | Order Code | Price Each |
|---------------|------------------------------------------|------------|------------|
| OM11042       | MBED Prototyping Module with LPC2368 MCU | 176-1178   | 44.30      |
| OM11043       | MBED Prototyping Module with LPC1768 MCU | 176-1179   | 44.30      |

## ST-LINK

In-Circuit Debugger/Programmer for STM8 and STM32



ST-LINK is a very low-cost, in-circuit debugger/programmer for the STM8L, STM8S and STM32. It connects to application or evaluation boards for programming and debugging via STMicroelectronics' SWIM single-wire connection for the STM8L and STM8S and via a JTAG standard connection for STM32 microcontrollers.

### Features and Benefits:

- 5 V power supplied by USB connector
- USB 2.0 full speed interface compatible
- USB standard A to Mini-B cable provided

**ST**  
New

### STM8 SWIM specific features:

- 1.65 V to 5.5 V application voltage supported
- SWIM low-speed and high-speed modes supported
- SWIM cable provided for connection to an application with an ERNI standard vertical or horizontal connector
- SWIM cable for connection to an application with pin headers or 2.54 mm pitch connector

### STM32 JTAG specific features:

- 3 V to 3.6 V application voltage supported on JTAG interface and 5 V tolerant inputs
- JTAG cable provided for connection to a standard JTAG 20-pin 2.54 mm pitch connector

| Mfrs. List No | Description                    | Order Code | Price Each |
|---------------|--------------------------------|------------|------------|
| ST-LINK       | In-Circuit debugger/programmer | 177-9159   | 17.83      |

## STM8S-DISCOVERY Evaluation Board



The STM8S-Discovery kit, is the cheapest and quickest way to discover the STM8S, to build and debug the application, and to program and use the device. It is a quick-start evaluation board based on the STM8S105C6T6, and it includes the embedded

debugger ST-LINK and one touch-sensing button which helps users to discover the STM8 features.

Plug the STM8S-Discovery into a PC through a standard USB cable and run the proposed example. Once the debugger is open, users will see the real-time execution of the code. Numerous applications are available in order to learn, re-use and modify codes for a fast time to proof-of-concept or demonstration.

### Features:

- STM8S105C microcontroller
- Powered by USB cable between PC and STM8S-DISCOVERY
- Selectable power of 5 V or 3.3 V
- Embedded ST-Link for STM8S
- USB interface for programming and debugging
- SWIM debug support
- Touch Sensing button, TS1
- User LED, LD1
- Extension header for all I/Os
- Wrapping area for users own application

| Mfrs. List No   | Description                                | Order Code | Price Each |
|-----------------|--------------------------------------------|------------|------------|
| STM8S-DISCOVERY | Discovery Board for STM8S (32K flash) MCUs | 177-5251   | 4.25       |

**ST**  
New

## ADSP-BF506F EZ-KIT Lite

**ANALOG DEVICES**

New



The ADSP-BF506F EZ-KIT Lite® provides developers with a cost-effective method for initial evaluation of the ADSP-BF504/F and BF506F Blackfin® Processors via a USB-based, PC-hosted tool set. With this EZ-KIT Lite, users can learn more about the Analog Devices (ADI) ADSP-BF506F hardware and software development, and quickly prototype a wide range of applications.

| Mfrs. List No.     | Description        | Order Code | Price Each |
|--------------------|--------------------|------------|------------|
| ADZS-BF506F-EZLITE | BF506F EZ-KIT Lite | 178-1106   | 130.16     |

## nanoWatt XLP 16-bit Development Board

**MICROCHIP**

New



The 16-bit XLP Development Board is designed with extreme low power in mind. Designed as a true platform for low power development, this board utilizes techniques such as MCU controlled component power sources that keep board level current consumption to a minimum. It can be used with all XLP PIC24 Microcontrollers in 20 or 28-pins. The 16-bit XLP Development board supports battery power (AAA, CR2032), energy harvesting, or separate power supplies providing flexibility to the extreme.

### Features:

- mTouch™ capacitive buttons
- RS-232 communications
- Temperature sensor
- Serial EEPROM
- Watch crystal for RTC
- Serial to USB link for PC connectivity
- Dual LEDs
- Small prototyping area
- Expansion via a PICtail™ connector

| Mfrs. List No. | Description                           | Order Code | Price Each |
|----------------|---------------------------------------|------------|------------|
| DM240311       | nanoWatt XLP 16-bit Development Board | 176-1254   | 36.25      |

## F1 Evaluation Platform

**MICROCHIP**

New



The F1 Evaluation Platform is a demonstration/development tool for Enhanced Mid-range PIC microcontrollers (PIC12F1xxx/PIC16F1xxx). Populated with a PIC16LF1937 featuring XLP technology, this platform consists of a 44-pin development board with prototyping space, 3V LCD glass, support for the Motor Control add-on (DM164130-2), and support for PICKIT 3 & PICKIT Serial. This kit provides a platform for general purpose development, and includes demonstrations focusing on Low Power, LCD, and Motor Control.

| Mfrs. List No. | Description            | Order Code | Price Each |
|----------------|------------------------|------------|------------|
| DM164130-1     | F1 Evaluation Platform | 176-1253   | 24.17      |

## JN5148 ZigBee PRO Devices

**Jennic**

New



JN5148-EK010

The **JN5148-001** is an ultra low power, high performance wireless MCU targeted at ZigBee PRO networking applications. The device features an enhanced 32-bit RISC processor offering high coding efficiency through variable width instructions, a multi-stage instruction pipeline and low power operation with programmable clock speeds.

The **JN5148-EK010** ZigBee PRO evaluation kit provides a complete environment for the development of ZigBee PRO applications based on the JN5148 wireless microcontroller.

The kit contains a complete package of hardware and software, including five wireless sensor nodes, an unrestricted SDK and example code.

The **JN5148-UG010** allows users with existing JN5139-EKxxx evaluation kits to upgrade to ZigBee PRO with the JN5148-UG010 ZigBee Upgrade Kit. It contains 7 modules in total; 5 are standard power and 2 are high power modules.

The **JN5148-001-M0x** family is a range of ultra low power, high performance surface mount modules targeted at ZigBee PRO networking applications, enabling users to realise products with minimum time to market and at the lowest cost. They remove the need for expensive and lengthy development of custom RF board designs and test suites.

| Mfrs. List No.        | Description                                 | Order Code | Price Each |
|-----------------------|---------------------------------------------|------------|------------|
| <b>JN5148 MCU</b>     |                                             |            |            |
| JN5148-001            | Wireless Microcontroller                    | 173-9339   | 6.86       |
| <b>JN5148 Kits</b>    |                                             |            |            |
| JN5148-EK010          | ZigBee PRO Evaluation Kit                   | 173-9333   | 409.00     |
| JN5148-UG010          | ZigBee PRO Upgrade Kit                      | 173-9334   | 150.00     |
| <b>JN5148 Modules</b> |                                             |            |            |
| JN5148-001-M00        | ZigBee PRO Module - Integrated Antenna      | 173-9336   | 13.83      |
| JN5148-001-M03        | ZigBee PRO Module - UFL Connector           | 173-9337   | 15.27      |
| JN5148-001-M04        | ZigBee PRO Module - UFL Connector, PA & LNA | 173-9338   | 20.91      |

## Wireless CPUs & Development Kits Q26 Family



The **Q2686** is equipped with up to 44 GPIOs and is especially suited to applications which require a high number of connections. The Open AT® OS runs on an ARM9 core, providing applications with up to 87 MIPS (using VariSpeed). It features a market-leading range of peripheral interfaces, including companion Bluetooth® and GPS.

The **Q2687** is an automotive-grade Wireless CPU® which is backwards compatible with the Q2686, forwards compatible with 3G evolutions and their cellular software application development environments so that application portability is made easy. It also supports a new parallel data bus for interfacing to displays and external memory and data bearers up to EDGE.

The **Q2686H-DK** and **Q2687H-DK** Development Kits allow Development of Automotive, industrial M2M and Mobile Professional applications. All functions of the kits are provided by the wireless CPU.

|                        | Q2686H                                                                                                              | Q2687H                                                                |
|------------------------|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Core Processor         | ARM9, 32 bit, 104 MHz running Open AT® RTOS as standard                                                             | ARM9 4 6, 32 bit, 104 MHz running Open AT® RTOS as standard           |
| Memory                 | Internal, supports up to 128Mb Flash, 128 MB PSRAM                                                                  | Internal, 32 / 8 Mb Flash                                             |
| Digital Control        | Up to 44 GPIO, 2 INT, 2 SPI, 1 I2C, 5 x 5 keyboard                                                                  |                                                                       |
| Digital Comms          | 2 UART, USB 2.0                                                                                                     | 2 UART, USB 2.0, 1 parallel ports, 1 DAC                              |
| Analogue Interfaces    | 2 ADC                                                                                                               |                                                                       |
| Audio Interfaces       | 2 analogue channels, 1 PCM                                                                                          |                                                                       |
| Cellular Radio         | Global operation (auad GSM band: 800/900/1800/1900 MHz)                                                             |                                                                       |
| Cellular Data          | GSM standard SMS, Fax, CSD (circuit), GPRS cl 10 (packet)                                                           | GSM standard SMS, Fax, CSD (circuit), GPRS cl 10 (packet), EDGE cl 10 |
| Cellular Voice         | Quad codec (FR/HR/EFR/AMR), VDA2A                                                                                   |                                                                       |
| RF and IO connectivity | 1 UFL connector for GSM FR, 1 RF connection which allows to support board to board solution, 100 I/O Pins connector |                                                                       |
| Dimensions             | L40 x W32.2 x H 4mm                                                                                                 | L40 x W32 x H 6.55mm                                                  |

### Description

Wismo Quik GSM/GPRS Quad Band Module  
Wismo Quik Q2687H GSM/GPRS/EDGE Quad Band Module  
Q2686H Development Kit  
Q2687H Development Kit

### Mfrs. List No.

Q2686H  
Q2687H  
Q2686H DK  
Q2687H DK

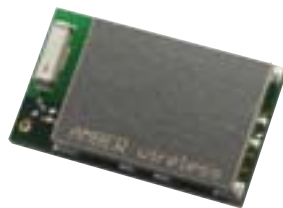
### Order Code

165-6750  
165-6769  
165-6753  
165-6751

### Price Each

60.01  
53.82  
504.56  
610.52

## AMBZ300 ZigBee / IEEE802.15.4 Transceiver Module



The AMBZ300 is a compact, powerful 2.4 GHz transceiver module. It combines the latest transceiver technology with a tested antenna configuration and wiring in a single module. With just a few external components, it is possible to set up a ZigBee-compatible network solution. Due to the small size, the outstanding performance with low power consumption, and the easy modular handling, the AMBZ300 is a trendsetter in the domain of ZigBee OEM modules.

### Features:

- RF Transceiver (second generation)
- 2.4 GHz ISM frequency band
- Excellent RX sensitivity up to -98 dBm
- Programmable output power up to 5 dBm
- Compact form factor: 16 x 27 x 3.3 mm
- Large supply voltage range from 1.8 V to 3.8 V
- Hardware support for IEEE802.15.4 conformity
- Easy to interface via SPI
- Configurable IOs and energy saving modes
- Complies with R&TTE directive 1999/5/EC
- Integrated ceramic antenna

| Mfrs. List No | Description                              | Order Code | Price Each |
|---------------|------------------------------------------|------------|------------|
| AMBZ300       | ZigBee / IEEE802.15.4 Transceiver Module | 174-9520   | 16.34      |

## Drop-in Networking Professional Development Kits for XBee ZB



The Drop-in Networking Professional Development Kits for XBee® ZB provides the hardware and software tools necessary to rapidly deploy a real-world ZigBee sensor / device network. All hardware components are pre-configured to run ZigBee networking software, which is optimized for low-power, battery-fueled operation.

### Features:

- Easily configure a low-power ZigBee sensor/device network
- Conduct a basic wireless range test
- Provide IP connectivity to the ZigBee network using the ConnectPort X4 gateway
- Monitor light and temperature readings from the XBee ZB wall router

| Mfrs List No. | Description                                         | Order Code | Price Each |
|---------------|-----------------------------------------------------|------------|------------|
| XK-Z11-EBP-WB | Drop-in Networking Pro Dev Kit for XBee ZB - UK     | 175-1801   | 239.11     |
| XK-Z11-EBP-WE | Drop-in Networking Pro Dev Kit for XBee ZB - Europe | 175-1802   | 239.11     |

## CC2530 ZigBee Development Kit



The **CC2530ZDK** is designed to deliver the most powerful elements for ZigBee and ZigBee PRO development in the market today. The kit is based on TI's second generation 2.4GHz IEEE 802.15.4 compliant System-on-Chip, the CC2530, and contains all hardware, software, tools, and documentation necessary to build a ZigBee compliant product. The CC2530ZDK includes CC2530-based evaluation modules, SmartRF05EB and SmartRFBB development boards, a USB interface dongle, cables, antennas and documentation to get you up and running with the ZStack on the CC2530.

| Mfrs. List No. | Description                   | Order Code | Price Each |
|----------------|-------------------------------|------------|------------|
| CC2530ZDK      | CC2530 ZigBee Development Kit | 175-2230   | 435.98     |

## Fastrack Supreme Wireless CPU® Development Kit & Terminal



The Fastrack Supreme Wireless CPU® keeps the same versatile form factor as previous FASTRACK products and is designed with expandability in mind. Users can easily add additional IO and features (like GPS, WiFi, Bluetooth, Zigbee and more) thanks to a new open standard internal expansion socket (IES) interface that can be populated with an expansion card from Wavecom or one of your own.

The Fastrack Supreme Development Kit is a ready-to-go hardware and software development platform which provides the user with all the tools and accessories needed to prove concepts, deliver prototypes or develop an end user application.

| Mfrs. List No. | Description                      | Order Code | Price Each |
|----------------|----------------------------------|------------|------------|
| FSU002 8XN500  | Fastrack Supreme Terminal        | 165-6754   | 143.45     |
| FSUD05-DK      | Fastrack Supreme Development Kit | 165-6755   | 320.51     |

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## ARF32 Class2 Bluetooth® Modules for Data or Audio Transmission



These miniature modules enable full duplex Bluetooth® data or audio transmissions over 20m. They use the international 2.45 GHz frequency band as described by European Directive RTTE / EN300-328 / EN301-489 and US FCC part 15 (USA/CAN). This module is Bluetooth "V2 End Product" certified, meaning users are able to directly use the Bluetooth® logo. Data transmission and configuration are both managed through

UART-type TTL serial interface. The air rate is 723kbps. Miniature antenna is included. With the "Data" version, the embedded SPP profile allows the ARF32 module to establish a wireless serial connection with PDAs, laptops, mobile phones or any other Bluetooth enabled device.

The "Audio" version offers, on top of the data features, an SCO link that supports HFP, HSP and HSAG profiles. By using the HSAG profile, the ARF32 module becomes a gateway to any generic Bluetooth headset. With the HFP and HSP profiles, and with additional basic microphone and speaker, the ARF32 module becomes a hand-free system.

Both Data and Audio versions are extremely easy to use, evaluate and integrate with the tools included in the DemoKits.

### Specifications:

- Class 2 Bluetooth®
- Frequency on the free wavebands 2.4 - 2.5GHz
- Totally complies with the Bluetooth® V2 standard
- Radio rate up to 723 kbps
- Serial link rate: up to 921.6 kbps
- Integrated miniature antenna on the PCB
- On-board SPP profile totally compatible with the PDA, portable PC and Bluetooth® GSM

| Mfrs. List No. | Description                                            | Order Code | Price Each |
|----------------|--------------------------------------------------------|------------|------------|
| ARF7044A       | Class2 Bluetooth® Module - Data Version                | 175-3619   | 21.43      |
| ARF7208A       | Class2 Bluetooth® Module - Data & Analog Audio Version | 175-3621   | 26.34      |

## DemoKit Bluetooth - Wireless DemoKits for Class1 & Class2 Bluetooth® Modules



The main functions of the new ADEUNIS RF wireless DemoKits include evaluating ADEUNIS RF products, measuring RF and developing a prototype. These DemoKits are an ideal way to evaluate the Adeunis RF Bluetooth® modules and comprise a demo board, module, power supply cable and documentation. They are available for the following products:

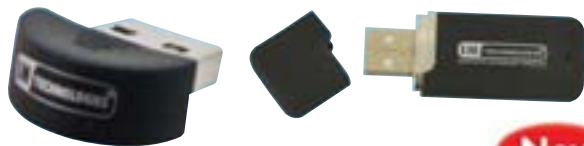
- ARF32 Data - Class2 Bluetooth® Module for Data Transmission
  - ARF32 Data & Audio - Class 2 Bluetooth® Module for Audio Transmission
  - ARF52 - Class1 Bluetooth® Module
- Ease of implementation and configuration by an AT command set limits the risks associated with new technology and optimises time-to-market, especially for those who are not familiar with the detailed design of RF systems.

### Specifications:

- Immediate connection to a PC serial port, permitting in particular, simple and rapid configuration of the radio module with the parameters required by the application
- Implement measurements of sensitivity, power and all RF parameters
- All the DemoKits have chip areas as well as direct access to all the radio module's signals permitting easy addition of additional electronics
- Configuration using AT commands
- Bluetooth® certified "end user" solution
- Fully compliant with the Bluetooth® V2 standard
- Data or Audio versions
- Applications: geo-localization, payment terminals, connection compatible with PDAs, laptops, GSM, etc.

| Mfrs. List No. | Description                   | Order Code | Price Each |
|----------------|-------------------------------|------------|------------|
| ARF7069B       | ARF32 - RS232 "Data" DemoKit  | 175-3620   | 88.39      |
| ARF7213B       | ARF32 - RS232 "Audio" DemoKit | 175-3622   | 88.39      |
| ARF6469B       | ARF52 - RS232 Class1 DemoKit  | 175-3624   | 133.04     |

## Bluetooth USB Adapters



These Bluetooth EDR USB adapters allow connection from a desktop or laptop computer to other Bluetooth enabled devices.

The **LM505** Nano Bluetooth EDR USB adapter is the worlds smallest Bluetooth adapter that discreetly fits in to the USB port of a Laptop or desktop computer. The **LM055** is a Class 2 - 40 Metre Bluetooth USB adapter with the latest EDR Chipset and Vista compatibility.

The **LM056** Bluetooth EDR USB adapter allows connect a desktop or laptop computer to other Bluetooth enabled devices within a 250 Metre range.

| Mfrs. List No. | Description                    | Order Code | Price Each |
|----------------|--------------------------------|------------|------------|
| LM505          | Nano Bluetooth USB Adapter     | 169-6625   | 6.75       |
| LM055          | 40 Metre Bluetooth USB Adapter | 169-6624   | 6.50       |

## nDolphin RF Digital Lock Kit



The nDolphin is a new name in RF digital locks, which allows Implementation of 13.56MHz RFID technology.

It is both durable and reliable with dual stainless lock features. Due to minimised power consumption it has a long lasting battery life and is also user friendly for both customers and administrators.

### Features:

- Automatic lock feature
- External emergency power source for battery exhaustion
- Signal alert for battery exchange (Approx. 40x use after first signal alert)
- Signal alert for irregular locked door
- Signal alert for forced breakage
- Easy security restrictions
- Functions as locker handle

| Mfrs. List No. | Description         | Order Code | Price Each |
|----------------|---------------------|------------|------------|
| NDOLPHIN       | RF Digital Lock Kit | 161-6966   | 59.12      |

## USB RFID Reader & RFID Tags (125kHz)



The **MOD-RFID125** is a USB plug in module that works with every USB host which supports HID Keyboard and CDC. It reads RFID125 kHz tags from 5 - 15 cm in distance and emulates a USB keyboard or Virtual COM port. These RFID tags operate at 125KHz and are suitable for MOD-RFID125 module. They come in different shape and have different reading distances. Generally the bigger the tag, the further the reading distance.

### Features:

- EM4102 64 bit Read only tag
- Operating Temperature -40°C to +85°C
- Relative Humidity 5% to 90% non-condensing
- Operating frequency 125kHz

| Mfrs. List No. | Description        | Order Code | Price Each |
|----------------|--------------------|------------|------------|
| MOD-RFID125    | USB RFID Reader    | 170-1545   | 39.95      |
| RFID125-CSH    | Clamshell Card Tag | 170-1548   | 2.92       |
| RFID125-STI    | Sticker Tag        | 170-1549   | 3.68       |
| RFID125-KEY    | Keyfob Tag         | 170-1550   | 3.68       |

## XPort® Pro™ Embedded Networking Modules & Development Kit



The XPort® Pro™ is Lantronix' most powerful, self-contained embedded networking module. Footprint compatible with the popular XPort® and running either Linux or Evolution OS® operating systems, the XPort Pro eliminates the complexity of designing network connectivity into a product and allows you to deploy advanced applications on the edge device itself.

| Mfrs. List No. | Description              | Order Code | Price Each |
|----------------|--------------------------|------------|------------|
| XPP100200S-01R | XPort Pro - Evolution OS | 177-4242   | 52.29      |
| XPP100300S-01R | XPort Pro - Linux OS     | 177-4243   | 52.29      |
| XP10010NMK-01  | Universal Demo Board     | 177-4245   | 77.66      |

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## ETRX2 Wireless Mesh Networking Ethernet Access Points



The EAP-E -PA Ethernet access point allow access to an ETRX2 or ETRX2-PA wireless mesh networking module via Ethernet using the Lantronix® XPort® Direct™ serial to Ethernet bridge device. The Telegesis AT-Command interface - based on the EmberZNet meshing stack - can be easily accessed by the application software using telnet or by creating a virtual COM port using the supported Lantronix® CPR (COM Port Redirector) software for windows.



### Features Include:

- Complete TCP/IP protocol stack and Windows deployment software
- Interface: Ethernet 10Base-T or 100Base-TX (Auto-Sensing)
- Link and activity indicator (LED)
- Management: Telnet and Microsoft Windows®-based utility for configuration
- Can offer access to the remote AT-Command Interface via a virtual Com port
- SIF interface for Custom application development and real time debugging of custom firmware

| Mfrs. List No. | Power Amplified Wireless Mesh Networking Ethernet Access Point | Order Code | Price Each |
|----------------|----------------------------------------------------------------|------------|------------|
| EAP-E-PA       |                                                                | 160-6672   | 97.29      |

## Intel® 82574 Family Gigabit Ethernet Controllers

The 82574 family (82574L and 82574IT) are single, compact, low power components that offer a fully-integrated Gigabit Ethernet Media Access Control (MAC) and Physical Layer (PHY) port. The 82574 uses the PCI Express\* (PCIe\*) architecture and provides a single-port implementation in a relatively small area so it can be used for server and client configurations as a LAN on Motherboard (LOM) design. The 82574 family can also be used in embedded applications such as switch add-on cards and network appliances.



| Ports  | Interface Type      | Message Signal Interrupt | NC Sideband Interface | RX Side Scaling | Jumbo Frames Supported | Time Sync Protocol Indicator | Lithography | Max TDP | Temperature Range | Mfrs. List No.   | Order Code | Price Each |
|--------|---------------------|--------------------------|-----------------------|-----------------|------------------------|------------------------------|-------------|---------|-------------------|------------------|------------|------------|
| Single | PCIe v1.1 (2.5GT/s) | ✓                        | ✓                     | ✓               | ✓                      | ✓                            | 90 nm       | 0.727 W | -40°C to 85°C     | WG82574L S LBA9  | 174-0826   | 5.66       |
| Single | PCIe v1.1 (2.5GT/s) | ✓                        | ✓                     | ✓               | ✓                      | ✓                            | 90 nm       | 0.727 W | -40°C to 85°C     | WG82574IT S LBA9 | 174-0827   | 6.86       |

## LAN9xxx Ethernet Products

The **LAN9211** is a full-featured, single chip 10/100 Ethernet controller designed for embedded applications. It has been designed to provide high performance and throughput for 16-bit applications. The LAN9211 is fully IEEE 802.3 10BASE-T and 100BASE-TX compliant and supports HP Auto-MDIX.

The **LAN9500** is a high performance Hi-Speed 2.0 USB to 10/100 Ethernet controller. It contains an integrated 10/100 Ethernet PHY, USB PHY, Hi speed USB 2.0 device controller, 10/100 Ethernet MAC, TAP controller, EEPROM and FIFO controllers with total of 30kb of internal packet buffering.

The **LAN9215** is a full-featured, single chip 10/100 Ethernet controller designed for embedded applications. It has been architected to provide the best price-performance ratio for 16-bit applications with medium performance requirements.

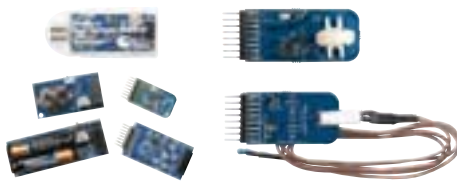
The **LAN9218** is a full-featured, single chip 10/100 Ethernet controller designed for embedded applications. It has been architected to provide the highest performance possible for any given architecture. The LAN9218 is fully IEEE 802.3 10BASE-T and 100BASE-TX compliant and support HP Auto-MDIX.

The **LAN9221** is a full-featured, single chip 10/100 Ethernet controller designed for embedded applications. It has been designed to provide high performance and throughput for 16-bit applications. The LAN9221 is fully IEEE 802.3 10BASE-T and 100BASE-TX compliant and supports HP Auto-MDIX. The variable voltage I/O signals accommodate lower voltage I/O signalling without the need for voltage level shifters.

The **LAN9313** is a full featured, 3 port 10/100 managed Ethernet switch designed for embedded application. It combines all functions of a 10/100 switch system including the switch fabric, packet buffers, buffer manager, MAC controllers, PHY transceivers and serial management.

| Pins/Pkg | Description                                                  | Supply Voltage | Operating Temperature | Mfrs. List No. | Order Code | 1+    | 10+   | 100+  |
|----------|--------------------------------------------------------------|----------------|-----------------------|----------------|------------|-------|-------|-------|
| 56/QFN   | Ethernet Controller with HP Auto-MDIX Support                | 3 to 3.6V      | 0°C to +70°C          | LAN9211-ABZJ   | 171-1346   | 9.95  | 7.74  | 5.81  |
| 100/TQFP | Non-PCI 10/100 Ethernet Controller with HP Auto-MDIX Support | 3 to 3.6V      | 0°C to +70°C          | LAN9215-MT     | 171-1347   | 12.75 | 9.91  | 7.44  |
| 100/TQFP | 10/100 Ethernet Controller with HP Auto-MDIX Support         | 3 to 3.6V      | 0°C to +70°C          | LAN9218-MT     | 171-1348   | 22.98 | 17.87 | 13.41 |
| 56/QFN   | Non-PCI 10/100 Ethernet Controller with Variable Voltage I/O | 1.62 to 3.6V   | 0°C to +70°C          | LAN9221-ABZJ   | 171-1351   | 9.41  | 8.37  | 6.28  |
| 128/TQFP | Three Port 10/100 Managed Ethernet Switch with MII           | 3 to 3.6V      | 0°C to +70°C          | LAN9313-NU     | 171-1352   | 11.30 | 8.79  | 6.59  |
| 56/QFN   | Hi-Speed USB 2.0 to 10/100 Ethernet Controller               | 3 to 3.6V      | -40°C to +85°C        | LAN9500I-ABZJ  | 171-1353   | 11.95 | 9.30  | 6.98  |

## PSoC FirstTouch Starter Kit & Environmental Sensing Kit



CY3271

CY3271-EXP1

The **CY3271** Starter Kit allows evaluation of the PSoC programmable system-on-chip and CyFi low-power RF in CapSense™ touch-sensing, proximity-sensing, temperature-sensing, and light-sensing applications. It includes a PC dongle with RF, an RF expansion card with power amplification for long-range applications, a multifunction expansion card, and two battery packs (2xAAA and CR2032). It also features the PSoC Designer IDE and Cypress's Sense and Control Dashboard software.

The **CY3271-EXP1** is an expansion kit for the CY3271 PSoC FirstTouch Starter Kit. Included in the kit are two boards; the Weather Station Expansion Board (atmospheric pressure, humidity, temperature, and ambient light) and the Pigtail Thermistor Expansion Board. The Sense & Control Dashboard (SCD) from the CY3271 Kit lets users quickly setup and monitor a wired or wireless sensor network through an intuitive visual dashboard. Easily demonstrate features such as data logging, data aggregation, alarms, and sensor calibration for nearly any type of sensor.

| Mfrs. List No. | Description                 | Order Code | Price Each |
|----------------|-----------------------------|------------|------------|
| CY3271         | PSoC FirstTouch Starter Kit | 167-2996   | 86.24      |
| CY3271-EXP1    | Environmental Sensing Kit   | 167-2997   | 86.24      |

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## CY8CKIT-006 and CY8CKIT-029 LCD Segment Drive kits



The CY8CKIT-006 PSoC® 3 LCD Segment Drive Evaluation Kit and CY8CKIT-029 PSoC LCD Segment Drive Expansion Board Kit show the ease-of-use, fast development time and flexibility of the PSoC 3 architecture for LCD segment drive applications. The kits demonstrate how a single PSoC 3 device can drive up to 736 LCD segments, more than any microcontroller-based solution. With the kits, designers can leverage the drag-and-drop LCD Drive component in the PSoC Creator™ Integrated Development Environment (IDE) to quickly and easily design products with an LCD screen for the consumer electronics, handheld, medical, industrial, white goods, automotive and other markets

| Mfrs. List No. | Description                                | Order Code | Price Each |
|----------------|--------------------------------------------|------------|------------|
| CY8CKIT-006    | PSoC® 3 LCD Segment Drive Evaluation Kit   | 178-0584   | 90.30      |
| CY8CKIT-029    | PSoC LCD Segment Drive Expansion Board Kit | 178-0585   | 35.76      |

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## KITMPL115A: Digital Barometric Sensor Evaluation Boards



KITMPL115A1SPI and KITMPL115A2I2C are evaluation boards consisting of the Freescale MPL115A1 or A2 (SPI or I2C, respectively) digital pressure sensor on a PCB. This aids the customer with a fast prototyping and evaluation tool for our latest pressure sensor. They include all required filters and pull-up resistors for quick connection to a microcontroller. Simply biasing voltage, ground and digital SPI or I2C connections to the microcontroller will start the evaluation process.

| Mfrs. List No  | Description                                      | Order Code | Price Each |
|----------------|--------------------------------------------------|------------|------------|
| KITMPL115A1SPI | Digital Barometric Sensor Evaluation Board (SPI) | 177-8231   | 11.05      |
| KITMPL115A2I2C | Digital Barometric Sensor Evaluation Board (I2C) | 177-8232   | 11.05      |

## AVRTS2080A / AVRTS2080B Evaluation Kits



- The **AVRTS2080A** kit is preloaded with software for two buttons, one slider and one rotor.
- The **AVRTS2080B** kit is preloaded with software for four buttons and one rotor.

The AVRTS2080A & AVRTS2080B boards are ideal kits for evaluating the Atmel Touch Library implemented on the ATmega88. By downloading the Atmel Touch Library other configurations can be created and uploaded to the boards. Please note that this requires the use of an external programmer e.g. ATAVRISP mkII or AVR Dragon.

| Mfrs. List No. | Description    | Order Code | Price Each |
|----------------|----------------|------------|------------|
| ATAVRTS2080A   | Evaluation Kit | 177-3395   | 165.31     |
| ATAVRTS2080B   | Evaluation Kit | 177-3396   | 165.31     |

## AccessTouch

Touch Sensitive Keyed Access Controller



AccessTouch is an integrated combination key access controller using capacitive touch sensing technology and featuring tough-sensitive keys for vandal-proof operation. The PCB keyboard shown can be overlaid by a non-metallic covering. It automatically calculates signal averages to compensate for track capacitance, water splashes, etc. A buzzer output provides audio feedback as buttons are pressed.



The unpopulated board includes provision for:

- 20-pin, 28-pin and 40-pin DIL USB devices
- Type B socket, suitable for standard USB cables
- Type A plug, suitable for USB extension cables
- Prototyping area
- RS232 line driver, 9-pin sockets in DTE and DCE configurations
- RS485 line driver
- Coin cell battery
- SPI serial memory
- 28-pin DIL host processor
- 3 active low LEDs
- 3 active high LEDs
- 3 jumpers
- Photodiode
- Thermistor

| Mfrs List No.     | Description                | Order Code | Price Each |
|-------------------|----------------------------|------------|------------|
| ACCESS-TOUCH      | Pre-Programmed 20-Pin SSOP | 167-0841   | 6.64       |
| ACCESS-TOUCH-EVAL | Evaluation Board           | 167-0842   | 71.43      |

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## AR1000 Development Kit



The mTouch AR1000 Development Kit provides everything designers need to get started using AR1000 resistive controllers for a turn-key, cost effective solution. The kit includes the AR1000 development board, a 7" four-wire resistive touch screen, a PICKit™ Serial Analyzer and all necessary interface cables, as well as a CD containing technical documentation and all necessary software. The CD also includes an easy-to-use AR1000 configuration utility, which has a Graphical User Interface (GUI) that enables designers to test all user-configurable options with the AR1000 controllers.

| Mfrs. List No. | Description            | Order Code | Price Each |
|----------------|------------------------|------------|------------|
| DV102011       | AR1000 Development Kit | 174-0243   | 61.17      |

## mTouch Cap Touch Evaluation Kit



The mTouch Capacitive Evaluation Kit provides a simple platform for developing a variety of capacitive touch sense applications using PIC16F or PIC24F microcontrollers. The Diagnostic Tool provided allows the user to analyze application-critical information in real-time as it relates to touch sensor behaviour.

### Kit Includes:

- PIC16F727 CSM Motherboard
- PIC24FJ64GB106 Motherboard
- Direct 8 Key Board
- 12-Key Matrix Sensor Board
- 4-Channel Slider Sensor Board
- 2-Channel Slider Sensor Board
- PICKit Serial Analyzer
- USB Cable

| Mfrs. List No. | Description                     | Order Code | Price Each |
|----------------|---------------------------------|------------|------------|
| DM183026       | mTouch Cap Touch Evaluation Kit | 171-8592   | 51.97      |

## 4-Button Inductive Touch Board



The PICDEM Inductive Touch Development Kit is an evaluation and development platform for Microchips Inductive Touch Technology. Factory programmed firmware provides immediate access to all the boards features through the use of the MPLAB mTouch plug-in. Using a PICKit Serial analyzer to communicate with the PC, it allows the user to analyze application critical information in real-time as it relates to sensor behaviour.

### Features:

- Populated with a PIC16F1936
- Embossed Aluminum 4 Buttons Front Panel
- Buzzer and LEDs for feedback
- ICSP™ programming header
- PICKit™ Serial Analyzer connectivity

| Mfrs. List No. | Description                    | Order Code | Price Each |
|----------------|--------------------------------|------------|------------|
| DM183027       | 4-Button Inductive Touch Board | 177-8502   | 43.48      |

600694

[www.element-14.com](http://www.element-14.com)

**The first online technical portal for design engineers**  
Log on, research, refine and design

# Lightning Strikes - Ohmite Protects

Lightning strikes and power surges can lose data. Ohmite resistors won't let this happen. From remote metering to building management systems, Ohmite has a resistor which will withstand the most dramatic changes in current.

Choose Ohmite for surge protection on your smart metering products and stay in control.

**OHMITE**

[www.ohmite.com](http://www.ohmite.com)



## 3mm / T-1, AlInGaP LED Lamps



- High luminous intensity output
- Low power consumption
- High efficiency
- Versatile mounting on PCB or panel
- I.C. Compatible/low current requirement
- Applications include status indicator, backlighting front panels, light pipe sources and lighted switches

Operating Temperature -40°C to +100°C



| Colour       | Lens                  | Viewing Angle | Luminous Intensity |           | Current If (mA) | Voltage Vf Max (V) |                 | Peak Wavelength (nm) | Mfrs. List No. | Order Code | Price Each |       |      |     |
|--------------|-----------------------|---------------|--------------------|-----------|-----------------|--------------------|-----------------|----------------------|----------------|------------|------------|-------|------|-----|
|              |                       |               | Typ (mcd)          | Max (mcd) |                 |                    |                 |                      |                |            | 10+        | 50+   | 250+ | 1K+ |
| Amber        | Untinted Non-diffused | 45°           | 400                | 20        | 2.2             | 595                | HLMP-Y701-G0000 | 173-5246             | 0.160          | 0.150      | 0.139      | 0.128 |      |     |
| Green        | Untinted Non-diffused | 30°           | 310                | 20        | 2.4             | 575                | HLMP-Y801-JPP00 | 173-5247             | 0.160          | 0.150      | 0.139      | 0.128 |      |     |
| Orange       | Untinted Non-diffused | 45°           | 680                | 20        | 2.4             | 611                | HLMP-Y901-J0000 | 173-5248             | 0.160          | 0.150      | 0.139      | 0.128 |      |     |
| Red          | Untinted Non-diffused | 45°           | 680                | 20        | 2.2             | 633                | HLMP-Y601-J0000 | 173-5244             | 0.160          | 0.150      | 0.139      | 0.128 |      |     |
| Red / Orange | Untinted Non-diffused | 45°           | 680                | 20        | 2.2             | 622                | HLMP-Y951-K0000 | 173-5249             | 0.160          | 0.150      | 0.139      | 0.128 |      |     |
| Deep Red     | Untinted Non-diffused | 45°           | 300                | 20        | 2.2             | 652                | HLMP-Y651-G0000 | 173-5245             | 0.160          | 0.150      | 0.139      | 0.128 |      |     |

## Moonstone™

### 1W Power LED Light Source



170-5247



170-5248, 170-5248



170-5249, 170-5251

- Energy efficient
- High current operation
- Long operation life
- Wide viewing angle
- Silicone encapsulation
- Applications include architectural lighting, garden lighting and decorative lighting



| Colour     | Viewing Angle | Luminous Intensity |          | Current If (mA) | Voltage Vf Max (V) |          | Mfrs. List No. | Order Code | Price Each |      |      |      |      |
|------------|---------------|--------------------|----------|-----------------|--------------------|----------|----------------|------------|------------|------|------|------|------|
|            |               | Typ (lm)           | Max (lm) |                 |                    |          |                |            | 1+         | 25+  | 100+ | 250+ | 500+ |
| Warm White | 130°          | 60                 | 350      | 4               | ASMT-AY00-NST00    | 170-5247 | 1.92           | 1.66       | 1.58       | 1.51 | 1.46 |      |      |
| Blue       | 120°          | 15                 | 350      | 4               | ASMT-MB00-NDFO0    | 170-5248 | 2.31           | 2.00       | 1.91       | 1.82 | 1.76 |      |      |
| Blue       | 120°          | 15                 | 350      | 4               | ASMT-MBKO-NDFO0    | 170-5249 | 3.21           | 2.77       | 2.64       | 2.53 | 2.44 |      |      |
| Green      | 120°          | 60                 | 350      | 4               | ASMT-MG00-NJK00    | 170-5250 | 2.49           | 2.16       | 2.07       | 1.96 | 1.89 |      |      |
| Green      | 120°          | 60                 | 350      | 4               | ASMT-MGKO-NJK00    | 170-5251 | 3.47           | 3.00       | 2.87       | 2.73 | 2.64 |      |      |

## 3W Miniature High-Power LEDs



Power Dissipation  
Forward Current  
Operating Temperature

AlInGaP  
2450mW  
700mA  
-40°C to +100°C

InGaN  
3010mW  
700mA  
-40°C to +105°C

- Energy efficient
- Direct heat transfer from metal slug to mother board
- Compatible with reflow soldering process
- High current operation
- Long operation life
- Silicone encapsulation
- Non-ESD sensitive (threshold > 16kV)



L=5, W=4, D=1.85  
LED dia.=3.7

| Colour        | Viewing Angle | Luminous Flux / (Radiometric Power) |         | Voltage Vf (V) |     | Wavelength / (Colour Temperature) |              | Material | Mfrs. List No.  | Order Code | Price Each |      |      |      |      |
|---------------|---------------|-------------------------------------|---------|----------------|-----|-----------------------------------|--------------|----------|-----------------|------------|------------|------|------|------|------|
|               |               | Typ                                 | Max     | Min            | Max | Dom. / (Min)                      | Peak / (Max) |          |                 |            | 1+         | 25+  | 100+ | 250+ | 500+ |
| Cool White    | 140°          | 85lm                                | 113.6lm | 4              | 4.3 | (4500K)                           | (10000K)     | InGaN    | ASMT-JW31-NTV01 | 171-8399   | 2.45       | 2.17 | 1.97 | 1.76 | 1.69 |
| Cool White    | 140°          | 95lm                                | 113.6lm | 3.5            | 4   | (4500K)                           | (10000K)     | InGaN    | ASMT-JW31-NUV01 | 176-1161   | 1.97       | 1.76 | 1.57 | 1.40 | 1.37 |
| Neutral White | 140°          | 150lm                               | 198lm   | 4              | 4.3 | (3500K)                           | (4500K)      | InGaN    | ASMT-JN31-NTV01 | 171-8401   | 1.76       | 1.55 | 1.40 | 1.25 | 1.21 |
| Warm White    | 140°          | 120lm                               | 171lm   | 4              | 4.3 | (2700K)                           | (3500K)      | InGaN    | ASMT-JY31-NSU01 | 171-8402   | 2.45       | 2.17 | 1.97 | 1.76 | 1.69 |
| Amber         | 165°          | 80lm                                | 120lm   | 2.8            | 3.5 | 590nm                             | 598nm        | AlInGaP  | ASMT-JA30-ARS01 | 171-8394   | 1.50       | 1.33 | 1.20 | 1.07 | 1.04 |
| Blue          | 165°          | 3333                                | 50lm    | 4              | 4.3 | 470nm                             | 460nm        | InGaN    | ASMT-JB31-NMP01 | 171-8397   | 1.68       | 1.49 | 1.34 | 1.20 | 1.16 |
| Royal Blue    | 165°          | (650mW)                             | (515mW) | 4              | 4.3 | 455nm                             | 450nm        | InGaN    | ASMT-JL31-NPQ01 | 171-8398   | 1.68       | 1.49 | 1.34 | 1.20 | 1.16 |
| Green         | 165°          | 120lm                               | 153lm   | 4              | 4.3 | 525nm                             | 519nm        | InGaN    | ASMT-JG31-NST01 | 171-8403   | 2.02       | 1.80 | 1.62 | 1.45 | 1.40 |
| Red           | 165°          | 80lm                                | 120lm   | 2.8            | 3.5 | 625nm                             | 635nm        | AlInGaP  | ASMT-JR30-ARS01 | 171-8395   | 2.10       | 1.86 | 1.68 | 1.50 | 1.46 |
| Red / Orange  | 165°          | 80lm                                | 120lm   | 2.8            | 3.5 | 615nm                             | 625nm        | AlInGaP  | ASMT-JH30-ARS01 | 171-8396   | 1.50       | 1.33 | 1.20 | 1.07 | 1.04 |

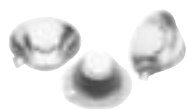
## Lenses and LED Holders



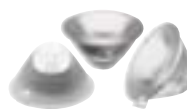
177-4870, 177-4871, 177-4877, 177-4878



177-4872, 177-4880



177-4873, 177-4881



177-4874, 177-4879, 177-4882, 177-4883

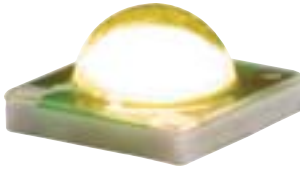


177-4875, 177-4884



|                 |                      |              | Mfrs.<br>List No. | Order Code | 10 + | Price Each<br>50 + | 100 + |
|-----------------|----------------------|--------------|-------------------|------------|------|--------------------|-------|
| Colour / Type   |                      | For Use With |                   |            |      |                    |       |
| LED Holders     |                      |              |                   |            |      |                    |       |
| Black           | —                    | 10489        | 177-4870          | 0.15       | 0.14 | 0.12               |       |
| Black           | —                    | 10499        | 177-4871          | 0.15       | 0.14 | 0.12               |       |
| Black           | —                    | 10481        | 177-4877          | 0.34       | 0.32 | 0.30               |       |
| Black           | —                    | 10491        | 177-4878          | 0.34       | 0.32 | 0.30               |       |
| Lenses          |                      |              |                   |            |      |                    |       |
| Plain Tight     | Avago Aveon LEDs     | 10048        | 177-4872          | 1.12       | 1.07 | 1.01               |       |
| Plain Tight     | Avago Moonstone LEDs | 10391        | 177-4880          | 1.12       | 1.07 | 1.01               |       |
| Frost Narrow    | Avago Aveon LEDs     | 10108        | 177-4874          | 1.12       | 1.07 | 1.01               |       |
| Frost Narrow    | Avago Moonstone LEDs | 10392        | 177-4881          | 1.12       | 1.07 | 1.01               |       |
| Frost Medium    | Avago Aveon LEDs     | 10124        | 177-4873          | 1.12       | 1.07 | 1.01               |       |
| Frost Medium    | Avago Moonstone LEDs | 10393        | 177-4882          | 1.12       | 1.07 | 1.01               |       |
| Soft Frost Wide | Avago Jade LEDs      | 10260        | 177-4879          | 1.12       | 1.07 | 1.01               |       |
| Soft Frost Wide | Avago Moonstone LEDs | 10394        | 177-4883          | 1.12       | 1.07 | 1.01               |       |
| Elliptical Beam | Avago Aveon LEDs     | 10049        | 177-4875          | 1.12       | 1.07 | 1.01               |       |
| Elliptical Beam | Avago Moonstone LEDs | 10395        | 177-4884          | 1.12       | 1.07 | 1.01               |       |

## XPE Series



- Small footprint
- Low thermal resistance 9°C/W
- Electrically isolated base
- New colour versions now available

| Colour        | Viewing Angle | Luminous Intensity |  | Current If (mA) | Voltage Vf Max (V) |  | Mfrs. List No.       | Order Code | Price Each |      |      |      |      |
|---------------|---------------|--------------------|--|-----------------|--------------------|--|----------------------|------------|------------|------|------|------|------|
|               |               | Typ (lm)           |  |                 |                    |  |                      |            | 1+         | 25+  | 50+  | 100+ | 250+ |
| Cool White    | 115°          | 100                |  | 700             | 3.9                |  | XPEWHT-L1-R250-00C01 | 164-9030   | 4.83       | 3.98 | 3.62 | 3.38 | 3.11 |
| Cool White    | 115°          | 107                |  | 700             | 3.4                |  | XPEWHT-L1-R250-00D01 | 168-8707   | 5.63       | 5.00 | 4.59 | 4.25 | 3.95 |
| Cool White    | 115°          | 114                |  | 700             | 3.4                |  | XPEWHT-L1-R250-00E01 | 168-8708   | 7.23       | 6.42 | 5.90 | 5.46 | 5.07 |
| Neutral White | 115°          | 87.4               |  | 700             | 3.9                |  | XPEWHT-L1-R250-00AE5 | 164-9044   | 5.26       | 4.32 | 3.94 | 3.67 | 3.39 |
| Warm White    | 115°          | 73.9               |  | 700             | 3.9                |  | XPEWHT-L1-R250-008E7 | 164-9045   | 4.81       | 3.97 | 3.61 | 3.36 | 3.10 |
| Amber         | 130°          | 51.7               |  | 500             | 2.5                |  | XPEAMB-L1-R250-00401 | 172-7689   | 2.03       | 1.89 | 1.81 | --   | --   |
| Blue          | 130°          | 30.6               |  | 1000            | 3.9                |  | XPEBLU-L1-R250-00Y01 | 172-7687   | 2.93       | 2.72 | 2.61 | --   | --   |
| Green         | 130°          | 100                |  | 700             | 3.9                |  | XPEGRN-L1-R250-00C01 | 172-7688   | 4.06       | 3.77 | 3.62 | --   | --   |
| Red           | 130°          | 51.7               |  | 700             | 2.5                |  | XPERED-L1-R250-00401 | 172-7691   | 2.03       | 1.89 | 1.81 | --   | --   |
| Red / Orange  | 130°          | 56.8               |  | 700             | 2.5                |  | XPERDO-L1-R250-00501 | 172-7690   | 2.10       | 1.95 | 1.87 | --   | --   |

## MCE Series



- Industry's first lighting-class multi-chip LED
- Individually addressable LEDs
- Electrically neutral thermal path
- New colour versions now available

Dimensions L=9, W=7, D=4.48

| Colour                     | Viewing Angle | Luminous Intensity |  | Colour Temperature |         | Current If (mA) | Voltage Vf Max (V) |  | Mfrs. List No.           | Order Code | Price Each |       |       |       |
|----------------------------|---------------|--------------------|--|--------------------|---------|-----------------|--------------------|--|--------------------------|------------|------------|-------|-------|-------|
|                            |               | Typ (lm)           |  | Min (K)            | Max (K) |                 |                    |  |                          |            | 1+         | 25+   | 50+   | 100+  |
| Cool White                 | 110°          | 370                |  | 2600               | 3700    | 700             | 3.9                |  | MCE4WT-A2-0000-000K01    | 164-9028   | 15.84      | 13.04 | 11.88 | 11.09 |
| Cool White                 | 110°          | 430                |  | 10000              | 5000    | 700             | 3.9                |  | MCE4WT-A2-0000-000M01    | 168-8706   | 17.98      | 15.69 | 14.38 | 13.28 |
| Neutral White              | 110°          | 320                |  | 3700               | 5000    | 700             | 3.9                |  | MCE4WT-A2-0000-000JE5    | 164-9027   | 16.21      | 13.35 | 12.16 | 11.35 |
| Warm White                 | 110°          | 280                |  | 5000               | 10000   | 700             | 3.9                |  | MCE4WT-A2-0000-000HE7    | 164-9026   | 15.05      | 12.43 | 11.42 | 10.53 |
| Red - Green - Blue - White | 115°          | 95                 |  | --                 | --      | 350             | 3.9                |  | MCE4CT-A2-0000-00A5AAAA1 | 172-7693   | 9.24       | 8.59  | 8.23  | --    |
| Red - Green - Blue - White | 115°          | 80                 |  | --                 | --      | 350             | 3.9                |  | MCE4CT-A2-0000-00A4AAAA1 | 172-7694   | 9.24       | 8.59  | 8.23  | --    |

## Acriche



- Designed for AC source operation and high flux output applications
  - 110V or 230V environmentally friendly semiconductor lighting that can be used in AC without additional device
  - Thermal management perform exceeds other power LED solutions
  - Incorporates state of the art SMD design and thermal emission material
  - Applications include architectural lighting, task lighting, decorative / pathway lighting and household appliances
- Operating Temperature 25mm x 25mm -30°C to +85°C  
30mm x 30mm -40°C to +85°C

| Colour     | LED Size    | Viewing Angle | Luminous Flux |  | Current If (mA) | Voltage Vf Max (V) |  | Mfrs. List No. | Order Code | Price Each |       |       |       |       |
|------------|-------------|---------------|---------------|--|-----------------|--------------------|--|----------------|------------|------------|-------|-------|-------|-------|
|            |             |               | Typ (lm)      |  |                 |                    |  |                |            | 1+         | 5+    | 20+   | 100+  | 250+  |
| Pure White | 25mm x 25mm | 110°          | 80            |  | 20              | 110                |  | AW2214.        | 173-4730   | 6.90       | 6.19  | 5.69  | --    | --    |
| Pure White | 30mm x 30mm | 130°          | 215           |  | 40              | 110                |  | AW3211         | 173-4731   | 11.61      | 10.70 | 10.48 | 10.14 | 10.02 |
| Pure White | 30mm x 30mm | 130°          | 215           |  | 20              | 230                |  | AW3231         | 173-4729   | 11.61      | 10.70 | 10.48 | 10.14 | 10.02 |
| Warm White | 25mm x 25mm | 110°          | 65            |  | 20              | 110                |  | AN2214.        | 173-4728   | 9.59       | 8.87  | 8.32  | --    | --    |
| Warm White | 30mm x 30mm | 130°          | 145           |  | 40              | 110                |  | AN3211         | 173-4732   | 11.61      | 10.70 | 10.48 | 10.14 | 10.02 |
| Warm White | 30mm x 30mm | 130°          | 145           |  | 20              | 230                |  | AN3231.        | 173-4733   | 11.61      | 10.70 | 10.48 | 10.14 | 10.02 |

## Acriche Modules



176-8726, 176-8732



176-8729, 176-8733



176-8730, 176-8734



176-8731, 176-8735

| Colour     | Luminous Flux (lm) | Current If (mA) | Voltage Vf Max (V) | Mfrs. List No. | Order Code | Price Each |  |
|------------|--------------------|-----------------|--------------------|----------------|------------|------------|--|
|            |                    |                 |                    |                |            | 1+         |  |
| Warm White | 200                | 40              | 110                | AN4211         | 176-8726   | 10.85      |  |
| Warm White | 200                | 40              | 110                | AN4212         | 176-8729   | 10.43      |  |
| Warm White | 200                | 40              | 110                | AN4213         | 176-8730   | 11.27      |  |
| Warm White | 400                | 80              | 110                | AN4214         | 176-8731   | 20.57      |  |
| Warm White | 200                | 20              | 220                | AN4221         | 176-8732   | 10.85      |  |
| Warm White | 200                | 20              | 220                | AN4222         | 176-8733   | 10.43      |  |
| Warm White | 200                | 20              | 220                | AN4223         | 176-8734   | 11.27      |  |
| Warm White | 400                | 40              | 220                | AN4224         | 176-8735   | 20.57      |  |

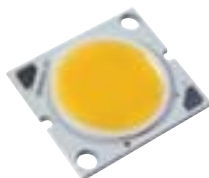
## ES Array Series



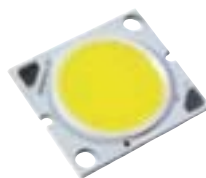
178-7306



178-7313, 178-7314



178-7315, 178-7316



178-7307, 178-7308, 178-7309

Operating Temperature -40°C to +105°C



### Features

- Compact high flux density light source
- Uniform high quality illumination
- Streamlined thermal path
- Energy Star / ANSI compliant binning structure
- More energy efficient than incandescent, halogen and fluorescent lamps
- Low voltage DC operation
- Instant light with unlimited dimming
- Long operating life

### Benefits

- Enhanced optical control
- Clean white light without pixilation
- Significantly reduced thermal resistance and increased operating temperatures
- Uniform consistent white light
- Lower operating costs
- Increased safety
- Easy to use with daylight and motion detectors to enable increased energy savings
- Reduced maintenance costs
- Environmentally friendly, no disposal issues

|        | Colour     | Viewing Angle | Luminous Flux (lm) | Current If (mA) | Voltage Vf Max (V) | CCT (K) | Colour Rendering Index | Mfrs. List No.   | Order Code | Price Each |         |
|--------|------------|---------------|--------------------|-----------------|--------------------|---------|------------------------|------------------|------------|------------|---------|
|        |            |               |                    |                 |                    |         |                        |                  |            |            |         |
|        |            |               |                    |                 |                    |         |                        |                  |            |            | 1+ 100+ |
| Star   | Cool White | 120°          | 450                | 500             | 9.5                | 5600    | 65                     | BXRA-C0402-00000 | 178-7306   | 4.70       | 4.23    |
|        | Warm White | 120°          | 440                | 700             | 9.5                | 3000    | 82                     | BXRA-W0401-00000 | 178-7313   | 5.91       | 5.31    |
|        | Warm White | 120°          | 460                | 700             | 9                  | 3000    | 82                     | BXRA-W0402-00000 | 178-7314   | 6.93       | 6.23    |
| Square | Cool White | 120°          | 880                | 700             | 12.7               | 5600    | 65                     | BXRA-C0802-00000 | 178-7307   | 8.89       | 8.00    |
|        | Cool White | 120°          | 1320               | 1.05            | 12.8               | 5600    | 65                     | BXRA-C1202-00000 | 178-7308   | 12.02      | 10.82   |
|        | Cool White | 120°          | 2200               | 1.5             | 16.2               | 5600    | 65                     | BXRA-C2002-00000 | 178-7309   | 18.75      | 16.88   |
|        | Warm White | 120°          | 930                | 1.05            | 12.2               | 3000    | 82                     | BXRA-W0802-00000 | 178-7315   | 12.48      | 11.22   |
|        | Warm White | 120°          | 1320               | 1.2             | 15.1               | 3000    | 82                     | BXRA-W1202-00000 | 178-7316   | 18.24      | 16.42   |
|        |            |               |                    |                 |                    |         |                        |                  |            |            |         |

## LS Array Series



178-7304



178-7311, 178-7312

Operating Temperature -40°C to +105°C



### Features

- Compact high flux density light source
- Uniform high quality illumination
- Streamlined thermal path
- Energy Star / ANSI compliant binning structure
- More energy efficient than incandescent, halogen and fluorescent lamps
- Low voltage DC operation
- Instant light with unlimited dimming
- Long operating life

### Benefits

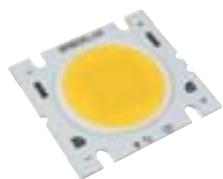
- Enhanced optical control
- Clean white light without pixilation
- Significantly reduced thermal resistance and increased operating temperatures
- Uniform consistent white light
- Lower operating costs
- Increased safety
- Easy to use with daylight and motion detectors to enable increased energy savings
- Reduced maintenance costs
- Environmentally friendly, no disposal issue

|      | Colour     | Viewing Angle | Luminous Flux (lm) | Current If (mA) | Voltage Vf Max (V) | CCT (K) | Colour Rendering Index | Mfrs. List No.   | Order Code | Price Each |         |
|------|------------|---------------|--------------------|-----------------|--------------------|---------|------------------------|------------------|------------|------------|---------|
|      |            |               |                    |                 |                    |         |                        |                  |            |            |         |
|      |            |               |                    |                 |                    |         |                        |                  |            |            | 1+ 100+ |
| Mini | Cool White | 120°          | 400                | 350             | 13.2               | 5600    | 65                     | BXRA-C0360-00000 | 178-7304   | 3.40       | 3.06    |
|      | Warm White | 120°          | 265                | 350             | 13.2               | 3000    | 82                     | BXRA-W0240-00000 | 178-7311   | 3.62       | 3.26    |
|      | Warm White | 120°          | 295                | 350             | 12.6               | 3000    | 82                     | BXRA-W0260-00000 | 178-7312   | 4.14       | 3.74    |

## RS Array Series



178-7310



178-7318

Operating Temperature -40°C to +105°C



### Features

- Compact high flux density light source
- Uniform high quality illumination
- Streamlined thermal path
- Energy Star / ANSI compliant binning structure
- More energy efficient than incandescent, halogen and fluorescent lamps
- Low voltage DC operation
- Instant light with unlimited dimming
- Long operating life

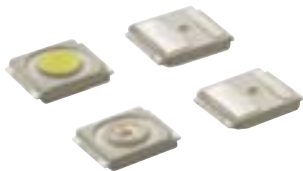
### Benefits

- Enhanced optical control
- Clean white light without pixilation
- Significantly reduced thermal resistance and increased operating temperatures
- Uniform consistent white light
- Lower operating costs
- Increased safety
- Easy to use with daylight and motion detectors to enable increased energy savings
- Reduced maintenance costs
- Environmentally friendly, no disposal issue

|      | Colour     | Viewing Angle | Luminous Flux (lm) | Current If (mA) | Voltage Vf Max (V) | CCT (K) | Colour Rendering Index | Mfrs. List No.   | Order Code | Price Each |         |
|------|------------|---------------|--------------------|-----------------|--------------------|---------|------------------------|------------------|------------|------------|---------|
|      |            |               |                    |                 |                    |         |                        |                  |            |            |         |
|      |            |               |                    |                 |                    |         |                        |                  |            |            | 1+ 100+ |
| Mega | Cool White | 120°          | 5000               | 2.1             | 25.4               | 5600    | 65                     | BXRA-C4500-00000 | 178-7310   | 46.98      | 42.43   |
|      | Warm White | 120°          | 3400               | 2.1             | 25.4               | 3000    | 82                     | BXRA-W3000-00000 | 178-7318   | 51.73      | 46.56   |

601079

## Little Star®



- One of the most robust and light efficient LEDs in the market
- Extremely high level of brightness and the ultra low high profile
- Highly suitable for both conventional lighting and specialized applications
- Applications include automotive signal lights, traffic lights, channel lights, tube lights and garden lights

Operating Temperature -40°C to +100°C



| Colour     | LED Size | Viewing Angle | Luminous Intensity |           |           | Current If (mA) | Voltage Vf Max (V) | Mfrs. List No.     | Order Code | Price Each |      |      |      |
|------------|----------|---------------|--------------------|-----------|-----------|-----------------|--------------------|--------------------|------------|------------|------|------|------|
|            |          |               | Min (mcd)          | Typ (mcd) | Max (mcd) |                 |                    |                    |            | 1+         | 10+  | 50+  | 100+ |
| White      | 3mm      | 120°          | 14000              | —         | 18000     | 350             | 4                  | VLMW711ADAF-GS08   | 156-1018   | 4.97       | —    | —    | —    |
| White      | 3mm      | 120°          | —                  | 25000     | —         | 350             | 4                  | VLMW711T3U2US-GS08 | 176-5223   | 2.92       | 2.70 | 2.59 | 2.30 |
| White      | 3mm      | 120°          | —                  | 29700     | —         | 350             | 4                  | VLMW711U2U3XV-GS08 | 176-5222   | 2.92       | 2.70 | 2.59 | 2.30 |
| Warm White | 3mm      | 120°          | 18000              | —         | 22400     | 350             | 4                  | VLMW711ACAE-GS08   | 156-1019   | 3.83       | —    | —    | —    |
| Warm White | 3mm      | 120°          | —                  | 19000     | —         | 350             | 4                  | VLMW711S2S3QN-GS08 | 176-5224   | 3.10       | 2.87 | 2.75 | 2.43 |
| Amber      | 3mm      | 120°          | 9000               | —         | 11250     | 400             | 2.8                | VLMK71ABAD-GS08    | 156-1015   | 1.59       | —    | —    | —    |
| Red        | 3mm      | 120°          | 7150               | —         | 9000      | 400             | 2.8                | VLMR71AAAC-GS08    | 156-1016   | 1.61       | —    | —    | —    |
| Yellow     | 3mm      | 120°          | 7150               | —         | 9000      | 400             | 2.8                | VLMY71AAAC-GS08    | 156-1020   | 2.38       | —    | —    | —    |

## M-Tubes

Flexible or Rigid LED-powered Light Tubes for low Energy, Long-life Illumination



M-Tubes from opto-electronic innovators Mentor GmbH deliver many of the properties of fluorescent or cold cathode technologies but have all of the advantages of LEDs. Either standard or hi-brightness LED-sourced light is input at each end of a crystal-clear light guide tube (both rigid and flexible versions are available). A printed reflective strip along the length of the tube delivers even, diffused and targeted light. There are no hot spots of lights as found with LED strips. M-Tubes are suitable for multiple applications including:-

- Architecture - stairs and edges, emergency lighting, ambience / decorative lighting, cove lighting, lift doors etc.
- Industrial electronics - switchgear cabinet illumination, service light, danger signals etc.
- Household - illumination and backlighting of all kinds
- Automotive and marine - light curtains, signal lights, contour illumination, ambience / decorative lighting

The light guide tubes can be up to 700mm in length and either 6mm or 10mm diameter. Brightness level of a 548mm ultra-white hi-brightness M-Tube is 250lx compared with 307lx from a typical 10W 500mm fluorescent tube. Energy-efficient with minimal heat generation - in terms of cost per kWh, the hi-brightness version is 63% cheaper than fluorescent tube and 94% cheaper than tungsten bulbs (approximate). Service life of around 50,000 hours to 50% brightness compares with typical tungsten bulb life of around 1,000 hours. Service life is unaffected by on/off actuations. Immediate full luminosity (no warm-up). Impervious to extremes of temperature - operating range -40°C to +70°C. Available in red, green, blue and up to three Kelvins of white. Dimmability of all LEDs and RGB colour control are possible using alternative power sources (not supplied).

## M-Tubes - Hi-Brightness LED Light System



- The Dragon LEDs used in Hi-Brightness M-Tubes deliver an impressive intensity of illumination whilst still retaining the benefits of low-energy and longevity
- An aluminium profile regulates the thermo-management of these powerful LEDs, whilst at the same time acting as a reflector and an elegant design feature
- As well as fully assembled units with sockets for power-in, unusual design requirements are accommodated for by the availability of modular components

## Complete Hi-Brightness Units

With aluminium profiles, DC/DC converters and female plug sockets (please note, AC / DC adaptor needs to be ordered separately)



| Colour                                | Colour Temperature (K) | Current Consumption Max (mA) | Operating Voltage DC (V) | Mfrs. List No. | Order Code | Price Each 1+ |
|---------------------------------------|------------------------|------------------------------|--------------------------|----------------|------------|---------------|
| <b>448.3mm Long Aluminium Profile</b> |                        |                              |                          |                |            |               |
| Ultra White                           | 6500                   | 500                          | 11 - 15                  | 1322.1320      | 177-3103   | 57.45         |
| Warm White                            | 3500                   | 500                          | 11 - 15                  | 1322.1420      | 177-3104   | 57.45         |
| White                                 | 5600                   | 500                          | 11 - 15                  | 1322.1520      | 177-3105   | 57.45         |
| Red                                   | —                      | 500                          | 11 - 15                  | 1322.1220      | 177-3106   | 51.69         |
| Blue                                  | —                      | 500                          | 11 - 15                  | 1322.1620      | 177-3107   | 57.45         |
| Green                                 | —                      | 500                          | 11 - 15                  | 1322.1820      | 177-3108   | 57.45         |
| <b>548.3mm Long Aluminium Profile</b> |                        |                              |                          |                |            |               |
| Ultra White                           | 6500                   | 500                          | 11 - 15                  | 1322.1330      | 177-3109   | 59.50         |
| Warm White                            | 3500                   | 500                          | 11 - 15                  | 1322.1430      | 177-3110   | 59.50         |
| White                                 | 5600                   | 500                          | 11 - 15                  | 1322.1530      | 177-3111   | 59.50         |
| Red                                   | —                      | 500                          | 11 - 15                  | 1322.1230      | 177-3113   | 53.75         |
| Blue                                  | —                      | 500                          | 11 - 15                  | 1322.1630      | 177-3114   | 59.50         |
| Green                                 | —                      | 500                          | 11 - 15                  | 1322.1830      | 177-3115   | 59.50         |
| <b>748.3mm Long Aluminium Profile</b> |                        |                              |                          |                |            |               |
| Ultra White                           | 6500                   | 500                          | 11 - 15                  | 1322.1340      | 177-3116   | 69.60         |
| Warm White                            | 3500                   | 500                          | 11 - 15                  | 1322.1440      | 177-3117   | 69.60         |
| White                                 | 5600                   | 500                          | 11 - 15                  | 1322.1540      | 177-3118   | 69.60         |
| Red                                   | —                      | 500                          | 11 - 15                  | 1322.1240      | 177-3119   | 63.84         |
| Blue                                  | —                      | 500                          | 11 - 15                  | 1322.1640      | 177-3120   | 69.60         |
| Green                                 | —                      | 500                          | 11 - 15                  | 1322.1840      | 177-3121   | 69.60         |
| <b>948.3mm Long Aluminium Profile</b> |                        |                              |                          |                |            |               |
| Ultra White                           | 6500                   | 500                          | 11 - 15                  | 1322.1350      | 177-3122   | 71.62         |
| Warm White                            | 3500                   | 500                          | 11 - 15                  | 1322.1450      | 177-3123   | 71.62         |
| White                                 | 5600                   | 500                          | 11 - 15                  | 1322.1550      | 177-3125   | 71.62         |
| Red                                   | —                      | 500                          | 11 - 15                  | 1322.1250      | 177-3126   | 65.86         |
| Blue                                  | —                      | 500                          | 11 - 15                  | 1322.1650      | 177-3127   | 71.62         |
| Green                                 | —                      | 500                          | 11 - 15                  | 1322.1850      | 177-3128   | 71.62         |

Continues on next page



## Modular Hi-Brightness Units

### Light Guides

|                                                                                   | Dimensions  | Mfrs. List No. | Order Code | Price Each |
|-----------------------------------------------------------------------------------|-------------|----------------|------------|------------|
|  | Ø10 x 100mm | 1320.1010      | 177-3052   | 1+         |
|                                                                                   | Ø10 x 300mm | 1320.1030      | 177-3053   | 2.98       |
|                                                                                   | Ø10 x 500mm | 1320.1050      | 177-3054   | 6.12       |
|                                                                                   | Ø10 x 700mm | 1320.1070      | 177-3055   | 9.26       |
|                                                                                   |             |                |            | 12.40      |

### LED Housings

M-Tube hi-brightness LED and housing (32.6mm aluminum) single module with stranded wire and split sleeve for Ø10mm flexible or rigid M-Tube light guides (one required for each unit)

|                                                                                   | Colour      | Colour Temperature (K) | Forward Current (mA) | Voltage Vf Typ (V) | Mfrs. List No. | Order Code | Price Each |
|-----------------------------------------------------------------------------------|-------------|------------------------|----------------------|--------------------|----------------|------------|------------|
|  | Ultra White | 6500                   | 600                  | 3.6                | 1322.1300      | 177-3089   | 1+         |
|                                                                                   | Warm White  | 3500                   | 600                  | 3.6                | 1322.1400      | 177-3090   | 14.02      |
|                                                                                   | White       | 5600                   | 600                  | 3.6                | 1322.1500      | 177-3091   | 14.02      |
|                                                                                   | Blue        | —                      | 600                  | 3.6                | 1322.1600      | 177-3092   | 14.02      |
|                                                                                   | Green       | —                      | 600                  | 3.6                | 1322.1800      | 177-3093   | 14.02      |
|                                                                                   | Red         | —                      | 600                  | 2.1                | 1322.1200      | 177-3095   | 11.14      |

M-Tube hi-brightness LED and housing (63.1mm aluminium) single module with DC / DC converter, stranded wire and split sleeve for Ø10mm flexible or rigid M-Tube light guides (one required for each unit)

|                                                                                   | Colour      | Colour Temperature (K) | Current Consumption Max (mA) | Operating Voltage DC (V) | Mfrs. List No. | Order Code | Price Each |
|-----------------------------------------------------------------------------------|-------------|------------------------|------------------------------|--------------------------|----------------|------------|------------|
|  | Ultra White | 6500                   | 500                          | 11 - 15                  | 1322.1301      | 177-3096   | 1+         |
|                                                                                   | Warm White  | 3500                   | 500                          | 11 - 15                  | 1322.1401      | 177-3097   | 28.07      |
|                                                                                   | White       | 5600                   | 500                          | 11 - 15                  | 1322.1501      | 177-3098   | 28.07      |
|                                                                                   | Blue        | —                      | 500                          | 11 - 15                  | 1322.1601      | 177-3099   | 28.07      |
|                                                                                   | Green       | —                      | 500                          | 11 - 15                  | 1322.1801      | 177-3101   | 28.07      |
|                                                                                   | Red         | —                      | 500                          | 11 - 15                  | 1322.1201      | 177-3102   | 28.07      |

### Power Supplies

|                                                                                     | Description                               | Mfrs. List No. | Order Code | Price Each |
|-------------------------------------------------------------------------------------|-------------------------------------------|----------------|------------|------------|
|   | AC / DC adaptor for hi-brightness M-Tubes | 1322.1000      | 177-3133   | 1+         |
|  | Power supply extension 3m                 | 1322.0100      | 177-3134   | 11.67      |
|                                                                                     |                                           |                |            | 5.94       |

### Accessories

|                                                                                     | Description                             | Mfrs. List No. | Order Code | Price Each |
|-------------------------------------------------------------------------------------|-----------------------------------------|----------------|------------|------------|
|  | Fastening device for Ø6mm M-Tube        | 1320.0020      | 177-3062   | 3+         |
|                                                                                     | Fastening device for Ø10mm M-Tube       | 1320.0040      | 177-3063   | 0.82       |
|  | Diffuser cover with end caps 450mm long | 1322.0020      | 177-3129   | 1+         |
|                                                                                     | Diffuser cover with end caps 550mm long | 1322.0030      | 177-3130   | 7.59       |
|                                                                                     | Diffuser cover with end caps 750mm long | 1322.0040      | 177-3131   | 9.42       |
|                                                                                     | Diffuser cover with end caps 950mm long | 1322.0050      | 177-3132   | 12.52      |
|                                                                                     |                                         |                |            | 13.66      |

## LUXEON® Rebel Illumination

### ANSI



- LUXEON® Rebel Illumination emitters deliver optimized combinations of light quality and light output needed for today's lighting applications
- These parts deliver the efficacy, lifetime and reliability that all LUXEON Rebel LEDs are renowned for
- ANSI compliant binning
- Exceed ENERGY STAR® lumen maintenance requirements
- High efficacy for sustainable design
- More light delivered at operating temperature

LUMILEDS



| Colour | Viewing Angle | Luminous Flux |          | Colour Temperature |         |         | Voltage Vf Max (V) | Mfrs. List No. | Order Code | Price Each |      |      |      |
|--------|---------------|---------------|----------|--------------------|---------|---------|--------------------|----------------|------------|------------|------|------|------|
|        |               | Min (lm)      | Typ (lm) | Min (K)            | Typ (K) | Max (K) |                    |                |            | 1+         | 10+  | 50+  | 100+ |
| White  | 120°          | 75            | 85       | 3710               | 3985    | 4260    | 3.99               | LXM3-PW51      | 177-4892   | 4.58       | 3.33 | 3.05 | 2.82 |
| White  | 120°          | 67            | 80       | 3220               | 3465    | 3710    | 3.99               | LXM3-PW61      | 177-4893   | 4.58       | 3.33 | 3.05 | 2.82 |
| White  | 120°          | 66            | 77       | 2870               | 3045    | 3220    | 3.99               | LXM3-PW71      | 177-4894   | 4.58       | 3.33 | 3.05 | 2.82 |
| White  | 120°          | 65            | 73       | 2580               | 2725    | 2870    | 3.99               | LXM3-PW81      | 177-4895   | 4.58       | 3.33 | 3.05 | 2.82 |
| White  | 120°          | 90            | 105      | 6020               | 6530    | 7040    | 3.99               | LXML-PW11      | 177-4896   | 4.26       | 3.10 | 2.84 | 2.62 |
| White  | 120°          | 90            | 105      | 5310               | 5665    | 6020    | 3.99               | LXML-PW21      | 177-4897   | 4.26       | 3.10 | 2.84 | 2.62 |
| White  | 120°          | 90            | 105      | 4745               | 5028    | 5311    | 3.99               | LXML-PW31      | 177-4898   | 4.58       | 3.33 | 3.05 | 2.82 |
| White  | 120°          | 90            | 105      | 3710               | 3985    | 4260    | 3.99               | LXML-PW51      | 177-4899   | 4.58       | 3.33 | 3.05 | 2.82 |
| White  | 120°          | 50            | 66       | 2870               | 3045    | 3220    | 3.99               | LXML-PW71      | 177-4900   | 4.73       | 3.33 | 3.05 | 2.82 |

## Premium service without a premium price



We regularly review our prices so that you receive the very best value. Go online to see our most up-to-date pricing at [www.farnell.co.uk](http://www.farnell.co.uk)

## Light Bars



300mm



600mm



Adaptor

Candell

SMD

New

| Colour                      | Viewing Angle | No. of LEDs | Luminous Flux (lm) | Colour Temperature (°K) | Operating Voltage (V) | Mfrs. List No. | Order Code      | 1+    | 10+   | 50+   | 100+  |
|-----------------------------|---------------|-------------|--------------------|-------------------------|-----------------------|----------------|-----------------|-------|-------|-------|-------|
| <b>300mm</b>                |               |             |                    |                         |                       |                |                 |       |       |       |       |
| Cool White                  | 100°          | 60          | 220                | 5500                    | 24                    | LB3002006CW    | <b>178-3813</b> | 36.36 | 32.73 | 30.91 | 29.09 |
| White                       | 100°          | 60          | 200                | 3500                    | 24                    | LB3002006NW    | <b>178-3812</b> | 36.36 | 32.73 | 30.91 | 29.09 |
| <b>600mm</b>                |               |             |                    |                         |                       |                |                 |       |       |       |       |
| Cool White                  | 100°          | 120         | 440                | 5500                    | 24                    | LB6002012CW    | <b>178-3815</b> | 70.45 | 63.41 | 59.89 | 56.36 |
| White                       | 100°          | 120         | 400                | 3500                    | 24                    | LB6002012NW    | <b>178-3814</b> | 70.45 | 63.41 | 59.89 | 56.36 |
| Operating Voltage (V)       |               |             |                    |                         |                       |                |                 |       |       |       |       |
| Power Consumption (W)       |               |             |                    |                         |                       |                |                 |       |       |       |       |
| Operating Temperature Range |               |             |                    |                         |                       |                |                 |       |       |       |       |
| <b>Adaptor</b>              |               |             |                    |                         |                       |                |                 |       |       |       |       |
| 24                          |               |             |                    |                         |                       | PSLB01         | <b>178-3817</b> | 15.68 | 14.11 | 13.33 | 12.55 |

## Panel Circuit Indicators

3.2mm x 2.9mm x 1.9mm



- Surface-mount devices
- Flat-top type
- High luminous intensity
- Low drive current, high-intensity light emission
- Colours: red, orange, yellow, blue, white(warm), green
- Applications include automotive use, message signboards and backlighting

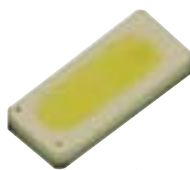
Operating Temperature -40°C to +100°C

TOSHIBA

SMD

| Colour      | Luminous Intensity Typ (mcd) | Current If (mA) | Voltage Vf Max (V) | Mfrs. List No.      | Order Code      | 1+    | 25+   | 100+  | 250+  | 500+  |
|-------------|------------------------------|-----------------|--------------------|---------------------|-----------------|-------|-------|-------|-------|-------|
| White       | 1500                         | 20              | 3.8                | TLWK1100B(T11)      | <b>168-4616</b> | 2.670 | 1.810 | 1.350 | 1.050 | 0.880 |
| White       | 1700                         | 30              | 3.2                | TLWK1100C(T11)      | <b>176-1574</b> | 0.630 | 0.600 | 0.580 | 0.570 | --    |
| Warm White  | 1500                         | 30              | 3.8                | TLWWK1100B(T11)     | <b>176-1576</b> | 0.630 | 0.600 | 0.580 | 0.570 | --    |
| Warm White  | 1500                         | 30              | 3.8                | TLWLK1100B(T11)     | <b>176-1577</b> | 0.630 | 0.600 | 0.580 | 0.570 | --    |
| Blue        | 100                          | 20              | 4.3                | TLRPA1100(T11)      | <b>176-1591</b> | 0.950 | 0.930 | 0.870 | 0.810 | --    |
| Fresh Green | 45                           | 20              | 2.4                | TLFGE1100B(T11)     | <b>176-1585</b> | 0.187 | 0.185 | 0.174 | 0.164 | --    |
| Pure Green  | 35                           | 20              | 2.5                | TLPGH1100B(T11.TEE) | <b>176-1588</b> | 0.280 | 0.270 | 0.260 | 0.240 | --    |
| Orange      | 500                          | 20              | 2.5                | TLOK1100C(T11)      | <b>168-4612</b> | 1.680 | 1.130 | 0.850 | 0.650 | 0.560 |
| Orange      | 270                          | 20              | 2.3                | TLOH1100B(T11)      | <b>176-1587</b> | 0.240 | 0.220 | 0.210 | 0.185 | --    |
| Red         | 300                          | 20              | 2.5                | TLRK1100C(T11)      | <b>168-4613</b> | 1.670 | 1.120 | 0.840 | 0.650 | 0.550 |
| Red         | 400                          | 20              | 2.5                | TLRMK1100C(T11)     | <b>168-4614</b> | 1.560 | 1.050 | 0.790 | 0.610 | 0.510 |
| Red         | 500                          | 20              | 2.5                | TLRK1100C(T11)      | <b>168-4615</b> | 1.810 | 1.220 | 0.920 | 0.710 | 0.600 |
| Red         | 150                          | 20              | 2.3                | TLRH1100B(T11)      | <b>176-1589</b> | 0.240 | 0.220 | 0.210 | 0.185 | --    |
| Red         | 150                          | 20              | 2.3                | TLRMH1100B(T11)     | <b>176-1590</b> | 0.240 | 0.220 | 0.210 | 0.185 | --    |
| Red         | 260                          | 20              | 2.3                | TLSH1100B(T11)      | <b>176-1592</b> | 0.240 | 0.220 | 0.210 | 0.185 | --    |
| Green       | 150                          | 20              | 2.5                | TLGH1100B(T11.TEE)  | <b>176-1586</b> | 0.280 | 0.270 | 0.260 | 0.240 | --    |
| Yellow      | 400                          | 20              | 2.5                | TLYK1100C(T11)      | <b>168-4617</b> | 1.830 | 1.240 | 0.930 | 0.720 | 0.610 |
| Yellow      | 220                          | 20              | 2.3                | TLYH1100B(T11)      | <b>176-1593</b> | 0.240 | 0.220 | 0.210 | 0.185 | --    |

## Power LEDs



Slim



- High luminous flux
- Colors: White, Neutral White and Warm White
- Operating / storage temperature: -40°C to 100°C
- Reflow-solderable
- Applications include LCD backlighting

Operating Temperature -40°C to +100°C

TOSHIBA

New

SMD

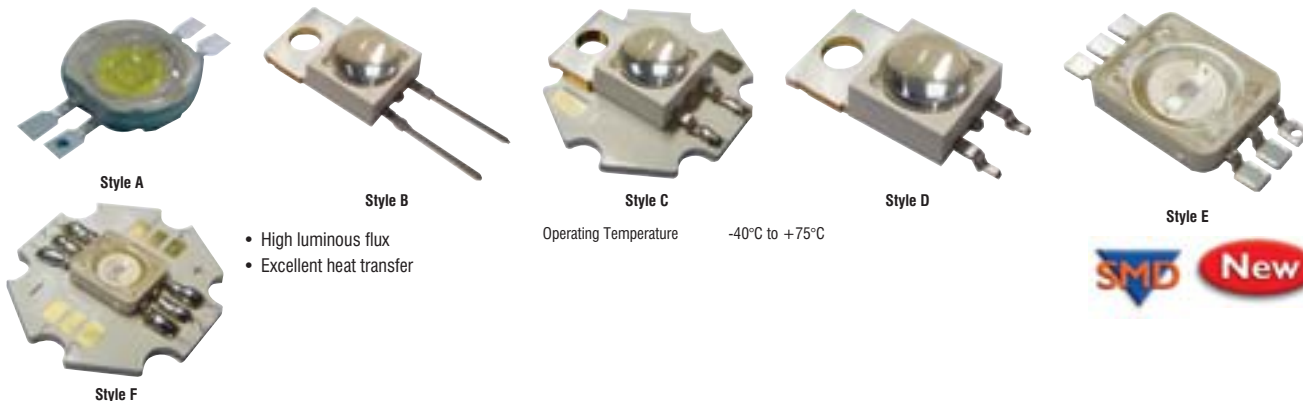
| Colour        | LED Size (L x W x H) | Viewing Angle | Luminous Flux Typ @ If (lm) | Current If (mA) | Voltage Vf Max (V) | Mfrs. List No. | Order Code      | 1+   | 25+  | 100+ | 500+ |
|---------------|----------------------|---------------|-----------------------------|-----------------|--------------------|----------------|-----------------|------|------|------|------|
| <b>0.5W</b>   |                      |               |                             |                 |                    |                |                 |      |      |      |      |
| White         | 4.5mm x 2mm x 0.8 mm | 120°          | 19                          | 180             | 3.8                | TL30W01-D(T36) | <b>176-1578</b> | 2.20 | 2.14 | 2.03 | 1.86 |
| <b>0.8W</b>   |                      |               |                             |                 |                    |                |                 |      |      |      |      |
| White         | 10.5mm x 5mm x 2.1mm | 120°          | 40                          | 300             | 3.4                | TL12W01-D(T30) | <b>176-1579</b> | 2.31 | 2.25 | 2.13 | 1.95 |
| Warm White    | 10.5mm x 5mm x 2.1mm | 120°          | 30                          | 300             | 3.4                | TL12W01-L(T30) | <b>176-1580</b> | 2.31 | 2.25 | 2.13 | 1.95 |
| <b>1.7W</b>   |                      |               |                             |                 |                    |                |                 |      |      |      |      |
| White         | 10.5mm x 5mm x 2.1mm | 120°          | 90                          | 300             | 6.8                | TL12W02-D(T30) | <b>176-1581</b> | 3.59 | 3.47 | 3.29 | 3.02 |
| Neutral White | 10.5mm x 5mm x 2.1mm | 120°          | 90                          | 300             | 7.9                | TL12W02-N(T30) | <b>176-1582</b> | 3.59 | 3.47 | 3.29 | 3.02 |
| Warm White    | 10.5mm x 5mm x 2.1mm | 120°          | 60                          | 300             | 7.9                | TL12W02-L(T30) | <b>176-1583</b> | 3.59 | 3.47 | 3.29 | 3.02 |

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## High Power



- High luminous flux
- Excellent heat transfer

Operating Temperature -40°C to +75°C



537570

| Colour             | Luminous Flux    |                  | Current If (mA) | Voltage Vf (V) |                 | Wavelength (nm) |     | Style | Mfrs. List No. | Order Code | Price Each |      |      |      |      |
|--------------------|------------------|------------------|-----------------|----------------|-----------------|-----------------|-----|-------|----------------|------------|------------|------|------|------|------|
|                    | Min (lm)         | Max (lm)         |                 | Min            | Max             | Min             | Max |       |                |            | 1+         | 25+  | 50+  | 100+ | 225+ |
| White              | 67               | 147.6            | 700             | 4.25           | —               | —               | —   | A     | OSW-1301       | 171-6738   | 8.65       | 7.86 | 7.08 | 6.29 | 5.50 |
| White              | 147              | 323              | 1500            | 4.25           | —               | —               | —   | A     | OSW-1501       | 171-6735   | 8.65       | 7.86 | 7.08 | 6.29 | 5.50 |
| White              | 67               | 147.6            | 700             | 4.25           | —               | —               | —   | B     | OSW-4301       | 171-6757   | 7.97       | 7.25 | 6.52 | 5.80 | 5.07 |
| White              | 67               | 147.6            | 700             | 4.25           | —               | —               | —   | D     | OSW-6301       | 171-6751   | 7.97       | 7.25 | 6.52 | 5.80 | 5.07 |
| White              | 67               | 147.6            | 700             | 4.25           | —               | —               | —   | C     | OSW-8301       | 171-6742   | 10.14      | 9.22 | 8.30 | 7.38 | 6.45 |
| Warm White         | 51               | 113              | 700             | 4.25           | —               | —               | —   | A     | OSW-1302       | 171-6739   | 8.70       | 7.91 | 7.12 | 6.33 | 5.54 |
| Warm White         | 113              | 248              | 1500            | 4.25           | —               | —               | —   | A     | OSW-1502       | 171-6737   | 8.70       | 7.91 | 7.12 | 6.33 | 5.54 |
| Warm White         | 67               | 147.6            | 700             | 4.25           | —               | —               | —   | B     | OSW-4302       | 171-6758   | 8.00       | 7.27 | 6.55 | 5.82 | 5.09 |
| Warm White         | 67               | 147.6            | 700             | 4.25           | —               | —               | —   | D     | OSW-6302       | 171-6752   | 8.00       | 7.27 | 6.55 | 5.82 | 5.09 |
| Warm White         | 67               | 147.6            | 700             | 4.25           | —               | —               | —   | C     | OSW-8302       | 171-6743   | 10.19      | 9.26 | 8.33 | 7.41 | 6.48 |
| Blue               | 7                | 23.5             | 700             | 4.25           | 460             | 475             | —   | B     | OSW-4303       | 171-6759   | 5.28       | 4.80 | 4.32 | 3.84 | 3.36 |
| Blue               | 7                | 23.5             | 700             | 4.25           | 460             | 475             | —   | D     | OSW-6303       | 171-6753   | 5.28       | 4.80 | 4.32 | 3.84 | 3.36 |
| Blue               | 7                | 23.5             | 700             | 4.25           | 460             | 475             | —   | C     | OSW-8303       | 171-6745   | 6.87       | 6.24 | 5.62 | 5.00 | 4.37 |
| Green              | 30.5             | 67               | 700             | 4.25           | 520             | 535             | —   | B     | OSW-4334       | 171-6760   | 5.28       | 4.80 | 4.32 | 3.84 | 3.36 |
| Green              | 30.5             | 67               | 700             | 4.25           | 520             | 535             | —   | D     | OSW-6334       | 171-6754   | 5.28       | 4.80 | 4.32 | 3.84 | 3.36 |
| Green              | 30.5             | 67               | 700             | 4.25           | 520             | 535             | —   | C     | OSW-8334       | 171-6746   | 6.87       | 6.24 | 5.62 | 5.00 | 4.37 |
| Red                | 23.5             | 51.6             | 700             | 2.8            | 620             | 630             | —   | B     | OSW-4338       | 171-6763   | 4.82       | 4.38 | 3.94 | 3.51 | 3.07 |
| Red                | 23.5             | 51.6             | 700             | 2.8            | 620             | 630             | —   | D     | OSW-6338       | 171-6756   | 4.82       | 4.38 | 3.94 | 3.51 | 3.07 |
| Red                | 23.5             | 51.6             | 700             | 2.8            | 620             | 630             | —   | C     | OSW-8338       | 171-6749   | 6.43       | 5.84 | 5.26 | 4.67 | 4.09 |
| Red - Green - Blue | 18 / 30.5 / 10.7 | 30.5 / 50 / 13.9 | 350             | 2.8 / 4 / 4    | 620 / 520 / 460 | 630 / 535 / 475 | —   | F     | OSW-8339       | 171-6740   | 8.40       | 7.64 | 6.87 | 6.11 | 5.34 |
| Red - Green - Blue | 18 / 30.5 / 10.7 | 30.5 / 50 / 13.9 | 350             | 2.8 / 4 / 4    | 620 / 520 / 460 | 630 / 535 / 475 | —   | E     | OSW-8349       | 171-6741   | 4.52       | 4.11 | 3.70 | 3.29 | 2.87 |
| Yellow             | 23.5             | 51.6             | 700             | 2.8            | 585             | 595             | —   | B     | OSW-4336       | 171-6762   | 5.30       | 4.82 | 4.34 | 3.86 | 3.37 |
| Yellow             | 23.5             | 51.6             | 700             | 2.8            | 585             | 595             | —   | D     | OSW-6336       | 171-6755   | 5.30       | 4.82 | 4.34 | 3.86 | 3.37 |
| Yellow             | 23.5             | 51.6             | 700             | 2.8            | 585             | 595             | —   | C     | OSW-8336       | 171-6747   | 6.90       | 6.27 | 5.64 | 5.02 | 4.39 |

## DMX LED Controller

iDrive™ UL



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The powerful new iDrive™ UL LED driver is designed to optimize the performance of high power lighting fixtures using high power LEDs. The integrated technology enables excellent colour matching and 100% smooth dimming with precise DC current control combined with advanced automatic heat management system to enhance the long life of both fixtures and LED boards. iDrive™ UL can be controlled by DMX512A, or use the hundreds of pre-programmed settings to provide independent scenes, colour combinations and effects.



New

- 16.8W per channel
- 3 fully addressable constant current outputs
- Digital dimming level from 0 - 100 % (350mA max)
- On board DMX512A compliant control interface
- LED temperature compensation feedback
- Energy efficient switch mode power electronics
- Short and open circuit protected
- Long life (+ 50,000 hours)
- High quality rugged construction
- Meets lighting approbation requirements (CE)
- Compliant with Luxeon™ power light sources
- Can be remote mounted from LEDs ~ 30 meters
- No binning of LEDs needed

| Mfrs. List No. | Order Code | 1+    | Price Each | 10+   |
|----------------|------------|-------|------------|-------|
| ISTL058        | 173-8713   | 98.00 |            | 92.00 |

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## Cool-LED Switchable LED Drivers

350 / 700mA and 500 / 1000mA



- Power factor corrected (0.98)
- Constant current output
- Switchable between 350 / 700mA or 500 / 1000mA
- Screwless cable clamps for fast assembly
- Surge protection up to 4kV
- Made in UK



New

| Input Power (W) | Input Frequency (Hz) | Input Voltage (V) | Output Voltage (V) | Output Current (mA) | Dimensions (L x W x H) (mm) | Mfrs. List No. | Order Code |
|-----------------|----------------------|-------------------|--------------------|---------------------|-----------------------------|----------------|------------|
| 33              | 48                   | 198 - 265         | 55                 | 350 and 700         | 179 x 31 x 31.5             | CL700S-240-C   | 176-1445   |
| 33              | 48                   | 198 - 265         | 55                 | 500 and 1000        | 179 x 31 x 31.5             | CL1000S-240-C  | 176-1446   |

546795

| Mfrs List No. | Order Code | 1+    | Price Each | 10+   | 50+   |
|---------------|------------|-------|------------|-------|-------|
| CL700S-240-C  | 176-1445   | 21.50 |            | 19.30 | 17.41 |
| CL1000S-240-C | 176-1446   | 21.50 |            | 19.30 | 17.41 |

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## Voltage Output DACs



New

These devices are serial input, voltage output, digital-to-analog converters (DACs). They can operate from single or dual supply voltages. Nominal full-scale output range is software selectable. Integrated output amplifiers, reference buffers, and proprietary power-up/power-down control circuitry are also provided. The parts offer guaranteed monotonicity, integral nonlinearity (INL), low noise, and short typical settling time with on-chip voltage reference.

| monotonicity, integral nonlinearity (INL), low noise, and short typical settling time with on-chip voltage reference. |                      |             |                       |                           |                   |                |                   |            |       |       |       |       |
|-----------------------------------------------------------------------------------------------------------------------|----------------------|-------------|-----------------------|---------------------------|-------------------|----------------|-------------------|------------|-------|-------|-------|-------|
| Pins/Pkg                                                                                                              | Resolution<br>(Bits) | Update Rate | Settling Time<br>(µs) | Power Dissipation<br>(mW) | No. of<br>Outputs | Type           | Mfrs.<br>List No. | Order Code | 1+    | 10+   | 100+  | 250+  |
| Unipolar/Bipolar                                                                                                      |                      |             |                       |                           |                   |                |                   |            |       |       |       |       |
| 24/ETSSOP                                                                                                             | 12                   | 1.1 MSPS    | 10                    | 310                       | 4                 | Voltage Output | AD5724RBREZ       | 178-6047   | 14.66 | 12.49 | 10.71 | 10.06 |
| 24/ETSSOP                                                                                                             | 14                   | 1.1 MSPS    | 10                    | 310                       | 4                 | Voltage Output | AD5734RBREZ       | 178-6048   | 17.61 | 14.21 | 12.45 | 12.09 |
| 24/ETSSOP                                                                                                             | 16                   | 1.07 MSPS   | 7.5                   | 190                       | 2                 | Voltage Output | AD5752RBREZ       | 178-6049   | 14.40 | 12.26 | 10.51 | 9.88  |
| 24/ETSSOP                                                                                                             | 16                   | 1.1 MSPS    | 10                    | 310                       | 4                 | Voltage Output | AD5754RBREZ       | 178-6050   | 20.84 | 16.81 | 14.74 | 14.31 |
| Bipolar                                                                                                               |                      |             |                       |                           |                   |                |                   |            |       |       |       |       |
| 32/TQFP                                                                                                               | 16                   | 84.6 KSPS   | 8                     | 250.5                     | 2                 | Voltage Output | AD5762RCSUZ       | 178-6051   | 27.21 | 21.97 | 19.26 | 18.69 |

## Low Noise, 1 GHz FastFET Op Amps



New

These single and dual FastFET amplifiers are unity-gain stable, ultrahigh speed voltage feedback amplifiers with FET inputs. They are developed with the eXtra Fast Complementary Bipolar (XFCB) process, which allows the amplifiers to achieve ultralow noise (4 nV/Hz; 2.5 fA/Hz) as well as very high input impedances. With a wide supply voltage range from 5 V to 10 V, a 1.5 pF of input capacitance, low offset voltage and 1050 MHz -3 dB bandwidth, they are ideal for data acquisition front ends as well as wideband transimpedance applications, such as photodiode preamps.

| Pins/Pkg | Bandwidth<br>(MHz) | Slew Rate<br>(V/μs) | Voltage -<br>Offset<br>(mV) | Input Current |                   |                  | Mfrs.<br>Mfrs.<br>List No. | Order Code | 1 +  | Price Each |       |       |  |
|----------|--------------------|---------------------|-----------------------------|---------------|-------------------|------------------|----------------------------|------------|------|------------|-------|-------|--|
|          |                    |                     |                             | Bias<br>(pA)  | Quiescent<br>(mA) | Noise<br>(nV/Hz) |                            |            |      | 10 +       | 100 + | 250 + |  |
| Single   |                    |                     |                             |               |                   |                  |                            |            |      |            |       |       |  |
| 8/LFCSP  | 1050               | 870                 | 0.4                         | 2             | 21                | 4                | ADA4817-1ACPZ-R2           | 178-6053   | 5.74 | 4.40       | 3.92  | 3.68  |  |
| 8/SOIC   | 1050               | 870                 | 0.4                         | 2             | 21                | 4                | ADA4817-1ARDZ              | 178-6054   | 4.99 | 3.83       | 3.40  | 3.21  |  |
| Dual     |                    |                     |                             |               |                   |                  |                            |            |      |            |       |       |  |
| 16/LFCSP | 1050               | 870                 | 2                           | 2             | 21                | 4                | ADA4817-2ACPZ-R2           | 178-6055   | 9.75 | 7.50       | 6.66  | 6.27  |  |

## Step-Down DC-to-DC Regulators



New



16-LFCSP

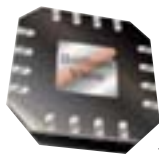
These low quiescent current, synchronous, step-down, dc-to-dc regulators use a current mode, and a constant frequency pulse-width modulation (PWM) control scheme for excellent stability and transient response. Under light loads, they can be configured to operate in pulse frequency modulation (PFM) mode that reduces switching frequency to save power.

| Pins/Pkg | Input<br>Voltage<br>(V) | Output<br>Voltage<br>(V) | Switching<br>Frequency<br>(MHz) | Output<br>Current (MAX)<br>(A) | Mfrs.<br>List No.  | Order Code | Price Each |      |      |      |
|----------|-------------------------|--------------------------|---------------------------------|--------------------------------|--------------------|------------|------------|------|------|------|
|          |                         |                          |                                 |                                |                    |            | 1+         | 10+  | 100+ | 250+ |
| 16/LFCSP | 2.3 - 5.5               | 1.0                      | 0.6/1.22                        | 3                              | ADP2118ACPZ-1.0-R7 | 178-6056   | 4.01       | 2.88 | 2.24 | 2.04 |
| 16/LFCSP | 2.3 - 5.5               | 1.2                      | 0.6/1.22                        | 3                              | ADP2118ACPZ-1.2-R7 | 178-6057   | 4.01       | 2.88 | 2.24 | 2.04 |
| 16/LFCSP | 2.3 - 5.5               | 1.5                      | 0.6/1.22                        | 3                              | ADP2118ACPZ-1.5-R7 | 178-6058   | 4.01       | 2.88 | 2.24 | 2.04 |
| 16/LFCSP | 2.3 - 5.5               | 1.8                      | 0.6/1.22                        | 3                              | ADP2118ACPZ-1.8-R7 | 178-6059   | 4.01       | 2.88 | 2.24 | 2.04 |
| 16/LFCSP | 2.3 - 5.5               | 2.5                      | 0.6/1.22                        | 3                              | ADP2118ACPZ-2.5-R7 | 178-6060   | 4.01       | 2.88 | 2.24 | 2.04 |
| 16/LFCSP | 2.3 - 5.5               | 3.3                      | 0.6/1.22                        | 3                              | ADP2118ACPZ-3.3-R7 | 178-6061   | 4.01       | 2.88 | 2.24 | 2.04 |
| 16/LFCSP | 2.3 - 5.5               | 0.6 to 5.5               | 0.6/1.22                        | 3                              | ADP2118ACPZ-R7     | 178-6062   | 4.01       | 2.88 | 2.24 | 2.04 |

## Low Power, 3-Axis Accelerometers



New



16-LFCSP

The **ADXL32X** family is a small, low power, complete 3-axis accelerometer with signal conditioned voltage outputs. They measure acceleration with a minimum full-scale range of  $\pm 2$  g to  $\pm 16$  g. These products can measure the static acceleration of gravity in tilt-sensing applications, as well as dynamic acceleration, resulting from motion, shock, or vibration. The user can select the bandwidth of the accelerometer to suit the application with a range of frequencies using the CX, CY, and CZ capacitors for the X, Y and Z axes respectively.

| Pins/Pkg | Measurement<br>Range<br>(g) | Input<br>Voltage Range<br>(V) | Frequency Response Range |             |            | Operating<br>Temperature | Mfrs.<br>List No. | Order Code | Price Each |      |      |      |
|----------|-----------------------------|-------------------------------|--------------------------|-------------|------------|--------------------------|-------------------|------------|------------|------|------|------|
|          |                             |                               | X<br>(Hz)                | Y<br>(Hz)   | Z<br>(Hz)  |                          |                   |            | 1+         | 10+  | 100+ | 250+ |
| 16/LFCSP | $\pm 2$ g                   | 1.8V to 3.6V                  | 0.5 to 1600              | 0.5 to 1600 | 0.5 to 550 | -40°C to +85°C           | ADXL327BCPZ       | 178-6066   | 4.20       | 3.36 | 2.79 | 2.59 |
| 16/LFCSP | $\pm 5$ g                   | 1.8V to 3.6V                  | 0.5 to 1600              | 0.5 to 1600 | 0.5 to 550 | -40°C to +85°C           | ADXL325BCPZ       | 178-6063   | 4.20       | 3.36 | 2.79 | 2.59 |
| 16/LFCSP | $\pm 16$ g                  | 1.8V to 3.6V                  | 0.5 to 1600              | 0.5 to 1600 | 0.5 to 550 | -40°C to +85°C           | ADXL326BCPZ       | 178-6065   | 4.20       | 3.36 | 2.79 | 2.59 |

## Mono/Stereo Low Power CODECs



New

The **WM8940** is a low power, high quality mono CODEC designed for portable applications such as digital still cameras or camcorders. The device integrates support for a differential or single ended mic, and includes drivers for speakers or headphone, and mono line output.

The **WM8974** integrates support for a differential or single ended mic, and includes drivers for speakers or headphone, and mono line output with no separate microphone or headphone amplifiers required.

The **WM8731x** can be controlled via a 2 or 3 wire serial interface. It has a stereo line and mono microphone level audio inputs along with a mute function, programmable line level volume control and a bias voltage output suitable for an electret type microphone.

The **WM8988** is a low power, high quality stereo CODEC designed for portable digital audio applications. The device integrates complete interfaces to 2 stereo headphone or line out ports.

The **WM8750xx** integrates complete interfaces to stereo or mono microphones and a stereo headphone. Advanced on-chip digital signal processing performs graphic equaliser, 3-D sound enhancement and automatic level control for the microphone or line input.

The **WM8976** is a low power, high quality codec designed for portable applications such as digital still camera or digital camcorder. The device integrates a preamp for a differential mic, and includes drivers for speakers, headphone and differential or stereo line output.

The **WM8960** is a stereo class D speaker driver that provides 1W per channel into 8W loads. The device integrates a complete microphone interface and a stereo headphone driver with advanced on-chip digital signal processing performs automatic level control for the microphone or line input.

Continues on next page

The **WM9711L** is a highly integrated input / output device designed for mobile computing and communications. The device can connect directly to mono or stereo microphones, stereo headphones and a mono speaker, reducing total component count in the system.

The **WM8991** is a highly integrated ultra-low power hi-fi CODEC designed for handsets rich in multimedia features such as GPS, mobile TV, digital audio playback and gaming that can operate in class D or AB modes.

| Pins/Pkg                       | DACs / ADCs | Headphone Driver | BTL Speaker Output | DAC SNR/THD (dB) | ADC SNR/THD (dB) | Clocking       | Analogue Supply (V) | Digital Supply (V) | Mfrs. List No. | Order Code      | 1+   | Price Each 10+ | 100+ |
|--------------------------------|-------------|------------------|--------------------|------------------|------------------|----------------|---------------------|--------------------|----------------|-----------------|------|----------------|------|
| <b>Mono Low Power CODECs</b>   |             |                  |                    |                  |                  |                |                     |                    |                |                 |      |                |      |
| 24/QFN                         | 1 / 1       | ✓                | 400mW              | 98 / -84         | 94 / -80         | Ext. MCLK, PLL | 2.5 to 3.6          | 1.7 to 3.6         | WM8940GEFL/RV  | <b>177-6284</b> | 1.96 | 1.47           | 1.15 |
| 24/QFN                         | 1 / 1       | —                | 900mW              | 98 / -84         | 94 / -83         | Ext. MCLK, PLL | 2.5 to 3.6          | 1.7 to 3.6         | WM8974GEFL/RV  | <b>177-6291</b> | 2.16 | 1.62           | 1.27 |
| <b>Stereo Low Power CODECs</b> |             |                  |                    |                  |                  |                |                     |                    |                |                 |      |                |      |
| 28/SSOP                        | 2 / 2       | ✓                | —                  | 100 / -86        | 90 / -84         | Ext. MCLK, OSC | 1.8 to 3.6          | 1.4 to 3.6         | WM8731SEDS/RV  | <b>177-6264</b> | 2.46 | 1.85           | 1.45 |
| 28/QFN                         | 2 / 2       | ✓                | —                  | 100 / -90        | 93 / -81         | Ext. MCLK      | 1.8 to 3.6          | 1.42 to 3.6        | WM8988LGECL/RV | <b>177-6294</b> | 2.91 | 2.26           | 1.77 |
| 32/QFN                         | 2 / 2       | ✓                | 400mW              | 98 / -84         | 95 / -82         | Ext. MCLK      | 1.8 to 3.6          | 1.4 to 3.6         | WM8750LGEFL/RV | <b>177-6270</b> | 3.23 | 2.42           | 1.90 |
| 32/QFN                         | 2 / 2       | ✓                | 400mW              | 98 / -84         | 95 / -82         | Ext. MCLK      | 1.8 to 3.6          | 1.4 to 3.6         | WM8750LSEFL/R  | <b>177-6271</b> | 2.93 | 2.20           | 1.72 |
| 32/QFN                         | 2 / 1       | ✓                | 900mW              | 98 / -84         | 95 / -84         | Ext. MCLK, PLL | 2.5 to 5.5          | 1.7 to 3.6         | WM8976GEFL/RV  | <b>177-6292</b> | 2.77 | 2.08           | 1.63 |
| 32/QFN                         | 2 / 2       | ✓                | Up to 1.4W         | 98 / -84         | 95 / -82         | Ext. MCLK, PLL | 2.5 to 3.6          | 1.7 to 3.6         | WM8960GEFL/RV  | <b>177-6288</b> | 3.37 | 2.53           | 1.98 |
| 48/QFN                         | 2 / 2       | ✓                | 400mW              | 98 / -84         | 95 / -82         | Ext. MCLK      | 1.8 to 3.6          | 1.4 to 3.6         | WM9711LGEFL/V  | <b>177-6301</b> | 4.22 | 3.17           | 2.48 |
| 65/BGA                         | 2 / 2       | ✓                | Up to 1.4W         | 99 / -84         | 94 / -82         | Ext. MCLK, PLL | 2.7 to 5.5          | 1.5 to 3.6         | WM8991GEB/RV   | <b>177-6295</b> | 3.98 | 2.98           | 2.34 |

## Stereo Low Power CODECs with Touchscreen Controller

The **WM9705** is a high-quality stereo audio codec with an integrated touch screen controller. It performs full-duplex 18-bit codec functions and supports variable sample rates from 8 to 48k samples/s with high SNR.

The **WM9712L** is a highly integrated input / output device designed for mobile computing and communications. The device can connect directly to a 4-wire or 5-wire touchpanel, mono or stereo microphones, stereo headphones and a mono speaker. Additionally, phone input and output pins are provided for seamless integration with wireless communication devices.

The **WM9713L** is architected for dual CODEC operation, supporting Hi-Fi stereo Codec functions via the AC link interface, and additionally supporting voice Codec functions via a PCM type Synchronous Serial Port (SSP).

| Pins/Pkg                       | DACs / ADCs | Headphone Driver | BTL Speaker Output | Control & Data Interface | Touch Panel Digitiser | Clocking       | Analogue Supply (V) | Digital Supply (V) | Mfrs. List No. | Order Code      | 1+   | Price Each 10+ | 100+ |
|--------------------------------|-------------|------------------|--------------------|--------------------------|-----------------------|----------------|---------------------|--------------------|----------------|-----------------|------|----------------|------|
| <b>Stereo Low Power CODECs</b> |             |                  |                    |                          |                       |                |                     |                    |                |                 |      |                |      |
| 48/QFN                         | 4 / 3       | ✓                | 400 mW             | AC'97 PCM, I2S           | 4 / 5-wire control    | Ext. MCLK, PLL | 1.8 to 3.6          | 1.8 to 3.6         | WM9713LGEFL/V  | <b>135-4191</b> | 5.64 | 4.51           | 3.72 |
| 48/QFN                         | 2 / 2       | ✓                | —                  | AC'97                    | 4 / 5-wire control    | Ext. MCLK, PLL | 3.0 to 5.0          | 3.0 to 5.0         | WM9705SEFL/V   | <b>177-6298</b> | 4.22 | 3.17           | 2.48 |
| 48/QFN                         | 3 / 3       | ✓                | 400 mW             | AC'97                    | 4 / 5-wire control    | Ext. MCLK, OSC | 1.8 to 3.6          | 1.5 to 3.6         | WM9712LGEFL/V  | <b>177-6302</b> | 4.53 | 3.39           | 2.66 |

## Power Management with Audio

The **WM8351/WM8352** are integrated audio CODECs that allows for the direct connection of headphones and microphones. A programmable low-noise bias voltage is available to feed one or more electret microphones. They includes four/six programmable DC-DC converters respectively, four low-dropout (LDO) regulators and a current limit switch to generate suitable supply voltages for each part of the system, as well as off-chip components such as a digital core and I/O supplies, and LED lighting. An additional on-chip regulator maintains the backup power for always-on functions. These CODECs can be powered by a lithium battery, by a wall adaptor or USB.

| Pins/Pkg | DACs / ADCs | Headphone Driver | BTL Speaker Output | Control & Data Interface | Touch Panel Digitiser | Clocking  | Analogue Supply (V) | Digital Supply (V) | Mfrs. List No. | Order Code      | 1+   | Price Each 10+ | 100+ |
|----------|-------------|------------------|--------------------|--------------------------|-----------------------|-----------|---------------------|--------------------|----------------|-----------------|------|----------------|------|
| 129/BGA  | 2 / 2       | ✓                | —                  | 1 x 1A, 2 x 500mA        | 1 x 20V @ 40mA        | 4 x 150mA | 3                   | 3                  | WM8351GEB/V    | <b>177-6251</b> | 7.60 | 5.70           | 4.47 |
| 129/BGA  | 2 / 2       | ✓                | —                  | 2 x 1A, 2 x 500mA        | 1 x 20V @ 40mA        | 4 x 150mA | 3                   | 3                  | WM8352GEB/V    | <b>177-6252</b> | 8.42 | 6.32           | 4.96 |

## Stereo Low Power Dual CODECs (voice & audio)

The **WM8753L** is a low power, high quality stereo Codec with integrated PCM CODEC designed for portable digital telephony applications such as mobile phone, or headset with Hi-Fi playback capability. The device integrates dual interfaces for two differentially connected microphones, and includes drivers for speakers, headphone and earpiece. Advanced on-chip digital signal processing performs tone control, bass boost and automatic level control for the microphone or line input through the ADC. The two ADCs may be used to support voice noise cancellation in a partnering DSP, or for stereo recording.

| Pins/Pkg | DACs / ADCs | Headphone Driver | BTL Speaker Output | DAC SNR/THD (dB) | ADC SNR/THD (dB) | Control & Data Interface | Clocking            | Analogue Supply (V) | Digital Supply (V) | Mfrs. List No. | Order Code      | 1+   | Price Each 10+ | 100+ |
|----------|-------------|------------------|--------------------|------------------|------------------|--------------------------|---------------------|---------------------|--------------------|----------------|-----------------|------|----------------|------|
| 52/BGA   | 3 / 2       | ✓                | 500mW              | 98 / -84         | 95 / -82         | PCM, I2S                 | External MCLK, PLLs | 1.8 to 3.6          | 1.4 to 3.6         | WM8753LGEFL/RV | <b>177-6273</b> | 5.47 | 4.11           | 3.22 |

## LED Drivers

| Pins/Pkg | Description                                 | Input Voltage (V) | Output Current (mA) | Operating Temperature | Mfrs. List No. | Order Code      | 1+   | Price Each 10+ | 100+ | 250+ | 500+ |
|----------|---------------------------------------------|-------------------|---------------------|-----------------------|----------------|-----------------|------|----------------|------|------|------|
| 4/SOT343 | LED Driver for Low Power LED's              | 18                | 10                  | -65°C to +150°C       | BCR401W        | <b>179-1058</b> | 0.28 | 0.22           | 0.17 | 0.15 | 0.13 |
| 4/SOT343 | LED Driver for Low Power LED's              | 18                | 20                  | -65°C to +150°C       | BCR402W        | <b>179-1061</b> | 0.28 | 0.22           | 0.17 | 0.15 | 0.13 |
| 6/SC74   | LED Driver for 0.5W Power LED's             | 24                | 250                 | -65°C to +150°C       | BCR320U        | <b>179-1065</b> | 0.54 | 0.42           | 0.34 | 0.30 | 0.25 |
| 6/SC74   | LED Driver for 0.5W Power LED's             | 24                | 250                 | -65°C to +150°C       | BCR321U        | <b>179-1066</b> | 0.54 | 0.42           | 0.34 | 0.30 | 0.25 |
| 6/SC74   | LED Driver IC for driving LED's above 100mA | 27                | 90                  | -65°C to +150°C       | BCR450         | <b>179-1069</b> | 0.71 | 0.63           | 0.50 | 0.45 | 0.38 |
| 6/SC74   | LED Driver for Low Power LED's              | 40                | 10                  | -65°C to +150°C       | BCR401U        | <b>179-1062</b> | 0.38 | 0.30           | 0.24 | 0.21 | 0.17 |
| 6/SC74   | LED Driver for Low Power LED's              | 40                | 20                  | -65°C to +150°C       | BCR402U        | <b>179-1063</b> | 0.38 | 0.30           | 0.24 | 0.21 | 0.17 |
| 6/SC74   | LED Driver for Low Power LED's              | 40                | 50                  | -65°C to +150°C       | BCR405U        | <b>179-1064</b> | 0.38 | 0.30           | 0.24 | 0.21 | 0.17 |
| 6/SC74   | LED Driver for 0.25W Power LED's            | 40                | 150                 | -65°C to +150°C       | BCR420U        | <b>179-1067</b> | 0.54 | 0.42           | 0.34 | 0.30 | 0.25 |
| 6/SC74   | LED Driver for 0.25W Power LED's            | 40                | 150                 | -65°C to +150°C       | BCR421U        | <b>179-1068</b> | 0.54 | 0.42           | 0.34 | 0.30 | 0.25 |

## USB Host Audio Decoder ICs

The **BU9457KV/BU9458KV** integrate USB 2.0 memory/SD card host audio and system controllers on a single chip. This configuration combines a controller and an audio decoder that utilizes commands from a CPU simplifying the design and reducing the number of external components. Both components are designed with an ESD resistance  $\pm 6000V$  at the USB terminal, 15kV against proximity (air) discharge (when used in conjunction with an external Zener diode), and 8kV against direct (contact) discharge, providing superior strength against surge noise, resulting in unsurpassed reliability. The BU9457KV/BU9458KV are compatible with MMC SD, miniSD, microSD, SDHC and support MPEG1,2,2.5 and Layer1,2,3.

| Pins/Pkg | Operating Voltage | Serial Interface     | WMA          | AAC         | Audio Output Analog | Digital                | Mfrs. List No. | Order Code      | 1+    | Price Each 10+ | 100+  | 250+  | 500+  |
|----------|-------------------|----------------------|--------------|-------------|---------------------|------------------------|----------------|-----------------|-------|----------------|-------|-------|-------|
| 64/VQFP  | 3V to 3.6V        | I <sup>2</sup> S BUS | —            | —           | Line                | I <sup>2</sup> S SPDIF | BU9457KV-E2    | <b>177-0569</b> | 31.71 | 25.72          | 20.85 | 17.80 | 16.77 |
| 64/VQFP  | 3V to 3.6V        | I <sup>2</sup> S BUS | WMA9Standard | MPEG4AAC-LC | Line                | I <sup>2</sup> S SPDIF | BU9458KV-E2    | <b>177-0570</b> | 31.71 | 25.72          | 20.85 | 17.80 | 16.77 |

## WE ARE THE MARKET LEADER IN...

### SEMICONDUCTORS

- Number 1 worldwide in discrete power semiconductors
- Number 1 worldwide in diodes
- Number 1 worldwide in power rectifiers
- Number 1 worldwide in low-voltage power MOSFETs
- Number 1 worldwide in infrared components

### PASSIVE COMPONENTS

- Number 1 worldwide in wirewound and other power resistors
- Number 1 worldwide in leaded film resistors
- Number 1 worldwide in thin film SMD resistors
- Number 1 worldwide in wet and conformal-coated tantalum capacitors
- Number 1 worldwide in capacitors for power electronics



Build **Vishay**  
into your **Design**



## Power Load Distribution Switches

The **TPS2294x** load switches provide protection to systems and loads in high-current conditions. The devices contain a 400-mΩ current-limited P-channel MOSFET that can operate over an input voltage range of 1.62 V to 5.5 V. Current is prevented from flowing when the MOSFET is off. The switch is controlled by an on/off input (ON), which is capable of interfacing directly with low-voltage control signals. The TPS2294x includes thermal shutdown protection that prevents damage to the device when a continuous over-current condition causes excessive heating by turning off the switch. When the switch current reaches the maximum limit, the TPS22941/2/3/4/5 operates in a constant-current mode to prohibit excessive currents from causing damage.

| Pins/Pkg | Supply Voltage Min - Max (V) | Adjustable Current Limit Min | Quiescent Current (μA) | rDS (ON) / FET (Typ) mΩ | Enable / Shutdown | Operating Temperature | Mfrs. List No. | Order Code      | 1+   | 10+  | 100+ | 250+ |
|----------|------------------------------|------------------------------|------------------------|-------------------------|-------------------|-----------------------|----------------|-----------------|------|------|------|------|
| 5/SC70   | 1.62 to 5.5                  | 100mA                        | 40                     | 400 / 1                 | Active High       | -40°C to +125°C       | TPS22944DCKR   | <b>177-8216</b> | 1.09 | 0.75 | 0.58 | 0.44 |
| 6/DSBGA  | 1.62 to 5.5                  | 155 - 300mA                  | 1                      | 400 / 1                 | Active High       | -40°C to +125°C       | TPS22946YZPR   | <b>177-8217</b> | 1.35 | 0.94 | 0.67 | 0.62 |
| 5/SC70   | 1.62 to 5.5                  | 40mA                         | 40                     | 300 / 1                 | Active Low        | -40°C to +125°C       | TPS22941DCKR   | <b>177-8215</b> | 1.09 | 0.75 | 0.58 | 0.44 |

## TL405x Precision Micropower Shunt Voltage Reference

The **TL4050** series of shunt voltage references are versatile easy-to-use references suitable for a wide array of applications. The two-terminal fixed-output device requires no external capacitors for operation and is stable with all capacitive loads. Additionally, the reference offers low dynamic impedance, low noise, and low temperature coefficient to ensure a stable output voltage over a wide range of operating currents and temperatures.

The **TL4051** series of shunt voltage references are versatile easy-to-use references suitable for a wide array of applications. The device is available in a fixed 1.225-V output or an adjustable output whose voltage is determined by an external resistor divider. The device requires no external capacitors for operation and is stable with all capacitive loads. Additionally, the reference offers low dynamic impedance, low noise, and low temperature coefficient to ensure a stable output voltage over a wide range of operating currents and temperatures.

| Pins/Pkg             | Output Voltage | Output Tolerance, Temperature Coefficient | Operating Temperature | Mfrs. List No. | Order Code      | 1+   | 10+  | 100+ | 250+ | 500+ |
|----------------------|----------------|-------------------------------------------|-----------------------|----------------|-----------------|------|------|------|------|------|
| <b>TL4050 Series</b> |                |                                           |                       |                |                 |      |      |      |      |      |
| 3/SOT-23             | 2.5V           | Max 0.1%, 50 ppm/°C                       | -40°C to +85°C        | TL4050A25IDBZT | <b>175-5350</b> | 1.33 | 1.07 | 0.97 | 0.79 | 0.74 |
| 3/SOT-23             | 2.5V           | Max 0.2%, 50 ppm/°C                       | -40°C to +85°C        | TL4050B25IDBZT | <b>175-5354</b> | 1.00 | 0.80 | 0.73 | 0.59 | 0.56 |
| 3/SOT-23             | 2.5V           | Max 0.5%, 50 ppm/°C                       | -40°C to +85°C        | TL4050C25IDBZT | <b>175-5357</b> | 0.80 | 0.64 | 0.58 | 0.47 | 0.44 |
| 3/SOT-23             | 4.096V         | Max 0.5%, 50 ppm/°C                       | -40°C to +85°C        | TL4050C41IDBZT | <b>175-5358</b> | 0.80 | 0.64 | 0.58 | 0.47 | 0.44 |
| 3/SOT-23             | 4.096V         | Max 0.2%, 50 ppm/°C                       | -40°C to +85°C        | TL4050B41IDBZT | <b>175-5355</b> | 1.00 | 0.80 | 0.73 | 0.59 | 0.56 |
| 3/SOT-23             | 4.096V         | Max 0.1%, 50 ppm/°C                       | -40°C to +85°C        | TL4050A41IDBZT | <b>175-5351</b> | 1.33 | 1.07 | 0.97 | 0.79 | 0.74 |
| 5/SC-70              | 5V             | Max 0.1%, 50 ppm/°C                       | -40°C to +85°C        | TL4050A50IDCKT | <b>175-5558</b> | 1.42 | 1.13 | 1.03 | 0.85 | 0.79 |
| 3/SOT-23             | 5V             | Max 0.1%, 50 ppm/°C                       | -40°C to +85°C        | TL4050A50IDBZT | <b>175-5557</b> | 1.33 | 1.07 | 0.97 | 0.79 | 0.74 |
| 3/SOT-23             | 5V             | Max 0.2%, 50 ppm/°C                       | -40°C to +85°C        | TL4050B50IDBZT | <b>175-5561</b> | 1.00 | 0.80 | 0.73 | 0.59 | 0.56 |
| 3/SOT-23             | 5V             | Max 0.5%, 50 ppm/°C                       | -40°C to +85°C        | TL4050C50IDBZT | <b>175-5359</b> | 0.80 | 0.64 | 0.58 | 0.47 | 0.44 |
| 3/SOT-23             | 10V            | Max 0.1%, 50 ppm/°C                       | -40°C to +85°C        | TL4050A10IDBZT | <b>175-5349</b> | 1.33 | 1.07 | 0.97 | 0.79 | 0.74 |
| 3/SOT-23             | 10V            | Max 0.2%, 50 ppm/°C                       | -40°C to +85°C        | TL4050B10IDBZT | <b>175-5352</b> | 1.00 | 0.80 | 0.73 | 0.59 | 0.56 |
| 3/SOT-23             | 10V            | Max 0.5%, 50 ppm/°C                       | -40°C to +85°C        | TL4050C10IDBZT | <b>175-5356</b> | 0.80 | 0.64 | 0.58 | 0.47 | 0.44 |
| <b>TL4051 Series</b> |                |                                           |                       |                |                 |      |      |      |      |      |
| 3/SOT-23             | 1.225V         | Max 0.5%, 50 ppm/°C                       | -40°C to +85°C        | TL4051C12IDBZT | <b>175-5364</b> | 0.91 | 0.74 | 0.67 | 0.55 | 0.51 |
| 3/SOT-23             | 1.225V         | Max 0.1%, 50 ppm/°C                       | -40°C to +85°C        | TL4051A12IDBZT | <b>175-5360</b> | 1.33 | 1.07 | 0.97 | 0.79 | 0.74 |
| 3/SOT-23             | 1.225V         | Max 0.2%, 50 ppm/°C                       | -40°C to +85°C        | TL4051B12IDBZT | <b>175-5362</b> | 0.91 | 0.74 | 0.67 | 0.55 | 0.51 |
| 3/SOT-23             | 1.225V to 10V  | Max 0.1%, 50 ppm/°C                       | -40°C to +85°C        | TL4051AIDBZT   | <b>175-5361</b> | 1.33 | 1.07 | 0.97 | 0.79 | 0.74 |
| 3/SOT-23             | 1.225V to 10V  | Max 0.2%, 50 ppm/°C                       | -40°C to +85°C        | TL4051BIDBZT   | <b>175-5363</b> | 0.91 | 0.74 | 0.67 | 0.55 | 0.51 |
| 3/SOT-23             | 1.225V to 10V  | Max 0.5%, 50 ppm/°C                       | -40°C to +85°C        | TL4051CIDBZT   | <b>175-5366</b> | 0.91 | 0.74 | 0.67 | 0.55 | 0.51 |

## 600W & 1500W Bidirectional TransZorb™ Suppression Diodes



- Bidirectional
- Glass passivated chip junction
- Very fast response time
- Excellent clamping capability
- Low incremental surge resistance
- 1500 W peak pulse power capability with a 10/1000μs

| Stand-Off Voltage<br>V <sub>RM</sub><br>V | Breakdown Voltage<br>V <sub>BR</sub><br>V | Clamping Voltage Max.<br>8/20μs<br>V | Max. Peak Pulse Current<br>8/20μs<br>A | Temp. Co-efficient<br>(%/°C) | Mfrs. List No.  |
|-------------------------------------------|-------------------------------------------|--------------------------------------|----------------------------------------|------------------------------|-----------------|
| 40.2                                      | 44.7                                      | 64.8                                 | 9.3                                    | 0.101                        | P6KE47CA-E3/54  |
| 30.8                                      | 34.2                                      | 49.9                                 | 30.1                                   | 0.099                        | 1.5KE36CA-E3/54 |
| 36.8                                      | 40.9                                      | 59.3                                 | 25.3                                   | 0.101                        | 1.5KE43CA-E3/54 |
| 47.8                                      | 53.2                                      | 77                                   | 19.5                                   | 0.103                        | 1.5KE56CA-E3/54 |

| Order Multiple=1 | Mfrs. List No.  | Package | Order Code      | 1+   | 25+  | 100+ | 250+ | 500+ |
|------------------|-----------------|---------|-----------------|------|------|------|------|------|
|                  | P6KE47CA-E3/54  | DO-15   | <b>169-8856</b> | 0.50 | 0.39 | 0.32 | 0.26 | 0.23 |
|                  | 1.5KE36CA-E3/54 | 1.5KE   | <b>169-8852</b> | 0.54 | 0.45 | 0.37 | 0.30 | 0.26 |
|                  | 1.5KE43CA-E3/54 | 1.5KE   | <b>169-8853</b> | 0.54 | 0.45 | 0.37 | 0.30 | 0.26 |
|                  | 1.5KE56CA-E3/54 | 1.5KE   | <b>169-8854</b> | 0.54 | 0.45 | 0.37 | 0.30 | 0.26 |

## Triple Data Line TVS

Ethernet protection is located between the RJ45 and the transformer. There is no DC current and crowbar protection can be used to carry high surge currents without risking latch-up. Advantage of the crowbar devices is the short circuit to a few volts, once the breakover voltage is reached. The benefit of the crowbar solution is the surge current capability, keeping the capacitance low enough to be compliant with 100 Mbit/s bit rate. In some cases TPN3021 limits data rates due to junction capacitance.

- Triple crowbar protection
- Tripolar overvoltage protection
- Low capacitance
- Low holding current: IH=30mA minimum
- Pin/package 8/SOIC
- Designed to meet T1/E1 & ethernet networks
- Surge current IPP=200A, 2/10μs & IPP=30A, 10/1000μs

| Mfrs. List No. | Order Code      | 1+   | 25+  | 100+ | 250+ |
|----------------|-----------------|------|------|------|------|
| TPN3021        | <b>169-7528</b> | 3.19 | 2.92 | 2.69 | 2.57 |

## Single, Dual & Triple PIN Diodes

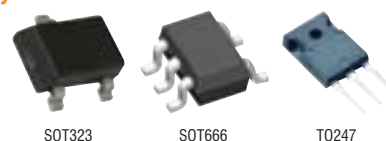


These PIN Diode are best suited for Automatic Gain Control, in small package.

- V<sub>R</sub> Max @ 25°C 50V
- I<sub>F</sub> Max @ 25°C 50mA
- Typical Capacitance 0.23pF

| Mfrs. List No.       | Case Style | Max Power 25°C W | Max Resis. Ω | Order Code      | 1+   | 25+  | 100+ |
|----------------------|------------|------------------|--------------|-----------------|------|------|------|
| <b>Single series</b> |            |                  |              |                 |      |      |      |
| 1SV233-TB-E          | SOT-23     | 0.15             | 5            | <b>173-5393</b> | 0.55 | 0.46 | 0.38 |
| 1SV250-TB-E          | SOT-23     | 0.15             | 4.5          | <b>173-5396</b> | 0.55 | 0.46 | 0.38 |
| 1SV294-TB-E          | SOT-23     | 0.15             | 7            | <b>173-5400</b> | 0.79 | 0.67 | 0.54 |
| <b>Dual series</b>   |            |                  |              |                 |      |      |      |
| 1SV246-TL-E          | SOT-323    | 0.1              | 5            | <b>173-5394</b> | 0.40 | 0.34 | 0.27 |
| 1SV249-TL-E          | SOT-323    | 0.1              | 4.5          | <b>173-5395</b> | 0.49 | 0.41 | 0.34 |
| 1SV251-TB-E          | SOT-23     | 0.15             | 4.5          | <b>173-5397</b> | 0.64 | 0.54 | 0.44 |
| 1SV264-TL-E          | SOT-323    | 0.1              | 2.5          | <b>173-5398</b> | 1.04 | 0.88 | 0.71 |
| 1SV267-TB-E          | SOT-23     | 0.15             | 2.5          | <b>173-5399</b> | 0.55 | 0.46 | 0.38 |
| 1SV315-TL-E          | SOT-323    | 0.1              | 6            | <b>173-5402</b> | 0.46 | 0.39 | 0.31 |
| 1SV316-TB-E          | SOT-23     | 0.1              | 6            | <b>173-5403</b> | 0.88 | 0.75 | 0.61 |
| <b>Triple series</b> |            |                  |              |                 |      |      |      |
| 1SV298H-TL-E         | SOT-346    | 0.15             | 7            | <b>173-5401</b> | 0.64 | 0.54 | 0.44 |

## Small Signal & Power Schottky Barrier Diode



- Very low conduction losses
- Negligible switching losses
- Low forward and reverse recovery times
- Extremely fast switching
- Surface mount device
- Low capacitance diode

Continues on next page

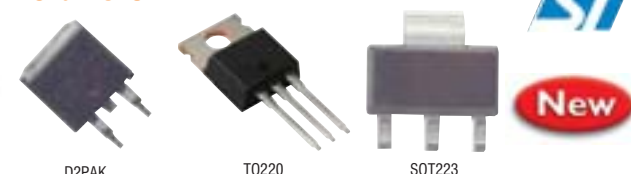


| $V_{rm}$<br>V       | $I_f$<br>mA | $V_f$<br>mV | Max. Junction<br>Temp °C | Case<br>Style | Mfrs.<br>List No. |
|---------------------|-------------|-------------|--------------------------|---------------|-------------------|
| <b>Single Diode</b> |             |             |                          |               |                   |
| 30                  | 300         | 580         | 150                      | SOT-323       | BAT30SWFILM       |
| 30                  | 300         | 580         | 150                      | SOT-666       | BAT30-07P6FILM    |
| 30                  | 300         | 580         | 150                      | SOT-666       | BAT30-09P6FILM    |
| 30                  | 300         | 580         | 150                      | SOT-323       | BAT30AWFILM       |
| 30                  | 300         | 580         | 150                      | SOT-323       | BAT30CWFILM       |
| 30                  | 300         | 580         | 150                      | SOT-323       | BAT30JFILM        |
| 100                 | 200         | 1000        | 150                      | SOT-323       | BAT41JFILM        |
| 30                  | 30          | 380         | 150                      | TO-247        | STPS60L30CW       |

|                                    |    |     |     |        |             |
|------------------------------------|----|-----|-----|--------|-------------|
| <b>Dual Diode - Common Cathode</b> |    |     |     |        |             |
| 45                                 | 30 | 500 | 150 | TO-247 | STPS60L45CW |

| Mfrs.<br>List No. | Order Code | 1+   | 25+  | 100+ | 250+ | 500+ |
|-------------------|------------|------|------|------|------|------|
| BAT30SWFILM       | 174-9247   | 0.07 | 0.06 | 0.05 | 0.04 | 0.03 |
| BAT30-07P6FILM    | 174-9248   | 0.10 | 0.09 | 0.08 | 0.06 | 0.05 |
| BAT30-09P6FILM    | 174-9251   | 0.10 | 0.09 | 0.08 | 0.06 | 0.05 |
| BAT30AWFILM       | 174-9252   | 0.07 | 0.06 | 0.05 | 0.04 | 0.03 |
| BAT30CWFILM       | 174-9253   | 0.07 | 0.06 | 0.05 | 0.04 | 0.03 |
| BAT30JFILM        | 174-9254   | 0.07 | 0.06 | 0.05 | 0.04 | 0.03 |
| BAT41JFILM        | 174-9255   | 0.07 | 0.06 | 0.05 | 0.04 | 0.03 |
| STPS60L30CW       | 174-9256   | 5.34 | 4.68 | 4.16 | 3.40 | 2.88 |
| STPS60L45CW       | 174-9257   | 5.87 | 5.14 | 4.57 | 3.74 | 3.16 |

## N Channel OMNIFET



- Linear current limitation
- Thermal shutdown
- Short circuit protection
- Integrated clamp
- Low current drawn from input pin
- Diagnostic feedback through input pin
- ESD protection
- Direct access to the gate of the Power MOSFET (analog driving)
- Compatible with standard Power MOSFET

This range of monolithic ONIFET devices, uses STMicroelectronics VIPower M0 Technology, intended for replacement of standard power MOSFETs in DC to 50 kHz applications. Built-in thermal shut-down, linear current limitation and overvoltage clamp protect the chip in harsh environments. Fault feedback can be detected by monitoring the voltage at the input pin.

| $V_{clamp}(typ)$<br>V | $I_D$ cont<br>@ 25°C<br>A | $R_{DS(on)}$<br>mΩ | $V_{GS}$<br>V | Package | Order<br>Code | Mfrs. list No. |
|-----------------------|---------------------------|--------------------|---------------|---------|---------------|----------------|
| <b>N Channel</b>      |                           |                    |               |         |               |                |
| 42                    | 14                        | 0.035ohm           | 10            | D2PAK   | 173-9404      | VNB28N04-E     |
| 42                    | 14                        | 0.035ohm           | 10            | TO-220  | 173-9427      | VNP28N04-E     |
| 45                    | 0.5                       | 250mohm            | 5             | DPAK    | 173-9409      | VND1NV04TR-E   |
| 45                    | 0.5                       | 250mohm            | 5             | SOIC    | 173-9439      | VNS1NV04D-E    |
| 45                    | 3.5                       | 60mohm             | 5             | SOIC    | 173-9442      | VNS7NV04TR-E   |
| 45                    | 3.5                       | 60mohm             | 5             | DPAK    | 173-9415      | VND7NV04-E     |
| 45                    | 3.5                       | 60mohm             | 5             | SOT-223 | 173-9422      | VNN7NV04TR-E   |
| 45                    | 7                         | 35mohm             | 5             | DPAK    | 173-9408      | VND14NV04-E    |
| 45                    | 7                         | 35mohm             | 5             | TO-220  | 173-9424      | VNP14NV04-E    |
| 45                    | 15                        | 13mohm             | 5             | TO-220  | 173-9429      | VNP35NV04-E    |
| 70                    | 5                         | 0.1ohm             | 10            | TO-220  | 173-9423      | VNP10N07-E     |
| 70                    | 10                        | 0.05ohm            | 10            | TO-220  | 173-9425      | VNP20N07-E     |
| 70                    | 10                        | 0.05ohm            | 10            | D2PAK   | 173-9403      | VNB20N07       |
| 70                    | 18                        | 0.028ohm           | 10            | TO-220  | 173-9428      | VNP35N07-E     |
| 70                    | 18                        | 0.028ohm           | 10            | D2PAK   | 173-9405      | VNB35N07TR-E   |
| <b>NN Channel</b>     |                           |                    |               |         |               |                |
| 45                    | 1.5                       | 120mohm            | 5             | SOIC    | 173-9441      | VNS3NV04D-E    |

| Mfrs.<br>List No. | Order Code | 1+   | 10+  | 100+ | 250+ |
|-------------------|------------|------|------|------|------|
| VNB28N04-E        | 173-9404   | 3.23 | 2.58 | 2.15 | 1.84 |
| VNP28N04-E        | 173-9427   | 3.12 | 2.49 | 2.08 | 1.78 |
| VND1NV04TR-E      | 173-9409   | 1.21 | 0.97 | 0.80 | 0.69 |
| VNS1NV04D-E       | 173-9439   | 1.56 | 1.25 | 1.04 | 0.89 |
| VNS7NV04TR-E      | 173-9442   | 1.46 | 1.17 | 0.97 | 0.83 |
| VND7NV04-E        | 173-9415   | 1.78 | 1.42 | 1.19 | 1.02 |
| VNN7NV04TR-E      | 173-9422   | 1.46 | 1.16 | 0.97 | 0.83 |
| VND14NV04-E       | 173-9408   | 2.34 | 1.87 | 1.56 | 1.34 |
| VNP14NV04-E       | 173-9424   | 2.53 | 2.02 | 1.69 | 1.45 |
| VNP35NV04-E       | 173-9429   | 2.00 | 1.60 | 1.33 | 1.14 |
| VNP10N07-E        | 173-9423   | 6.77 | 5.41 | 4.51 | 3.87 |
| VNP20N07-E        | 173-9425   | 1.35 | 1.20 | 1.11 | 1.03 |
| VNB20N07          | 173-9425   | 3.16 | 2.53 | 2.11 | 1.81 |
| VNP35N07-E        | 173-9403   | 3.23 | 2.58 | 2.15 | 1.84 |
| VNB35N07TR-E      | 173-9428   | 5.02 | 4.02 | 3.35 | 2.87 |
| VNS3NV04D-E       | 173-9405   | 5.14 | 4.11 | 3.43 | 2.94 |

## Dual MOSFETs Array

New SANYO



| $V_{DS}(typ)$<br>V       | $I_D$ cont<br>@ 25°C<br>A | $R_{DS(on)}$<br>mΩ | $V_{GS}$<br>V | $P_D$<br>@ 25°C<br>W | Package | Order Code | Mfrs. List No. |
|--------------------------|---------------------------|--------------------|---------------|----------------------|---------|------------|----------------|
| <b>Dual N Channel</b>    |                           |                    |               |                      |         |            |                |
| 30                       | 2.5                       | 105                | 10            | 900                  | SOT-346 | 173-5448   | CPH6616-TL-E   |
| 30                       | 8                         | 22                 | 10            | 2.5                  | SOT-96  | 173-5471   | FW808-TL-E     |
| 45                       | 6                         | 34                 | 10            | 2.2                  | SOT-96  | 173-5464   | FW248-TL-E     |
| 60                       | 1.5                       | 93                 | 10            | 1.5                  | ECH8    | 173-5458   | ECH8616-TL-E   |
| 100                      | 1                         | 260                | 10            | 1.5                  | ECH8    | 173-5459   | ECH8618-TL-E   |
| <b>Dual P Channel</b>    |                           |                    |               |                      |         |            |                |
| 12                       | 2                         | 49                 | 4.5           | 1                    | VEC8    | 173-5491   | VEC2303-TL-E   |
| 12                       | 2                         | 40                 | 4.5           | 1.5                  | ECH8    | 173-5455   | ECH8611-TL-E   |
| 12                       | 2                         | 33                 | 5             | 1.5                  | ECH8    | 173-5456   | ECH8613-TL-E   |
| 12                       | 0.5                       | 615                | 4.5           | 650                  | SCH6    | 173-5489   | SCH2315-TL-E   |
| 18                       | 1.5                       | 115                | 4.5           | 1                    | VEC8    | 173-5492   | VEC2305-TL-E   |
| 20                       | 1                         | 150                | 4             | 1.2                  | EMH8    | 173-5463   | EMH2301-TL-E   |
| 20                       | 2                         | 81                 | 4.5           | 1                    | VEC8    | 173-5490   | VEC2301-TL-E   |
| 20                       | 2                         | 54                 | 4.5           | 1.5                  | ECH8    | 173-5453   | ECH8603-TL-E   |
| 20                       | 3                         | 38                 | 4.5           | 1.5                  | ECH8    | 173-5462   | ECH8654-TL-H   |
| 20                       | 6                         | 40                 | 4             | 2.5                  | SOT-96  | 173-5468   | FW705-TL-E     |
| 20                       | 0.4                       | 900                | 4             | 800                  | SC-88   | 173-5483   | MCH6635-TL-E   |
| 20                       | 0.5                       | 500                | 4             | 800                  | SC-88   | 173-5480   | MCH6617-TL-E   |
| 20                       | 0.8                       | 235                | 4             | 1.2                  | SOT-346 | 173-5446   | CPH6601-TL-E   |
| 30                       | 0.05                      | 10400              | 4             | 800                  | SC-88   | 173-5479   | MCH6601-TL-E   |
| 30                       | 0.2                       | 1900               | 4             | 800                  | SC-88   | 173-5481   | MCH6629-TL-E   |
| <b>N &amp; P Channel</b> |                           |                    |               |                      |         |            |                |
| 30                       | 1.5                       | 105                | 10            | 900                  | SOT-346 | 173-5447   | CPH6615-TL-E   |
| 30                       | 2                         | 34                 | 10            | 1.5                  | ECH8    | 173-5454   | ECH8609-TL-H   |
| 30                       | 6                         | 33                 | 10            | 2.2                  | SOT-96  | 173-5465   | FW342-TL-E     |
| 35                       | 6                         | 33                 | 10            | 2.2                  | SOT-96  | 173-5467   | FW377-TL-E     |
| 45                       | 5                         | 37                 | 10            | 2.2                  | SOT-96  | 173-5466   | FW349-TL-E     |
| 60                       | 1.5                       | 93                 | 10            | 1.5                  | ECH8    | 173-5460   | ECH8619-TL-E   |
| 100                      | 1                         | 260                | 10            | 1.5                  | ECH8    | 173-5461   | ECH8620-TL-E   |

| Mfrs.<br>List No.        | Order Code | 1+   | 25+  | 100+ | 250+ | 500+ |
|--------------------------|------------|------|------|------|------|------|
| <b>Dual N Channel</b>    |            |      |      |      |      |      |
| CPH6616-TL-E             | 173-5448   | 0.51 | 0.43 | 0.35 | 0.29 | 0.25 |
| FW808-TL-E               | 173-5471   | 1.27 | 1.08 | 0.88 | 0.74 | 0.62 |
| FW248-TL-E               | 173-5464   | 1.10 | 0.93 | 0.76 | 0.64 | 0.54 |
| ECH8616-TL-E             | 173-5458   | 0.98 | 0.83 | 0.67 | 0.57 | 0.48 |
| ECH8618-TL-E             | 173-5459   | 1.04 | 0.88 | 0.71 | 0.60 | 0.51 |
| <b>Dual P Channel</b>    |            |      |      |      |      |      |
| VEC2303-TL-E             | 173-5491   | 1.10 | 0.93 | 0.75 | 0.64 | 0.54 |
| ECH8611-TL-E             | 173-5455   | 1.28 | 1.08 | 0.88 | 0.74 | 0.63 |
| ECH8613-TL-E             | 173-5456   | 1.68 | 1.42 | 1.15 | 0.97 | 0.82 |
| SCH2315-TL-E             | 173-5489   | 1.04 | 0.88 | 0.71 | 0.60 | 0.51 |
| VEC2305-TL-E             | 173-5492   | 1.04 | 0.88 | 0.71 | 0.60 | 0.51 |
| EMH2301-TL-E             | 173-5463   | 0.98 | 0.83 | 0.67 | 0.56 | 0.48 |
| VEC2301-TL-E             | 173-5490   | 1.16 | 0.98 | 0.80 | 0.67 | 0.57 |
| ECH8603-TL-E             | 173-5453   | 1.22 | 1.03 | 0.84 | 0.71 | 0.60 |
| ECH8654-TL-H             | 173-5462   | 0.64 | 0.54 | 0.44 | 0.37 | 0.31 |
| FW705-TL-E               | 173-5468   | 1.23 | 1.04 | 0.85 | 0.71 | 0.60 |
| MCH6635-TL-E             | 173-5483   | 0.79 | 0.67 | 0.54 | 0.46 | 0.39 |
| MCH6617-TL-E             | 173-5480   | 0.85 | 0.72 | 0.59 | 0.49 | 0.42 |
| CPH6601-TL-E             | 173-5446   | 0.91 | 0.77 | 0.63 | 0.53 | 0.45 |
| MCH6601-TL-E             | 173-5479   | 0.49 | 0.41 | 0.34 | 0.28 | 0.24 |
| MCH6629-TL-E             | 173-5481   | 0.91 | 0.77 | 0.63 | 0.53 | 0.45 |
| <b>N &amp; P Channel</b> |            |      |      |      |      |      |
| CPH6615-TL-E             | 173-5447   | 0.42 | 0.36 | 0.29 | 0.25 | 0.21 |
| ECH8609-TL-H             | 173-5454   | 0.64 | 0.54 | 0.44 | 0.37 | 0.31 |
| FW342-TL-E               | 173-5465   | 0.68 | 0.57 | 0.47 | 0.39 | 0.33 |
| FW377-TL-E               | 173-5467   | 1.10 | 0.93 | 0.76 | 0.64 | 0.54 |
| FW349-TL-E               | 173-5466   | 1.06 | 0.90 | 0.73 | 0.61 | 0.52 |
| ECH8619-TL-E             | 173-5460   | 0.68 | 0.58 | 0.47 | 0.40 | 0.33 |
| ECH8620-TL-E             | 173-5461   | 0.76 | 0.65 | 0.53 | 0.44 | 0.37 |

## NPN/PNP Transistors



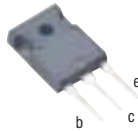
| $V_{CE0}$<br>(V) | $I_C$<br>Max(A) | $h_{FE}$<br>Min. | $P_D$<br>Max.(W) | Case Style | Order Code | Mfrs.<br>List No. |
|------------------|-----------------|------------------|------------------|------------|------------|-------------------|
| <b>NPN</b>       |                 |                  |                  |            |            |                   |
| 30               | 100             | 210              | 0.5              | SOT-23     | 174-9422   | 2STR1230          |
| 60               | 500             | 180              | 0.5              | SOT-23     | 174-9421   | 2STR1160          |
| 30               | 1               | 100              | 12.5             | SOT-32     | 174-9417   | 2SD882            |
| 60               | 2               | 160              | 1                | TO-92      | 174-9423   | 2STX1360          |
| 80               | 8               | 60               | 20               | TO-252     | 174-9426   | MJD44H11T4        |
| 700              | 4.5             | -                | 150              | TO-3       | 174-9424   | BU208A            |
| <b>PNP</b>       |                 |                  |                  |            |            |                   |
| 60               | 2               | 160              | 1.4              | SOT-89     | 174-9418   | 2STF2360          |
| 60               | 4               | 20               | 20               | TO-252     | 174-9425   | MJD2955T4         |
| 80               | 500             | 50               | 12.5             | SOT-32     | 174-9427   | MJE172            |
| 80               | 4               | 7                | 40               | SOT-32     | 174-9416   | 2N5195            |

Continues on next page

| Mfrs. List No. | Order Code | 1+   | 25+  | 100+ | 250+ |
|----------------|------------|------|------|------|------|
| <b>NPN</b>     |            |      |      |      |      |
| 2STR1230       | 174-9422   | 0.11 | 0.09 | 0.08 | 0.07 |
| 2STR1160       | 174-9421   | 0.11 | 0.09 | 0.08 | 0.07 |
| 2SD882         | 174-9417   | 0.26 | 0.23 | 0.20 | 0.17 |
| 2STX1360       | 174-9423   | 0.11 | 0.09 | 0.08 | 0.07 |
| MJD44H11T4     | 174-9426   | 0.28 | 0.24 | 0.22 | 0.18 |
| BU208A         | 174-9424   | 2.96 | 2.59 | 2.30 | 1.88 |
| <b>PNP</b>     |            |      |      |      |      |
| 2STF2360       | 174-9418   | 0.17 | 0.15 | 0.14 | 0.11 |
| MJD2955T4      | 174-9425   | 0.49 | 0.43 | 0.38 | 0.31 |
| MJE172         | 174-9427   | 0.46 | 0.40 | 0.36 | 0.29 |
| 2N5195         | 174-9416   | 0.52 | 0.46 | 0.41 | 0.33 |

## T0247 Audio Power Transistors

ON Semiconductor



- Excellent gain linearity
- Pin/package 3/ T0247
- High SOA: 2.25A, 80V, 1 second
- Total harmonic distortion characterized
- High DC current gain, hfe=20 min @ Ic=8Adc



The MJW21195/6 utilize Perforated Emitter technology and are specifically designed for high power audio output, disk head positioners and linear applications.

| Mfrs. List No. | Transistor Type | Order Code | 1+   | 25+  |
|----------------|-----------------|------------|------|------|
| MJW21195G      | NPN             | 170-0965   | 4.85 | 3.50 |
| MJW21196G      | PNP             | 170-0966   | 4.85 | 3.50 |

## 893D Series



- Solid Tantalum Chip Capacitors

Operating Temperature -55°C to +125°C  
Capacitance Tolerance ± 20% Reel Qty. 500

| Dimensions<br>μF H W D | Max. DC<br>Leakage Current (μA) | Max. ESR @<br>25°C, 100 kHz (Ω) | Mfrs. List No.    | Order Code |
|------------------------|---------------------------------|---------------------------------|-------------------|------------|
| <b>16 Volt d.c.</b>    |                                 |                                 |                   |            |
| 10 2.5 6 3.2           | 1.6                             | 1.8                             | 893D106X0016C2TE3 | 175-4032   |
| <b>20 Volt d.c.</b>    |                                 |                                 |                   |            |
| 22 2.8 7.3 4.3         | 4.4                             | 0.7                             | 893D226X0020D2TE3 | 175-4033   |
| <b>25 Volt d.c.</b>    |                                 |                                 |                   |            |
| 4.7 2.5 6 3.2          | 1.2                             | 1.9                             | 893D475X0025C2TE3 | 175-4034   |
| <b>35 Volt d.c.</b>    |                                 |                                 |                   |            |
| 2.2 2.5 6 3.2          | 0.8                             | 2.9                             | 893D225X0035C2TE3 | 175-4035   |
| 10 2.8 7.3 4.3         | 3.5                             | 0.8                             | 893D106X0035D2TE3 | 175-4036   |
| <b>50 Volt d.c.</b>    |                                 |                                 |                   |            |
| 1 2.5 6 3.2            | 0.5                             | 4.4                             | 893D105X0050C2TE3 | 175-4037   |
| 3.3 2.8 7.3 4.3        | 1.7                             | 1.6                             | 893D335X0050D2TE3 | 175-4039   |

| μF                  | Order Code | 1+   | 10+  | 100+ | 250+ | 500+ |
|---------------------|------------|------|------|------|------|------|
| <b>16 Volt d.c.</b> |            |      |      |      |      |      |
| 10                  | 175-4032   | 1.89 | 1.72 | 1.55 | 1.32 | 0.97 |
| <b>20 Volt d.c.</b> |            |      |      |      |      |      |
| 22                  | 175-4033   | 2.75 | 2.50 | 2.25 | 1.92 | 1.42 |
| <b>25 Volt d.c.</b> |            |      |      |      |      |      |
| 4.7                 | 175-4034   | 1.72 | 1.57 | 1.41 | 1.20 | 0.89 |
| <b>35 Volt d.c.</b> |            |      |      |      |      |      |
| 2.2                 | 175-4035   | 1.72 | 1.57 | 1.41 | 1.20 | 0.89 |
| 10                  | 175-4036   | 2.75 | 2.50 | 2.25 | 1.92 | 1.42 |
| <b>50 Volt d.c.</b> |            |      |      |      |      |      |
| 1                   | 175-4037   | 0.67 | 0.61 | 0.55 | 0.46 | 0.34 |
| 3.3                 | 175-4039   | 3.54 | 3.21 | 2.89 | 2.46 | 1.82 |

## T83 Series



- Weibull Grading and Surge Current Test options
- Standard and Low ESR options

Operating Temperature -55°C to +125°C  
Capacitance Tolerance ± 10%

| Dimensions<br>μF H W D | Max. DC<br>Leakage Current (μA) | Max. ESR @<br>25°C, 100 kHz (Ω) | Reel Qty. | Mfrs. List No.  | Order Code |
|------------------------|---------------------------------|---------------------------------|-----------|-----------------|------------|
| <b>6.3 Volt d.c.</b>   |                                 |                                 |           |                 |            |
| 47 1.9 3.5 2.8         | 2.8                             | 2                               | 2000      | T83B476K6R3EBZL | 175-4243   |
| <b>16 Volt d.c.</b>    |                                 |                                 |           |                 |            |
| 10 2.5 6 3.2           | 16                              | 1.8                             | 500       | T83C106K016EBZS | 175-4244   |
| <b>25 Volt d.c.</b>    |                                 |                                 |           |                 |            |
| 47 2.8 7.3 4.3         | 11.8                            | 0.6                             | 500       | T83D476K025EBZL | 175-4246   |
| <b>35 Volt d.c.</b>    |                                 |                                 |           |                 |            |
| 22 4 7.3 4.3           | 7.7                             | 0.6                             | 400       | T83E226K035EBZL | 175-4247   |

| Order Multiple=5<br>μF | Order Code | 5+   | 50+  | Price Each<br>100+ | 250+ | 2K+  |
|------------------------|------------|------|------|--------------------|------|------|
| <b>6.3 Volt d.c.</b>   |            |      |      |                    |      |      |
| 47                     | 175-4243   | 6.45 | 5.86 | 5.28               | 4.49 | 3.32 |
| <b>16 Volt d.c.</b>    |            |      |      |                    |      |      |
| 10                     | 175-4244   | 5.72 | 5.20 | 4.68               | 3.98 | 2.94 |
| <b>25 Volt d.c.</b>    |            |      |      |                    |      |      |
| 47                     | 175-4246   | 8.67 | 7.88 | 7.10               | 6.04 | 4.47 |
| <b>35 Volt d.c.</b>    |            |      |      |                    |      |      |
| 22                     | 175-4247   | 8.03 | 7.30 | 6.57               | 5.59 | 4.13 |

## 298D Series - MicroTan™



- Solid tantalum chip capacitors
- MICROTAN™ lead frame-less molded



Operating Temperature -55°C to +85°C

| μF                   | Dimensions<br>L W H | Tolerance | Case Size | Mfrs. List No.   | Order Code |
|----------------------|---------------------|-----------|-----------|------------------|------------|
| <b>4 Volt d.c.</b>   |                     |           |           |                  |            |
| 220                  | 2.4 1.45 1.1        | ± 20%     | P         | 298D227X0004P2T  | 156-5124   |
| <b>6.3 Volt d.c.</b> |                     |           |           |                  |            |
| 10                   | 1.6 0.85 0.8        | ± 10%     | M         | 298D106X96R3M2T  | 156-5120   |
| 22                   | 1.6 0.85 0.8        | ± 20%     | M         | 298D226X006R3M2T | 156-5123   |
| <b>10 Volt d.c.</b>  |                     |           |           |                  |            |
| 10                   | 1.6 0.85 0.8        | ± 20%     | M         | 298D106X0010M2T  | 156-5121   |
| 15                   | 1.6 0.85 0.8        | ± 20%     | M         | 298D156X0010M2T  | 156-5122   |
| <b>16 Volt d.c.</b>  |                     |           |           |                  |            |
| 1                    | 1.6 0.85 0.8        | ± 10%     | M         | 298D105X9016M2T  | 156-5119   |

| μF                   | Order Code | 1+   | 50+  | Price Each<br>100+ | 500+ | 1K+  |
|----------------------|------------|------|------|--------------------|------|------|
| <b>4 Volt d.c.</b>   |            |      |      |                    |      |      |
| 220                  | 156-5124   | 1.95 | 1.38 | 1.06               | 0.82 | 0.65 |
| <b>6.3 Volt d.c.</b> |            |      |      |                    |      |      |
| 10                   | 156-5120   | 0.84 | 0.68 | 0.55               | 0.47 | 0.42 |
| 22                   | 156-5123   | 0.74 | 0.59 | 0.49               | 0.43 | 0.42 |
| <b>10 Volt d.c.</b>  |            |      |      |                    |      |      |
| 10                   | 156-5121   | 1.11 | 0.88 | 0.72               | 0.63 | 0.54 |
| 15                   | 156-5122   | 1.11 | 0.88 | 0.72               | 0.63 | 0.54 |
| <b>16 Volt d.c.</b>  |            |      |      |                    |      |      |
| 1                    | 156-5119   | 0.74 | 0.59 | 0.47               | 0.43 | 0.38 |

## T95 Series



- High reliability; Weibull grading available
- Standard and Low ESR options

Operating Temperature -55°C to +85°C  
Capacitance Tolerance ± 10%  
Reel Qty 600

| Dimensions<br>μF H W D | Max. DC<br>Leakage Current (μA) | Max. ESR @<br>25°C, 100 kHz (Ω) | Mfrs. List No.  | Order Code |
|------------------------|---------------------------------|---------------------------------|-----------------|------------|
| <b>10 Volt d.c.</b>    |                                 |                                 |                 |            |
| 330 1.3 1.83 7.2       | 33                              | 0.13                            | T95R337K010ESAL | 175-4248   |
| <b>50 Volt d.c.</b>    |                                 |                                 |                 |            |
| 15 1.3 1.83 7.2        | 7.5                             | 0.4                             | T95R156K050ESAL | 175-4249   |
| 22 1.3 1.83 7.2        | 11                              | 0.39                            | T95R226K050EABL | 175-4250   |

| Order Multiple=5<br>μF | Order Code | 5+    | 50+   | Price Each<br>100+ | 250+ | 600+ |
|------------------------|------------|-------|-------|--------------------|------|------|
| <b>10 Volt d.c.</b>    |            |       |       |                    |      |      |
| 330                    | 175-4248   | 8.14  | 7.40  | 6.66               | 5.67 | 4.19 |
| <b>50 Volt d.c.</b>    |            |       |       |                    |      |      |
| 15                     | 175-4249   | 8.53  | 7.76  | 6.98               | 5.95 | 4.40 |
| 22                     | 175-4250   | 14.02 | 12.75 | 11.47              | 9.77 | 7.22 |

## Accelerate your designs with DesignLink



Download Farnell parts data  
directly into your schematic.  
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## T97 Series



- Ultra-low ESR
- High reliability; Weibull failure rate grading available

Operating Temperature -55°C to +85°C  
Capacitance Tolerance ± 10%  
Rating Voltage 50V  
Reel Qty 300

| Dimensions<br>μF H W D | Max. DC<br>Leakage Current (μA) | Max. ESR @<br>25°C, 100 kHz (Ω) | Mfrs. List No. | Order Code |
|------------------------|---------------------------------|---------------------------------|----------------|------------|
| 22 3.6 6 7.3           | 11                              | 0.17                            | T97R226K050ESB | 175-4251   |
| 33 4.7 6 7.3           | 17                              | 0.15                            | T97F336K050EAA | 175-4252   |

| Order Multiple=5<br>μF | Order Code | 5+    | 50+   | 100+  | 250+ | 300+ |
|------------------------|------------|-------|-------|-------|------|------|
| 50 Volt d.c.           |            |       |       |       |      |      |
| 22                     | 175-4251   | 8.59  | 7.81  | 7.03  | 5.99 | 4.42 |
| 33                     | 175-4252   | 12.73 | 11.57 | 10.41 | 8.87 | 6.56 |

## IHLP-2020 Series

Low Profile - High Current



(HxWxD) 2 x 5.49 x 5.18mm

### Features:

- Shielded construction
- Frequency range up to 5.0 MHz
- Handles high transient current spikes without saturation

### Applications:

- PDA/Notebook/Desktop/Server applications
- Low profile, high current power supplies
- Battery powered devices
- DC/DC converters

| Inductance<br>μH | DC Res<br>mΩ @ 25°C | Saturation<br>Current, DC (A) | Heat Rating<br>Current, DC (A) | Mfrs.<br>List No.   | Order Code |
|------------------|---------------------|-------------------------------|--------------------------------|---------------------|------------|
| 0.1              | 3.6                 | 45                            | 17                             | IHLP2020BZERR10M01  | 169-8002   |
| 0.1              | 2.7                 | 25                            | 21                             | IHLP2020BZERR10M11  | 174-1307   |
| 0.1              | 2.6                 | 25                            | 21                             | IHLP2020CZERR10M11  | 174-1318   |
| 0.22             | 4.9                 | 22                            | 15                             | IHLP2020BZERR22M01  | 169-8003   |
| 0.22             | 4.1                 | 13                            | 17                             | IHLP2020BZERR22M11  | 174-1308   |
| 0.22             | 3.5                 | 14.5                          | 21                             | IHLP2020CZERR22M11  | 174-1319   |
| 0.33             | 7.6                 | 25                            | 12                             | IHLP2020BZERR33M01  | 169-8004   |
| 0.33             | 5.5                 | 7.5                           | 13                             | IHLP2020BZERR33M11  | 174-1309   |
| 0.33             | 4.5                 | 9                             | 16.5                           | IHLP2020CZERR33M11  | 174-1320   |
| 0.47             | 8.9                 | 21                            | 11.5                           | IHLP2020BZERR47M01  | 169-8005   |
| 0.47             | 7.1                 | 8                             | 12.5                           | IHLP2020BZERR47M11  | 174-1310   |
| 0.47             | 5.4                 | 9                             | 14                             | IHLP2020CZERR47M11  | 174-1321   |
| 0.68             | 11.2                | 15                            | 10                             | IHLP2020BZERR68M01  | 169-8006   |
| 1                | 18.9                | 16                            | 7                              | IHLP2020BZERR16M01  | 169-8007   |
| 1                | 16.8                | 7                             | 7.5                            | IHLP2020BZERR16M11  | 174-1311   |
| 1                | 10                  | 6.5                           | 10                             | IHLP2020CZERR16M11  | 174-1322   |
| 1.5              | 17.1                | 7                             | 7.5                            | IHLP2020CZERR15M11  | 174-1323   |
| 2.2              | 45.6                | 12.5                          | 4.2                            | IHLP2020BZERR22M01  | 169-8008   |
| 2.2              | 34.9                | 5.5                           | 5                              | IHLP2020BZERR22M11  | 174-1312   |
| 2.2              | 22.5                | 5.5                           | 6.75                           | IHLP2020CZERR22M11  | 174-1324   |
| 3.3              | 79.2                | 8.5                           | 3.3                            | IHLP2020BZERR33M01  | 169-8009   |
| 3.3              | 53.5                | 4.7                           | 4.1                            | IHLP2020BZERR33M11  | 174-1313   |
| 3.3              | 36.4                | 7                             | 5.5                            | IHLP2020CZERR33M11  | 174-1325   |
| 4.7              | 108                 | 5                             | 2.8                            | IHLP2020BZERR47M01  | 169-8010   |
| 4.7              | 75.3                | 3                             | 3.2                            | IHLP2020BZERR47M11  | 174-1314   |
| 4.7              | 54                  | 5.2                           | 4.5                            | IHLP2020CZERR47M11  | 174-1326   |
| 5.6              | 113                 | 4.5                           | 2.5                            | IHLP2020BZERR56M01  | 169-8012   |
| 5.6              | 85.2                | 2.2                           | 3                              | IHLP2020BZERR56M11  | 174-1315   |
| 5.6              | 63                  | 3.5                           | 4.25                           | IHLP2020CZERR56M11  | 174-1327   |
| 6.8              | 139                 | 4.3                           | 2.4                            | IHLP2020BZERR68M01  | 169-8013   |
| 10               | 184                 | 4                             | 2.3                            | IHLP2020BZERR100M01 | 169-8014   |
| 10               | 169.3               | 2                             | 2.2                            | IHLP2020BZERR100M11 | 174-1316   |
| 10               | 122.1               | 2.25                          | 2.75                           | IHLP2020CZERR100M11 | 174-1328   |
| 22               | 250                 | 1.7                           | 1.9                            | IHLP2020CZERR220M11 | 174-1331   |

| Inductance<br>μH | Order Code   | 1+   | 10+  | 50+  | 100+ | 500+ |
|------------------|--------------|------|------|------|------|------|
| 0.1              | 169-8002     | 1.50 | 1.35 | 1.26 | 1.13 | 0.99 |
| 0.1              | NEW 174-1307 | 1.72 | 1.55 | 1.44 | 1.29 | 1.13 |
| 0.1              | NEW 174-1318 | 1.18 | 1.06 | 0.99 | 0.88 | 0.78 |
| 0.22             | 169-8003     | 1.50 | 1.35 | 1.26 | 1.13 | 0.99 |
| 0.22             | NEW 174-1308 | 1.72 | 1.55 | 1.44 | 1.29 | 1.13 |
| 0.22             | NEW 174-1319 | 1.18 | 1.06 | 0.99 | 0.88 | 0.78 |
| 0.33             | 169-8004     | 1.50 | 1.35 | 1.26 | 1.13 | 0.99 |
| 0.33             | NEW 174-1309 | 1.72 | 1.55 | 1.44 | 1.29 | 1.13 |
| 0.33             | NEW 174-1320 | 1.18 | 1.06 | 0.99 | 0.88 | 0.78 |
| 0.47             | 169-8005     | 1.50 | 1.35 | 1.26 | 1.13 | 0.99 |
| 0.47             | NEW 174-1310 | 1.72 | 1.55 | 1.44 | 1.29 | 1.13 |
| 0.47             | NEW 174-1321 | 1.18 | 1.06 | 0.99 | 0.88 | 0.78 |
| 0.68             | 169-8006     | 1.50 | 1.35 | 1.26 | 1.13 | 0.99 |
| 1                | 169-8007     | 1.50 | 1.35 | 1.26 | 1.13 | 0.99 |
| 1                | NEW 174-1311 | 1.72 | 1.55 | 1.44 | 1.29 | 1.13 |
| 1                | NEW 174-1322 | 1.18 | 1.06 | 0.99 | 0.88 | 0.78 |
| 1.5              | NEW 174-1323 | 1.18 | 1.06 | 0.99 | 0.88 | 0.78 |
| 2.2              | 169-8008     | 1.50 | 1.35 | 1.26 | 1.13 | 0.99 |
| 2.2              | NEW 174-1312 | 1.72 | 1.55 | 1.44 | 1.29 | 1.13 |
| 2.2              | NEW 174-1324 | 1.18 | 1.06 | 0.99 | 0.88 | 0.78 |
| 3.3              | 169-8009     | 1.50 | 1.35 | 1.26 | 1.13 | 0.99 |

| Inductance<br>μH | Order Code   | 1+   | 10+  | Price Each | 50+  | 500+ |
|------------------|--------------|------|------|------------|------|------|
| 3.3              | NEW 174-1313 | 1.72 | 1.55 | 1.44       | 1.29 | 1.13 |
| 3.3              | NEW 174-1325 | 1.18 | 1.06 | 0.99       | 0.88 | 0.78 |
| 4.7              | 169-8010     | 1.50 | 1.35 | 1.26       | 1.13 | 0.99 |
| 4.7              | NEW 174-1314 | 1.72 | 1.55 | 1.44       | 1.29 | 1.13 |
| 4.7              | NEW 174-1326 | 1.18 | 1.06 | 0.99       | 0.88 | 0.78 |
| 5.6              | 169-8012     | 1.50 | 1.35 | 1.26       | 1.13 | 0.99 |
| 5.6              | NEW 174-1315 | 1.72 | 1.55 | 1.44       | 1.29 | 1.13 |
| 5.6              | NEW 174-1327 | 1.18 | 1.06 | 0.99       | 0.88 | 0.78 |
| 6.8              | 169-8013     | 1.50 | 1.35 | 1.26       | 1.13 | 0.99 |
| 10               | 169-8014     | 1.50 | 1.35 | 1.26       | 1.13 | 0.99 |
| 10               | NEW 174-1316 | 1.72 | 1.55 | 1.44       | 1.29 | 1.13 |
| 10               | NEW 174-1328 | 1.18 | 1.06 | 0.99       | 0.88 | 0.78 |
| 22               | NEW 174-1331 | 1.18 | 1.06 | 0.99       | 0.88 | 0.78 |

## ITH-0750JZ Series



Body Dia. = 20.47mm, Height  
(Without Legs) = 9.52mm

- Shielded construction
- Frequency range up to 1.0 MHz
- Handles high transient current spikes without saturation
- Ultra low buzz noise, due to composite construction
- Tolerance ± 20%

| Inductance<br>(μH) | Heat<br>Current<br>A | Resistance<br>Typ.<br>Ω | Lead<br>Spacing<br>(mm) | Lead<br>Dia.<br>(mm) | Lead<br>Length<br>(mm) |
|--------------------|----------------------|-------------------------|-------------------------|----------------------|------------------------|
| 0.47               | 60                   | 0.47                    | 8.91                    | 2.1                  | 4.19                   |
| 4.7                | 22                   | 2.52                    | 11.78                   | 1.67                 | 4.19                   |
| 10                 | 13                   | 7.68                    | 10.84                   | 1.32                 | 4.19                   |
| 22                 | 11.5                 | 14.1                    | 11.43                   | 1.19                 | 4.19                   |
| 33                 | 8.5                  | 23.7                    | 12.11                   | 0.94                 | 4.19                   |
| 47                 | 7                    | 34.8                    | 13.33                   | 0.83                 | 4.19                   |
| 68                 | 5.8                  | 50                      | 12.64                   | 0.83                 | 4.19                   |
| 100                | 5                    | 68.3                    | 12.16                   | 0.76                 | 4.19                   |

| Value<br>(μH) | Current<br>(A) | Order Code | 1+   | 10+  | Price Each | 50+  | 100+ |
|---------------|----------------|------------|------|------|------------|------|------|
| 0.47          | 60             | 176-4412   | 5.72 | 5.03 | 4.58       | 4.12 | 3.66 |
| 4.7           | 22             | 176-4413   | 5.72 | 5.03 | 4.58       | 4.12 | 3.66 |
| 10            | 13             | 176-4414   | 5.72 | 5.03 | 4.58       | 4.12 | 3.66 |
| 22            | 11.5           | 176-4415   | 5.72 | 5.03 | 4.58       | 4.12 | 3.66 |
| 33            | 8.5            | 176-4416   | 5.72 | 5.03 | 4.58       | 4.12 | 3.66 |
| 47            | 7              | 176-4417   | 5.72 | 5.03 | 4.58       | 4.12 | 3.66 |
| 68            | 5.8            | 176-4418   | 5.72 | 5.03 | 4.58       | 4.12 | 3.66 |
| 100           | 5              | 176-4419   | 5.72 | 5.03 | 4.58       | 4.12 | 3.66 |

## ITH-1125MZ Series



Body Dia. = 29.95mm, Height  
(Without Legs) = 12.7mm

- Shielded construction
- Frequency range up to 1.0 MHz
- Handles high transient current spikes without saturation
- Ultra low buzz noise, due to composite construction
- Tolerance ± 20%

| Inductance<br>(μH) | Heat<br>Current<br>A | Resistance<br>Typ.<br>Ω | Lead<br>Spacing<br>(mm) | Lead<br>Dia.<br>(mm) | Lead<br>Length<br>(mm) |
|--------------------|----------------------|-------------------------|-------------------------|----------------------|------------------------|
| 0.47               | 20.9                 | 0.27                    | 14.45                   | 2.71                 | 4.19                   |
| 4.7                | 2.09                 | 2.09                    | 21.1                    | 2.28                 | 4.19                   |
| 10                 | 3.46                 | 17.79                   | 20.5                    | 4.19                 | 4.19                   |
| 22                 | 6.5                  | 19.25                   | 1.67                    | 4.19                 | 4.19                   |
| 33                 | 10.4                 | 19.25                   | 1.67                    | 4.19                 | 4.19                   |
| 47                 | 14.5                 | 19.25                   | 1.67                    | 4.19                 | 4.19                   |
| 100                | 29.4                 | 16.58                   | 1.37                    | 4.19                 | 4.19                   |

| Value<br>(μH) | Current<br>(A) | Order Code | 1+   | 10+  | Price Each | 50+  | 100+ |
|---------------|----------------|------------|------|------|------------|------|------|
| 0.47          | 20.9           | 176-4420   | 9.72 | 8.56 | 7.78       | 7.00 | 6.22 |
| 4.7           | 2.09           | 176-4422   | 9.72 | 8.56 | 7.78       | 7.00 | 6.22 |
| 10            | 3.46           | 176-4423   | 9.72 | 8.56 | 7.78       | 7.00 | 6.22 |
| 22            | 6.5            | 176-4424   | 9.72 | 8.56 | 7.78       | 7.00 | 6.22 |
| 33            | 10.4           | 176-4425   | 9.72 | 8.56 | 7.78       | 7.00 | 6.22 |
| 47            | 14.5           | 176-4426   | 9.72 | 8.56 | 7.78       | 7.00 | 6.22 |
| 100           | 29.4           | 176-4427   | 9.72 | 8.56 | 7.78       | 7.00 | 6.22 |

## Express checkout



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## RF Cable Assemblies

### U.FL-LP-088 Terminal to SMA / N Type Bulkhead Jack



- Standard, Reverse Polarity and IP67 cable assemblies available
- Cable lengths from 100 - 300mm
- Cable diameter = 1.37mm

#### Specifications:-

|                                      |                                          |
|--------------------------------------|------------------------------------------|
| Impedance                            | 50Ω                                      |
| Max. Working Voltage                 | 60V rms.                                 |
| Min. Dielectric Withstanding Voltage | 200V rms.                                |
| Min. Insulation Resistance           | 500MΩ                                    |
| Frequency Range                      | DC to 3GHz. (SMA) / DC to 6GHz. (N Type) |



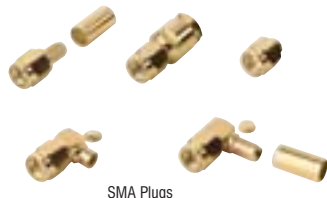
| Cable Length                             | Order Code | 1+    | 10+   | 25+   | 50+   | 100+ |
|------------------------------------------|------------|-------|-------|-------|-------|------|
| <b>Standard U.FI - SMA</b>               |            |       |       |       |       |      |
| 100mm                                    | 169-9231   | 6.57  | 5.58  | 4.60  | 4.09  | 3.68 |
| 150mm                                    | 169-9242   | 6.75  | 5.73  | 4.73  | 4.20  | 3.78 |
| 200mm                                    | 169-9243   | 6.70  | 5.71  | 4.85  | 4.31  | 3.88 |
| 300mm                                    | 169-9244   | 7.29  | 6.19  | 5.10  | 4.53  | 4.08 |
| <b>Reverse Polarity U.FI - SMA</b>       |            |       |       |       |       |      |
| 100mm                                    | 169-9245   | 6.70  | 5.71  | 4.85  | 4.31  | 3.88 |
| 150mm                                    | 169-9247   | 7.11  | 6.04  | 4.98  | 4.42  | 3.98 |
| 200mm                                    | 169-9248   | 7.29  | 6.19  | 5.10  | 4.53  | 4.08 |
| 300mm                                    | 169-9249   | 7.64  | 6.49  | 5.35  | 4.76  | 4.28 |
| <b>IP67 U.FI - SMA</b>                   |            |       |       |       |       |      |
| 100mm                                    | 169-9254   | 10.66 | 8.44  | 6.75  | 5.78  | 5.06 |
| 150mm                                    | 169-9255   | 10.67 | 8.49  | 6.93  | 5.94  | 5.20 |
| 200mm                                    | 169-9256   | 10.40 | 8.23  | 6.58  | 5.64  | 4.94 |
| 300mm                                    | 169-9257   | 11.82 | 9.36  | 7.48  | 6.41  | 5.61 |
| <b>IP67, Reverse Polarity U.FI - SMA</b> |            |       |       |       |       |      |
| 100mm                                    | 169-9259   | 11.24 | 8.90  | 7.11  | 6.10  | 5.34 |
| 150mm                                    | 169-9261   | 11.24 | 8.94  | 7.30  | 6.25  | 5.47 |
| 200mm                                    | 169-9262   | 11.82 | 9.36  | 7.48  | 6.41  | 5.61 |
| 300mm                                    | 169-9263   | 11.46 | 9.08  | 7.26  | 6.23  | 5.45 |
| <b>IP67 U.FL - N Type</b>                |            |       |       |       |       |      |
| 100mm                                    | 171-4789   | 18.25 | 14.60 | 12.17 | 10.43 | 9.13 |
| 150mm                                    | 171-4791   | 18.50 | 14.80 | 12.33 | 10.57 | 9.25 |
| 200mm                                    | 171-4792   | 18.75 | 15.00 | 12.50 | 10.71 | 9.38 |

## SMA Plugs, Jacks and Adaptors

50Ω

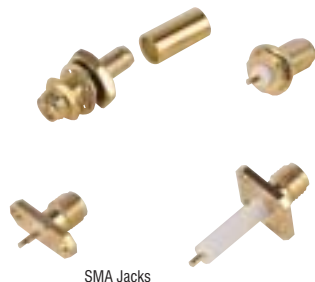
- Semi precision, sub miniature connectors
- Broadband performance with low reflection

|                      |                             |                     |                 |
|----------------------|-----------------------------|---------------------|-----------------|
| Impedance            | 50Ω                         | Contact Res - Outer | 2mΩ             |
| Frequency Range      | 0 to 18.0GHz Semi Rigid     | Ins Resistance      | 5000MΩ min      |
|                      | 0 to 12.4GHz Flexible Cable | Temp Range          | -65°C165°C to + |
| Contact Res - Centre | 3mΩ                         |                     |                 |



SMA Plugs

|                       | Cable | Order Code | 1+   | 10+  | 50+  | 100+ |
|-----------------------|-------|------------|------|------|------|------|
| <b>Straight Plugs</b> |       |            |      |      |      |      |
| Crimp                 | RG58  | 116-9616   | 2.45 | 2.11 | 1.69 | 1.53 |
| Clamp                 | RG58  | 116-9617   | 3.47 | 2.93 | 2.35 | 2.15 |
| Clamp                 | RG174 | 116-9618   | 3.44 | 2.92 | 2.34 | 2.14 |
| Direct Solder         | RG402 | 116-9619   | 2.52 | 2.14 | 1.73 | 1.56 |
| Direct Solder         | RG405 | 116-9620   | 2.12 | 1.79 | 1.39 | 1.24 |
| <b>RA Plugs</b>       |       |            |      |      |      |      |
| Crimp                 | RG58  | 116-9627   | 2.07 | 1.74 | 1.38 | 1.24 |
| Direct Solder         | RG402 | 116-9624   | 4.29 | 3.64 | 2.96 | 2.68 |
| Direct Solder         | RG405 | 116-9625   | 4.29 | 3.64 | 2.96 | 2.68 |



SMA Jacks

| Cable                                                     | Order Code | 1+       | 10+  | 50+  | 100+ |
|-----------------------------------------------------------|------------|----------|------|------|------|
| <b>Straight Bulkhead Jack</b>                             |            |          |      |      |      |
| Direct Solder                                             | RG402      | 116-9621 | 2.14 | 1.80 | 1.42 |
| Direct Solder                                             | RG405      | 116-9623 | 2.56 | 2.14 | 1.68 |
| Crimp                                                     | RG58       | 116-9628 | 3.87 | 3.29 | 2.67 |
| <b>Straight Bulkhead Jack - Rear Mount</b>                |            |          |      |      |      |
| Solder                                                    |            | 116-9630 | 3.15 | 2.67 | 2.17 |
| <b>4 Hole Square Flange Jack - Epoxy Captivated</b>       |            |          |      |      |      |
| Solder                                                    |            | 116-9626 | 4.70 | 3.98 | 3.23 |
| <b>2 Hole Flange Jack Receptacle - Solder Pot Contact</b> |            |          |      |      |      |
| Solder                                                    |            | 116-9629 | 3.55 | 3.01 | 2.46 |



SMA PCB Mount Jacks

| PCB Mount Jacks               | Order Code | 1+   | 10+  | 50+  | 100+ |
|-------------------------------|------------|------|------|------|------|
| <b>Through Hole PCB Mount</b> |            |      |      |      |      |
| Straight                      | 116-9631   | 3.56 | 3.03 | 2.45 | 2.19 |
| RA                            | 116-9632   | 4.79 | 4.03 | 3.30 | 2.97 |
| <b>SMT PCB Mount</b>          |            |      |      |      |      |
| Straight                      | 116-9633   | 3.72 | 3.15 | 2.56 | 2.33 |
| RA                            | 116-9635   | 3.75 | 3.13 | 2.46 | 2.22 |



SMA Adaptors

| Adaptors               | Order Code | 1+   | 10+  | 50+  | 100+ |
|------------------------|------------|------|------|------|------|
| SMA Plug - SMA Plug    | 116-9638   | 3.81 | 3.24 | 2.63 | 2.36 |
| SMA Jack - SMA Jack    | 116-9639   | 3.52 | 3.01 | 2.45 | 2.19 |
| RA SMA Plug - SMA Jack | 116-9636   | 5.18 | 4.42 | 3.56 | 3.21 |
| SMA BH Jack - SMA Jack | 116-9637   | 5.01 | 4.24 | 3.45 | 3.10 |

## SMA Jack End Launchers 50Ω



Gold plated centre contact & body with PTFE insulation

|                       |                     |
|-----------------------|---------------------|
| Impedance             | 50Ω                 |
| Frequency Range       | 0 - 18GHz           |
| Contact Resistance    | 3mohm               |
| Insulation Resistance | 5000Mohm            |
| Body                  | Brass - Gold plated |

| Type             | PCB Thickness (mm) | Order Code | 1+   | 10+  | 50+  |
|------------------|--------------------|------------|------|------|------|
| <b>SMA Jacks</b> |                    |            |      |      |      |
| Bulkhead         | 1.73               | 134-2651   | 2.66 | 2.23 | 1.87 |
| PCB              | 1.73               | 134-2652   | 2.32 | 1.97 | 1.63 |
| PCB              | 1.22               | 134-2653   | 2.32 | 1.97 | 1.63 |

## RF Cable Assemblies



|                        |              |
|------------------------|--------------|
| <b>Specification:-</b> |              |
| Attenuation            | 1.5dB        |
| VSWR                   | 1.5 max      |
| Frequency Range        | 45MHz - 6GHz |
| Impedance              | 50Ω          |

- U.FI to SMA cable assemblies
- Cable length from 75mm to 150mm

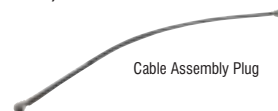
| Cable Length | Mftrs. List No. | Order Code | 1+    | 10+  | 25+  | 50+  | 100+ |
|--------------|-----------------|------------|-------|------|------|------|------|
| 150mm        | CASS-0419-RC    | 168-8079   | 11.88 | 9.42 | 8.33 | 7.80 | 6.61 |
| 100mm        | CASS-0442-RC    | 168-8081   | 10.27 | 8.14 | 7.20 | 6.74 | 5.71 |
| 75mm         | CASS-0627-RC    | 168-8082   | 10.67 | 8.55 | 7.40 | 6.91 | 5.90 |

## Ultra Small SMT Coaxial Connectors

### U.FL Series (Commodity Version)



Receptacle



Cable Assembly Plug

- 2.5mm mated height
- 7.7mm<sup>2</sup> footprint
- High frequency performance DC to 6 Ghz
- Plug diameter - 0.81mm / 1.37mm
- Nominal attenuation at 6Ghz - 9.42dB/m (0.81mm Ø) / 4.3dB/m (1.37mm Ø)
- Ultra-fine PTFE Cable
- Extraction tool for easy removal

Continues on next page



**Typical applications:** Mobile phones, Wireless LAN, Mini-PCI, Bluetooth, PDA, GPS, electronic measuring instruments, etc.

| Specification:-           |                | Materials:-    |                               |
|---------------------------|----------------|----------------|-------------------------------|
| Impedance                 | 50Ω            | Shell          | Phosphor Bronze silver plated |
| VSWR                      | 1.3 max        | Male Contact   | Brass Tin plated              |
| Voltage Rating            | 60V AC (rms)   | Female Contact | Phosphor Bronze gold plated   |
| Contact Resistance Outer  | 10 mΩ max      | Insulator      | Receptacle LCP UL94V-0        |
| Contact Resistance Centre | 20 mΩ max      | Insulator      | Plug PBT UL94V-0              |
| Frequency Range           | DC - 6GHz      |                |                               |
| Temperature Range         | -40°C to +90°C |                |                               |

| Cable Length                        | Mfrs. List No.          | Order Code | 1+    | 10+   | 25+  |
|-------------------------------------|-------------------------|------------|-------|-------|------|
| <b>Cable Assembly Plugs, 0.81mm</b> |                         |            |       |       |      |
| 50mm                                | U.FL-2LP-04K1T-A-(50)   | 168-8065   | 2.20  | 1.75  | 1.54 |
| 100mm                               | U.FL-2LP-04K1T-A-(100)  | 168-8067   | 2.28  | 1.81  | 1.60 |
| 150mm                               | U.FL-2LP-04K1T-A-(150)  | 168-8068   | 2.47  | 1.96  | 1.73 |
| 200mm                               | U.FL-2LP-04K1T-A-(200)  | 168-8069   | 2.46  | 1.95  | 1.72 |
| 300mm                               | U.FL-2LP-04K1T-A-(300)  | 168-8070   | 2.89  | 2.29  | 2.03 |
| <b>Cable Assembly Plugs, 1.37mm</b> |                         |            |       |       |      |
| 50mm                                | U.FL-2LP-088K1T-A-(50)  | 168-8071   | 2.22  | 1.76  | 1.56 |
| 100mm                               | U.FL-2LP-088K1T-A-(100) | 168-8072   | 2.32  | 1.84  | 1.62 |
| 150mm                               | U.FL-2LP-088K1T-A-(150) | 168-8073   | 2.50  | 1.98  | 1.75 |
| 200mm                               | U.FL-2LP-088K1T-A-(200) | 168-8074   | 2.51  | 1.99  | 1.76 |
| 300mm                               | U.FL-2LP-088K1T-A-(300) | 168-8075   | 2.74  | 2.17  | 1.92 |
| <b>Receptacle, SMT</b>              |                         |            |       |       |      |
|                                     | U.FL-R-SMT-1(10)        | 168-8077   | 0.32  | 0.29  | 0.26 |
| <b>Extraction Tool</b>              |                         |            |       |       |      |
|                                     | Mfrs. List No.          | Order Code | 1+    | 3+    |      |
|                                     | U.FL-LP-N2              | 168-8076   | 28.88 | 21.63 |      |

## Datamate Mix-Tek 2mm High Reliability Connectors

### Features and Specifications

- Suited for use in environments where high vibration, shock and extreme temperatures are a consideration
- Professional Connector System at commercial prices
- Proven history in Mil/Aero applications
- Ideal for COTS applications
- Power and signal contacts in-one - numerous options
- 3A, four finger BeCu contact, screw machined shell (pictured)
- RoHS Compliant per Harwin documentation

|                         |                                     |                        |                                 |
|-------------------------|-------------------------------------|------------------------|---------------------------------|
| <b>Specifications:-</b> |                                     | <b>Signal Contacts</b> |                                 |
| Power Contacts          | Up to 20A                           | 3A                     |                                 |
| Working Voltage         | 240V dc/ac RMS                      | Contact Resistance     | 20 mohm max.                    |
| PC Tail                 | Glass-filled thermoplastic, UL94V-0 | Insulation Resistance  | 100 Mohm min @ 500Vdc           |
| Crimp Mouldings         | Glass-filled thermoplastic, UL94V-0 | Pitch                  | 2mm                             |
| Durability              | 500 operations                      | Operating Temp.        | -55° to 125° / 56 days @ 95% RH |

## Mix-Tek Female Crimp / Male Vertical PC Tail Connectors



| No. of Contacts (Signal + Power)               | Mfrs. List No.              | Order Code | 1+    | 10+   | 25+   |
|------------------------------------------------|-----------------------------|------------|-------|-------|-------|
| <b>Female, Crimp, 24-28AWG</b>                 |                             |            |       |       |       |
| 0+2                                            | M80-4000000F1-02-325-00-000 | 170-1552   | 15.51 | 14.72 | 13.93 |
| 0+4                                            | M80-4000000F1-04-325-00-000 | 170-1553   | 24.24 | 23.00 | 21.77 |
| 2+2                                            | M80-4C10205F1-02-325-00-000 | 170-1554   | 17.16 | 16.29 | 15.42 |
| 2+4                                            | M80-4C10205F1-04-325-00-000 | 170-1555   | 25.25 | 23.96 | 22.68 |
| 4+2                                            | M80-4C10405F1-02-325-00-000 | 170-1556   | 18.05 | 17.13 | 16.21 |
| 4+4                                            | M80-4C10405F1-04-325-00-000 | 170-1557   | 26.30 | 24.96 | 23.62 |
| 6+2                                            | M80-4C10605F1-02-325-00-000 | 170-1558   | 19.10 | 18.13 | 17.15 |
| 6+4                                            | M80-4C10605F1-04-325-00-000 | 170-1559   | 27.21 | 25.83 | 24.44 |
| 8+2                                            | M80-4C10805F1-02-325-00-000 | 170-1560   | 20.05 | 19.03 | 18.00 |
| 8+4                                            | M80-4C10805F1-04-325-00-000 | 170-1561   | 28.18 | 26.74 | 25.31 |
| 12+2                                           | M80-4C11205F1-02-325-00-000 | 170-1562   | 21.99 | 20.87 | 19.75 |
| 12+4                                           | M80-4C11205F1-04-325-00-000 | 170-1564   | 30.13 | 28.59 | 27.06 |
| <b>Female, Crimp, 22AWG</b>                    |                             |            |       |       |       |
| 6+4                                            | M80-4D10642F1-00-000-04-327 | 155-8151   | 17.63 | 15.99 | 14.32 |
| 0+6                                            | M80-4000000F1-06-327-00-000 | 155-8152   | 17.33 | 15.74 | 14.09 |
| <b>Male, Vertical PC Tail, with Jackscrews</b> |                             |            |       |       |       |
| 0+2                                            | M80-5000000M1-02-331-00-000 | 170-1565   | 13.50 | 12.81 | 12.13 |
| 0+4                                            | M80-5000000M1-04-331-00-000 | 170-1566   | 22.81 | 21.65 | 20.49 |
| 2+2                                            | M80-5T10205M1-02-331-00-000 | 170-1567   | 14.11 | 13.39 | 12.67 |
| 2+4                                            | M80-5T10205M1-04-331-00-000 | 170-1568   | 23.84 | 22.63 | 21.41 |
| 4+2                                            | M80-5T10405M1-02-331-00-000 | 170-1569   | 14.71 | 13.96 | 13.21 |
| 4+4                                            | M80-5T10405M1-04-331-00-000 | 170-1570   | 29.29 | 27.80 | 26.31 |
| 6+2                                            | M80-5T10605M1-02-331-00-000 | 170-1571   | 15.35 | 14.57 | 13.79 |
| 6+4                                            | M80-5T10605M1-04-331-00-000 | 170-1572   | 25.94 | 24.62 | 23.29 |
| 8+2                                            | M80-5T10805M1-02-331-00-000 | 170-1573   | 15.97 | 15.16 | 14.34 |

|                                                            |                             |          |       |       |       |
|------------------------------------------------------------|-----------------------------|----------|-------|-------|-------|
| <b>Male, Vertical PC Tail, with Jackscrews</b>             |                             |          |       |       |       |
| 8+4                                                        | M80-5T10805M1-04-331-00-000 | 170-1574 | 26.98 | 25.61 | 24.24 |
| 12+2                                                       | M80-5T11205M1-02-331-00-000 | 170-1576 | 17.33 | 16.45 | 15.56 |
| 12+4                                                       | M80-5T11205M1-04-331-00-000 | 170-1577 | 29.29 | 27.80 | 26.31 |
| <b>Male, Vertical PC Tail, with Board-Mount Jackscrews</b> |                             |          |       |       |       |
| 6+4                                                        | M80-5T10642M2-00-000-04-331 | 155-8149 | 19.40 | 17.58 | 15.77 |
| 0+6                                                        | M80-5000000M3-06-332-00-000 | 155-8150 | 15.40 | 13.97 | 12.51 |

## CONAN® High Density, Low Profile 1.00mm Headers



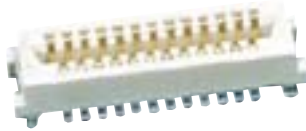
FCI's Conan® 1.0mm mezzanine connector system provides a mechanically secure, high density electrical interface between parallel PCBs. The mechanical features and palladium / nickel / gold plated electrical contacts qualify it for high reliability use in portable and mobile electronic equipment. Conan connectors also work well in medical and instrumentation environments, communications and networking systems, and in office equipment.

Features and Benefits:-

- 'Snap' engagement contacts assure secure mating with an audible 'click'
- Blade-on-beam contact design allows "peeling" disengagement and prevents contact stubbing
- Connector housings feature "lead-in" angles to assist in mating
- Surface mounted metal hold-downs reinforce connector retention to the PCB
- Mating polarization prevents backward connections
- PCB polarization prevents errors during PCB assembly
- Header height options support a range of PCB stack heights: 4.15mm to 7mm
- 9 part sizes: 9 to 69 contacts
- Conan headers mate with Conan receptacles (91930-211XLF)
- Lead-free RoHS compatible products satisfy environmental regulations

| Housing Material | Contact Material | Contact Plating       | No. of Mating Cycles | Operating Temperature |      |      |      |
|------------------|------------------|-----------------------|----------------------|-----------------------|------|------|------|
| LCP              | Copper Alloy     | 0.38 μm (15 μin.) GXT | 30                   | -55°C to 130°C        |      |      |      |
| Mfrs. List No.   | Stacking Height  | No. of Ways           | Order Code           | 1+                    | 10+  | 50+  | 100+ |
| 91910-21109LF    | 0.86mm           | 9                     | 163-0716             | 1.83                  | 1.73 | 1.65 | 1.53 |
| 91910-21111LF    | 0.86mm           | 11                    | 163-0717             | 1.65                  | 1.56 | 1.49 | 1.40 |
| 91910-21115LF    | 0.86mm           | 15                    | 163-0718             | 2.30                  | 2.18 | 2.09 | 1.91 |
| 91910-21121LF    | 0.86mm           | 21                    | 163-0719             | 2.18                  | 2.05 | 1.96 | 1.83 |
| 91910-21125LF    | 0.86mm           | 25                    | 163-0720             | 2.38                  | 2.27 | 2.14 | 1.98 |
| 91910-21131LF    | 0.86mm           | 31                    | 163-0721             | 2.32                  | 2.21 | 2.09 | 1.94 |
| 91910-21141LF    | 0.86mm           | 41                    | 163-0722             | 3.63                  | 3.45 | 3.28 | 3.03 |
| 91910-21151LF    | 0.86mm           | 51                    | 163-0723             | 4.49                  | 4.26 | 4.03 | 3.75 |
| 91910-21169LF    | 0.86mm           | 69                    | 163-0724             | 4.90                  | 4.65 | 4.39 | 4.07 |
| 91910-21209LF    | 1.23mm           | 9                     | 163-0735             | 1.68                  | 1.58 | 1.51 | 1.41 |
| 91910-21211LF    | 1.23mm           | 11                    | 163-0736             | 1.73                  | 1.64 | 1.56 | 1.45 |
| 91910-21215LF    | 1.23mm           | 15                    | 163-0737             | 2.35                  | 2.24 | 2.11 | 1.97 |
| 91910-21221LF    | 1.23mm           | 21                    | 163-0739             | 2.77                  | 2.63 | 2.50 | 2.34 |
| 91910-21225LF    | 1.23mm           | 25                    | 163-0741             | 3.34                  | 3.18 | 3.02 | 2.78 |
| 91910-21231LF    | 1.23mm           | 31                    | 163-0742             | 2.41                  | 2.28 | 2.15 | 2.01 |
| 91910-21241LF    | 1.23mm           | 41                    | 163-0743             | 3.76                  | 3.54 | 3.37 | 3.14 |
| 91910-21251LF    | 1.23mm           | 51                    | 163-0744             | 4.61                  | 4.39 | 4.15 | 3.87 |
| 91910-21269LF    | 1.23mm           | 69                    | 163-0745             | 5.76                  | 5.44 | 5.15 | 4.81 |
| 91910-21309LF    | 1.73mm           | 9                     | 163-0746             | 1.32                  | 1.26 | 1.20 | 1.11 |
| 91910-21311LF    | 1.73mm           | 11                    | 163-0747             | 0.78                  | 0.77 | 0.75 | 0.74 |
| 91910-21315LF    | 1.73mm           | 15                    | 163-0748             | 2.26                  | 2.14 | 2.04 | 1.89 |
| 91910-21321LF    | 1.73mm           | 21                    | 163-0749             | 2.52                  | 2.39 | 2.28 | 2.10 |
| 91910-21325LF    | 1.73mm           | 25                    | 163-0750             | 3.04                  | 2.86 | 2.73 | 2.52 |
| 91910-21331LF    | 1.73mm           | 31                    | 163-0752             | 2.81                  | 2.67 | 2.53 | 2.35 |
| 91910-21341LF    | 1.73mm           | 41                    | 163-0753             | 3.44                  | 3.25 | 3.09 | 2.85 |
| 91910-21351LF    | 1.73mm           | 51                    | 163-0754             | 4.65                  | 4.41 | 4.16 | 3.88 |
| 91910-21369LF    | 1.73mm           | 69                    | 163-0755             | 4.85                  | 4.58 | 4.33 | 4.03 |
| 91910-21409LF    | 2.72mm           | 9                     | 163-0756             | 1.51                  | 1.42 | 1.35 | 1.26 |
| 91910-21411LF    | 2.72mm           | 11                    | 163-0757             | 2.00                  | 1.90 | 1.82 | 1.66 |
| 91910-21415LF    | 2.72mm           | 15                    | 163-0758             | 1.72                  | 1.64 | 1.54 | 1.42 |
| 91910-21421LF    | 2.72mm           | 21                    | 163-0759             | 2.11                  | 1.99 | 1.89 | 1.75 |
| 91910-21425LF    | 2.72mm           | 25                    | 163-0760             | 2.07                  | 1.97 | 1.85 | 1.74 |
| 91910-21431LF    | 2.72mm           | 31                    | 163-0761             | 3.86                  | 3.64 | 3.45 | 3.20 |
| 91910-21441LF    | 2.72mm           | 41                    | 163-0762             | 4.61                  | 4.35 | 4.12 | 3.83 |
| 91910-21451LF    | 2.72mm           | 51                    | 163-0764             | 4.68                  | 4.40 | 4.20 | 3.89 |
| 91910-21469LF    | 2.72mm           | 69                    | 163-0765             | 5.37                  | 5.08 | 4.83 | 4.49 |
| 91910-21509LF    | 3.721mm          | 9                     | 163-0725             | 1.98                  | 1.88 | 1.76 | 1.65 |
| 91910-21511LF    | 3.721mm          | 11                    | 163-0727             | 1.57                  | 1.47 | 1.40 | 1.31 |
| 91910-21515LF    | 3.721mm          | 15                    | 163-0728             | 2.14                  | 2.03 | 1.90 | 1.78 |
| 91910-21521LF    | 3.721mm          | 21                    | 163-0729             | 2.49                  | 2.36 | 2.25 | 2.08 |
| 91910-21525LF    | 3.721mm          | 25                    | 163-0730             | 3.68                  | 3.47 | 3.29 | 3.08 |
| 91910-21531LF    | 3.721mm          | 31                    | 163-0731             | 3.24                  | 3.09 | 2.92 | 2.72 |
| 91910-21541LF    | 3.721mm          | 41                    | 163-0732             | 3.57                  | 3.38 | 3.20 | 2.97 |
| 91910-21551LF    | 3.721mm          | 51                    | 163-0733             | 5.64                  | 5.37 | 5.06 | 4.73 |
| 91910-21569LF    | 3.721mm          | 69                    | 163-0734             | 5.39                  | 5.12 | 4.85 | 4.51 |

## CONAN® High Density, Low Profile 1.00mm Receptacles



- 'Snap' engagement contacts assure secure mating with an audible 'click'
- The receptacles have a stacking height of 3.28mm supporting a range of PCB stack heights: 4.15mm to 7mm
- 9 part sizes: 9 to 69 contacts
- Conan® receptacles mate with Conan® headers (91910-21XXLF)
- Lead-free RoHS compatible products satisfy environmental regulations

| Housing Material | Contact Material | Contact Plating       | No. of Mating Cycles | Operating Temperature |      |      |      |
|------------------|------------------|-----------------------|----------------------|-----------------------|------|------|------|
| LCP              | Copper Alloy     | 0.38 μm (15 μin.) GXT | 30                   | -55°C to 130°C        |      |      |      |
| Mfrs. List No.   | Stacking Height  | No. of Ways           | Price Each           |                       |      |      |      |
|                  |                  |                       | Order Code           | 1+                    | 10+  | 50+  | 100+ |
| 91930-21109LF    | 3.28mm           | 9                     | 163-0766             | 2.01                  | 1.86 | 1.77 | 1.65 |
| 91930-21111LF    | 3.28mm           | 11                    | 163-0767             | 2.40                  | 2.28 | 2.17 | 1.99 |
| 91930-21115LF    | 3.28mm           | 15                    | 163-0768             | 2.79                  | 2.66 | 2.51 | 2.34 |
| 91930-21121LF    | 3.28mm           | 21                    | 163-0769             | 2.60                  | 2.45 | 2.30 | 2.15 |
| 91930-21125LF    | 3.28mm           | 25                    | 163-0770             | 3.48                  | 3.30 | 3.12 | 2.89 |
| 91930-21131LF    | 3.28mm           | 31                    | 163-0771             | 3.46                  | 3.27 | 3.10 | 2.87 |
| 91930-21141LF    | 3.28mm           | 41                    | 163-0772             | 4.08                  | 3.87 | 3.65 | 3.40 |
| 91930-21151LF    | 3.28mm           | 51                    | 163-0773             | 4.42                  | 4.17 | 3.96 | 3.66 |
| 91930-21169LF    | 3.28mm           | 69                    | 163-0774             | 6.62                  | 6.28 | 5.94 | 5.53 |

## 0.8mm Board-to-Board Headers 2011 Series



- Double row
- Profile Height - 4.15mm / 5.15mm / 5.65mm
- Pitch - 0.8mm
- Pitch Row - 0.8mm
- Flammability Rating - UL94V-0
- Operating Temperature - -40°C to 105°C
- Mates with 2010 series

|                                |                             |                                     |                         |                                                     |
|--------------------------------|-----------------------------|-------------------------------------|-------------------------|-----------------------------------------------------|
| Current Rating<br>0.5A         | Voltage Rating<br>50V AC/DC | Contact Material<br>Phosphor Bronze | Contact Plating<br>Gold | Insulator Material<br>High Temp. Plastic (Nylon 46) |
| Mated Heights with 2010 series |                             |                                     |                         |                                                     |
| 2010 Profile Height            | 2011 Profile Height         |                                     |                         |                                                     |
|                                | 4.15mm                      | 5.15mm                              | 5.65mm                  |                                                     |
| 3.55mm                         | 5.0mm                       | 6.0mm                               | 6.5mm                   |                                                     |
| 4.05mm                         | 5.5mm                       | 6.5mm                               | 7.0mm                   |                                                     |

| No. of Ways                    | Order Code      | 5+   | 25+  | 50+  | 100+ | 250+ |
|--------------------------------|-----------------|------|------|------|------|------|
| <b>Profile Height - 4.15mm</b> |                 |      |      |      |      |      |
| 40                             | <b>166-1185</b> | 1.08 | 0.99 | 0.83 | 0.77 | 0.72 |
| 60                             | <b>166-1186</b> | 1.48 | 1.36 | 1.16 | 1.08 | 1.01 |
| 80                             | <b>166-1187</b> | 2.42 | 2.25 | 1.87 | 1.77 | 1.68 |
| 100                            | <b>166-1189</b> | 2.82 | 2.62 | 2.21 | 2.11 | 2.01 |
| <b>Profile Height - 5.15mm</b> |                 |      |      |      |      |      |
| 40                             | <b>166-1191</b> | 1.08 | 0.99 | 0.83 | 0.77 | 0.72 |
| 60                             | <b>166-1192</b> | 1.48 | 1.36 | 1.16 | 1.08 | 1.01 |
| 80                             | <b>166-1193</b> | 2.42 | 2.25 | 1.87 | 1.77 | 1.68 |
| 100                            | <b>166-1194</b> | 2.82 | 2.62 | 2.21 | 2.11 | 2.01 |
| <b>Profile Height - 4.2mm</b>  |                 |      |      |      |      |      |
| 40                             | <b>166-1195</b> | 1.08 | 0.99 | 0.83 | 0.77 | 0.72 |
| 60                             | <b>166-1196</b> | 1.48 | 1.36 | 1.16 | 1.08 | 1.01 |
| 80                             | <b>166-1197</b> | 2.42 | 2.25 | 1.87 | 1.77 | 1.68 |
| 100                            | <b>166-1198</b> | 2.82 | 2.62 | 2.21 | 2.11 | 2.01 |

## 0.8mm Board-to-Board Sockets 2010 Series



- Double row
- Profile Height - 3.55mm / 4.05mm
- Pitch - 0.8mm
- Pitch Row - 0.8mm
- Flammability Rating - UL94V-0
- Operating Temperature - -40°C to 105°C
- Mates with 2011 series



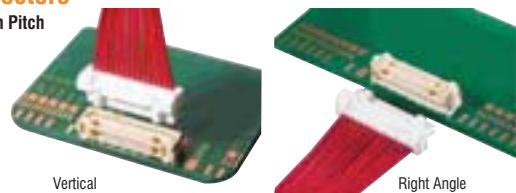
| Current Rating                 | Voltage Rating | Contact Material    | Contact Plating | Insulator Material            |
|--------------------------------|----------------|---------------------|-----------------|-------------------------------|
| 0.5A                           | 50V AC/DC      | Phosphor Bronze     | Gold            | High Temp. Plastic (Nylon 46) |
| Mated Heights with 2011 series |                |                     |                 |                               |
| 2010 Profile Height            |                | 2011 Profile Height |                 |                               |
|                                |                | 4.15mm              | 5.15mm          | 5.65mm                        |
| 3.55mm                         |                | 5.0mm               | 6.0mm           | 6.5mm                         |
| 4.05mm                         |                | 5.5mm               | 6.5mm           | 7.0mm                         |

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| No. of Ways                    | Order Code      | 5+   | 25+  | 50+  | 100+ | 250+ |
|--------------------------------|-----------------|------|------|------|------|------|
| <b>Profile Height - 3.55mm</b> |                 |      |      |      |      |      |
| 40                             | <b>166-1199</b> | 1.08 | 0.99 | 0.83 | 0.77 | 0.72 |
| 60                             | <b>166-1200</b> | 1.48 | 1.36 | 1.16 | 1.08 | 1.01 |
| 80                             | <b>166-1201</b> | 2.42 | 2.25 | 1.87 | 1.77 | 1.68 |
| 100                            | <b>166-1202</b> | 2.82 | 2.62 | 2.21 | 2.11 | 2.01 |
| <b>Profile Height - 4.05mm</b> |                 |      |      |      |      |      |
| 40                             | <b>166-1203</b> | 1.08 | 0.99 | 0.83 | 0.77 | 0.72 |
| 60                             | <b>166-1204</b> | 1.48 | 1.36 | 1.16 | 1.08 | 1.01 |
| 80                             | <b>166-1205</b> | 2.42 | 2.25 | 1.87 | 1.77 | 1.68 |
| 100                            | <b>166-1207</b> | 2.82 | 2.62 | 2.21 | 2.11 | 2.01 |

## CLIK-Mate™ SMT Wire-to-Board Connectors

1.25mm Pitch



Molex's new 1.25mm pitch SMT CLIK-Mate series has a superior lock design that offers easier use and better mating retention compared to competitive versions. This series also provides about 60% space savings compared to similar dual-lock 2.00mm pitch versions. The CLIK-Mate 1.25mm series was designed for applications such as LCD TVs that require higher pin count connectors to carry more signal lines in less space. The connectors in this series have a unique tuning fork terminal concept that provides low insertion force and secure mating contact.

Benefits of the 1.25 pitch SMT CLIK-Mate series:

- Audible click, low insertion force and secure mating
- Secure contact and avoids terminal stubbing
- Easy and quick mating operators
- Housing wall support and secure PCB retention
- Reinforced metal solder tabs
- No costly capton tape needed

| Housing Material           | Contact Material | Contact Plating | Voltage |       | Current Rating | Operating Temperature |       |     |
|----------------------------|------------------|-----------------|---------|-------|----------------|-----------------------|-------|-----|
| Polybutylene Terephthalate | Copper Alloy     | Tin             | 50V     |       | 1A             | -25°C to 85°C         |       |     |
| Mfrs. List No.             | No. of Ways      | Order Code      | 10+     | 100+  | Price Each     | 250+                  | 500+  | 1K+ |
| Crimp Housings             |                  |                 |         |       |                |                       |       |     |
| 502380-0200                | 2                | 162-0773        | 0.069   | 0.056 | 0.047          | 0.042                 | 0.037 |     |
| 502380-0300                | 3                | 162-0774        | 0.071   | 0.058 | 0.049          | 0.043                 | 0.038 |     |
| 502380-0400                | 4                | 162-0775        | 0.072   | 0.059 | 0.049          | 0.044                 | 0.039 |     |
| 502380-0500                | 5                | 162-0776        | 0.077   | 0.063 | 0.053          | 0.047                 | 0.042 |     |
| 502380-0600                | 6                | 162-0777        | 0.079   | 0.065 | 0.054          | 0.048                 | 0.042 |     |
| 502380-0800                | 8                | 162-0778        | 0.083   | 0.068 | 0.057          | 0.051                 | 0.045 |     |
| 502380-1000                | 10               | 162-0779        | 0.122   | 0.100 | 0.084          | 0.074                 | 0.065 |     |
| 502380-1200                | 12               | 162-0780        | 0.123   | 0.101 | 0.084          | 0.075                 | 0.066 |     |
| 502380-1400                | 14               | 162-0781        | 0.124   | 0.102 | 0.085          | 0.075                 | 0.067 |     |
| Vertical Receptacles       |                  |                 |         |       |                |                       |       |     |
| 502382-0270                | 2                | 162-0783        | 0.290   | 0.240 | 0.200          | 0.178                 | 0.157 |     |
| 502382-0370                | 3                | 162-0785        | 0.310   | 0.250 | 0.210          | 0.186                 | 0.165 |     |
| 502382-0470                | 4                | 162-0786        | 0.330   | 0.270 | 0.230          | 0.200                 | 0.178 |     |
| 502382-0570                | 5                | 162-0787        | 0.340   | 0.280 | 0.240          | 0.210                 | 0.185 |     |
| 502382-0670                | 6                | 162-0788        | 0.360   | 0.290 | 0.250          | 0.220                 | 0.192 |     |
| 502382-0870                | 8                | 162-0789        | 0.380   | 0.320 | 0.260          | 0.230                 | 0.210 |     |
| 502382-1070                | 10               | 162-0790        | 0.370   | 0.300 | 0.260          | 0.230                 | 0.199 |     |
| 502382-1270                | 12               | 162-0791        | 0.440   | 0.360 | 0.300          | 0.270                 | 0.240 |     |
| 502382-1470                | 14               | 162-0792        | 0.440   | 0.360 | 0.300          | 0.270                 | 0.230 |     |
| R/A Receptacles            |                  |                 |         |       |                |                       |       |     |
| 502386-0270                | 2                | 162-0793        | 0.300   | 0.240 | 0.200          | 0.180                 | 0.159 |     |
| 502386-0370                | 3                | 162-0795        | 0.300   | 0.250 | 0.210          | 0.185                 | 0.163 |     |
| 502386-0470                | 4                | 162-0796        | 0.340   | 0.280 | 0.230          | 0.210                 | 0.183 |     |
| 502386-0570                | 5                | 162-0797        | 0.340   | 0.280 | 0.230          | 0.210                 | 0.183 |     |
| 502386-0670                | 6                | 162-0798        | 0.350   | 0.290 | 0.240          | 0.220                 | 0.190 |     |
| 502386-0870                | 8                | 162-0799        | 0.340   | 0.280 | 0.230          | 0.210                 | 0.182 |     |
| 502386-1070                | 10               | 162-0801        | 0.380   | 0.310 | 0.260          | 0.230                 | 0.210 |     |
| 502386-1270                | 12               | 162-0802        | 0.410   | 0.330 | 0.280          | 0.250                 | 0.220 |     |
| 502386-1470                | 14               | 162-0803        | 0.420   | 0.340 | 0.290          | 0.260                 | 0.230 |     |
| Pre-Crimped Leads          |                  |                 |         |       |                |                       |       |     |
| 85409-0051                 | 300mm, 1.25mm    | 162-0804        | 0.700   | 0.600 | 0.550          | 0.500                 | 0.450 |     |
| 85409-0052                 | 150mm, 1.25mm    | 162-0805        | 0.380   | 0.320 | 0.300          | 0.270                 | 0.240 |     |

Over half a million products available online



## Super Low Profile Crimping Connectors

### DF14 Series



Crimp Socket Housing



Header, R/A, SMT



- Low profile - 2.5mm board mounting height
- Header has a vacuum mount face that enables vacuum absorption and automatic mounting
- Header has a box structure to prevent mis-insertion
- Header has a wall on the PCB side and does not have any trouble resulting from the friction of the socket with the PCB.
- A metal hold down is attached to prevent the solder peel
- High heat resistant nylon insulation material allows VPS, IR, or hot air reflow soldering
- 1.25mm pitch

#### Specifications:-

|                       |               |                    |               |
|-----------------------|---------------|--------------------|---------------|
| Current Rating        | 1A            | Voltage Rating     | 150VAC        |
| Insulation Resistance | 500Mohm       | Contact Resistance | 30mohm        |
| Contact Material      | Brass         | Contact Plating    | Tinned Copper |
| Operating Temp.       | -35°C to 85°C | Insulator Material | Polyamide     |

| No. of Ways                                                          | Mfrs. List No.     | Order Code | 1+    | 10+   | 100+  |
|----------------------------------------------------------------------|--------------------|------------|-------|-------|-------|
| <b>Crimp Socket Housing</b>                                          |                    |            |       |       |       |
| 2                                                                    | DF14-2S-1.25C      | 171-9124   | 0.165 | 0.143 | 0.105 |
| 3                                                                    | DF14-3S-1.25C      | 171-9125   | 0.165 | 0.143 | 0.105 |
| 4                                                                    | DF14-4S-1.25C      | 171-9126   | 0.165 | 0.143 | 0.105 |
| 5                                                                    | DF14-5S-1.25C      | 171-9127   | 0.165 | 0.143 | 0.105 |
| 6                                                                    | DF14-6S-1.25C      | 171-9128   | 0.189 | 0.159 | 0.121 |
| 7                                                                    | DF14-7S-1.25C      | 171-9131   | 0.189 | 0.159 | 0.121 |
| 8                                                                    | DF14-8S-1.25C      | 171-9132   | 0.189 | 0.159 | 0.121 |
| 30                                                                   | DF14-30S-1.25C     | 171-9133   | 0.310 | 0.260 | 0.200 |
| 10                                                                   | DF14-10S-1.25C     | 171-9134   | 0.210 | 0.182 | 0.136 |
| 20                                                                   | DF14-20S-1.25C     | 171-9135   | 0.240 | 0.198 | 0.152 |
| <b>Pin Header, Locating Boss, Right Angle, SMT</b>                   |                    |            |       |       |       |
| 2                                                                    | DF14-2P-1.25H(25)  | 171-9137   | 0.730 | 0.660 | 0.500 |
| 3                                                                    | DF14-3P-1.25H(25)  | 171-9138   | 0.800 | 0.710 | 0.540 |
| 4                                                                    | DF14-4P-1.25H(25)  | 171-9139   | 0.850 | 0.760 | 0.580 |
| 5                                                                    | DF14-5P-1.25H(25)  | 171-9140   | 0.900 | 0.800 | 0.610 |
| 6                                                                    | DF14-6P-1.25H(25)  | 171-9141   | 0.940 | 0.840 | 0.640 |
| 7                                                                    | DF14-7P-1.25H(25)  | 171-9143   | 0.970 | 0.870 | 0.670 |
| 8                                                                    | DF14-8P-1.25H(25)  | 171-9144   | 1.040 | 0.920 | 0.700 |
| 10                                                                   | DF14-10P-1.25H(25) | 171-9145   | 1.130 | 1.010 | 0.770 |
| 20                                                                   | DF14-20P-1.25H(25) | 171-9146   | 1.720 | 1.540 | 1.180 |
| 30                                                                   | DF14-30P-1.25H(25) | 171-9147   | 2.150 | 1.920 | 1.460 |
| <b>DF14 Series Contact</b>                                           |                    |            |       |       |       |
| AWG                                                                  | Mfrs. List No.     | Order Code | 10+   | 100+  | 1K+   |
| 26-28                                                                | DF14-2628SCF       | 171-9136   | 0.058 | 0.039 | 0.020 |
| <b>Cable Assemblies, DF14-2628SCF - DF14-2628SCF Socket Contacts</b> |                    |            |       |       |       |
| Length                                                               | Mfrs. List No.     | Order Code | 50+   | 100+  | 250+  |
| 150mm                                                                | CASS-0897          | 176-4393   | 0.200 | 0.180 | 0.170 |
| 300mm                                                                | CASS-0898          | 176-4394   | 0.230 | 0.210 | 0.200 |
| <b>Crimp Tool</b>                                                    |                    |            |       |       |       |
| Mfrs. List No.                                                       | Order Code         | 1+         | 10+   | 100+  | 1K+   |
| DF14-2628/CR-HT                                                      | 171-9148           | 1,348.650  |       |       |       |

## LSF-SMT 90° / 135° PCB

### Terminal Blocks

#### 5.0mm / 5.08mm Pitch



- LSF-SMT terminals use the new Weidmüller Push-In connection method
- Push-In connection enables high speed wiring and higher conductor pull out forces than with tension clamp connection
- Terminals are designed to withstand 2 passes at a maximum temperature of 290°C
- Suitable for Infrared, Convection and Vapour Phase heating methods

- Terminals accept stranded, solid and flexible conductors

#### Specifications:-

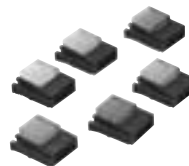
|                    |              |                     |                                          |
|--------------------|--------------|---------------------|------------------------------------------|
| Contact Material   | Copper Alloy | Contact Plating     | Tin                                      |
| Insulator Material | LCP          | Flammability Rating | UL94V-0                                  |
| Colour             | Black        | Pin Length          | 1.5mm                                    |
| Current Rating     | 17.5A        | Wire Size           | 0.25mm <sup>2</sup> - 1.5mm <sup>2</sup> |
| Voltage Rating     | 500V         |                     | 16-24AWG                                 |

| No. of Ways                   | Mfrs. List No. | Order Code | 1+   | 10+  | 50+  | 100+ | 250+ |
|-------------------------------|----------------|------------|------|------|------|------|------|
| <b>5.0mm Pitch, 90° Entry</b> |                |            |      |      |      |      |      |
| 2                             | 1869600000     | 171-5786   | 0.44 | 0.39 | 0.35 | 0.32 | 0.29 |
| 3                             | 1869610000     | 171-5787   | 0.67 | 0.59 | 0.54 | 0.48 | 0.44 |
| 4                             | 1869620000     | 171-5788   | 0.88 | 0.78 | 0.70 | 0.64 | 0.59 |
| 5                             | 1869630000     | 171-5789   | 1.10 | 0.98 | 0.89 | 0.80 | 0.74 |
| 6                             | 1869640000     | 171-5790   | 1.33 | 1.18 | 1.06 | 0.97 | 0.89 |
| 7                             | 1869650000     | 171-5791   | 1.55 | 1.37 | 1.24 | 1.12 | 1.03 |
| 8                             | 1869660000     | 171-5792   | 1.77 | 1.58 | 1.42 | 1.29 | 1.18 |

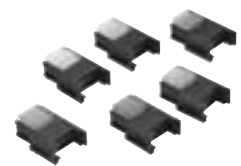
| No. of Ways                     | Mfrs. List No. | Order Code | 1+   | 10+  | 50+  | 100+ | 250+ |
|---------------------------------|----------------|------------|------|------|------|------|------|
| <b>5.0mm Pitch, 135° Entry</b>  |                |            |      |      |      |      |      |
| 2                               | 1884530000     | 171-5794   | 0.44 | 0.39 | 0.35 | 0.32 | 0.29 |
| 3                               | 1884540000     | 171-5795   | 0.67 | 0.59 | 0.54 | 0.48 | 0.44 |
| 4                               | 1884550000     | 171-5796   | 0.88 | 0.86 | 0.84 | 0.82 | 0.80 |
| 5                               | 1884560000     | 171-5797   | 1.10 | 0.98 | 0.89 | 0.80 | 0.74 |
| 6                               | 1884570000     | 171-5798   | 1.33 | 1.18 | 1.06 | 0.97 | 0.89 |
| 7                               | 1884580000     | 171-5799   | 1.55 | 1.37 | 1.24 | 1.12 | 1.03 |
| 8                               | 1884590000     | 171-5801   | 1.77 | 1.58 | 1.42 | 1.29 | 1.18 |
| <b>5.08mm Pitch, 90° Entry</b>  |                |            |      |      |      |      |      |
| 2                               | 1869670000     | 171-5802   | 0.44 | 0.39 | 0.35 | 0.32 | 0.29 |
| 3                               | 1869680000     | 171-5803   | 0.67 | 0.59 | 0.54 | 0.48 | 0.44 |
| 4                               | 1869690000     | 171-5804   | 0.88 | 0.78 | 0.70 | 0.64 | 0.59 |
| 5                               | 1869700000     | 171-5805   | 1.10 | 0.98 | 0.89 | 0.80 | 0.74 |
| 6                               | 1869710000     | 171-5806   | 1.33 | 1.18 | 1.06 | 0.97 | 0.89 |
| 7                               | 1869720000     | 171-5807   | 1.55 | 1.37 | 1.24 | 1.12 | 1.03 |
| 8                               | 1869730000     | 171-5808   | 1.77 | 1.58 | 1.42 | 1.29 | 1.18 |
| <b>5.08mm Pitch, 135° Entry</b> |                |            |      |      |      |      |      |
| 2                               | 1884730000     | 171-5809   | 0.44 | 0.39 | 0.35 | 0.32 | 0.29 |
| 3                               | 1884740000     | 171-5810   | 0.67 | 0.59 | 0.54 | 0.48 | 0.44 |
| 4                               | 1884750000     | 171-5812   | 0.88 | 0.78 | 0.70 | 0.64 | 0.59 |
| 5                               | 1884760000     | 171-5813   | 1.10 | 0.98 | 0.89 | 0.80 | 0.74 |
| 6                               | 1884770000     | 171-5814   | 1.33 | 1.18 | 1.06 | 0.97 | 0.89 |
| 7                               | 1884780000     | 171-5815   | 1.55 | 1.37 | 1.24 | 1.12 | 1.03 |
| 8                               | 1884790000     | 171-5816   | 1.77 | 1.58 | 1.42 | 1.29 | 1.18 |

## Mini-Clamp II Plugs & Sockets

### 371 & 373 series



Plug



Socket

- Designed to accommodate typical wiring specifications per Europe and North America suppliers
- Easy, quick and reliable IDC termination
- Integrated cable retention
- Design accepts multiple wire size diameter - 20-26 AWG
- No special tooling needed
- Sockets available with or without a latch - the latch helps enable rugged field termination
- Compact design saves board space
- High number of mating cycles
- Flammability rating - UL 94V-0
- RoHS compliant

| Contact Material | Contact Plating | Current Rating | Voltage Rating | Operating Temperature |
|------------------|-----------------|----------------|----------------|-----------------------|
| Copper Alloy     | Gold            | 3A             | 32V            | -20 - 85°C            |

521951

| Mfrs. List No.               | No. of Ways | Colour | Order Code | 1+   | 50+  | 100+ |
|------------------------------|-------------|--------|------------|------|------|------|
| <b>Plugs</b>                 |             |        |            |      |      |      |
| 37103-A124-00E MB            | 3           | Green  | 163-7089   | 1.49 | 1.43 | 1.39 |
| 37103-A165-00E MB            | 3           | Blue   | 163-7090   | 1.56 | 1.45 | 1.41 |
| 37103-A206-00E MB            | 3           | Grey   | 163-7091   | 1.56 | 1.45 | 1.41 |
| 37103-B101-00E MB            | 3           | Red    | 163-7093   | 1.56 | 1.45 | 1.41 |
| 37103-B122-00E MB            | 3           | Yellow | 163-7094   | 1.56 | 1.45 | 1.41 |
| 37103-B163-00E MB            | 3           | Orange | 163-7096   | 1.56 | 1.45 | 1.41 |
| 37104-A124-00E MB            | 4           | Green  | 163-7097   | 1.72 | 1.71 | 1.67 |
| 37104-A165-00E MB            | 4           | Blue   | 163-7098   | 1.86 | 1.74 | 1.70 |
| 37104-A206-00E MB            | 4           | Grey   | 163-7099   | 1.86 | 1.74 | 1.70 |
| 37104-B101-00E MB            | 4           | Red    | 163-7100   | 1.86 | 1.74 | 1.70 |
| 37104-B122-00E MB            | 4           | Yellow | 163-7102   | 1.86 | 1.69 | 1.67 |
| 37104-B163-00E MB            | 4           | Orange | 163-7103   | 1.72 | 1.61 | 1.57 |
| <b>Sockets without Latch</b> |             |        |            |      |      |      |
| 37303-A124-00E MB            | 3           | Green  | 163-7104   | 1.67 | 1.52 | 1.50 |
| 37303-A165-00E MB            | 3           | Blue   | 163-7105   | 1.55 | 1.40 | 1.18 |
| 37303-A206-00E MB            | 3           | Grey   | 163-7106   | 1.55 | 1.40 | 1.18 |
| 37303-B101-00E MB            | 3           | Red    | 163-7107   | 1.67 | 1.52 | 1.27 |
| 37303-B122-00E MB            | 3           | Yellow | 163-7108   | 1.67 | 1.52 | 1.50 |
| 37303-B163-00E MB            | 3           | Orange | 163-7109   | 1.67 | 1.52 | 1.50 |
| 37304-A124-00E MB            | 4           | Green  | 163-7110   | 2.00 | 1.82 | 1.80 |
| 37304-A165-00E MB            | 4           | Blue   | 163-7111   | 2.65 | 2.39 | 2.01 |
| 37304-A206-00E MB            | 4           | Grey   | 163-7112   | 2.00 | 1.82 | 1.53 |
| 37304-B101-00E MB            | 4           | Red    | 163-7114   | 1.85 | 1.69 | 1.41 |
| 37304-B122-00E MB            | 4           | Yellow | 163-7115   | 1.85 | 1.84 | 1.80 |
| 37304-B163-00E MB            | 4           | Orange | 163-7116   | 1.85 | 1.69 | 1.41 |
| <b>Sockets with Latch</b>    |             |        |            |      |      |      |
| 37303-A124-OPE MB            | 3           | Green  | 163-7117   | 1.75 | 1.58 | 1.57 |
| 37303-A165-OPE MB            | 3           | Blue   | 163-7118   | 1.75 | 1.58 | 1.33 |
| 37303-A206-OPE MB            | 3           | Grey   | 163-7119   | 1.62 | 1.45 | 1.23 |
| 37303-B101-OPE MB            | 3           | Red    | 163-7120   | 1.75 | 1.58 | 1.33 |
| 37303-B122-OPE MB            | 3           | Yellow | 163-7121   | 1.75 | 1.58 | 1.57 |
| 37303-B163-OPE MB            | 3           | Orange | 163-7122   | 1.75 | 1.58 | 1.57 |
| 37304-A124-OPE MB            | 4           | Green  | 163-7123   | 1.93 | 1.74 | 1.45 |
| 37304-A165-OPE MB            | 4           | Blue   | 163-7124   | 2.08 | 1.88 | 1.58 |
| 37304-A206-OPE MB            | 4           | Grey   | 163-7126   | 2.08 | 1.88 | 1.58 |
| 37304-B101-OPE MB            | 4           | Red    | 163-7127   | 2.08 | 1.88 | 1.87 |
| 37304-B122-OPE MB            | 4           | Yellow | 163-7128   | 2.08 | 1.88 | 1.87 |
| 37304-B163-OPE MB            | 4           | Orange | 163-7129   | 2.08 | 1.88 | 1.87 |

## Mini-Clamp Sockets

372 series



- 2 mm boardmount, straight solder tails
- Provides even quality
- Ensures easy operation for system building

- Saves board space
- Reduces waste
- Dust cover accessory available
- Flammability rating - UL 94V-0

| Housing Material | Contact Material | Contact Plating | Current Rating | Voltage Rating | Operating Temperature |
|------------------|------------------|-----------------|----------------|----------------|-----------------------|
| Nylon            | Copper Alloy     | Gold            | 3A             | 32V            | -20 - 85°C            |

521953

| Mfrs. List No.     | No. of Ways | Order Code | 1+    | 50+   | 100+  |
|--------------------|-------------|------------|-------|-------|-------|
| 37203-62A3-003PL   | 3           | 163-7130   | 1.060 | 0.980 | 0.950 |
| 37203-62B3-003PL   | 3           | 163-7131   | 1.060 | 0.980 | 0.950 |
| 37204-62A3-004     | 4           | 163-7132   | 1.190 | 1.120 | 1.090 |
| 37204-62B3-004     | 4           | 163-7133   | 1.100 | 1.040 | 1.010 |
| 37206-62A3-003PL   | 3 x 2       | 163-7134   | 1.820 | 1.700 | 1.650 |
| 37208-62A3-004PL   | 4 x 2       | 163-7135   | 2.230 | 2.080 | 2.030 |
| 37212-62M3-003PL   | 3 x 4       | 163-7136   | 2.080 | 1.950 | 1.900 |
| 37216-62M3-004PL   | 4 x 4       | 163-7138   | 1.990 | 1.860 | 1.810 |
| <b>Dust Covers</b> |             |            |       |       |       |
| 37803-1000-00      | 3           | 163-7139   | 0.038 | 0.035 | 0.033 |
| 37804-1000-00      | 4           | 163-7140   | 0.041 | 0.038 | 0.036 |

## Mini USB Interfaces

MUSB Series



- B and AB types available
- Surface Mount

### Specifications:-

|                      |                          |                    |        |
|----------------------|--------------------------|--------------------|--------|
| Contact Material     | Phosphor Bronze          | Contact Plating    | Gold   |
| Insulator Material   | High Temp. Thermoplastic | Contact Resistance | 50mohm |
| Current Rating       | 1A per contact           | Voltage Rating     | 30Vrms |
| No. of Mating Cycles | 1500                     | No. of Ways        | 5      |
| Operating Temp.      | -50°C to 85°C            |                    |        |

| No. of Ways | Type | Mfrs. List No.    | Order Code | 1+   | 10+  | 50+  | 100+ | 500+ |
|-------------|------|-------------------|------------|------|------|------|------|------|
| 5           | B    | MUSB-05-S-B-SM-A  | 175-3806   | 0.76 | 0.59 | 0.54 | 0.49 | 0.45 |
| 5           | AB   | MUSB-05-S-AB-SM-A | 175-3807   | 0.83 | 0.64 | 0.58 | 0.53 | 0.48 |

## USB Interfaces

USBR Series



175-3808

175-3809

- A and B types available
- Higher retention than standard USBs
- Through Hole

### Specifications:-

|                      |                          |                    |        |
|----------------------|--------------------------|--------------------|--------|
| Contact Material     | Phosphor Bronze          | Contact Plating    | Gold   |
| Insulator Material   | High Temp. Thermoplastic | Contact Resistance | 30mohm |
| Current Rating       | 1A per contact           | Voltage Rating     | 30Vrms |
| No. of Mating Cycles | 1500                     | No. of Ways        | 4      |
| Operating Temp.      | -50°C to 85°C            |                    |        |

| No. of Ways | Type | Mfrs. List No.  | Order Code | 1+   | 10+  | 50+  | 100+ | 500+ |
|-------------|------|-----------------|------------|------|------|------|------|------|
| 4           | A    | USBR-A-S-S-O-TH | 175-3808   | 1.10 | 0.86 | 0.77 | 0.70 | 0.64 |
| 4           | B    | USBR-B-S-S-O-TH | 175-3809   | 0.98 | 0.76 | 0.68 | 0.62 | 0.57 |

3M

## Mini HDMI Connectors

Type C

multicomp



170-8473 170-8474 170-8475 170-8476 170-8477 170-8479

- 0.4mm pitch, 19 position, mini HDMI Connectors
- Type C connectors, HDMI 1.3 specification
- Solderable nickel plated shell
- Dimensions - 10.5 x 2.5mm (sockets), 10.42 x 2.42mm (plugs)

New

### Specifications:-

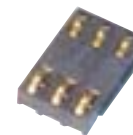
|                       |                                          |                                 |               |
|-----------------------|------------------------------------------|---------------------------------|---------------|
| Current Rating        | 0.5A                                     | Dielectric Withstanding Voltage | 500VAC r.m.s. |
| Insulation Resistance | 100Mohm                                  | Operating Temp.                 | -20°C to 85°C |
| Contact Material      | Brass (Socket) / Phosphor Bronze (Plugs) | Contact Plating                 | Gold Flash    |

| Description                             | Order Code | 1+   | 10+  | Price Each | 500+ | 1K+  |
|-----------------------------------------|------------|------|------|------------|------|------|
| Socket, SMT Type Solder Tail            | 170-8473   | 1.12 | 0.90 | 0.75       | 0.64 | 0.56 |
| Socket, Through Hole Solder Tail        | 170-8474   | 1.12 | 0.90 | 0.75       | 0.64 | 0.56 |
| Socket, Kinked Through Hole Solder Tail | 170-8475   | 1.12 | 0.90 | 0.75       | 0.64 | 0.56 |
| Plug, without PCB                       | 170-8476   | 1.05 | 0.84 | 0.70       | 0.60 | 0.53 |
| Plug, with PCB                          | 170-8477   | 1.12 | 0.90 | 0.75       | 0.64 | 0.56 |
| Plug, C/M to A/F PCB                    | 170-8479   | 1.19 | 0.95 | 0.79       | 0.68 | 0.60 |

## SIM Card

5 Direction SIM

Tyco Electronics



- Suitable for reading SIM and UIM cards
- Tape mounted for pick and place manufacturing

|            |                               |
|------------|-------------------------------|
| Housing    | Thermoplastic, UL94V-0, Black |
| Contacts   | Gold                          |
| Durability | Up to 5000 mating cycles      |

| Height | Mfrs. List No. | Order Code | 1+   | Price Each | 10+  | 50+ |
|--------|----------------|------------|------|------------|------|-----|
| 2.1mm  | 2-1705300-1    | 128-4399   | 0.38 | 0.36       | 0.32 |     |

## Security Access Modules (SAM)

Tyco Electronics



- SIM/SAM
- Metal Locking Disk
- Includes Switch

|                 |                                       |
|-----------------|---------------------------------------|
| Housing         | High Temperature Thermoplastic, Black |
| Contact Plating | Gold                                  |
| Durability      | Up to 10000 mating cycles             |

| No. of Contacts | Mfrs. List No. | Order Code | 1+   | 10+  | 50+  | 100+ |
|-----------------|----------------|------------|------|------|------|------|
| 6               | 5145299-1      | 128-4401   | 1.90 | 1.77 | 1.69 | 1.60 |
| 8               | 5145299-2      | 128-4402   | 2.29 | 2.04 | --   | --   |

## Multifunction Graphics Meter

Panel Pilot Series

LASCAR



The Panel Pilot Series is a range of color TFT graphics meters that users can program to display a variety of meter styles previously provided by a traditional panel meter. Initially available in 2.4" screen size, the meters are programmable via USB interface with free Windows-based configuration software provided with the unit. Users can select the type of meter style they want (choices include 3½ digit, bar graph and analog style options) and personalise the display by selecting preferences in color, text and voltage input scaling. Once programming is complete, the user can

save all selections to the meter and computer, detach the unit and mount in their panel as they would any standard display. The unit is supplied with 6 programmable meter styles. Users can select more by visiting Lascar's website at [www.panelpilot.com](http://www.panelpilot.com)

- Large 2.4" Color TFT Screen options
- Programmable via USB Interface
- User selectable meter style selection
- Simple panel mounting
- Free Windows-based Configuration Software supplied with meter
- Operating Voltage of 4V - 30Vd.c.
- Adjustable 0 to 40 Vd.c. input
- Screw terminal connections

| Mfrs. List No. | Order Code | 1+    | 5+    | Price Each | 10+   | 25+   | 50+ |
|----------------|------------|-------|-------|------------|-------|-------|-----|
| SGD 24-M       | 178-1995   | 59.95 | 58.00 | 56.85      | 55.75 | 54.00 |     |



## Digital Metering System



The Integra Ci3 digital metering system (dms) represents the first model of a new generation of digital metering systems designed to complement the current Crompton Instruments Integra series. Its easy programming, mounting and user-friendly navigation make the Integra Ci3 dms an ideal choice for customers who require reliable energy measurement. The product features a DIN 96 panel mounted enclosure, backlit LCD display and user programmable CT ratios, all accessible via an intuitive user interface. Integra Ci3 dms measures 17 electrical parameters including total harmonic distortion (THD) measurement up to the 31st harmonic.

- DIN 96 enclosure
- Backlit LCD screen
- Bezel depth 6.1mm
- Plug-in output modules
- Programmable CT ratio
- True rms measurement
- User programmable system configuration

Nominal input voltage 100 to 289V ac  
Nominal input voltage burden <0.2VA per phase  
Nominal input current 5A AC rms  
Dimensions 96 x 96 x 64.1mm (depth behind panel without module 58mm, with module 82.5mm)

Panel cut-out 92 x 92mm  
Panel thickness 1mm to 5mm  
Front protection rating IP52  
Case protection rating IP30  
Terminals Shrouded screw-clamp 0.05-4mm wire  
Operating temperature -10°C to +55°C  
Parameters measured Voltage, Frequency, Current, Power, Power factor and Energy.

| Mfrs. List No. | Description           | Order Code      | 1+    | 5+    |
|----------------|-----------------------|-----------------|-------|-------|
| CI3-01         | Integra Ci3 Base Unit | <b>177-5885</b> | 99.00 | 80.00 |
| <b>Modules</b> |                       |                 |       |       |
| CI-PUL-01      | Pulsed Output         | <b>177-5886</b> | 18.00 | 16.70 |
| CI-MOD-01      | Modbus™ RS485         | <b>177-5887</b> | 35.00 | 33.30 |

## Digital Metering System



Tegra 710 and 810 Series



The Tegra 710 and 810 multi-function digital metering systems display and communicate major electrical parameters. The digital meters are available in 4 module DIN-rail or DIN 72 panel mounted enclosure and display up to 57 electrical parameters including the true rms values, selectable CT and VT ratios and monitor current, voltage, power factor, phase angle, active/reactive energy, and frequency values. The simple menu-driven interface offers three reading modes (phase parameters, system parameters and maximum parameter values).

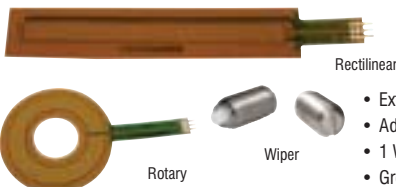
- LCD, backlight control
- Fully programmable VT and CT ratios
- Current demand per phase
- Resettable active energy meter
- Resettable reactive energy meter
- Programmable relay outputs
- Modbus RTU

Supply Voltage 195.5V - 253V ac 50/60Hz  
Supply burden <4 VA  
Sealing IP 40 (54 front side installed)  
Operating temperature 0°C to +50°C  
Parameters measured System volts, System current, System active power, System apparent power, System reactive power, Phase - neutral voltages (VL-N), Phase - phase voltages (VL-L), Phase - phase current, Frequency (of voltage V1), Active power per phase, Apparent power per phase, Reactive power per phase, Power factor (PF), Total active energy Wh, Total reactive energy Varh, Phase angle, Mean and peak values, Time and date, Hours run

| Mfrs. List No. | Type             | Output        | Order Code      | 1+     | 5+     |
|----------------|------------------|---------------|-----------------|--------|--------|
| TEGRA-810-200  | DIN Rail         | Pulsed        | <b>177-5888</b> | 140.00 | 120.00 |
| TEGRA-810-010  | DIN Rail         | Modbus™ RS485 | <b>177-5889</b> | 160.00 | 135.00 |
| TEGRA-710-200  | 72mm Panel Mount | Pulsed        | <b>177-5890</b> | 140.00 | 120.00 |
| TEGRA-710-010  | 72mm Panel Mount | Modbus™ RS485 | <b>177-5891</b> | 160.00 | 135.00 |

## Position Sensors

Membrane - Self Adhesive

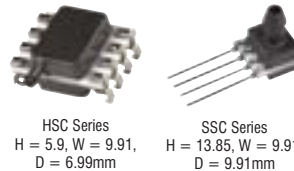


- Extremely flat - 0.5mm
- Adhesive film
- 1 Watt max. @ 25°C
- Greater than 1 million cycles life

| Length (mm)        | Width (mm) | Mfrs. List No.       | Order Code      | 1+    | 10+   | 25+   | 50+   |
|--------------------|------------|----------------------|-----------------|-------|-------|-------|-------|
| <b>Rectilinear</b> |            |                      |                 |       |       |       |       |
| 65.86              | 20.32      | SP-L-0050-ST         | <b>173-4690</b> | 16.25 | 15.12 | 14.13 | 13.00 |
| 115.86             | 20.32      | SP-L-0100-ST         | <b>173-4691</b> | 17.75 | 16.51 | 15.43 | 14.20 |
| 215.86             | 20.32      | SP-L-0200-ST         | <b>173-4692</b> | 21.00 | 19.53 | 18.26 | 16.80 |
| 515.86             | 20.32      | SP-L-0500-ST         | <b>173-4693</b> | 27.00 | 25.12 | 23.48 | 21.60 |
| <b>Rotary</b>      |            |                      |                 |       |       |       |       |
| 56mm OD of Track   |            | SP-R-0046/353-103-ST | <b>173-4694</b> | 21.00 | 19.53 | 18.26 | 16.80 |
| <b>Accessories</b> |            |                      |                 |       |       |       |       |
| Wiper, M6 x 0.75   |            | WIPER 1-3N           | <b>173-4695</b> | 7.00  | 6.51  | 6.09  | 5.60  |

## Pressure Sensor - Silicon

TruStability™ Range



The sensing element consists of 4 piezoresistors galvanized with a thin, chemically etched silicon diaphragm. A pressure change will flex the mechanism, causing a strain in the diaphragm and buried resistors. The resistor values will change in proportion to the stress applied, which produces an electrical output. These devices have potential applications in dialysis equipment, blood analysis, centrifusion and oxygen and nitrogen gas distribution, HVAC devices, data storage, process controls, industrial machinery, pumps and robotics.

- Fully calibrated
- On-board Application Specific Integrated Circuit (ASIC)
- Long term stability
- High accuracy
- Miniature package size
- Low operating voltage
- Extremely power consumption
- Insensitive mounting orientation

| Order Code                            | Mfrs. List No.  | Pressure Range | Supply Voltage | Output Type    |
|---------------------------------------|-----------------|----------------|----------------|----------------|
| <b>HSC Series - High Accuracy</b>     |                 |                |                |                |
| 177-8672                              | HSCMRN001BGAA5  | 0bar to 1bar   | 5V             | Analog voltage |
| 177-8673                              | HSCMRN001BG2A5  | 0bar to 1bar   | 5V             | Analog voltage |
| 177-8674                              | HSCMRN001PG2A3  | 0psi to 1psi   | 3.3V           | Digital        |
| <b>SSC Series - Standard Accuracy</b> |                 |                |                |                |
| 177-8676                              | SSCSANN001BGAA5 | 0bar to 1bar   | 5V             | Analog voltage |
| 177-8677                              | SSCSANN001PGAA5 | 0psi to 1psi   | 5V             | Analog voltage |

| Pressure Range                        | Mfrs. List No.  | Order Code      | 1+    | 10+   | 25+   | 50+   |
|---------------------------------------|-----------------|-----------------|-------|-------|-------|-------|
| <b>HSC Series - High Accuracy</b>     |                 |                 |       |       |       |       |
| 0bar to 1bar                          | HSCMRN001BGAA5  | <b>177-8672</b> | 30.90 | 23.33 | 21.63 | 20.55 |
| 0bar to 1bar                          | HSCMRN001BG2A5  | <b>177-8673</b> | 30.90 | 23.33 | 21.63 | 20.55 |
| 0psi to 1psi                          | HSCMRN001PG2A3  | <b>177-8674</b> | 30.90 | 23.33 | 21.63 | 20.55 |
| <b>SSC Series - Standard Accuracy</b> |                 |                 |       |       |       |       |
| 0bar to 1bar                          | SSCSANN001BGAA5 | <b>177-8676</b> | 25.49 | 18.54 | 17.10 | 16.38 |
| 0psi to 1psi                          | SSCSANN001PGAA5 | <b>177-8677</b> | 25.49 | 18.54 | 17.10 | 16.38 |

## Digital Soft Starters

Single Phase AC Motors



- Fit and Forget - No maintenance
- Quick fit and simple wiring
- Simple and easy Retrofit
- LED Indication showing power and energy saving
- Energy Optimising
- Torque Reduction

HFE5, 10 & 17 - H = 180, W = 65, D = 69mm  
HFE30 - H = 195, W = 150, D = 97.5mm

HFE energy saving soft starters are designed to control single phase AC motors. Operation is fully automatic, a low starting voltage is applied to the motor as soon as the supply is switched on. The internal automatic ramp control immediately takes over and raises the voltage progressively, causing the motor to accelerate smoothly. At the end of the ramp period, the motor is operated in Energy Saving mode and the HFE continuously regulates the voltage to match mechanical load. Energy consumption at light loads is considerably reduced, motor winding and case temperatures are lowered, motor life is extended, noise levels are reduced and Power Factor is improved.

| Operational Current (A) | Motor kW (kW) | Motor HP (460) V | Mfrs. List No. | Order Code      | Price Each 1+ |
|-------------------------|---------------|------------------|----------------|-----------------|---------------|
| 5                       | 0.56          | 0.56             | HFE 5A         | <b>176-0621</b> | 105.00        |
| 10                      | 1.1           | 1.1              | HFE 10A        | <b>176-0623</b> | 108.35        |
| 17                      | 2.2           | 2.2              | HFE 17A        | <b>176-0624</b> | 115.00        |
| 30                      | 4             | 4                | HFE 30A        | <b>176-0625</b> | 233.35        |

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## Electronic Soft Starters

### 3 - Phase AC Induction Motors



This range of soft starters display the latest developments in design and technology from a company that has over 25 years experience of innovative design and manufacture of motor starters. With the addition of the optional fan, these units can be upgraded from 10 starts or 5 starts + 5 stops per hour to 60 starts or 30 starts + 30 stops per hour.

Case Size 1 - H = 140, W = 45, D = 120mm  
Case Size 2 - H = 165, W = 55, D = 120mm

- Voltage - 230V rms to 460V rms
- Current - 5A to 41A (460V)
- Control voltage - 24V dc
- Start time - 1s to 30s
- Stop time - 0 to 30s
- Start pedestal voltage - 30% to 100%
- Standard Duty - IE AC53B, 3-5, 355
- DIN rail mounting
- Two phase control
- Internally bypassed
- Over current protected

| Case Size                        | Operational Current (A) | Motor kW (kW) | HP (460) V | Mfrs. List No. | Order Code | Price Each 1+ |
|----------------------------------|-------------------------|---------------|------------|----------------|------------|---------------|
| 1                                | 5                       | 2.2           | 2.2        | PFE-02         | 176-0605   | 82.00         |
| 1                                | 7                       | 3             | 3          | PFE-04         | 176-0606   | 88.00         |
| 1                                | 9                       | 4             | 4          | PFE-06         | 176-0607   | 98.00         |
| 1                                | 12                      | 5.5           | 5.5        | PFE-08         | 176-0608   | 106.00        |
| 1                                | 16                      | 7.5           | 7.5        | PFE-10         | 176-0611   | 115.00        |
| 2                                | 22                      | 11            | 11         | PFE-12         | 176-0612   | 132.00        |
| 2                                | 30                      | 15            | 15         | PFE-14         | 176-0613   | 160.00        |
| 2                                | 36                      | 18.5          | 18.5       | PFE-16         | 176-0614   | 188.00        |
| 2                                | 41                      | 22            | 22         | PFE-18         | 176-0615   | 210.00        |
| Fan for Case Size 1 Softstarters |                         |               |            |                | PFEFAN01   | 28.55         |
| Fan for Case Size 2 Softstarters |                         |               |            |                | PFEFAN02   | 210.00        |

## efergy E<sup>2</sup> Energy Monitoring Meter

### Wireless



Display - H = 185, W = 185, D = 24mm

- Simple and quick to install and use
- PC connectivity, sensor, transmitter/sender and Elink energy monitoring software CD included
- Program up to 4 tariffs - set start/end times and p/kWhr to match your supply
- Instant, Average and Historical data shown on portable wireless display

The Efergy 2 + Elink wireless electricity display device is a wireless energy monitor that displays at a glance how much electricity your equipment is using. Elink technology allows data to be transferred to your computer to help you spot money saving opportunities and to assist with the reduction of carbon footprints.

You can view instant, average and historical information (daily, weekly and monthly totals are stored in the memory) on the portable display unit. Download stored data to your PC for more detailed analysis and see your energy use clearly displayed in bar charts and line graphs. Radiated frequency 433.52MHz with a range of 40 to 70m depending on the environment. The Portable Display Unit and the Transmitter/Sender Unit require 3 X AAA batteries each (6 in total). Lithium or rechargeable cells are recommended.

| Mfrs. List No.  | Order Code | Price Each 1+ |
|-----------------|------------|---------------|
| EFERGY E2-METER | 177-4541   | 52.45         |

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## Lighting Controllers

### Energy Saving - Fluorescent and HID circuits



- Fit and Forget - No maintenance
- Quick fit and simple wiring
- Simple and easy Retrofit
- LED Indication showing power and energy saving
- Electrical connections via terminal block at base of unit

H = 305, W = 170, D = 100mm

After fluorescent / HID lights have been switched on and go through a warm up period they can operate effectively on a reduced power supply. These units function by allowing lights to be activated at the standard utility voltage and then reducing the voltage by switching into economy mode. This intelligent and safe control of power reduces energy consumed with little or no impact on light output.

A Liquid Crystal Display panel on the front of the device shows savings being made in real time.

The units can sense a change in energy demand and automatically switch back to mains voltage where necessary. System failure is eliminated as internal circuits automatically change over to mains power if overload or low voltage is detected. A bypass switch to allow manual bypass of economy mode during lighting maintenance is fitted as standard with automatic return to economy mode after a set period of time.

The units can be retrofitted to existing fluorescent / HID lighting circuits and can be easily installed by a qualified electrician in less than 30 minutes keeping interruption and lighting downtime is a matter of minutes. Once installed there are no maintenance costs - only ongoing savings.

| Load Current (A)                                       | Load (VA) | Mfrs. List No.     | Order Code | Price Each 1+ |
|--------------------------------------------------------|-----------|--------------------|------------|---------------|
| <b>Fluorescent Light Controllers</b>                   |           |                    |            |               |
| 9                                                      | 2400      | LIGHT ECO 2.4      | 176-0618   | 526.00        |
| 14                                                     | 3800      | LIGHT ECO 3.8      | 176-0619   | 760.00        |
| <b>High Intensity Discharge (HID) Light Controller</b> |           |                    |            |               |
| 16                                                     |           | LIGHT ECO PLUS HID | 176-0620   | 820.00        |

## Override & Status Indicating Modules

### 19 Series



These modules are used as an interface between Building Management Systems (BMS), Direct Digital Controllers (DDC) or in combination with Programmable Logic Controllers (PLC's) and connected equipment.

**Override Control Modules** can override the BMS, DDC or PLC and permit the equipment to be forced into the desired operational status. In the "Automatic" position, signals from the BMS, DDC or PLC will be transferred, unchanged, to the equipment. In the "Hand" position it is possible to force the equipment to the desired status, which is indicated by an LED (or LED's for type 19.50) on the module's fascia.

**Status Indicating Modules** are LED indicating modules which show the status of the input signal, but where the LED colour has been preset to match the degree of importance or urgency of the signal. Presetting the colour to Red, Green or Blue is by a DIP-switch on the rear face of the module, before mounting. An output CO or NC contact, following the input, is provided for control or status feedback.

- Clear indication of signal or equipment status
- Easy operation of selector switches and potentiometers
- Feedback contact - Signals when switch is not in the "Auto" position
- Compact housing with two widths, 17.5 or 35mm
- Uniform unit depth of 60.8mm overall
- Only 88.8mm in height
- 35mm DIN Rail mounting

| Nominal Supply Voltage                  | Mfrs. List No.   | Order Code | Price Each 1+ |
|-----------------------------------------|------------------|------------|---------------|
| <b>Status Indicating Modules</b>        |                  |            |               |
| 1 Channel Input Module                  | 19.31.0.024.0000 | 171-8985   | 42.53         |
| 2 Channel Input Module                  | 19.32.0.024.0000 | 171-8986   | 45.36         |
| <b>Digital Override Control Modules</b> |                  |            |               |
| On / Off Module                         | 19.41.0.024.0000 | 171-8987   | 49.14         |
| Low / High Output Module                | 19.42.0.024.0000 | 171-8989   | 56.70         |
| <b>Analogue Override Control Module</b> |                  |            |               |
| Analogue Output Module 0-10V            | 19.50.0.024.0000 | 171-8991   | 51.98         |

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## WSM Soldering Station



Weller  
New

Ideal for all soldering applications that need a professional but handy and uncomplicated station. ESD safe and designed for use in laboratories, repair, service and industrial engineering.

|                        |               |
|------------------------|---------------|
| Temperature range      | 100°C - 400°C |
| Heat up time           | 4 sec.        |
| Power                  | 40W / 12V     |
| Switching power supply | 100 - 230V    |

### WSM 1:

- ESD safe, for industrial applications
- Built in Stop+Go function for energy efficient switch off
- Touch sense technology
- Temperature-locking function
- 2 adjustable temperatures
- Integrated micro soldering iron WMRP 40 W in chrome design
- Changeable, highly efficient RT 3 Micro soldering tip and integrated heating element
- Safety rest with WDC dry cleaner

### WSM 1C:

Like WSM 1, plus rechargeable battery for mobile, cordless service. The perfect alternative to gas powered irons.

- Latest LiFePo4-rechargeable technology
- Up to one hour soldering capacity
- Recharged in 20 minutes

| Mfrs. List No.   | Order Code | Price Each |
|------------------|------------|------------|
| WSM 1 (UK + EU)  | 172-9965   | 230.43     |
| WSM 1C (UK + EU) | 172-9966   | 285.52     |

## WS81 Soldering Station



Weller

An 80 watt electronically controlled soldering station. The station has an analogue temperature scale and is suitable for through hole and surface mount printed circuit board assembly and rework operations

- Rating 80W
- Supply 230V input, 24V output
- Temperature range: 150°C to 450°C
- Temperature accurate to ±2% of Max. temp
- Temperature set by rotary potentiometer
- LED temperature condition indicator
- ESD safe
- Can drive all Weller electronically controlled tools up-to 80W rating compatible with the station
- Uses LT series tips
- Lead free manufacture compatible

Station comprises:

PU81 power unit, Mfr's List No. 0053252399  
WSP80 soldering iron, Mfr's List No. 0052918099  
WPH80 bench support, Mfr's List No. 0051514099

| Description     | Order Code | Price Each |
|-----------------|------------|------------|
| WS 81 (UK Plug) | 972-009    | 191.88     |
| WS 81 (EU Plug) | 380-4379   | 174.99     |

## WFE2ES Fume Extraction System



Weller

Comprises:  
WFE 2ES volume fume extraction unit with filter system  
One extraction arm kit consisting of:  
60mm Extraction Arm  
Funnel Nozzle  
Stop Valve  
2 bench mounting clamps  
3 metre length of extraction hose

- Supply voltage 230V / 50Hz
- Dimensions 320 x 320 x 395 mm (L x W x H)
- Power input 115 VA
- Noise level 52db(A) at 1 m
- Extraction rate 220 Cu/M per hour
- Max vac 1800Pa
- Filter fine dust filter grade F5
- Combined HEPA filter grade H12 and wide band gas filter
- Will remove 99.5 % of particles down to 0.3 micron
- Can be upgraded to a 2 point extraction unit by the addition of an extra arm kit

The WFE 2ES is a powerful and economic volume extraction system which will support up to 2 workstations. Ideally suited to applications involving solder baths, hot air soldering, hand soldering and gluing work, this system will safely and efficiently remove from the workplace, the increased levels of air-borne pollutants produced when using lead free solder.

|         |                                                                  |               |         |
|---------|------------------------------------------------------------------|---------------|---------|
| Filter: | F5 fine dust filter<br>H12 HEPA filter plus wide band gas filter | Max. Vacuum:  | 1800 Pa |
|         |                                                                  | Max. Airflow: | 220m³/h |

| Description                               | Mfrs. List No. | Order Code | Price Each |
|-------------------------------------------|----------------|------------|------------|
| Fume Extraction Kit                       | 0053651689     | 168-8999   | 603.56     |
| Fume Extraction Unit                      | WFE 2ES        | 137-8428   | 489.46     |
| 60mm Funnel Arm Kit                       | 0053657199     | 167-6548   | 122.76     |
| Filter Set (1 x H12, 10 x F5 Pre-Filters) | 0058762701     | 137-8432   | 73.18      |
| F5 Fine filter for WFE 2ES (Pack of 10)   | 0058762703     | 137-8433   | 24.39      |

## Gas Soldering Iron

### Pyropen Peizo Kit - Self Igniting



Kit contents:

Self igniting butane powered soldering iron, 3mm chisel soldering tip (Mfr's No. 0051612199), hot blow nozzle (Mfr's No. 0051614299) and an accessory pouch, containing heat shrink kit, wrench and butane refill canister.

- Supplied in a robust, hinged metal case, complete with a soldering iron support and a cleaning sponge
- Temperature range 300°C - 500°C
- Functions as a soldering iron, or hot air blower
- Self igniting piezo ignition
- Gas level indicator
- Approx. 3 hours operation from each fill
- Uses WPT series tips
- Uses WHC series hot blow nozzles

| Mfrs. List No. | Order Code | 1+       | 5+     | 10+    |
|----------------|------------|----------|--------|--------|
| Pyropen Kit    | 0051605999 | 434-3554 | 118.43 | 114.88 |

## Soldering and Rework Station

### ZD-917



The digital repair system includes a soldering iron and desoldering gun. It offers a controlled supply of heat, suitable for desoldering all type of components and allows easy removal of the residual solder. The soldering iron and desoldering iron can be used independently or at the same time. The temperature sensor on the top of the tips can check the tip temperature quickly and decrease the possibility of the tip temperature falling off during the operation. Suitable for lead free soldering applications.

**Contents of Station:** Power unit, soldering iron (with a conical tip), desoldering gun (with 3 conical tips), ZD-10K stand with sponge and

user instructions.

| Technology Specification | Technology Specification         |
|--------------------------|----------------------------------|
| Supply Voltage           | 230V (220-240V)                  |
| Power                    | 60W Soldering<br>80W Desoldering |
| Temperature range        | 160°C - 480°C                    |

| Description                               | Order Code | 1+     | 3+     | 10+    |
|-------------------------------------------|------------|--------|--------|--------|
| Soldering & Rework Station (UK & EU Plug) | 149-8363   | 137.33 | 127.03 | 120.17 |
| Replacement Filter                        | 151-6020   | 0.22   | 0.21   | 0.19   |

## MRS-1000A Modular Rework System



OKI  
New

A convection rework system for the removal and placement of QFP/BGA/CSP and SMT components. The MRS provides rework solutions to customers who have a need to repair PCB's in a simple and professional manner.

- Digital display for repeatable temperature settings and profile control
- Automatic control of the preheater for simple operation
- Easy profile creation for operator repeatability
- Integrated vacuum pickup for easy component removal
- Hand held or tool holder mounted for operator comfort
- Manual mode for quick setup

Continues on next page

- External thermocouple for process setup and verification
- Digital controlled airflow for repeatable results
- X, Y, Z and Theta controls for component alignment
- Adjustable PCB holder for easy change outs
- Automatic vacuum lift off at the end of the cycle

**MRS-1000A Contents:** PCT-1000 Programmable Preheater, HCT-1000 Programmable Hand Held Convection Tool, ATH-1000 Adjustable Tool Holder and LM-1000 Light Magnifier.

| Description            | Mfrs. List No. | Order Code | Price Each<br>1+ |
|------------------------|----------------|------------|------------------|
| Modular Rework System  | MRS-1000A      | 177-3269   | 3,264.00         |
| Hot Air Rework Station | HCT-1000       | 177-3270   | 1,348.00         |
| Preheater              | PCT-1000       | 177-3271   | 710.00           |

## MX-5000 Soldering, Desoldering and Rework System



MX-5010 - Soldering / Rework System



MX-5020 - UltraFine™ Soldering



MX-5041 - Precision Tweezer, Soldering / Rework



MX-5051 - Soldering, De-soldering / Rework

- Powered by Metcal SmartHeat™ technology
- Unique display indicating thermal demand, power output, per solder joint

- Tip saver stand with sponge & brass pad for extended tip life
- Automatic power down when not in use for prolonged periods
- 100 - 240VAC Input voltage

### MX-5010 Soldering and Rework System

The MX-5010 configured with the Metcal Advanced™ Hand-piece is highly effective for all soldering applications including: lead-free, high mass components or boards, thermally sensitive components requiring low operating temperature, high volume production soldering and touch-up soldering operations, using the STTC Series soldering cartridges. In addition, the MX-5010 can be used for conduction rework of SMDs when using SMTC Series soldering.

### MX-5020 UltraFine™ Soldering System

The MX-5020 includes the Metcal UltraFine™ Soldering Hand-piece. Using the all-new UFTC cartridges, the hand-piece is a speciality tool for soldering and touch-up of very small components, restricted access or high density component packaging on a PCB.

### MX-5041 Precision Tweezers, Soldering and Rework System

The MX-5041 combines both the Metcal Advanced™ Hand-piece and the Precision Tweezers Hand-piece. Users get maximum application flexibility for soldering and reworking the wide range of surface mount components. When switching hand-pieces, tips reach operating temperature in seconds by simply pressing the Output Selector/Command Button.

### MX-5051 Soldering, De-soldering and Rework System

The MX-5051 addresses through-hole de-soldering, general soldering, and SMD rework applications. The system includes two hand-pieces. The Metcal Advanced™ Hand-piece with a selection of soldering and SMD rework cartridges and the Metcal MX-DS1 De-soldering hand-piece for through-hole de-soldering. This configuration is ideal for mixed technology boards and provides the greatest versatility for addressing soldering and rework tasks.

| Content of each single Soldering System |                             |         |         |         |         |
|-----------------------------------------|-----------------------------|---------|---------|---------|---------|
| Mfrs List No.                           | Description                 | MX-5010 | MX-5020 | MX-5041 | MX-5051 |
| MX-PS5000                               | Power Supply 100 - 240V AC  | ●       | ●       | ●       | ●       |
| MX-H1-AV                                | Advanced Handpiece          | ●       | ●       | ●       | ●       |
| AC-CP2                                  | Cartridge Removal Pad       | ●       | ●       | ●       | ●       |
| AC-YS3                                  | Sponge                      | ●       | ●       | ●       | ●       |
| AC-BP                                   | Brass Pad (Pack of 10)      | ●       | ●       | ●       | ●       |
| MX-W1AV                                 | Solder Handpiece Stand      | ●       | ●       | ●       | ●       |
| MX-H2-UF                                | Ultra Fine Handpiece        |         | ●       |         |         |
| MX-PTZ                                  | Precision Tweezer Handpiece |         |         | ●       |         |
| MX-W4PT                                 | Precision Tweezer Stand     |         |         | ●       |         |
| MX-DS1                                  | Desoldering Handpiece       |         |         |         | ●       |
| MX-W5DS                                 | Desolder Stand              |         |         |         | ●       |
| MX-RM8E                                 | Desoldering Cord            |         |         |         | ●       |
| MX-DAH4                                 | Desolder Air Line           |         |         |         | ●       |
| AC-TC                                   | Desoldering Tip Cleaner     |         |         |         | ●       |
| MX-DCFI                                 | Desolder Filter & Liner Set |         |         |         | ●       |

| Mfrs List No.                       | Description                                   | Order Code | Price Each<br>1+ |
|-------------------------------------|-----------------------------------------------|------------|------------------|
| MX-5010                             | Soldering / Rework System                     | 169-7226   | 420.00           |
| MX-5020                             | UltraFine™ Soldering System                   | 170-5191   | 430.00           |
| MX-5041                             | Precision Tweezers, Soldering / Rework System | 170-5190   | 640.00           |
| MX-5051                             | Soldering, De-soldering / Rework System       | 170-5188   | 650.00           |
| <b>Power Supply and Accessories</b> |                                               |            |                  |
| MX-H1-AV                            | Advanced Handpiece                            | 170-5193   | 61.00            |
| MX-PTZ                              | Precision Tweezer Handpiece                   | 170-5194   | 164.00           |
| MX-H2-UF                            | Ultra Fine Handpiece                          | 170-5195   | 77.00            |
| MX-DAH4                             | Desolder Air Line                             | 170-5196   | 22.50            |
| MX-W1AV                             | Solder Handpiece Stand                        | 170-5197   | 44.00            |
| MX-W4PT                             | Precision Tweezer Stand                       | 170-5198   | 44.00            |
| MX-W5DS                             | Desolder Stand                                | 170-5199   | 44.00            |

## ST 65 Soldering System



The ST 65 is a single channel, dial control system features the SX-90 Solder-X-Tractor. Compatible with all IntelliHeat™ hand-pieces. Featuring a powerful multi-stage venturi powered by your compressed air source, the ST 65 is ideal for applications requiring continuous pressure. It is compatible with all IntelliHeat handpieces. Tips supplied separately.

- IntelliHeat Control Technology
- °C/°F Temperature Scales
- Temperature Adjustment Lockout
- Patented Snap-Vac Technology
- ESD grounding jack
- ESD Safe metal housing
- Stackable
- Tips not included

|                    |                                    |
|--------------------|------------------------------------|
| Power requirements | 197-253 VAC, 50/60Hz, 90 Watts Max |
| Dimensions         | 104 x 130 x 152mm                  |
| Weight             | 2.3Kg                              |
| Temp. stability    | ±1.1°C (±2°F) @ Idle tip temp      |
| Temp. range        | 176°C - 482°C (350°F - 900°F)      |

| Description                | Mfrs. List No. | Order Code | Price Each<br>1+ |
|----------------------------|----------------|------------|------------------|
| ST 65 with SX-90 Handpiece | 8007-0516      | 177-5252   | 385.78           |
| ST 65 Power Unit           | 8007-0517      | 177-5253   | 251.59           |

## MBT 250 Digital High Performance Rework System



The MBT 250-SDPT provides you with an advanced, microprocessor-based Thermal SMT and repair management centre which powers and controls three SensaTemp handpieces simultaneously for safe, rapid installation and removal of surface mount and thru-hole components.

- Setback automatically reduces tip temperature to 350°F/177°C after 10-90 minutes
- Manual mode allows you to put all channels into setback; Auto Off
- High power, 3 channel system - 185 watts total power
- Independently powered
- °F/°C selector key
- Tip and temperature selection system charts make choosing the right tip and temperature easy
- Tips not included

|                    |                                        |
|--------------------|----------------------------------------|
| Power requirements | 230VAC, 50/60Hz, 207 Watts maximum     |
| Dimensions         | 135 x 165 x 260mm                      |
| Weight             | 5Kg                                    |
| Temp. stability    | ±1.1°C (±2°F) @ idle from set tip temp |
| Temp. range        | 38°C to 482°C (100°F to 900°F) nominal |

| Description                              | Mfrs. List No. | Order Code | Price Each<br>1+ |
|------------------------------------------|----------------|------------|------------------|
| MBT 250 with PS-90, SX-90, TT-65 & TP-65 | 8007-0207      |            |                  |
| Handpieces                               |                | 177-5255   | 1,408.24         |
| MBT 250 Power Unit                       | 8007-0353      | 177-5256   | 738.00           |

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## Digital Microscope, USB

**DURATOOL**



- Digital microscope with image capture facility
- Manual focus range from 10mm
- 10x - 200x magnification
- 4x White LEDs provide illumination in any conditions
- Software (supplied) shows live feed on your monitor/notebook
- Capture still images and video up to 1280x960 resolution (640x480 pixel sensor)
- TWAIN compatible
- USB interface with 1.4m cable

- Supports Win 98SE/ME/2000/XP or later
- Dimensions (HxWxD): 33x33x112mm
- Contents: Microscope, software and user guide.

| Mfrs. List No.           | Order Code | Price Each |
|--------------------------|------------|------------|
| MICROSCOPE, DIGITAL, USB | D00997     | 1+ 59.90   |

## Electronic Professional Side Cutters

**DURATOOL**

The Best Cutters You'll Ever Use



- High quality ball bearing steel
- 63 - 65 Rockwell Hardness (HRC)
- 2-Component ESD Ergonomic handles, soft comfortable gripping surface, hard plastic core
- Dual leaf springs in blue steel
- Matched bearing rings to minimize metal-metal contact and friction

- Lap joint with screw to achieve a high level of strength and precision
- Static dissipative ( $10^6 - 10^8 \Omega/\text{sq.}$ ), oil, grease and wear-resistant
- All cutters available with three types of cutting blades:
  - Semi-flush: for soft and hard wire
  - Flush: for very precise cutting of soft wire
  - Full-flush: for a perfect cutting of soft wire

| Head Size                          | Cut Type   | Cutting Capacity | Overall length inch | mm  | Mfrs. List No. | Order Code |
|------------------------------------|------------|------------------|---------------------|-----|----------------|------------|
| <b>Oval Head</b>                   |            |                  |                     |     |                |            |
| S                                  | Semi-flush | 0.2 - 1.2 mm     | 4.8"                | 123 | D00998         | 169-6510   |
| S                                  | Flush      | 0.1 - 1.2 mm     | 4.8"                | 123 | D00999         | 169-6511   |
| S                                  | Full-flush | 0.1 - 1.0 mm     | 4.8"                | 123 | D01000         | 169-6512   |
| L                                  | Semi-flush | 0.3 - 1.6 mm     | 4.9"                | 125 | D01001         | 169-6513   |
| L                                  | Flush      | 0.2 - 1.6 mm     | 4.9"                | 125 | D01002         | 169-6514   |
| L                                  | Full-flush | 0.2 - 1.2 mm     | 4.9"                | 125 | D01003         | 169-6515   |
| <b>Tapered Head</b>                |            |                  |                     |     |                |            |
| S                                  | Semi-flush | 0.2 - 1.2 mm     | 4.8"                | 123 | D01004         | 169-6516   |
| S                                  | Flush      | 0.1 - 1.2 mm     | 4.8"                | 123 | D01005         | 169-6517   |
| S                                  | Full-flush | 0.1 - 1.0 mm     | 4.8"                | 123 | D01006         | 169-6519   |
| L                                  | Semi-flush | 0.3 - 1.6 mm     | 4.9"                | 125 | D01007         | 169-6521   |
| L                                  | Flush      | 0.2 - 1.6 mm     | 4.9"                | 125 | D01008         | 169-6522   |
| L                                  | Full-flush | 0.2 - 1.2 mm     | 4.9"                | 125 | D01009         | 169-6523   |
| <b>Tapered &amp; Relieved Head</b> |            |                  |                     |     |                |            |
| S                                  | Semi-flush | 0.2 - 1.0 mm     | 4.8"                | 123 | D01010         | 169-6524   |
| S                                  | Flush      | 0.1 - 1.0 mm     | 4.8"                | 123 | D01011         | 169-6525   |
| S                                  | Full-flush | 0.1 - 0.8 mm     | 4.8"                | 123 | D01012         | 169-6526   |

| Mfrs. List No.                     | Head Size | Cut Type   | Order Code | 1+    | 5+    | 10+   |
|------------------------------------|-----------|------------|------------|-------|-------|-------|
| <b>Oval Head</b>                   |           |            |            |       |       |       |
| D00998                             | S         | Semi-flush | 169-6510   | 23.72 | 21.83 | 21.37 |
| D00999                             | S         | Flush      | 169-6511   | 24.23 | 22.29 | 21.83 |
| D01000                             | S         | Full-flush | 169-6512   | 24.74 | 22.75 | 22.29 |
| D01001                             | L         | Semi-flush | 169-6513   | 24.74 | 22.75 | 22.29 |
| D01002                             | L         | Flush      | 169-6514   | 25.25 | 23.21 | 22.75 |
| D01003                             | L         | Full-flush | 169-6515   | 25.76 | 23.72 | 23.21 |
| <b>Tapered Head</b>                |           |            |            |       |       |       |
| D01004                             | S         | Semi-flush | 169-6516   | 23.72 | 21.83 | 21.37 |
| D01005                             | S         | Flush      | 169-6517   | 24.23 | 22.29 | 21.83 |
| D01006                             | S         | Full-flush | 169-6519   | 24.74 | 22.75 | 22.29 |
| D01007                             | L         | Semi-flush | 169-6521   | 24.74 | 22.75 | 22.29 |
| D01008                             | L         | Flush      | 169-6522   | 25.25 | 23.21 | 22.75 |
| D01009                             | L         | Full-flush | 169-6523   | 25.45 | 23.41 | 22.90 |
| <b>Tapered &amp; Relieved Head</b> |           |            |            |       |       |       |
| D01010                             | S         | Semi-flush | 169-6524   | 25.45 | 23.41 | 22.90 |
| D01011                             | S         | Flush      | 169-6525   | 25.45 | 23.41 | 22.90 |
| D01012                             | S         | Full-flush | 169-6526   | 25.45 | 23.41 | 22.90 |

## Electronic Professional Pliers

**DURATOOL**

The Best Pliers You'll Ever Use



- High quality ball bearing steel
- 63 - 65 Rockwell Hardness (HRC)
- 2-Component ESD Ergonomic handles, soft comfortable gripping surface, hard plastic core
- Dual leaf springs in blue steel
- Matched bearing rings to minimize metal-metal contact and friction
- Lap joint with screw to achieve a high level of strength and precision
- Static dissipative ( $10^6 - 10^8 \Omega/\text{sq.}$ ), oil, grease and wear-resistant

| Mfrs. List No.         | Jaw      | Overall length inch | mm  | Order Code | 1+    | 5+    | 10+   |
|------------------------|----------|---------------------|-----|------------|-------|-------|-------|
| <b>Long Snipe Nose</b> |          |                     |     |            |       |       |       |
| D01013                 | Smooth   | 5.6"                | 143 | 169-6527   | 21.42 | 19.69 | 19.28 |
| D01014                 | Serrated | 5.6"                | 143 | 169-6528   | 22.44 | 20.66 | 20.20 |
| <b>Snipe Nose</b>      |          |                     |     |            |       |       |       |
| D01015                 | Smooth   | 5.2"                | 133 | 169-6529   | 20.91 | 19.23 | 18.82 |
| D01016                 | Serrated | 5.2"                | 133 | 169-6530   | 21.93 | 20.20 | 19.74 |
| <b>Flat Nose</b>       |          |                     |     |            |       |       |       |
| D01017                 | Smooth   | 5.2"                | 133 | 169-6532   | 20.20 | 18.56 | 18.16 |
| <b>Round Nose</b>      |          |                     |     |            |       |       |       |
| D01018                 | Smooth   | 5.2"                | 133 | 169-6533   | 20.99 | 19.30 | 18.92 |

## Vacuum Pick-up Set

**DURATOOL**

New



Hand held vacuum pick-up tool, suitable for the handling and placement of surface mount and small components. Supplied with: 3 Straight heads with rubber suction pads 3 Angled heads with rubber suction pads Suction pad diameters: 3, 6 & 10mm Supplied complete in a fitted plastic case

|                         | Mfrs.<br>List No. | Order Code | 1+    | Price Each |       |
|-------------------------|-------------------|------------|-------|------------|-------|
|                         |                   |            |       | 5+         | 10+   |
| VACUUM PICK UP TOOL SET | 79-050-100        | 171-6016   | 15.25 | 14.18      | 13.52 |

## Electronic Cutters and Pliers Kit

**DURATOOL**

6 Pieces



- High quality ball bearing steel
- 63 - 65 Rockwell Hardness (HRC): Pyrometer controlled inductive hardening
- All cutters available with three types of cutting blades:

- SEMI-FLUSH, for soft and hard wire
- FLUSH, for very precise cutting of soft wire
- FULL-FLUSH, for a perfect cutting of soft wire

- 2-Component ESD Ergonomic handles, soft comfortable gripping surface, hard plastic core
- Dual leaf springs in blue steel
- Matched bearing rings in order to minimize metal-metal contact and friction
- Lap joint with screw in order to achieve a high level of strength and precision. The nut is made of hardened alloy steel in order to resist high cutting load. The screw is fine-pitched for perfect joint adjustment
- Kit Content:
  - Oval Small Semi-Flush cutters
  - Oval Big Semi-Flush cutters
  - Tapered Small Flush cutters
  - Tapered and relieved Full-Flush cutters
  - Snipe Long Nose pliers
  - Round Nose pliers

| Description                          | Mfrs. List No. | Order Code | 1+    | 3+    | 5+    |
|--------------------------------------|----------------|------------|-------|-------|-------|
| ELECTRONIC PLIERS + CUTTERS SET, 6PC | D01628         | 177-2127   | 99.90 | 95.90 | 89.90 |

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## Electronics Tool Kit

**DURATOOL**

New



Ideal for technicians, a comprehensive electronics toolkit supplied within a handy zipped tool bag - external dimensions: 340 x 210 x 50mm

### Kit Contents:

- 20W/130W Soldering iron
- Desoldering pump
- Multimeter
- 5" Long nose pliers
- 5" Side cutters
- slotted precision screwdriver: 2.5 x 75mm
- Phillips precision screwdriver: PH00 x 75mm
- Slotted screwdriver: 4 x 75, 5 x 75, 6 x 125mm
- Phillips Screwdriver: PH0 x 75, PH1 x 75, PH2 x 125mm
- Maintester screwdriver
- Wire stripper/cutter
- 8pc Hex key set: 1.5, 2, 2.5, 3, 4, 5, 5.5, 6mm
- IC Extractor
- Tweezers

| Mfrs. List No. | Order Code | 1+    | 3+    | 10+   |
|----------------|------------|-------|-------|-------|
| D00029         | 171-2132   | 20.35 | 17.29 | 15.25 |

## 15 Piece Precision Screwdriver Set

**DURATOOL**



- Cushion handle provides super soft comfortable grip allowing use over prolonged periods
- Supplied in a convenient plastic carry case

### Set contents:

Slotted - 2 x 65mm, 2.5 x 65mm, 3 x 65mm, 4 x 65mm  
Phillips - PH000 x 65mm, PH00 x 65mm, PH0 x 65mm, PH1 x 65mm  
Torx - T6 x 50mm, T7 x 50mm, T8 x 50mm, T9 x 50mm, T10 x 50mm, T15 x 50mm, T20 x 50mm

| Order Code | 1+   | 5+   | 10+  | 20+  | 50+  |
|------------|------|------|------|------|------|
| 144-7570   | 9.60 | 8.53 | 7.59 | 7.02 | 6.71 |

## 4 in 1 Ceramic Trimmers



New

- Same characteristics as individual trimmer series T4845
- 4 ceramic trimmer blades in 1 tool
- Each 2 reversible inserts with each 2 ceramic blades
- Delivered with transparent protection caps
- Antistatic handle
- With protection cap fitted, the blade inserts can be used as Mini-Alignment-Tools
- Blade sizes
  - Slotted 0.9 mm and 1.8 mm
  - Phillips size 0 and Phillips size 0 special

| Mfrs. List No. | Order Code | 1+    | 5+    | 10+   |
|----------------|------------|-------|-------|-------|
| T4856          | 172-5368   | 36.82 | 34.99 | 33.15 |

## Ergo Quickset Calibrated Screwdriver TLS 0022 GOLD

**DURATOOL**

New



- The TLS 0022 incorporates slipping technology, eliminating over tightening
- Tamperproof adjustment makes this tool ideal for production, where the same torque must be accurately and repeatably applied
- Smooth reset action reduces operator fatigue
- Manufactured to exceed the requirements of ISO 6789:2003
- Torque range: 0.5 - 22cNm
- Accuracy +/- 6% of Setting

| Mfrs. List No.      | Order Code | Price Each |
|---------------------|------------|------------|
| TLS 0022 F/HEX GOLD | 171-4397   | 1+ 71.35   |

## Precision Tweezer Sets

**DURATOOL**

ESD-conductive



161-7215  
(includes: 3.SA; 7A.SA; 12.SA.SMD; 13.SA.SMD)



161-7216  
(includes: 3.SA; 5.SA; 7A.SA; 12.SA.SMD; 13.SA.SMD)



161-7218  
(includes: 3.SA; 3C.SA; 5.SA; 7A.SA; 12.SA.SMD; 13.SA.SMD)

- The Set contains the most used precision tweezers
- Made of Anti-Magnetic Anti-Acid stainless Steel with ESD polyester epoxy coating ( $10^5 - 10^6$  ohm)
- Comfortable handling and insertion of SMD components

| Mfrs. List No. | Type      | Description                                                         | length |
|----------------|-----------|---------------------------------------------------------------------|--------|
| D00831         | 3.SA ESD  | Sharp Tweezers                                                      | 120    |
| D00832         | 3C.SA ESD | Sharp Tweezers                                                      | 110    |
| D00833         | 5.SA ESD  | Fine Tips Tweezers                                                  | 110    |
| D00834         | 7A.SA ESD | Fine Curved Tweezers                                                | 115    |
| D00836         | 12.SA.SMD | SMD Tweezers for handling and positioning 2 and 3 lead SOT 45° bent | 120    |
| D00837         | 13.SA.SMD | SMD Tweezers for handling and positioning 1mm components            | 120    |

| Mfrs. List No. | Order Code | 1+    | 5+    | 10+   |
|----------------|------------|-------|-------|-------|
| D00838         | 161-7215   | 31.62 | 30.04 | 28.46 |
| D00839         | 161-7216   | 39.00 | 37.05 | 35.10 |
| D00840         | 161-7218   | 46.92 | 44.57 | 42.23 |

## Magnifier With 2 Arms

**Pro'sKit**



- Rimless Optical Lens Magnifier with Detail Inset
- Sturdy Alloy Clamp with Protective Coated Clip holds Magnifier firmly
- Stands on Desk or Tabletop with Legs Pulled Out
- Flexible Goose Neck adjusts to any position
- 2 LED Lights can also be used as a Reading Light

| Description                   | Mfrs. List No. | Order Code | 1+    | 5+    | 10+   |
|-------------------------------|----------------|------------|-------|-------|-------|
| Two-Arms Clip/Stand Magnifier | MA-018         | 166-6224   | 20.81 | 19.76 | 18.72 |

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## Low profile AC/DC Power Modules

### TMP Series with extended power from 7 to 30 Watt

- 40 Models offer single, dual, and triple output voltages
- UL 508 (15 to 30 Watt models) and UL 60950-1 safety approvals
- Fully encapsulated plastic casing
- Available for PCB mount or chassis mount with screw terminals
- Optional DIN-rail mount adaptor
- Universal Input 85-264 VAC, 47-440 Hz
- Output voltages from 5 VDC up 48 VDC
- Protection Class II, double insulation
- Short circuit protection and overload protection
- EMC compliance for commercial, residential and industrial applications
- **3 years warranty**



## TEN 8WI Series, 8 Watt, 4:1 Input Range

**TRACO POWER**
**New**

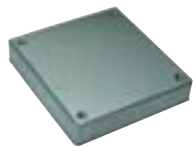

- Ultra wide 4:1 input range
- High efficiency up to 88%
- Input filter meets EN 55022, class A and FCC, level A with external capacitor
- Short circuit protection
- Six-side shielded metal case, with insulated base plate
- Remote On/Off
- Industry standard pin out
- 3 year product warranty

| PIN CONNECTIONS |               |               |             |
|-----------------|---------------|---------------|-------------|
| Pin             | Single Output |               | Dual Output |
| 1               | Remote On/Off | Remote On/Off |             |
| 2               | -Vin (GND)    | -Vin (GND)    |             |
| 3               | -Vin (GND)    | -Vin (GND)    |             |
| 9               | No con.       | Common        |             |
| 11              | No con.       | -Vout         |             |
| 14              | +Vout         | +Vout         |             |
| 16              | -Vout         | Common        |             |
| 22              | +Vin (Vcc)    | +Vin (Vcc)    |             |
| 23              | +Vin (Vcc)    | +Vin (Vcc)    |             |

| Mfrs. List No. | Input Voltage Range | Voltage | Output Current | Efficiency |
|----------------|---------------------|---------|----------------|------------|
| TEN 8-2410WI   | 9-36V               | 3.3V    | 2A             | 85%        |
| TEN 8-2411WI   | 9-36V               | 5V      | 1.5A           | 87%        |
| TEN 8-2412WI   | 9-36V               | 12V     | 665mA          | 86%        |
| TEN 8-2413WI   | 9-36V               | 15V     | 535mA          | 86%        |
| TEN 8-2421WI   | 9-36V               | ±5V     | ±800mA         | 84%        |
| TEN 8-2422WI   | 9-36V               | ±12V    | ±335mA         | 86%        |
| TEN 8-2423WI   | 9-36V               | ±15V    | ±265mA         | 86%        |
| TEN 8-4810WI   | 18-75V              | 3.3V    | 2A             | 85%        |
| TEN 8-4811WI   | 18-75V              | 5V      | 1.5A           | 87%        |
| TEN 8-4812WI   | 18-75V              | 12V     | 665mA          | 87%        |
| TEN 8-4813WI   | 18-75V              | 15V     | 535mA          | 88%        |
| TEN 8-4821WI   | 18-75V              | ±5V     | ±800mA         | 84%        |
| TEN 8-4822WI   | 18-75V              | ±12V    | ±335mA         | 86%        |
| TEN 8-4823WI   | 18-75V              | ±15V    | ±265mA         | 87%        |

| Mfrs. List No. | Order Code | 1+    | 5+    | 10+   | 25+   | 50+   |
|----------------|------------|-------|-------|-------|-------|-------|
| TEN 8-2410WI   | 177-2186   | 22.80 | 21.43 | 19.44 | 18.53 | 17.62 |
| TEN 8-2411WI   | 177-2187   | 22.80 | 21.43 | 19.44 | 18.53 | 17.62 |
| TEN 8-2412WI   | 177-2188   | 22.80 | 21.43 | 19.44 | 18.53 | 17.62 |
| TEN 8-2413WI   | 177-2189   | 22.80 | 21.43 | 19.44 | 18.53 | 17.62 |
| TEN 8-2421WI   | 177-2190   | 24.05 | 22.60 | 20.52 | 19.57 | 18.61 |
| TEN 8-2422WI   | 177-2191   | 24.05 | 22.60 | 20.52 | 19.57 | 18.61 |
| TEN 8-2423WI   | 177-2192   | 24.05 | 22.60 | 20.52 | 19.57 | 18.61 |
| TEN 8-4810WI   | 177-2194   | 22.80 | 21.43 | 19.44 | 18.53 | 17.62 |
| TEN 8-4811WI   | 177-2195   | 22.80 | 21.43 | 19.44 | 18.53 | 17.62 |
| TEN 8-4812WI   | 177-2196   | 22.80 | 21.43 | 19.44 | 18.53 | 17.62 |
| TEN 8-4813WI   | 177-2197   | 22.80 | 21.43 | 19.44 | 18.53 | 17.62 |
| TEN 8-4821WI   | 177-2198   | 24.05 | 22.60 | 20.52 | 19.57 | 18.61 |
| TEN 8-4822WI   | 177-2199   | 24.05 | 22.60 | 20.52 | 19.57 | 18.61 |
| TEN 8-4823WI   | 177-2201   | 24.05 | 22.60 | 20.52 | 19.57 | 18.61 |

## TEP 75WI Series, 75 Watt, 4:1 Input Range

**TRACO POWER**
**New**


- Rugged, compact metal case
- Easy chassis mount
- Ultra wide 4:1 input voltage range
- Full load operation up to 60°C with convection cooling
- Soft start and reverse input voltage protection
- Short circuit protection
- Remote On/Off
- Adjustable output voltage
- 3 years warranty

| PIN CONNECTIONS |               |
|-----------------|---------------|
| Pin             | Single Output |
| 1               | - Vin         |
| 2               | Case          |
| 3               | Remote On/Off |
| 4               | + Vin         |
| 5               | - Vout        |
| 6               | - Sense*      |
| 7               | Trim          |
| 8               | + Sense*      |
| 9               | + Vout        |

| Mfrs. List No. | Input Voltage Range | Voltage | Output Current | Efficiency |
|----------------|---------------------|---------|----------------|------------|
| TEP 75-2411WI  | 9-36V               | 5V      | 15A            | 88%        |
| TEP 75-2412WI  | 9-36V               | 12V     | 6.3A           | 88%        |
| TEP 75-2413WI  | 9-36V               | 15V     | 5A             | 88%        |
| TEP 75-2415WI  | 9-36V               | 24V     | 3.2A           | 87%        |
| TEP 75-2416WI  | 9-36V               | 28V     | 2.7A           | 87%        |
| TEP 75-2418WI  | 9-36V               | 48V     | 1.6A           | 87%        |
| TEP 75-4811WI  | 18-75V              | 5V      | 15A            | 90%        |
| TEP 75-4812WI  | 18-75V              | 12V     | 6.3A           | 89%        |
| TEP 75-4813WI  | 18-75V              | 15V     | 5A             | 89%        |
| TEP 75-4815WI  | 18-75V              | 24V     | 3.2A           | 87%        |
| TEP 75-4816WI  | 18-75V              | 28V     | 2.7A           | 87%        |
| TEP 75-4818WI  | 18-75V              | 48V     | 1.6A           | 87%        |

| Mfrs. List No.    | Order Code | 1+     | 5+     | 10+    |
|-------------------|------------|--------|--------|--------|
| TEP 75-2411WI     | 177-2225   | 126.30 | 119.99 | 113.99 |
| TEP 75-2412WI     | 177-2226   | 126.30 | 119.99 | 113.99 |
| TEP 75-2413WI     | 177-2227   | 126.30 | 119.99 | 113.99 |
| TEP 75-2415WI     | 177-2228   | 126.30 | 119.99 | 113.99 |
| TEP 75-2416WI     | 177-2229   | 126.30 | 119.99 | 113.99 |
| TEP 75-2418WI     | 177-2230   | 126.30 | 119.99 | 113.99 |
| TEP 75-4811WI     | 177-2231   | 126.30 | 119.99 | 113.99 |
| TEP 75-4812WI     | 177-2232   | 126.30 | 119.99 | 113.99 |
| TEP 75-4813WI     | 177-2233   | 126.30 | 119.99 | 113.99 |
| TEP 75-4815WI     | 177-2234   | 126.30 | 119.99 | 113.99 |
| TEP 75-4816WI     | 177-2236   | 126.30 | 119.99 | 113.99 |
| TEP 75-4818WI     | 177-2237   | 126.30 | 119.99 | 113.99 |
| Heat Sink TEP-HS1 | 177-2238   | 30.90  | 29.36  | 27.89  |

## DC/DC Converter - Adjustable O/P

**Okami Series**


The OKL-T/3 series are miniature non-isolated Point-of-Load (POL) DC/DC power converters for embedded applications. The tiny form factor is configured on a Land Grid Array (LGA) assembly. Applications include powering CPU's, datacom/telecom systems, distributed bus architectures (DBA), programmable logic and mixed voltage systems.

- Non-isolated SMT LGA POL DC/DC power module
- 4.5-14Vdc input voltage range
- Drives 1000  $\mu$ F ceramic capacitive loads
- High power conversion efficiency at 93% module
- On/Off control
- Designed to meet UL/EN/IEC 60950-1 safety

| Mfrs. List No. | Output Voltage (V) | Current (A) | Input Voltage (V) | On/Off Control Polarity * | Dimensions (mm) (WxHxD) |
|----------------|--------------------|-------------|-------------------|---------------------------|-------------------------|
| OKL-T/3-W12N-C | 0.591 - 5.5        | 3           | 12                | N                         | 12.4x12.4x5.6           |
| OKL-T/3-W12P-C | 0.591 - 5.5        | 3           | 12                | P                         | 12.4x12.4x5.6           |

\* N = Negative polarity, P = Positive polarity.

| Mfrs. List No. | Order Code | 1+   | 10+  | 25+  | 50+  |
|----------------|------------|------|------|------|------|
| OKL-T/3-W12N-C | 171-2341   | 6.00 | 5.86 | 5.73 | 5.60 |
| OKL-T/3-W12P-C | 171-2343   | 6.00 | 5.86 | 5.73 | 5.60 |

## DC/DC Converter - Adjustable O/P

**Okami Series**


The OKX-T/10 and -T/16 series are miniature SIP non-isolated Point-of-Load (POL) switch mode DC/DC power converters for embedded applications. The module is fully compatible with Distributed-power Open Standards Alliance (DOSA) industry-standard specifications. Applications include powering CPU's, datacom/telecom systems, distributed bus architectures (DBA), programmable logic and mixed voltage systems.

- Non-isolated SIP POL DC/DC power module
- 8.3-14Vdc input voltage range
- Programmable output voltage from 0.75-5.5Vdc
- Drives 1000  $\mu$ F capacitive loads
- Over temperature and over current protection
- Industry-standard (DOSA) SIP format

| Mfrs. List No.   | Output Voltage (V) | Current (A) | Input Voltage (V) | On/Off Control Polarity * | Dimensions (mm) (WxHxD) |
|------------------|--------------------|-------------|-------------------|---------------------------|-------------------------|
| OKX-T/10-D12N-C  | 0.75 - 5.5         | 10          | 12                | N                         | 50.8x12.7x9.4           |
| OKX-T/10-D12P-C  | 0.75 - 5.5         | 10          | 12                | P                         | 50.8x12.7x9.4           |
| OKX2-T/10-D12N-C | 0.75 - 5.5         | 10          | 12                | N                         | 50.8x12.7x9.4           |
| OKX2-T/10-D12P-C | 0.75 - 5.5         | 10          | 12                | P                         | 50.8x12.7x9.4           |
| OKX-T/16-D12N-C  | 0.75 - 5.5         | 16          | 12                | N                         | 50.8x12.7x9.4           |
| OKX-T/16-D12P-C  | 0.75 - 5.5         | 16          | 12                | P                         | 50.8x12.7x9.4           |
| OKX2-T/16-D12N-C | 0.75 - 5.5         | 16          | 12                | N                         | 50.8x12.7x9.4           |
| OKX2-T/16-D12P-C | 0.75 - 5.5         | 16          | 12                | P                         | 50.8x12.7x9.4           |

\* N = Negative polarity, P = Positive polarity.

| Mfrs. List No.   | Order Code | 1+    | 10+   | 25+   | 50+   |
|------------------|------------|-------|-------|-------|-------|
| OKX-T/10-D12N-C  | 170-5262   | 12.03 | 11.83 | 11.66 | 11.31 |
| OKX-T/10-D12P-C  | 170-5263   | 12.03 | 11.83 | 11.66 | 11.31 |
| OKX-T/16-D12N-C  | 170-5264   | 13.50 | 13.28 | 13.09 | 12.70 |
| OKX-T/16-D12P-C  | 170-5265   | 13.50 | 13.28 | 13.09 | 12.70 |
| OKX2-T/10-D12N-C | 170-5266   | 13.50 | 13.28 | 13.09 | 12.70 |
| OKX2-T/10-D12P-C | 170-5267   | 13.50 | 13.28 | 13.09 | 12.70 |
| OKX2-T/16-D12N-C | 170-5268   | 14.50 | 14.26 | 14.06 | 13.64 |
| OKX2-T/16-D12P-C | 170-5269   | 14.50 | 14.26 | 14.06 | 13.64 |



## DC/DC Converter - Adjustable O/P

Okami Series



The OKY-T/3 and -T/5 series are miniature nonisolated Point-of-Load (POL) switch mode DC/DC power converters for embedded applications. The module is fully compatible with Distributed-power Open Standards Alliance (DOSA) industry-standard specifications. Applications include powering CPU's, datacom/telecom systems, distributed bus architectures (DBA), programmable logic and mixed voltage systems.

- Non-isolated SMT POL DC/DC power module
- 8.3-14Vdc input voltage range
- Programmable output voltage from 0.75-5.5Vdc
- Drives 1000  $\mu$ F capacitive loads
- Over temperature and over current protection
- On/Off control
- Industry-standard (DOSA) surface-mount package

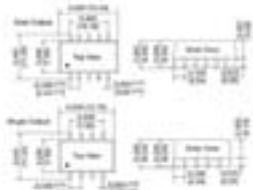
| Mfrs. List No. | Output Voltage (V) | Output Current (A) | Input Voltage (V) | On/Off Control Polarity * | Dimensions (mm) (WxHxD) |
|----------------|--------------------|--------------------|-------------------|---------------------------|-------------------------|
| OKY-T/3-D12N-C | 0.75 - 5.5         | 3                  | 12                | N                         | 20.8x11.9x7.1           |
| OKY-T/3-D12P-C | 0.75 - 5.5         | 3                  | 12                | P                         | 20.8x11.9x7.1           |
| OKY-T/5-D12N-C | 0.75 - 5.5         | 5                  | 12                | N                         | 20.8x11.9x7.1           |

\* N = Negative polarity, P = Positive polarity.

| Mfrs. List No. | Order Code | 1+   | 10+  | 25+  | 50+  |
|----------------|------------|------|------|------|------|
| OKY-T/3-D12N-C | 170-5270   | 6.20 | 6.10 | 6.01 | 5.83 |
| OKY-T/3-D12P-C | 170-5272   | 6.20 | 6.10 | 6.01 | 5.83 |
| OKY-T/5-D12N-C | 170-5273   | 7.50 | 7.38 | 7.27 | 7.05 |

## 1 Watt Single and Dual Output DC/DC Converters

Industry Standard SMD Package



| PIN CONNECTIONS | Single Output | Dual Output |
|-----------------|---------------|-------------|
| Pin             |               |             |
| 1               | -Vin          | -Vin        |
| 2               | +Vin          | +Vin        |
| 3               | N/C           | N/C         |
| 4               | 0V            | 0V          |
| 5               | +Vout         | -Vout       |
| 6               | N/C           | N/C         |
| 7               | N/C           | +Vout       |
| 8               | N/C           | N/C         |
| 9               | N/A           | N/C         |
| 10              | N/A           | N/C         |

- Single & Dual Output
- SMD Package
- Industry Standard Pinout
- 1000 VDC Isolation
- Short Circuit Protection
- MTBF >3.5 Mhrs
- 3 Year Warranty



Input Voltage Range: 8.3-14Vdc  
Line Regulation: 1.2%/1%  $\Delta$  Vin  
Load Regulation: 7.5% 10-100% load change  
Ripple & Noise: Single output: 100 mV pk-pk, 20 MHz bandwidth  
Dual output: 75mV pk-pk, 20MHz bandwidth  
Isolation: 1000 VDC  
Operating Temperature: -40°C to +85°C, full load  
MTBF: >3.5 Mhrs to MIL-HDBK-217F at 25°C, GB

| Mfrs. List No. | Input Voltage (V) | Output Voltage (V) | Output Current (mA) | Efficiency (%) | Order Code |
|----------------|-------------------|--------------------|---------------------|----------------|------------|
| ISF0303A       | 3.3               | 3.3                | 300                 | 73             | 177-6109   |
| ISF0305A       | 3.3               | 5                  | 200                 | 74             | 177-6110   |
| ISF0503A       | 5                 | 3.3                | 300                 | 72             | 177-6111   |
| ISF0505A       | 5                 | 5                  | 200                 | 77             | 177-6112   |
| ISF0509A       | 5                 | 9                  | 110                 | 76             | 177-6114   |
| ISF0512A       | 5                 | 12                 | 84                  | 79             | 177-6115   |
| ISF0515A       | 5                 | 15                 | 67                  | 78             | 177-6116   |
| ISF0505        | 5                 | $\pm$ 5            | $\pm$ 100           | 77             | 177-6117   |
| ISF0509        | 5                 | $\pm$ 9            | $\pm$ 55            | 76             | 177-6118   |
| ISF0512        | 5                 | $\pm$ 12           | $\pm$ 42            | 79             | 177-6119   |
| ISF0515        | 5                 | $\pm$ 15           | $\pm$ 33.5          | 78             | 177-6120   |
| ISF1205A       | 12                | 5                  | 200                 | 69             | 177-6121   |
| ISF1209A       | 12                | 9                  | 110                 | 73             | 177-6122   |
| ISF1212A       | 12                | 12                 | 84                  | 73             | 177-6123   |
| ISF1215A       | 12                | 15                 | 67                  | 74             | 177-6124   |
| ISF1205        | 12                | $\pm$ 5            | $\pm$ 100           | 69             | 177-6126   |
| ISF1209        | 12                | $\pm$ 9            | $\pm$ 55            | 73             | 177-6127   |
| ISF1212        | 12                | $\pm$ 12           | $\pm$ 42            | 73             | 177-6128   |
| ISF1215        | 12                | $\pm$ 15           | $\pm$ 33.5          | 74             | 177-6129   |
| ISF2403A       | 24                | 3.3                | 300                 | 69             | 177-6130   |
| ISF2405A       | 24                | 5                  | 200                 | 70             | 177-6131   |
| ISF2409A       | 24                | 9                  | 110                 | 72             | 177-6132   |
| ISF2412A       | 24                | 12                 | 84                  | 75             | 177-6133   |
| ISF2415A       | 24                | 15                 | 67                  | 76             | 177-6134   |

| Mfrs. List No. | Input Voltage (V) | Output Voltage (V) | Output Current (A) | Efficiency (%) | Order Code |
|----------------|-------------------|--------------------|--------------------|----------------|------------|
| ISF2424A       | 24                | 24                 | 42                 | 77             | 177-6135   |
| ISF2405        | 24                | $\pm$ 5            | $\pm$ 100          | 70             | 177-6136   |
| ISF2409        | 24                | $\pm$ 9            | $\pm$ 55           | 72             | 177-6138   |
| ISF2412        | 24                | $\pm$ 12           | $\pm$ 42           | 75             | 177-6139   |
| ISF2415        | 24                | $\pm$ 15           | $\pm$ 33.5         | 76             | 177-6140   |

|               | Order Code      | 1+   | 5+   | 10+  | 25+  |
|---------------|-----------------|------|------|------|------|
| Single Output | All Order Codes | 4.00 | 3.88 | 3.76 | 3.60 |
| Dual Output   | All Order Codes | 4.50 | 4.37 | 4.23 | 4.05 |

## 150 - 500 Watt Single Output Industrial PSU's



- Single Output Industrial Supplies
- High Efficiency
- Low Cost
- Output Voltage Trim
- 150 W Convection Cooled
- 300 W & 500 W with Internal Fans
- Outputs from 12 V to 48 V
- 3 Year Warranty

| Mfrs. List No. | Power | Output Voltage | Current | Dimensions (WxDxH) | Order Code |
|----------------|-------|----------------|---------|--------------------|------------|
| LCL150PS12     | 150W  | 12V            | 12.5A   | 192 x 95 x 50      | 173-8311   |
| LCL150PS15     | 150W  | 15V            | 10A     | 192 x 95 x 50      | 173-8312   |
| LCL150PS24     | 150W  | 24V            | 6.3A    | 192 x 95 x 50      | 173-8313   |
| LCL150PS48     | 150W  | 48V            | 3.1A    | 192 x 95 x 50      | 173-8314   |
| LCL300PS12     | 300W  | 12V            | 25A     | 205 x 110 x 50     | 173-8315   |
| LCL300PS15     | 300W  | 15V            | 20A     | 205 x 110 x 50     | 173-8316   |
| LCL300PS24     | 310W  | 24V            | 13A     | 205 x 110 x 50     | 173-8317   |
| LCL300PS48     | 320W  | 48V            | 6.7A    | 205 x 110 x 50     | 173-8319   |
| LCL500PS12     | 500W  | 12V            | 42A     | 250 x 127 x 53     | 173-8321   |
| LCL500PS15     | 500W  | 15V            | 34A     | 250 x 127 x 53     | 173-8322   |
| LCL500PS24     | 500W  | 24V            | 21A     | 250 x 127 x 53     | 173-8323   |
| LCL500PS48     | 500W  | 48V            | 10.5A   | 250 x 127 x 53     | 173-8324   |

|        | Order Code      | 1+     | 5+     | 10+    | 25+    |
|--------|-----------------|--------|--------|--------|--------|
| LCL150 | All Order Codes | 53.00  | 51.41  | 49.82  | 47.70  |
| LCL300 | All Order Codes | 95.00  | 92.15  | 89.30  | 85.50  |
| LCL500 | All Order Codes | 150.00 | 145.50 | 141.00 | 135.00 |

## 100 Watt Single Output

Ultra Compact Design



- IT & Medical Safety Approvals
- Green Mode, <0.5 W Standby Power
- 80W - Convection-cooled
- 100W - Forced Cooled
- Class I & Class II Construction
- Industry Standard 2" x 4" Package
- Low Leakage Current
- 3 Year Warranty

Dimensions (mm): H=30.5, W=101.6, D=50.8

| Mfrs. List No. | Output Power (Convection Cooled) | Output Power (Forced Cooled 10 CFM) | Output Voltage | Output Current | Order Code |
|----------------|----------------------------------|-------------------------------------|----------------|----------------|------------|
| ECS100US12     | 100W                             | 100W                                | 12V            | 8.3A           | 173-8297   |
| ECS100US15     | 100W                             | 100W                                | 15V            | 6.7A           | 173-8298   |
| ECS100US24     | 100W                             | 100W                                | 24V            | 4.2A           | 173-8299   |
| ECS100US28     | 100W                             | 100W                                | 28V            | 3.6A           | 173-8300   |
| ECS100US48     | 100W                             | 100W                                | 48V            | 2.1A           | 173-8301   |

|               | Order Code      | 1+    | 5+    | 10+   | 25+   |
|---------------|-----------------|-------|-------|-------|-------|
| ECS100 Series | All Order Codes | 41.00 | 39.77 | 38.54 | 36.90 |

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## U1210 Series Handheld Clamp Meters

Agilent Technologies



U1213A

Measurements of electrical distribution cables can be challenging and risky. The Agilent U1210 Series handheld clamp meters enable high-current measurements without breaking the circuit. Unlike most clamp meters, they also include DMM capabilities - resistance, capacitance, frequency and temperature - to simplify troubleshooting during installation and maintenance. Best of all, they provide an extra layer of protection with CAT IV 600V and CAT III 1000 V safety ratings.

- Large clamp opening of 52mm or 2 inch
- High measurement capability of up to 1000 A for AC, DC or AC + DC
- CAT III 1000 V/ CAT IV 600 V safety rating
- Includes full-featured DMM with resistance, capacitance, frequency and temperature functions
- High resolution measurements - measure current as low as 0.01 mA
- Peak hold

- Dual ranging mode - manual and auto
- Min / max recording capability
- Large dual display
- For more information, please visit [farnell.com](http://farnell.com)

### Dimensions

#### U1211A

106mm(W) X 273mm(L) X 43mm(H)

#### U1212A & U1213A

106mm(W) X 260mm(L) X 43mm(H)

### Net Weight

#### U1211A

625 grams with batteries included

#### U1212A & U1213A

525 grams with batteries included

### Display

4 digits with maximum reading 4,100 counts. The 12 Segments analog bar graph and full annunciator. Automatic polarity indication.

### Battery

#### Battery Life

Standard 9 V Battery - Alkaline

#### Operating temperature

-10°C to 50°C, 0-80% R.H.

#### Storage temperature

-20°C to 60°C, 0-80% R.H.

|                               | Mfrs.<br>List No. | Order Code | Price Each<br>1+ |
|-------------------------------|-------------------|------------|------------------|
| AC Clamp Meter - 1000A        | U1211A            | 178-0334   | 189.00           |
| AC/DC Clamp Meter - 1000A     | U1212A            | 178-0336   | 249.00           |
| AC/DC Clamp Meter Pro - 1000A | U1213A            | 178-0337   | 264.00           |

## U1583B Current Clamp

Agilent Technologies



The U1583B current clamp is designed for Agilent handheld digital multimeter (DMM) and handheld digital oscilloscope. The BNC-to-banana plug is required to connect the current clamp with DMM. While for handheld oscilloscope, it needs to use with BNC connector.

- Dual range 40 A and 400 A clamp-on AC current clamp.
- Designed for Agilent handheld digital multimeter (DMM) and Agilent handheld oscilloscope.
- For more information, please visit [farnell.com](http://farnell.com)

| Specifications          | Current Clamp                                                                           |
|-------------------------|-----------------------------------------------------------------------------------------|
| Specified Current Range | 1 A to 400 A ac                                                                         |
| Usable Current Range    | 0.5 A to 400 A                                                                          |
| AC crest factor         | < 3                                                                                     |
| Bandwidth               | 10 kHz                                                                                  |
| Operating Temperature   | -10 °C to 55 °C (14 °F to 131 °F)                                                       |
| Storage Temperature     | -20 °C to 70 °C (-4 °F to 158 °F)                                                       |
| Relative Humidity       | Max 80% RH for temperature up to 35 °C decreasing linearly to 50% RH at 55 °C           |
| Maximum Jaw Opening     | 32 mm                                                                                   |
| Maximum conductor size  | 30 mm or 16 mm x 2                                                                      |
| Load impedance          | > 1 M ohm, < 100 pF                                                                     |
| Cable length            | 1500 +/- 20 mm                                                                          |
| Altitude                | Up to 2000 meters                                                                       |
| Safety Compliance       | Certified by UL ( Canada & USA ) for IEC/EN/UL 61010-1 2nd Edition & EN/IEC 61010-2-032 |
| Measurement Category    | CAT III 600 V; Pollution degree II                                                      |
| EMC Compliance          | Certified to IEC/EN 61326:2002, CISPR 11, and equivalents for Group 1, Class A          |
| Dimensions (HxWxD)      | 44 mm (H) x 92 mm (W) x 188 mm (L)                                                      |
| Weight                  | 294 grams                                                                               |
| Warm-up time            | Immediately upon power on                                                               |

| Mfrs.<br>List No. | Order Code | Price Each<br>1+ |
|-------------------|------------|------------------|
| U1583B            | 178-0332   | 106.00           |

## Handheld Digital Oscilloscopes

Agilent Technologies

### U1600B Series



W=138, H=241, D=66mm. Weight 1.5kg

A three-in-one solution: Dual channel oscilloscope, True RMS DMM and Real-Time Data Logger. A high performance troubleshooting and quality assurance tool for technical professionals in the installation, maintenance, service and automotive industries.

- Large 4.5" 320x240 pixel colour LCD display
- Full remote control and data transfer via PC Link application software
- USB 1.1 full speed interface connectivity
- Multi-language Quick Help support
- 125 kilobytes/channel of waveform memory depth
- Up to 10 waveforms and configuration setups can be stored and recalled at anytime
- For extra storage, versions with USB flash drive support are available
- Real-time data logging functionality

### Oscilloscope features:

- Available in 20MHz and 40MHz bandwidth versions
- Autoscaling
- Dual Waveform Math (DWM) and Fast Fourier Transform (FFT)
- 22 automatic measurements and cursor measurements

### Multimeter features:

- 6000 count auto-ranging TRMS Digital Multimeter
- Voltage, Resistance and Capacitance measurements
- Diode and Continuity tests

### Oscilloscope Specifications

|                               | U1602B                                                                            | U1604B              |
|-------------------------------|-----------------------------------------------------------------------------------|---------------------|
| Bandwidth                     | 20MHz                                                                             | 40MHz               |
| Max. Sample Rate              | 200 MSamples/sec (interleaved)                                                    |                     |
| Rise Time                     | 17ns                                                                              | 8ns                 |
| Memory Depth                  | 125 kB / channel                                                                  |                     |
| <b>Vertical System</b>        |                                                                                   |                     |
| Vertical Range                | 5mV/div to 100V/div                                                               |                     |
| Vertical Resolution           | 8 bits                                                                            | 8 bits              |
| DC Vertical Gain Accuracy     | 3%                                                                                | 3%                  |
| <b>Horizontal System</b>      |                                                                                   |                     |
| Horizontal Range              | 50ns/div to 50s/div                                                               | 10ns/div to 50s/div |
| Horizontal Resolution         | 2ns                                                                               | 400ps               |
| Horizontal Accuracy           | 3%                                                                                | 3%                  |
| <b>Triggering</b>             |                                                                                   |                     |
| Trigger Source                | Channel 1 and Channel 2                                                           |                     |
| Trigger Modes                 | Auto, Normal, Single, Roll                                                        |                     |
| Selections                    | Edge, Pattern, Pulse Width, Video                                                 |                     |
| <b>Automatic Measurements</b> |                                                                                   |                     |
| Voltage                       | pk-to-pk, max, min, amplitude, top, base, overshoot, preshoot, RMS and mean       |                     |
| Time                          | frequency, period, width, duty cycle, rise time, fall time, delay and phase shift |                     |
| Waveform Maths                | CH1+CH2, CH1-CH2, CH2-CH1                                                         |                     |
| FFT (U1604A only)             | Rectangular, Hanning, Hamming and Blackman-Harris windows                         |                     |

### Multimeter Specifications

|             | Ranges        | Best Accuracy             |
|-------------|---------------|---------------------------|
| AC Voltage  | 600mV to 600V | ±(0.75% rdg + 0.2% range) |
| DC Voltage  | 600mV to 600V | ±(0.3% rdg + 0.08% range) |
| Resistance  | 600Ω to 600MΩ | ±(0.5% rdg + 0.2% range)  |
| Capacitance | 60nF to 300μF | ±(2% rdg + 0.2% range)    |

**Accessories included:** Probe (1:1) CAT III 300 V, Probe (10:1) CAT III 600 V, Ground alligator clip, DMM test lead, Hook Clip, Medium jaw alligator clip, USB cable, Power lead and AC adapter, Ni-MH battery pack, Quick Start Guide, CD-ROM containing Users Guide, Quick Start Guide and PC Link Application Software.

| Description          | Mfrs.<br>List No. | Order Code | Price Each<br>1+ |
|----------------------|-------------------|------------|------------------|
| 20MHz Scope          | U1602B            | 178-0320   | 1,025.00         |
| 20MHz Scope with USB | U1602B-001        | 178-0321   | 1,139.00         |
| 40 MHz Scope         | U1604B            | 178-0322   | 1,280.00         |
| 40MHz Scope with USB | U1604B-001        | 178-0324   | 1,394.00         |

## U1401B Multi-function Calibrator/Meter

Agilent Technologies



The U1401B Handheld Multi-function Calibrator/Meter from Agilent Technologies sets new levels of versatility and convenience in process control calibration with its ability to simultaneously source and measure. Such versatility, complete with high performance DMM capability, in an attractive price-value point, sets the U1401B strides ahead of other instruments in its class.

### Key Features:

- Simultaneous source and measure
- Process calibration tool incorporated with complete DMM features
- Trusted reliability and value
- 3-year warranty standard with every unit

(HxWxD) 192 x 90 x 54mm

Order Code  
178-0331

Price Each  
553.00

## Digital Multimeters U1241B & U1242B

Agilent Technologies



- 10,000 count display
- 0.09% basic DC voltage accuracy and true RMS measurement
- Basic functions: DCV, DCI, ACV, ACI, resistance, frequency, continuity, diode test
- Advanced functions (U1241B): capacitance, temperature, switch counter
- Advanced functions (U1242B): capacitance, temperature, switch counter, harmonic ratio, dual temperature (T1, T2, T1-T2)
- Manual and autoranging
- Continuity beeper and diode test
- Adjustable backlighting
- Min/Max recording
- Built-in probe holder
- Overmould body casing
- CAT III 1000V OV protection
- Certified to CE, CSA, and UL standards
- Powered by 4 x AAA batteries

| Description                | Mfrs. List No. | Order Code | Price Each |
|----------------------------|----------------|------------|------------|
| Handheld Multimeter U1241A | U1241B         | 178-0325   | 152.00     |
| Handheld Multimeter U1242A | U1242B         | 178-0326   | 167.00     |

## Handheld Digital Multimeters

U1251B and U1252B



- 50000 counts resolution on both displays
- 100 manual data storage points
- dBm measurements
- Diode test
- Duty cycle measurements
- Pulse width measurement
- Peak Hold
- IR to USB connectivity (optional U1173A connectivity cable sold separately)
- -20°C to +55°C operating temperature
- IEC61010-1 Cat III 1000V safety compliance
- Robust over-moulded design with multi-function tilt stand
- **U1252B Additional Features:**
  - 20 MHz frequency counter
  - Programmable square wave generator
  - Built-in battery charger capability
  - Support for J type thermocouple

### Accessories Included:

Soft carrying case, Battery, U1160A Standard Test Lead Kit, Quick Start Guide, User Guide, PC Software, Instrument Drivers, AC adaptor (U1252B only).

|     | Mfrs. List No. | Order Code | Price Each |
|-----|----------------|------------|------------|
| DMM | U1251B         | 178-0318   | 303.00     |
| DMM | U1252B         | 178-0319   | 333.75     |

## Agilent OLED DMM U1253B

Agilent Technologies



When you're carrying the world's first OLED handheld DMM, you won't have to squint to be sure that you're reading it right. On the go or on the bench, you'll get crystal-clear viewing indoors, even in dark, off-angle situations. Even though the U1253B is loaded with high-performance features and easy-to-use functions, it's priced to be easy on your pocket, too. You might even say it's revolutionary.

Mfrs.  
U1253B

Order Code  
178-0327

Price Each  
339.00

## PicoLog 1000 Series

Multichannel Voltage Data Loggers

pico  
Technology



Terminal Board

Designed to meet the needs of a wide range of general-purpose voltage, sensor and transducer logging applications, the PicoLog 1216 and 1012 feature independent software-configurable channels, ranges, scaling and control outputs, an external terminal board for custom front-end circuitry and a choice of 10 or 12-bit input resolution.

The PicoLog 1000 Series multichannel voltage data loggers include everything needed for immediate use and are complemented by a full suite of software including the PicoLog data logging package, the PicoScope oscilloscope package and an SDK for writing user programs. Both loggers feature 3 sampling modes to meet most data logging needs: real-time continuous, streaming and block mode. Streaming allows channel voltage readings to be logged continuously at 1 kS/s on any number of channels, while real-time continuous provides averaged, time-accurate readings with automatic measurements available in PicoLog. Block mode captures at the full 1 MS/s sample rate of the logger for the duration of the 8k sample buffer.

### PicoLog 1000 Series:

- 12 or 16 unipolar analog input channels
- 10 or 12-bit resolution for up to 0.5% accuracy
- up to 4 software configurable digital output lines
- 1 PWM control output (PicoScope 1216 only)
- Up to 1 MS/s sample rate
- USB connected and powered
- Software and pin-compatible with Pico USB ADC-11
- Works with Windows XP and Vista (32 and 64-bit) and Windows 7.
- Includes API and examples for C/C++/C#, VB, LabVIEW VIs
- Complete with terminal board and ready-to-go data logging software

| Mfrs. List No.       | Order Code | Price Each |
|----------------------|------------|------------|
| PICOLOG 1216         | 171-5266   | 159.00     |
| PICOLOG 1012         | 171-5267   | 105.00     |
| SMALL TERMINAL BOARD | 171-5269   | 15.00      |

## Digital Storage Oscilloscopes

GDS1000A Series

GW INSTEK



GDS-1000A Series is a general purpose 2-channel oscilloscope and originally designed to meet educational and industrial requirements without specializing in DSO features. This series provides three selective bandwidths of upto 150MHz together with innovative human machine interface design plus an TFT color LCD display, users will enjoy better measurement experience!

GDS-1000A series offers dual sampling mode, giving users two options for 1GSa/s Real-Time sampling or 25GSa/s high-speed Equivalent sampling rate. What's more, with high-speed wave handling capability, more advanced triggering functions, and 2.5 kg light-weight design, it is a powerful functional oscilloscope.

Easy to use Several acquisition mode and 27 auto measurement functions help user to measure the accurate property of waveforms. The advanced auto-set function makes GDS-1000A Series catch waveform automatically and display waveform quickly. With arithmetic functions, FFT function keeps user aware of the results by updating value immediately. Without almost extra-calculation GDS-1000A series can provide sufficient information of testing.

- 150/100/60 MHz Bandwidths
- Sample Rates up to 1 GSa/s Real-Time Maximum, 25GSa/s Equivalent-Time
- 2M Points Record Length Maximum
- 2mV-10V Vertical Scale
- 1ns-50s Horizontal Range
- TFT LCD Display Panel
- Up to 27 Automatic Measurements
- Up to 10ns Peak Detection for Glitch Capture
- Advanced Video, Pulse Width Trigger
- Cursor Tracking
- SD Card Supported
- On-Line Help and Multi-Language Operating Supported

|                       | GDS1062A                                   | GDS1102A | GDS1152A |
|-----------------------|--------------------------------------------|----------|----------|
| Bandwidth             | 60MHz                                      | 100MHz   | 150MHz   |
| Channels              | 2                                          | 2        | 2        |
| Real-Time Sample Rate | 1GSa/s maximum                             |          |          |
| Vertical Sensitivity  | 2mV/div ~ 10V/div (1-2.5 increments)       |          |          |
| Vertical Resolution   | ± (3% x 'Readout' + 0.1 div + 1mV)         |          |          |
| Display               | 5.6 inch                                   |          |          |
| Display resolution    | 234 (Vertically) x 320 (Horizontally) Dots |          |          |
| Dimensions            | 310(W) x 142 (H) x 140(D)mm                |          |          |
| Weight                | Approx. 2.5kg                              |          |          |

Continues on next page

| Bandwidth<br>MHz | Order Code | Price Each<br>1+ |
|------------------|------------|------------------|
| 60               | 173-9527   | 514.00           |
| 100              | 173-9528   | 634.00           |
| 150              | 173-9531   | 699.00           |

## Digital Storage Oscilloscopes



**TENMA**

**New**

- Dual channel
- HD colour LCD display system at 320 x 240 resolution
- Supports plug-and-play USB storage devices and capable of communicating with a computer through the USB storage device
- Automatic waveform and status configuration
- Storage of waveforms, setups and bit map and waveforms, setups recurrence
- Sophisticated window expansion function to analyse waveform details and overview precisely
- Automatic measurement of 19 waveform parameters
- Automatic cursor tracing measurement
- Unique wave recording and replay function
- Built-in FFT
- Multiple waveform mathematics functions (including add, subtract, multiply and divide)
- Edge, video, pulse width and alternate trigger functions
- Multilingual menu displays

|           | Sample Rate<br>Sample Rate (72-8395)<br>Trigger Type<br>Auto Waveform Measurements<br>Dimensions (WxHxD)<br>Weight | 500MS/s<br>250MS/s<br>Edge, Pulse, Video and Alternate<br>28<br>320x150x130mm<br>4kg |
|-----------|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Bandwidth | 72-8395 25 MHz                                                                                                     | 72-8225 40 MHz                                                                       |
| Rise Time | <14ns                                                                                                              | <8.7ns                                                                               |
| Bandwidth | 72-8240 100 MHz                                                                                                    | 72-8245 150 MHz                                                                      |
| Rise Time | <3.5ns                                                                                                             | <2.3ns                                                                               |

| Mfrs. List No. | Bandwidth | Order Code | Price Each<br>1+ |
|----------------|-----------|------------|------------------|
| 72-8395        | 25MHz     | 173-9448   | 269.00           |
| 72-8225        | 40MHz     | 173-9443   | 305.00           |
| 72-8230        | 60MHz     | 173-9444   | 349.00           |
| 72-8240        | 100MHz    | 173-9445   | 495.00           |
| 72-8245        | 150MHz    | 173-9446   | 660.00           |
| 72-8250        | 200MHz    | 173-9447   | 795.00           |

## DMM/Component Tester with Tweezers



**TENMA**

**New**

Compact pocket size component tester with tweezers measures AC/DC volts, resistance, capacitance and provides diode test. Convenient 'pen-style' allows the unit to be carried easily in a shirt pocket or toolbox. Included SMD probe allows quick one hand measurements of resistors, capacitors and diodes, even when mounted to a PC board. Simply unplug the probe and insert the included test leads and the unit is ready to measure AC/DC volts.

- 6,000 Count LCD display
- Selectable auto/manual range
- Data Hold/Max/Min recording mode
- Auto power off
- Wide capacitance range
- Diode check & continuity test
- Simple two button operation
- Slim compact size
- Dimensions (WxHxD): 37 x 184 x 23mm
- Weight: 110g
- Supplied with SMD probe & cover, test leads, 2x LR44 batteries & user guide.

| Technical Data   |                                   |            |
|------------------|-----------------------------------|------------|
| DC Voltage       | 600mV, 6V, 50V                    | ±0.5%, ±2  |
| AC Voltage       |                                   | ±1.0%, ±3  |
| Resistance       | 600Ω, 6KΩ, 60KΩ, 600KΩ, 6MΩ, 60MΩ | ±0.8%, ±2  |
| Capacitance      |                                   | ±5%, ±7    |
| Diode Continuity | Buzzer sounds at less than 30Ω    |            |
| Description      | Order Code                        | Price Each |
| SMD-100          | 174-9431                          | 35.00      |

## LAN Tester & Multimeter

**TENMA**

**New**



Compact 2-in-1 unit provides standard digital multimeter functions, as well as pin configurations on network and voice cables. Dual pinout indicator provides sequential verification of each pin on a network cable, and the included remote terminator allows testing of cables which are already installed. Digital multimeter measures AC/DC volts and amps, resistance and diodes, and provides audible continuity test.

- 2,000 Count LCD display
- Verifies correct wiring of 10 Base-T & 10 Base Thin Ethernet, RJ-45, RJ11, RJ12 and BNC network cables
- Autoranging multimeter functions
- Selectable auto/manual range selection
- Max & Data hold
- Selectable continuity beep

### Technical Data

|                 |                                 |
|-----------------|---------------------------------|
| DC Voltage      | 200mV, 2V, 20V, 200V, 600V      |
| AC Voltage      | 2V, 20V, 200V, 600V             |
| DC Current      | 200μA, 2000μA, 20mA, 200mA      |
| AC Current      | 200μA, 2000μA, 20mA, 200mA      |
| Resistance      | 200Ω, 2KΩ, 20KΩ, 2MΩ, 20MΩ      |
| Continuity      | Buzzer sounds at less than 150Ω |
| Input Impedance | 7.5MΩ                           |

### Basic Accuracy

|                 |
|-----------------|
| ±0.5% +3 digits |
| ±1.0% +5 digits |
| ±1.5% +3 digits |
| ±1.8% +3 digits |
| ±1.2% +5 digits |

| Description | Order Code | Price Each |
|-------------|------------|------------|
|             | 174-9433   | 29.95      |

## Tone & Probe Set

**TENMA**

**New**



This tone & probe set is a basic necessity for anyone running data, voice or any other low voltage cable. It is also suitable for tracing alarm, coax or speaker cables which are already installed.

- Headphone jack
- Transmitter has attached RJ-11 plug and clip leads

- Quickly trace and identify cables
- Provides live telephone line status check
- Selectable steady and warble tone
- Volume control

Supplied with 2x 9V batteries, belt loop carry case & user guide.

| Order Code | Price Each |
|------------|------------|
| 174-9434   | 32.50      |

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Phone: 08447 11 11 11



**NEW**

**FLUKE**

### The world's first Digital Multimeter with detachable display

The Fluke 233 Remote Display Multimeter will change the way you use a True-RMS Digital Multimeter (DMM). Its removable magnetic display has a wireless link, so you can take measurements in one place and view readings at another. Ideal for hard to reach places or hazardous areas, it lets you work more productively and more safely. That's Fluke's Five-Star performance.

- ★ Rugged
- ★ Safe
- ★ Easy to use
- ★ Accurate
- ★ Reliable, with long life

Looking for true flexibility in unusual test situations? The Fluke 233 is the world's first DMM that lets you be in two places at once.

**Fluke.** Keeping your world up and running.®

**Be here,  
work there!**

[www.farnell.com/fluke](http://www.farnell.com/fluke)

### Fluke 233 Remote Display Digital Multimeter

**FLUKE**



The first Fluke digital multimeter with a detachable display is here. The 233 wireless remote DMM allows maintenance professionals to address an age-old problem - display positioning. The new Fluke 233 can be used for even the most common meter measurements and is especially suited for those situations where display viewing is challenging

- True-rms ac voltage and current for accurate measurements on non-linear signals
- Measure up to 1000 V ac and dc
- Measure up to 10 A (20 A for 30 seconds)
- 10,000  $\mu$ F capacitance range
- Frequency to 50 kHz
- Built in thermometer conveniently allows you to take temperature readings without having to carry a separate instrument
- Resistance, continuity and diode test

|                |                             |                     |                  |
|----------------|-----------------------------|---------------------|------------------|
| Wireless Range | 30 Ft                       | Size (H x W x L) cm | 5.3 x 9.3 x 19.3 |
| Safety Rating  | CAT III 1000 V CAT IV 600 V | Weight              | 604 g            |

**Fluke 233 Remote Display Multimeter Includes:** Getting Started Manual (Printed), AA Batteries installed, Test leads, AC72 Alligator clips, 80BK-A Temperature Probe, CD-ROM (user manual & technical notes and application images)

| Mfrs. List No. | Order Code | Price Each   |
|----------------|------------|--------------|
| FLUKE 233      | 177-2092   | 1+<br>269.00 |

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Phone: 08447 11 11 11

### Fluke 27 II & 28 II Multimeters

**FLUKE**



The NEW Fluke 27 II and 28 II digital multimeters define a new standard for operating in harsh conditions with the features and accuracy to troubleshoot most electrical problems. Both meters have IP 67 (waterproof and dustproof) rating, extended operating temperature range of -15 °C to +55 °C (5 °F to 131 °F, -40 °C for up to 20 minutes) and 95 % humidity, and have been designed and tested to withstand a 3 m (10 ft) drop. The new Fluke 20 Series Multimeters are built to work in the toughest environments.

- Measure up to 1000 V ac and dc
- Measure up to 10 A (20 A for 30 seconds)
- 10,000  $\mu$ F capacitance range
- Frequency to 200 kHz
- Extended ac voltage bandwidth-15 Hz to 20 kHz (28 II), 40 Hz to 30 kHz (27 II)
- Built in thermometer conveniently allows you to take temperature readings without having to carry a separate instrument (28 II)
- Resistance, continuity and diode test
- Min/Max and average recording to capture variations automatically
- Peak min-max (28 II)
- Unique function for accurate voltage and frequency measurements on adjustable speed motor drives and other electrically noisy equipment (28 II)

#### Product Specifications:

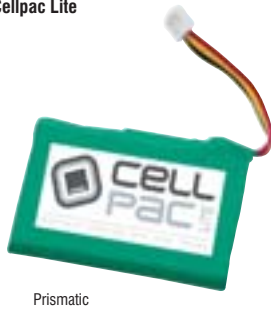
|                                                      | Fluke 27 II | Fluke 28 II                          |
|------------------------------------------------------|-------------|--------------------------------------|
| Agency Approvals: CSA, C-US, C-Tick, TUV             |             |                                      |
| Counts                                               | 6000        | True-rms 6000 / 19,999               |
| Voltage: 1000 V AC/DC                                | ●           | ●                                    |
| Current: 10 A AC/DC                                  | ●           | ●                                    |
| Resistance: 50 M $\Omega$                            | ●           | ●                                    |
| Continuity / Diode                                   | ●           | ●                                    |
| Capacitance: 10,000 $\mu$ F                          | ●           | ●                                    |
| Frequency 200kHz                                     | ●           | ●                                    |
| Min/Max/Average, Hold, Auto and Manual Range         | ●           | ●                                    |
| Peak Min/Max                                         |             | ●                                    |
| Temperature: -40 °C to +1090 °C (Display °C or °F)   |             | ●                                    |
| Low Pass Filter for working on variable speed drives |             | ●                                    |
| Safety Rating                                        |             | ●                                    |
| Battery life                                         |             | ●                                    |
|                                                      |             | CAT III 1000 V CAT IV 600 V 800 Hrs. |

**Fluke 27 II & 28 II Multimeters Include:** Getting Started Manual (Printed), AA Batteries installed, Test leads, AC72 Alligator clips, 80BK-A Temperature Probe (Fluke 28-II), CD-ROM (16 language user manual & technical notes and application images)

| Mfrs. List No. | Order Code | Price Each   |
|----------------|------------|--------------|
| FLUKE-27-II    | 177-2093   | 1+<br>329.00 |
| FLUKE-28-II    | 177-2094   | 359.00       |

## Rechargeable Lithium Prismatic Cells

Cellpac Lite



Prismatic



Cylindrical

**New**

- No Memory Effect
- RoHS compliant
- Battery designs in various assemblies
- In shrink sleeve with wire & connector
- In plastic housing with high-tech materials

- Single cell capacities between around 150 mAh and 2200 mAh
- Replaces the PoLiFlex range
- Single cell voltage 3.7 V
- Multicell configurations allow higher voltages and necessary capacities
- Excellent charge and discharge characteristics
- Low self discharge
- Battery design with focus on safety and minimum volume requirement
- Intelligent electronic design
- Additional fuel gauge option on request

| Voltage                          | Capacity | Max Discharge Current | Dimensions (mm) | Weight (g) Approx. | Order Code |
|----------------------------------|----------|-----------------------|-----------------|--------------------|------------|
|                                  |          |                       | H W D           |                    |            |
| <b>With PCM, Sleeve and Wire</b> |          |                       |                 |                    |            |
| 3.7V                             | 880mAh   | 850mA                 | 54.5 35 6       | 18                 | 171-2621   |
| 3.7V                             | 740mAh   | 1400mA                | 35 31 4         | 17                 | 171-2622   |
| 3.7V                             | 1100mAh  | 1800mA                | 54 35 35        | 20                 | 133-5851   |
| 4.2V                             | 1230mAh  | 2460mA                | 50 34 6.6       | 25.5               | 178-4133   |
| 3.7V                             | 2030mAh  | 2000mA                | 48.7 33.9 10.5  | 42                 | 179-1650   |

|                                               |         |        |              |    |          |
|-----------------------------------------------|---------|--------|--------------|----|----------|
| <b>Cylindrical, with PCM, Sleeve and Wire</b> |         |        |              |    |          |
| 3.7V                                          | 2200mAh | 4200mA | 65.1 (Ø18.4) | 48 | 171-2620 |
| 3.7V                                          | 2200mAh | 4000mA | 71 (Ø19)     | 46 | 508-8252 |
| 7.4V                                          | 2200mAh | 2600mA | 71 37.6 18.8 | 95 | 863-6320 |

|                           |         |        |                |      |          |
|---------------------------|---------|--------|----------------|------|----------|
| <b>With PCM and Wires</b> |         |        |                |      |          |
| 3.7V                      | 150mAh  | 280mA  | 35 29 4        | 3.7  | 171-2623 |
| 3.7V                      | 310mAh  | 600mA  | 29.2           | 8    | 171-2624 |
| 3.7V                      | 595mAh  | 1140mA | 41.5 33.8 4.6  | 13   | 177-3406 |
| 3.7V                      | 1160mAh | 2000mA | 66.5 35.5 4.6  | 26   | 177-5345 |
| 3.7V                      | 1300mAh | 2000mA | 60.5 37.5 5.4  | 24   | 177-4939 |
| 3.7V                      | 1300mAh | 2000mA | 63.5 35.5 5.6  | 22   | 177-5346 |
| 3.7V                      | 2600mAh | 2000mA | 64.5 35.5 10.6 | 43   | 177-5347 |
| 4.2V                      | 830mAh  | 1580mA | 50 34 3.85     | 14.3 | 178-4135 |
| 4.2V                      | 970mAh  | 1840mA | 50 33 4.7      | 17.1 | 178-4136 |
| 4.2V                      | 970mAh  | 1840mA | 50 33 4.7      | 17.1 | 178-4137 |
| 4.2V                      | 1400mAh | 1320mA | 59 37 5        | 23.6 | 178-4139 |
| 7.4V                      | 970mAh  | 1840mA | 50 33 4.7      | 17.1 | 178-4140 |

| Description                                   | Mfrs. List No. | Order Code | 1+    | Price Each | 25+   |
|-----------------------------------------------|----------------|------------|-------|------------|-------|
| <b>With PCM, Sleeve and Wire</b>              |                |            |       |            |       |
| LIP 423450                                    | 56424201012    | 171-2621   | 13.98 | 12.82      | 12.06 |
| LIP 533048                                    | 56466201013    | 171-2622   | 15.06 | 13.81      | 13.00 |
| LIP 653450                                    | 56491201012    | 133-5851   | 15.55 | 14.86      | 14.21 |
| LIP 653450                                    | 56491201013    | 178-4133   | 25.75 | 24.31      | 23.04 |
| LIP 103450                                    | 56429201099    | 179-1650   | 19.04 | 18.25      | 17.52 |
| <b>Cylindrical, with PCM, Sleeve and Wire</b> |                |            |       |            |       |
| LIC 18650 22L                                 | 56622201013    | 171-2620   | 16.29 | 15.25      | 14.64 |
| LIP 18650                                     | 56620201098    | 508-8252   | 17.23 | 16.88      | 16.54 |
| 2S / LIC 18650                                | 56620502097    | 863-6320   | 27.08 | 26.54      | 26.01 |
| <b>With PCM and Wires</b>                     |                |            |       |            |       |
| LPP 402025                                    | 56416201020    | 171-2623   | 11.71 | 10.73      | 10.10 |
| LPP 402934                                    | 56417201015    | 171-2624   | 13.48 | 12.36      | 11.64 |
| LPP 443441                                    | 56445201012    | 177-3406   | 15.63 | 14.53      | 13.61 |
| LPP 423566                                    | 56437201012    | 177-5345   | 16.12 | 15.12      | 14.25 |
| LPP 503759                                    | 56478201012    | 177-4939   | 16.12 | 15.12      | 14.25 |
| LPP 503562                                    | 56422201012    | 177-5346   | 16.12 | 15.12      | 14.25 |
| 2P / LPP 503562                               | 56422302016    | 177-5347   | 28.19 | 26.31      | 25.20 |
| LPP 383450                                    | 56428201012    | 178-4135   | 13.87 | 13.09      | 12.40 |
| LPP 473350                                    | 56479211099    | 178-4136   | 13.87 | 13.09      | 12.40 |
| LPP 473350                                    | 56479201012    | 178-4137   | 14.45 | 13.66      | 12.94 |
| LPP 523450                                    | 56493201012    | 178-4138   | 13.87 | 13.09      | 12.40 |
| LPP 503759                                    | 56427201012    | 178-4139   | 14.99 | 14.16      | 13.41 |
| 2S / LPP 473350                               | 56479302012    | 178-4140   | 25.75 | 24.31      | 23.04 |

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## Lithium Polymer EasyPack



**New**

- VARTA EasyPack S, L and XL
- Consumer replaceable battery
- Easy to use, complete system solution from the shelf
- High energy, slim, thin and lightweight design
- Charging reference design, blue prints and BOM
- Plug & Play charging solutions based on TI bq 24014
- Linear controller: no interference to the application
- Fits all VARTA Easy-Packs
- Charging current 500 mA / 1000 mA
- Easy access to IC test pins and battery contacts
- Two possibilities for connectivity - one on header, one on bottom side
- Proper battery mating platform fits all VARTA EasyPack types
- Including suitable power supply
- **UL, UNIATA** recognised

| Pack Size | Voltage | Capacity | Dimensions (mm) | Weight (g) Approx. | Order Code |
|-----------|---------|----------|-----------------|--------------------|------------|
|           |         |          | H W D           |                    |            |
| S         | 3.7V    | 595mAh   | 43.5 35.4 5.8   | 14                 | 177-3381   |
| L         | 3.7V    | 1130mAh  | 64.5 36.6 6.4   | 28                 | 177-3382   |
| XL        | 3.7V    | 2260mAh  | 64.5 36.6 11.4  | 44                 | 177-3383   |

| Pack Size | Mfrs. List No. | Order Code | 1+    | Price Each | 25+   |
|-----------|----------------|------------|-------|------------|-------|
| S         | 56445701099    | 177-3381   | 12.97 | 12.24      | 11.80 |
| L         | 56446701099    | 177-3382   | 16.68 | 15.74      | 15.16 |
| XL        | 56446702099    | 177-3383   | 29.65 | 27.98      | 26.96 |

## Lithium Thionyl Chloride Metering Battery



**New**



Nominal

- ½AA lithium-thionyl chloride component cell
- Easy integration into utility meters in demanding environments
- Stable and long-lasting, high voltage supply
- Wide operating temperature range (-60°C to 85°C)
- Low self-discharge rate (less than 1% per year in storage at 20°C)
- Battery non-restricted for transport
- Ideal for utility meters, alarms and security devices, memory back-up and professional electronics

| Mfrs List No. | Order Code | 1+   | Price Each | 25+  |
|---------------|------------|------|------------|------|
| LS14250 MLB   | 177-2155   | 6.69 |            | 6.02 |

## Lithium Thionyl Chloride C Battery - High Drain/Pulse Capability



**New**



Nominal

- Stable high voltage response
- High drain/pulse capability
- Wide operating temperature range (-60°C to 85°C)
- Easy integration into compact systems
- Low self-discharge rate (less than 3% after 1 year in storage at 20°C)
- Non-restricted for transport
- Stainless steel container with hermetic sealing
- Ideal for radio communication, alarms and security systems, beacons and location transmitters, GPS and sonobuoys

| Mfrs List No. | Order Code | 1+    | Price Each | 25+   |
|---------------|------------|-------|------------|-------|
| LSH14 LIGHT   | 177-2157   | 15.94 |            | 14.34 |

## Lithium Thionyl Chloride Memory Back-up Battery



**New**



Nominal

- Stable high voltage response
- Wide operating temperature range (-60°C to 85°C)
- Easy integration into compact systems
- Low self-discharge rate (less than 1% per year in storage at 20°C)
- Non-restricted for transport
- Stainless steel container with hermetic sealing
- Non-flammable electrolyte
- Ideal for memory back-up, smoke detectors, alarms and medical equipment
- Dimensions (H x W x D): 48.6 x 26.3 x 15.95mm

| Mfrs List No. | Order Code | 1+   | Price Each | 25+  |
|---------------|------------|------|------------|------|
| LS 9V         | 177-2158   | 8.41 |            | 7.58 |



## ReCyKo+ Pre-Charged Ni-MH Batteries



178-1101 178-1102 178-1098 178-1099



178-1100

- Pre-charged and ready to use
- High capacity retention, 90% charged after 6 months, 85% after 12 months
- 4x longer lasting than alkaline batteries in digital cameras
- Environmentally friendly
- Recharge up to 1000 times
- Ideal for powering high drain devices such as digital cameras, MP3 players and R/C toys

**New**

| Type | Voltage (V) | Capacity (mAh) | H    | Dimensions (mm) | W | D |
|------|-------------|----------------|------|-----------------|---|---|
| AA   | 1.2         | 2100           | 50.5 | 14.5            | — | — |
| AAA  | 1.2         | 850            | 44.5 | 10.5            | — | — |

| Description | Pack Qty | Order Code | 1+   | 5+   | 10+  | 25+  |
|-------------|----------|------------|------|------|------|------|
| AA          | 4        | 178-1101   | 7.32 | 7.05 | 6.81 | 6.46 |
| AAA         | 4        | 178-1102   | 4.12 | 3.97 | 3.83 | 3.64 |

## ReCyKo+ NIMH+4XAA Universal Charger



|                  |                                                             |
|------------------|-------------------------------------------------------------|
| Input Voltage    | 100 - 240V ac 50 / 60Hz                                     |
| Charging Time    | AA/ AAA x2 - 1hr 50mins<br>AA/ AAA x4 - 3hr 45mins          |
| Charging Current | 2x AA 1150mA<br>4x AA 575mA<br>2x AAA 475mA<br>4x AAA 235mA |
| Trickle Current  | AA 1x-4x 102mA<br>AAA 1x-4x 42mA                            |

- Charges 1-4 Ni-MH AAA or AA cells
- Up to 2 hours charging time
- 3 colour LED charge status indicator
- 4 individual battery charging channels
- -ΔV charging and temperature sensor
- Safety cut out
- Battery ejector system
- Alkaline or bad battery detection
- 100 - 240V ac for worldwide use
- Supplied with 4 x 2100mAh AA ReCyKo+ batteries

| Order Code | 1+    | 5+    | 10+   | 25+   |
|------------|-------|-------|-------|-------|
| 178-1097   | 12.87 | 12.39 | 11.96 | 11.36 |

## Eco Hook-up Wire



- UL AWM 11028
- Operating temperature -40°C to 105°C
- Tinned stranded copper conductors
- Rated voltage 600V
- Polyphenylene ether insulation
- Excellent abrasion resistance
- Oil resistant to Oil Res. 1
- 28-10 AWG
- Supplied in 30.5m & 304.8m reels

**New**

EcoWire hook-up wires use flexible Noryl insulation to provide an environmentally friendly alternative to PVC. Noryl is a modified polyphenylene ether thermoplastic that is inherently lighter and tougher, and more flame resistance than PVC. The result is UL AWM wires that are smaller than their PVC based counterparts. The non-halogenated insulation contains no heavy metal pigments, allowing it to help manufacturers to meet Waste Electrical and Electronic Equipment (WEEE) requirements.

| Gauge | Conductor Strand | Nominal Outside Dia | Maximum Current | Gauge | Conductor Strand | Nominal Outside Dia | Maximum Current |
|-------|------------------|---------------------|-----------------|-------|------------------|---------------------|-----------------|
| 28AWG | 7 / 36AWG        | 0.86mm              | 3A              | 18AWG | 1 / 18AWG        | 1.5mm               | 18A             |
| 26AWG | 7 / 34AWG        | 0.97mm              | 4A              | 16AWG | 26 / 30AWG       | 2.06mm              | 19A             |
| 24AWG | 7 / 32AWG        | 1.09mm              | 6A              | 14AWG | 41 / 30AWG       | 2.44mm              | 27A             |
| 22AWG | 7 / 30AWG        | 1.24mm              | 8A              | 12AWG | 1 / 14AWG        | 2.18mm              | 33A             |
| 20AWG | 10 / 30AWG       | 1.4mm               | 10A             | 12AWG | 65 / 30AWG       | 2.97mm              | 36A             |
| 18AWG | 16 / 30AWG       | 1.7mm               | 15A             | 10AWG | 105 / 30AWG      | 3.66mm              | 47A             |

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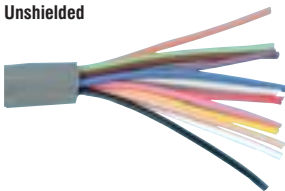
| Colour           | Order Code | Price Per Reel 30.5m |       | Order Code | Price Per Reel 304.8m |        |
|------------------|------------|----------------------|-------|------------|-----------------------|--------|
|                  |            | 1+                   | 5+    |            | 1+                    | 5+     |
| 28AWG (7/36AWG)  |            |                      |       |            |                       |        |
| Black            | 176-4891   | 8.66                 | 8.40  | 177-0261   | 39.74                 | 38.55  |
| Blue             | 176-4892   | 8.66                 | 8.40  | 177-0262   | 39.74                 | 38.55  |
| Brown            | 176-4893   | 8.66                 | 8.40  | 177-0264   | 39.74                 | 38.55  |
| Green            | 176-4894   | 8.66                 | 8.40  | 177-0265   | 39.74                 | 38.55  |
| Green / Yellow   | 176-4896   | 8.66                 | 8.40  | 177-0266   | 39.74                 | 38.55  |
| Orange           | 176-4897   | 8.66                 | 8.40  | 177-0267   | 39.74                 | 38.55  |
| Red              | 176-4898   | 8.66                 | 8.40  | 177-0268   | 39.74                 | 38.55  |
| Slate            | 176-4899   | 8.66                 | 8.40  | 177-0269   | 39.74                 | 38.55  |
| Violet           | 176-4900   | 8.66                 | 8.40  | 177-0270   | 39.74                 | 38.55  |
| White            | 176-4902   | 8.66                 | 8.40  | 177-0271   | 39.74                 | 38.55  |
| Yellow           | 176-4903   | 8.66                 | 8.40  | 177-0272   | 39.74                 | 38.55  |
| 26AWG (7/34AWG)  |            |                      |       |            |                       |        |
| Black            | 176-4904   | 8.92                 | 8.65  | 177-0273   | 44.50                 | 43.17  |
| Blue             | 176-4905   | 8.92                 | 8.65  | 177-0274   | 44.50                 | 43.17  |
| Brown            | 176-4906   | 8.92                 | 8.65  | 177-0276   | 44.50                 | 43.17  |
| Green            | 176-4907   | 8.92                 | 8.65  | 177-0277   | 44.50                 | 43.17  |
| Green / Yellow   | 176-4908   | 8.92                 | 8.65  | 177-0278   | 44.50                 | 43.17  |
| Orange           | 176-4909   | 8.92                 | 8.65  | 177-0279   | 44.50                 | 43.17  |
| Red              | 176-4910   | 8.92                 | 8.65  | 177-0280   | 44.50                 | 43.17  |
| Slate            | 176-4911   | 8.92                 | 8.65  | 177-0281   | 44.50                 | 43.17  |
| Violet           | 176-4912   | 8.92                 | 8.65  | 177-0282   | 44.50                 | 43.17  |
| White            | 176-4914   | 8.92                 | 8.65  | 177-0283   | 44.50                 | 43.17  |
| Yellow           | 176-4915   | 8.92                 | 8.65  | 177-0284   | 44.50                 | 43.17  |
| 24AWG (7/32AWG)  |            |                      |       |            |                       |        |
| Black            | 176-4916   | 9.52                 | 9.23  | 177-0285   | 50.30                 | 48.79  |
| Blue             | 176-4917   | 9.52                 | 9.23  | 177-0286   | 50.30                 | 48.79  |
| Brown            | 176-4918   | 9.52                 | 9.23  | 177-0288   | 50.30                 | 48.79  |
| Green            | 176-4919   | 9.52                 | 9.23  | 177-0289   | 50.30                 | 48.79  |
| Green / Yellow   | 176-4920   | 9.52                 | 9.23  | 177-0290   | 50.30                 | 48.79  |
| Orange           | 176-4921   | 9.52                 | 9.23  | 177-0291   | 50.30                 | 48.79  |
| Red              | 176-4922   | 9.52                 | 9.23  | 177-0292   | 50.30                 | 48.79  |
| Slate            | 176-4923   | 9.52                 | 9.23  | 177-0293   | 50.30                 | 48.79  |
| Violet           | 176-4924   | 9.52                 | 9.23  | 177-0294   | 50.30                 | 48.79  |
| White            | 176-4926   | 9.52                 | 9.23  | 177-0295   | 50.30                 | 48.79  |
| Yellow           | 176-4927   | 9.52                 | 9.23  | 177-0296   | 50.30                 | 48.79  |
| 22AWG (7/30AWG)  |            |                      |       |            |                       |        |
| Black            | 176-4928   | 9.96                 | 9.66  | 177-0297   | 60.00                 | 58.20  |
| Blue             | 176-4929   | 9.96                 | 9.66  | 177-0298   | 60.00                 | 58.20  |
| Brown            | 176-4930   | 9.96                 | 9.66  | 177-0300   | 60.00                 | 58.20  |
| Green            | 176-4931   | 9.96                 | 9.66  | 177-0301   | 60.00                 | 58.20  |
| Green / Yellow   | 176-4932   | 9.96                 | 9.66  | 177-0302   | 60.00                 | 58.20  |
| Orange           | 176-4933   | 9.96                 | 9.66  | 177-0303   | 60.00                 | 58.20  |
| Red              | 176-4934   | 9.96                 | 9.66  | 177-0304   | 60.00                 | 58.20  |
| Slate            | 176-4935   | 9.96                 | 9.66  | 177-0306   | 60.00                 | 58.20  |
| Violet           | 176-4936   | 9.96                 | 9.66  | 177-0307   | 60.00                 | 58.20  |
| White            | 176-4938   | 9.96                 | 9.66  | 177-0308   | 60.00                 | 58.20  |
| Yellow           | 176-4939   | 9.96                 | 9.66  | 177-0309   | 60.00                 | 58.20  |
| 20AWG (10/30AWG) |            |                      |       |            |                       |        |
| Black            | 176-4940   | 10.38                | 10.07 | 177-0310   | 71.00                 | 68.87  |
| Blue             | 176-4941   | 10.38                | 10.07 | 177-0311   | 71.00                 | 68.87  |
| Brown            | 176-4942   | 10.38                | 10.07 | 177-0312   | 71.00                 | 68.87  |
| Green            | 176-4943   | 10.38                | 10.07 | 177-0313   | 71.00                 | 68.87  |
| Green / Yellow   | 176-4944   | 10.38                | 10.07 | 177-0314   | 71.00                 | 68.87  |
| Orange           | 176-4945   | 10.38                | 10.07 | 177-0315   | 71.00                 | 68.87  |
| Red              | 176-4946   | 10.38                | 10.07 | 177-0316   | 71.00                 | 68.87  |
| Slate            | 176-4947   | 10.38                | 10.07 | 177-0318   | 71.00                 | 68.87  |
| Violet           | 176-4948   | 10.38                | 10.07 | 177-0319   | 71.00                 | 68.87  |
| White            | 176-4951   | 10.38                | 10.07 | 177-0320   | 71.00                 | 68.87  |
| Yellow           | 176-4952   | 10.38                | 10.07 | 177-0321   | 71.00                 | 68.87  |
| 18AWG (16/30AWG) |            |                      |       |            |                       |        |
| Black            | 176-4953   | 10.56                | 10.24 | 177-0322   | 93.50                 | 90.70  |
| Blue             | 176-4954   | 10.56                | 10.24 | 177-0323   | 93.50                 | 90.70  |
| Brown            | 176-4955   | 10.56                | 10.24 | 177-0324   | 93.50                 | 90.70  |
| Green            | 176-4956   | 10.56                | 10.24 | 177-0325   | 93.50                 | 90.70  |
| Green / Yellow   | 176-4957   | 10.56                | 10.24 | 177-0326   | 93.50                 | 90.70  |
| Orange           | 176-4958   | 10.56                | 10.24 | 177-0327   | 93.50                 | 90.70  |
| Red              | 176-4959   | 10.56                | 10.24 | 177-0328   | 93.50                 | 90.70  |
| Slate            | 176-4960   | 10.56                | 10.24 | 177-0331   | 93.50                 | 90.70  |
| Violet           | 176-4961   | 10.56                | 10.24 | 177-0332   | 93.50                 | 90.70  |
| White            | 176-4963   | 10.56                | 10.24 | 177-0333   | 93.50                 | 90.70  |
| Yellow           | 176-4964   | 10.56                | 10.24 | 177-0334   | 93.50                 | 90.70  |
| 18AWG (1/18AWG)  |            |                      |       |            |                       |        |
| Black            |            |                      |       | 177-0335   | 85.98                 | 83.40  |
| Blue             |            |                      |       | 177-0336   | 85.98                 | 83.40  |
| Brown            |            |                      |       | 177-0337   | 85.98                 | 83.40  |
| Green            |            |                      |       | 177-0338   | 85.98                 | 83.40  |
| Green / Yellow   |            |                      |       | 177-0339   | 85.98                 | 83.40  |
| Orange           |            |                      |       | 177-0340   | 85.98                 | 83.40  |
| Red              |            |                      |       | 177-0341   | 85.98                 | 83.40  |
| Slate            |            |                      |       | 177-0343   | 85.98                 | 83.40  |
| Violet           |            |                      |       | 177-0344   | 85.98                 | 83.40  |
| White            |            |                      |       | 177-0345   | 85.98                 | 83.40  |
| Yellow           |            |                      |       | 177-0346   | 85.98                 | 83.40  |
| 16AWG (26/30AWG) |            |                      |       |            |                       |        |
| Black            | 176-4965   | 12.98                | 12.59 | 177-0347   | 124.16                | 120.44 |
| Blue             | 176-4966   | 12.98                | 12.59 | 177-0348   | 124.16                | 120.44 |
| Brown            | 176-4967   | 12.98                | 12.59 | 177-0349   | 124.16                | 120.44 |
| Green            | 176-4968   | 12.98                | 12.59 | 177-0350   | 124.16                | 120.44 |
| Green / Yellow   | 176-4969   | 12.98                | 12.59 | 177-0351   | 124.16                | 120.44 |
| Orange           | 176-4970   | 12.98                | 12.59 | 177-0352   | 124.16                | 120.44 |
| Red              | 176-4971   | 12.98                | 12.59 | 177-0353   | 124.16                | 120.44 |
| Slate            | 176-4972   | 12.98                | 12.59 | 177-0355   | 124.16                | 120.44 |
| Violet           | 176-4973   | 12.98                | 12.59 | 177-0356   | 124.16                | 120.44 |
| White            | 176-4975   | 12.98                | 12.59 | 177-0357   | 124.16                | 120.44 |
| Yellow           | 176-4976   | 12.98                | 12.59 | 177-0358   | 124.16                | 120.44 |

Continues on next page

| Colour            | Order Code | Price Per Reel 30.5m |       | Order Code | Price Per Reel 304.8m |        |
|-------------------|------------|----------------------|-------|------------|-----------------------|--------|
|                   |            | 1 +                  | 5 +   |            | 1 +                   | 5 +    |
| 14AWG (41/30AWG)  |            |                      |       |            |                       |        |
| Black             | 176-4977   | 20.78                | 20.16 | 177-0359   | 188.06                | 182.42 |
| Blue              | 176-4978   | 20.78                | 20.16 | 177-0360   | 188.06                | 182.42 |
| Brown             | 176-4979   | 20.78                | 20.16 | 177-0361   | 188.06                | 182.42 |
| Green             | 176-4980   | 20.78                | 20.16 | 177-0362   | 188.06                | 182.42 |
| Green / Yellow    | 176-4981   | 20.78                | 20.16 | 177-0363   | 188.06                | 182.42 |
| Orange            | 176-4982   | 20.78                | 20.16 | 177-0364   | 188.06                | 182.42 |
| Red               | 176-4983   | 20.78                | 20.16 | 177-0365   | 188.06                | 182.42 |
| Slate             | 176-4984   | 20.78                | 20.16 | 177-0367   | 188.06                | 182.42 |
| Violet            | 176-4985   | 20.78                | 20.16 | 177-0368   | 188.06                | 182.42 |
| White             | 176-4987   | 20.78                | 20.16 | 177-0369   | 188.06                | 182.42 |
| Yellow            | 176-4988   | 20.78                | 20.16 | 177-0370   | 188.06                | 182.42 |
| 14AWG (1/14AWG)   |            |                      |       |            |                       |        |
| Black             |            |                      |       | 177-0371   | 182.42                | 176.95 |
| Blue              |            |                      |       | 177-0372   | 182.42                | 176.95 |
| Brown             |            |                      |       | 177-0373   | 182.42                | 176.95 |
| Green             |            |                      |       | 177-0374   | 182.42                | 176.95 |
| Green / Yellow    |            |                      |       | 177-0375   | 182.42                | 176.95 |
| Orange            |            |                      |       | 177-0376   | 182.42                | 176.95 |
| Red               |            |                      |       | 177-0377   | 182.42                | 176.95 |
| Slate             |            |                      |       | 177-0379   | 182.42                | 176.95 |
| Violet            |            |                      |       | 177-0381   | 182.42                | 176.95 |
| White             |            |                      |       | 177-0382   | 182.42                | 176.95 |
| Yellow            |            |                      |       | 177-0383   | 182.42                | 176.95 |
| 12AWG (65/30AWG)  |            |                      |       |            |                       |        |
| Black             | 176-4989   | 27.70                | 26.87 | 177-0384   | 289.10                | 280.43 |
| Blue              | 176-4990   | 27.70                | 26.87 | 177-0385   | 289.10                | 280.43 |
| Brown             | 176-4991   | 27.70                | 26.87 | 177-0386   | 289.10                | 280.43 |
| Green             | 176-4992   | 27.70                | 26.87 | 177-0387   | 289.10                | 280.43 |
| Green / Yellow    | 176-4993   | 27.70                | 26.87 | 177-0388   | 289.10                | 280.43 |
| Orange            | 176-4994   | 27.70                | 26.87 | 177-0389   | 289.10                | 280.43 |
| Red               | 176-4995   | 27.70                | 26.87 | 177-0390   | 289.10                | 280.43 |
| Slate             | 176-4996   | 27.70                | 26.87 | 177-0392   | 289.10                | 280.43 |
| Violet            | 176-4997   | 27.70                | 26.87 | 177-0393   | 289.10                | 280.43 |
| White             | 176-4999   | 27.70                | 26.87 | 177-0394   | 289.10                | 280.43 |
| Yellow            | 176-5001   | 27.70                | 26.87 | 177-0395   | 289.10                | 280.43 |
| 10AWG (105/30AWG) |            |                      |       |            |                       |        |
| Black             | 176-5002   | 49.36                | 47.88 | 177-0396   | 467.44                | 453.42 |
| Blue              | 176-5003   | 49.36                | 47.88 | 177-0397   | 467.44                | 453.42 |
| Brown             | 176-5004   | 49.36                | 47.88 | 177-0398   | 467.44                | 453.42 |
| Green             | 176-5005   | 49.36                | 47.88 | 177-0399   | 467.44                | 453.42 |
| Green / Yellow    | 176-5006   | 49.36                | 47.88 | 177-0400   | 467.44                | 453.42 |
| Orange            | 176-5007   | 49.36                | 47.88 | 177-0401   | 467.44                | 453.42 |
| Red               | 176-5008   | 49.36                | 47.88 | 177-0402   | 467.44                | 453.42 |
| Slate             | 176-5009   | 49.36                | 47.88 | 177-0403   | 467.44                | 453.42 |
| Violet            | 176-5010   | 49.36                | 47.88 | 177-0404   | 467.44                | 453.42 |
| White             | 176-5011   | 49.36                | 47.88 | 177-0405   | 467.44                | 453.42 |
| Yellow            | 176-5013   | 49.36                | 47.88 | 177-0406   | 467.44                | 453.42 |

## LSZH Communication and Control Cable

Unshielded



- UL2576 type CM recognised
- 22AWG (7/30) tinned copper conductors
- Low Smoke Zero Halogen Jacket
- Voltage rating: 300V
- Operating temperature: -20°C to +75°C

| Mfrs. List No. | No. of Conductors | Outside Diameter (mm) | Jacket Thickness (mm) | Order Code |
|----------------|-------------------|-----------------------|-----------------------|------------|
| 1172L          | 2                 | 4.09                  | 0.71                  | 171-2540   |
| 1173L          | 3                 | 4.29                  | 0.71                  | 171-2541   |
| 1174L          | 4                 | 4.8                   | 0.71                  | 171-2542   |
| 1175L          | 5                 | 5.11                  | 0.71                  | 171-2543   |
| 1176L          | 6                 | 5.31                  | 0.76                  | 171-2544   |
| 1177L          | 7                 | 5.31                  | 0.76                  | 171-2545   |
| 1178L          | 8                 | 5.59                  | 0.76                  | 171-2546   |
| 1179L          | 9                 | 6.3                   | 0.81                  | 171-2547   |
| 1180L          | 10                | 6.6                   | 0.89                  | 171-2549   |

| 30.5m Reel     |            | Price Per Reel |       |       |
|----------------|------------|----------------|-------|-------|
| Mfrs. List No. | Order Code | 1+             | 5+    | 10+   |
| 1172L          | 171-2540   | 14.58          | 14.14 | 13.72 |
| 1173L          | 171-2541   | 17.15          | 16.64 | 16.14 |
| 1174L          | 171-2542   | 20.50          | 19.89 | 19.29 |
| 1175L          | 171-2543   | 22.85          | 22.16 | 21.50 |
| 1176L          | 171-2544   | 23.61          | 22.90 | 22.21 |
| 1177L          | 171-2545   | 26.13          | 25.35 | 24.59 |
| 1178L          | 171-2546   | 37.34          | 36.22 | 35.13 |
| 1179L          | 171-2547   | 41.28          | 40.04 | 38.84 |
| 1180L          | 171-2549   | 46.56          | 45.16 | 43.81 |

## ZYRAD 500 Industrial Cable



- Tin plated stranded copper conductor
- Black Polyolefin (ZYRAD 500) jacket
- Rated voltage: 600V
- Supplied in 100m reels

Zyrad 500 is a modified cross-linked polyolefin cable with an excellent abrasion resistance, coupled with good flexibility. Suitable for Class F motors, transformers and general hostile environments. Approved to UL3289 and CSA CL 1503.

| Mfrs. List No. | Conductor CSA       | AWG Size | Conductor Stranding | Nominal Outside Dia. | Current Rating |
|----------------|---------------------|----------|---------------------|----------------------|----------------|
| H222TFR.02100  | 0.5mm <sup>2</sup>  | 22       | 16 / 0.2mm          | 2.53mm               | 16A            |
| H220TGR.02100  | 0.75mm <sup>2</sup> | 20       | 24 / 0.2mm          | 2.74mm               | 23A            |
| H218TJR.02100  | 1mm <sup>2</sup>    | 18       | 32 / 0.2mm          | 2.92mm               | 26A            |
| H216THR.02100  | 1.5mm <sup>2</sup>  | 16       | 30 / 0.25mm         | 3.2mm                | 35A            |
| H214TKR.01100  | 2.5mm <sup>2</sup>  | 14       | 50 / 0.25mm         | 3.67mm               | 50A            |
| H212TLR.01100  | 4mm <sup>2</sup>    | 12       | 56 / 0.3mm          | 4.2mm                | 69A            |

| Mfrs. List No. | Order Code | 1+     | Price Per Reel | 5+    | 10+ |
|----------------|------------|--------|----------------|-------|-----|
| H222TFR.02100  | 173-4766   | 38.73  | 37.18          | 35.69 |     |
| H220TGR.02100  | 173-4767   | 39.95  | 38.35          | 36.82 |     |
| H218TJR.02100  | 173-4768   | 47.67  | 45.76          | 43.93 |     |
| H216THR.02100  | 173-4769   | 60.15  | 57.74          | 55.43 |     |
| H214TKR.01100  | 173-4770   | 74.93  | 71.93          | 69.05 |     |
| H212TLR.01100  | 173-4771   | 105.30 | 101.09         | 97.05 |     |

## URM202 Coaxial Cable



- Conductor: Copper
- Dielectric: Foamed PE
- Shield: Bare Copper Braid
- Jacket: PVC according to the European Standard HD 624

|                          |                |                         |               |
|--------------------------|----------------|-------------------------|---------------|
| Nominal outside diameter | 5.1mm          | Attenuation per 100m    | 11dB @ 100MHz |
| Capacitance              | 55pF/m         |                         | 16dB @ 200MHz |
| Operating temperature    | -40°C to +70°C |                         | 40dB @ 900MHz |
| Max operating voltage    | 1200V rms      | Velocity of propagation | 81%           |

|        |           |            | Price Per Reel |       |       |
|--------|-----------|------------|----------------|-------|-------|
| Colour | Reel Size | Order Code | 1+             | 5+    | 10+   |
| Black  | 200m      | 176-9498   | 80.30          | 77.89 | 75.55 |
| Grey   | 200m      | 176-9499   | 80.30          | 77.89 | 75.55 |
| White  | 200m      | 176-9500   | 80.30          | 77.89 | 75.55 |

## URM203 Coaxial Cable



- Conductor: Copper
- Dielectric: Foamed PE
- Shield: Bare Copper Braid
- Jacket: PVC according to the European Standard HD 624

|                          |                |                         |                |
|--------------------------|----------------|-------------------------|----------------|
| Nominal outside diameter | 7.25mm         | Attenuation per 100m    | 7.5dB @ 100MHz |
| Capacitance              | 55pF/m         |                         | 11dB @ 200MHz  |
| Operating temperature    | -40°C to +70°C |                         | 26dB @ 900MHz  |
| Max operating voltage    | 2400V rms      | Velocity of propagation | 81%            |

|        |           |            | Price Per Reel |       |       |
|--------|-----------|------------|----------------|-------|-------|
| Colour | Reel Size | Order Code | 1+             | 5+    | 10+   |
| Black  | 100m      | 176-9501   | 56.99          | 55.28 | 53.62 |
| Grey   | 100m      | 176-9502   | 56.99          | 55.28 | 53.62 |
| White  | 100m      | 176-9503   | 56.99          | 55.28 | 53.62 |

## Datatuff® CAT 5e Industrial Ethernet Cable



- PVC jacket

| Mfrs. List No. | Conductor Make-up | Diameter (mm) | Mfrs. List No. | Conductor Make-up | Diameter (mm) |
|----------------|-------------------|---------------|----------------|-------------------|---------------|
| Unshielded     |                   |               | Shielded       |                   |               |
| 7918A          | 1 / 24AWG         | 5.84          | 7919A          | 1 / 24AWG         | 6.73          |
| 7923A          | 1 / 24AWG         | 5.94          | 7921A          | 1 / 24AWG         | 8.38          |
| 7930A          | 7 / 32AWG         | 6.1           | 7929A          | 1 / 24AWG         | 6.73          |
| 7934A          | 1 / 24AWG         | 5.84          |                |                   |               |

|            |                 |            | Price Per Reel |        |        |
|------------|-----------------|------------|----------------|--------|--------|
| Reel Size  | Mftrs. List No. | Order Code | 1+             | 5+     | 10+    |
| Unshielded |                 |            |                |        |        |
| 304.8m     | 7918A           | 176-9523   | 204.68         | 198.54 | 192.58 |
| 304.8m     | 7923A           | 176-9526   | 200.01         | 194.01 | 188.19 |
| 304.8m     | 7930A           | 176-9528   | 272.91         | 264.72 | 256.78 |
| 304.8m     | 7934A           | 176-9529   | 239.61         | 232.42 | 225.45 |
| Shielded   |                 |            |                |        |        |
| 304.8m     | 7919A           | 176-9524   | 304.27         | 295.14 | 286.29 |
| 304.8m     | 7921A           | 176-9525   | 524.90         | 509.15 | 493.88 |
| 304.8m     | 7929A           | 176-9527   | 300.96         | 291.93 | 283.17 |

## Twin Figure 8 Speaker Cable



- PVC insulated plain annealed copper
- Laid in a flat figure of 8 construction with markings to indicate polarity

Continues on next page

| Conductor Area      | Conductor Size | Current Rating | Nominal Dimensions (mm) |
|---------------------|----------------|----------------|-------------------------|
| 0.22mm <sup>2</sup> | 7 / 0.2mm      | 1A             | 4 x 2                   |
| 0.41mm <sup>2</sup> | 13 / 0.2mm     | 2.5A           | 4.3 x 2.3               |
| 0.68mm <sup>2</sup> | 24 / 0.2mm     | 5A             | 4.6 x 2.3               |
| 1mm <sup>2</sup>    | 32 / 0.2mm     | 10A            | 6 x 3                   |
| 2.5mm <sup>2</sup>  | 79 / 0.2mm     | 20A            | 6.6 x 3.3               |

| 100m Reels     |              |            | Price Per Reel |       |       |       |
|----------------|--------------|------------|----------------|-------|-------|-------|
| Conductor Size | Colour       | Order Code | 1+             | 5+    | 10+   | 25+   |
| 7 / 0.2mm      | Grey         | 173-5204   | 6.84           | 6.51  | 6.18  | 5.87  |
| 7 / 0.2mm      | Black        | 173-5205   | 7.09           | 6.74  | 6.40  | 6.08  |
| 13 / 0.2mm     | Black Ribbed | 173-5207   | 14.85          | 14.12 | 13.41 | 12.74 |
| 24 / 0.2mm     | White        | 173-5208   | 20.24          | 19.23 | 18.26 | 17.68 |
| 32 / 0.2mm     | White        | 173-5209   | 22.01          | 20.15 | 19.79 | 18.62 |
| 79 / 0.2mm     | White        | 173-5210   | 49.78          | 47.29 | 44.92 | 42.67 |
| 79 / 0.2mm     | Black        | 173-5211   | 49.78          | 47.29 | 44.92 | 42.67 |
| 79 / 0.2mm     | Black Ribbed | 173-5212   | 49.78          | 47.29 | 44.92 | 42.67 |
| 1000m Reels    |              |            |                |       |       |       |
| 13 / 0.2mm     | Grey         | 173-5206   | 107.48         | 98.40 | 93.64 | 88.43 |

## Microphone Cable



|            |                         |
|------------|-------------------------|
| Conductors | 20 / 0.12mm Bare Copper |
| Screen     | 60 / 0.12mm Bare Copper |
| Q/D        | 6mm                     |

|        |      |
|--------|------|
| Sheath | PVC  |
| Reel   | 100m |

| Colour | Order Code | 1+    | 5+    | 10+   |
|--------|------------|-------|-------|-------|
| Black  | 165-0588   | 48.87 | 47.40 | 45.98 |
| Red    | 165-0589   | 50.63 | 49.11 | 47.63 |
| Blue   | 165-0590   | 50.63 | 49.11 | 47.63 |
| White  | 165-0591   | 50.63 | 49.11 | 47.63 |
| Grey   | 165-0593   | 48.26 | 46.82 | 45.42 |

## Figure 8 Speaker Cable



PVC insulated, plain annealed copper cable, laid side by side in a flat figure of 8 construction with markings to indicate polarity. The range is available in a variety of sizes and is supplied in 100m reels.

| Conductor Make-up | Nominal Dimensions | Conductor Area      | DC Resistance |
|-------------------|--------------------|---------------------|---------------|
| 13/0.20mm         | 4.0 x 2.0mm        | 0.41mm <sup>2</sup> | 44Ω/km        |
| 42/0.20mm         | 6.0 x 3.0mm        | 1.32mm <sup>2</sup> | 13.6Ω/km      |
| 7/0.20mm          | 3.8 x 1.9mm        | 0.22mm <sup>2</sup> | 81.6Ω/km      |

| Conductor Make-up |                |       | Price Per Reel |       |  |
|-------------------|----------------|-------|----------------|-------|--|
| Colour            | Order Code     | 1 +   | 5 +            | 10 +  |  |
| 13 / 0.2mm        | Grey 171-7973  | 11.18 | 10.62          | 10.09 |  |
| 13 / 0.2mm        | Black 171-7974 | 11.18 | 10.62          | 10.09 |  |
| 42 / 0.2mm        | White 171-7975 | 28.35 | 26.93          | 25.58 |  |
| 7 / 0.2mm         | White 171-7976 | 8.90  | 8.45           | 8.03  |  |

## 2:1 Shrink Ratio Dispenser Boxes



- 2:1 Shrink ratio
- Adhesive lined
- Self-extinguishing
- Operating temperature: -40°C to +125°C
- Wide range of colours, including Green/Yellow earth strip

Ten size and six colour variations of thin-walled heatshrink tubing in easy to dispense display cartons. Manufactured from cross-linked semi-flexible polyolefin which shrinks uniformly to form a permanent insulating covering. Upon recovery, thin wall tube will conform to the shape it is applied over. Ideal for low voltage electrical insulation up to 1000V.

| Mfrs. List No. * | Black (BLK) | Brown (BR) | Clear (C) | Blue (BLUE) | Green / Yellow (GY) | Grey (GRY) |
|------------------|-------------|------------|-----------|-------------|---------------------|------------|
| HSB1206          | 169-7934    | 169-7935   | 169-7937  | 169-7938    | 169-7939            | 169-7940   |
| HSB1608          | 169-7941    | 169-7942   | 169-7943  | 169-7944    | 169-7945            | 169-7946   |
| HSB2412          | 169-7947    | 169-7949   | 169-7951  | 169-7952    | 169-7953            | 169-7954   |
| HSB3216          | 169-7955    | 169-7956   | 169-7957  | 169-7958    | 169-7959            | 169-7960   |
| HSB4824          | 169-7962    | 169-7963   | 169-7964  | 169-7965    | 169-7966            | 169-7967   |
| HSB7030          | 169-7968    | 169-7969   | 169-7970  | 169-7971    | 169-7972            | 169-7974   |
| HSB10050         | 169-7975    | 169-7976   | 169-7977  | 169-7978    | 169-7979            | 169-7980   |
| HSB13060         | 169-7981    | 169-7982   | 169-7983  | 169-7984    | 169-7986            | 169-7987   |
| HSB190100        | 169-7988    | 169-7989   | 169-7990  | 169-7991    | 169-7992            | 169-7993   |
| HSB260120        | 169-7994    | 169-7995   | 169-7996  | 169-7998    | 169-7999            | 169-8001   |

\*(Add Colour Suffix to Mfrs. List No.)

| Mfrs. List No. | Nom. | Dia. Shrunk | Length (m) | Order Code  | 1+   | 10+  | 25+  | 50+  |
|----------------|------|-------------|------------|-------------|------|------|------|------|
| HSB1206        | 1.2  | 0.6         | 15         | All Colours | 6.20 | 5.89 | 5.71 | 5.54 |
| HSB1608        | 1.6  | 0.8         | 15         | All Colours | 6.52 | 6.19 | 6.00 | 5.82 |
| HSB2412        | 2.4  | 1.2         | 15         | All Colours | 6.52 | 6.19 | 6.00 | 5.82 |
| HSB3216        | 3.2  | 1.6         | 15         | All Colours | 7.08 | 6.73 | 6.53 | 6.33 |
| HSB4824        | 4.8  | 2.4         | 10         | All Colours | 6.76 | 6.42 | 6.23 | 6.04 |

| Mfrs. List No. | Nom. | Dia. Shrunk | Length (m) | Order Code  | 1+    | 10+   | 25+   | 50+   |
|----------------|------|-------------|------------|-------------|-------|-------|-------|-------|
| HSB7030        | 6.4  | 3.2         | 10         | All Colours | 7.32  | 6.95  | 6.74  | 6.54  |
| HSB10050       | 9.5  | 4.7         | 10         | All Colours | 8.70  | 8.27  | 8.02  | 7.78  |
| HSB13060       | 12.7 | 6.4         | 8          | All Colours | 8.70  | 8.27  | 8.02  | 7.78  |
| HSB190100      | 19.1 | 9.5         | 7          | All Colours | 12.77 | 12.13 | 11.77 | 11.42 |
| HSB260120      | 25.4 | 12.7        | 4          | All Colours | 11.08 | 10.53 | 10.21 | 9.90  |

## Hot Air Gun

HG 2310 LCD



Powerful, electronically controlled hot air tool with continuously adjustable airflow and temperature control. Suitable for all hot-air jobs including plastic welding, drying and shrink fitting.

- Visual display of temperature and speed on LCD
- Selector button for 4 preset programmes
- Memory button
- Continuously adjustable temperature
- Continuously adjustable air flow
- Non-slip end cap

|                   |                                                            |
|-------------------|------------------------------------------------------------|
| Power Output      | 2300W                                                      |
| Temperature Range | Stage 1: 50°C<br>Stage 2: 50 - 600°C                       |
| Airflow Rate      | Stage 1: 150 - 250 l / min.<br>Stage 2: 150 - 500 l / min. |

|            |                                                                                                                                                              |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Programmes | Factory set:<br>1 = 250°C / approx. 350 l / min.<br>2 = 350°C / approx. 400 l / min.<br>3 = 450°C / approx. 500 l / min.<br>4 = 550°C / approx. 400 l / min. |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                    |                   |
|--------------------|-------------------|
| Display Mode       | LCD in 10°C steps |
| Dimensions (LxWxH) | 260 x 90 x 205mm  |
| Weight             | 940g              |

| Heat Gun            | Mfrs. List No.    | Order Code | 1+     | 5+     | 10+    |
|---------------------|-------------------|------------|--------|--------|--------|
| 3 Phase             | HG 2310LCD (110V) | 170-2590   | 112.50 | 109.13 | 105.86 |
| UK Mains Plug       | HG 2310LCD UK     | 170-2591   | 112.50 | 109.13 | 105.86 |
| EU Plug             | HG 2310LCD EU     | 171-2315   | 112.50 | 109.13 | 105.86 |
| Nozzles             |                   |            | 1+     | 5+     | 10+    |
| 50mm Surface        | 070113            | 170-2599   | 6.75   | 6.48   | 6.29   |
| 75mm Surface        | 070212            | 170-2597   | 6.75   | 6.48   | 6.29   |
| 50mm Window         | 070311            | 170-2598   | 6.75   | 6.48   | 6.29   |
| Welding             | 070915            | 170-2601   | 8.00   | 7.68   | 7.45   |
| Slit                | 071011            | 170-2600   | 5.75   | 5.52   | 5.35   |
| Large Reflector     | 073015            | 311-6815   | 16.27  | 15.13  | 13.80  |
| Reflector           | 070519            | 311-6797   | 8.70   | 8.08   | 7.53   |
| Soldering Reflector | 074616            | 311-6852   | 7.75   | 7.36   | 7.14   |
| 9mm Reduction       | 070618            | 815-0788   | 6.04   | 5.60   | --     |
| 14mm Reduction      | 070717            | 311-6803   | 4.38   | 4.11   | 4.01   |
| 20mm Reduction      | 070816            | 815-0770   | 6.04   | 5.60   | --     |
| Accessories         |                   |            | 1+     | 5+     | 10+    |
| Guard Cage          | 074005            | 170-2602   | 12.00  | 11.52  | 11.17  |
| Feed Roller         | 012311            | 170-2603   | 13.00  | 12.48  | 12.11  |
| Paint Scraper Kit   | 010317            | 170-2604   | 15.26  | 14.65  | 14.21  |

## D-Clip

HellermannTyton



D-Clips can be used in a variety of applications where quick and easy installation of cables or pipes are required. The clips are flexible to allow quick and easy installation as well as removal of cables and pipes

|                       |                  |
|-----------------------|------------------|
| Material              | Polyacetal (POM) |
| Colour                | Black            |
| Operating Temperature | -40°C to +85°C   |
| Flammability          | UL94 HB          |

| Mfrs. List No. | Length From Fixing Hole To Centre (mm) | Width (mm) | Fixing Hole (mm) | Bundle Max. (mm) |
|----------------|----------------------------------------|------------|------------------|------------------|
| 4D10           | 17                                     | 15         | 4                | 10               |
| 4D15           | 25                                     | 15         | 4                | 15               |
| 4D20           | 28                                     | 15         | 4                | 20               |

| 100 Per Pack   |            | Price Per Pack |      |      |
|----------------|------------|----------------|------|------|
| Mfrs. List No. | Order Code | 1+             | 5+   | 10+  |
| 4D10           | 177-4291   | 7.95           | 7.71 | 7.48 |
| 4D15           | 177-4292   | 9.72           | 9.43 | 9.15 |
| 4D20           | 177-4294   | 10.24          | 9.93 | 9.63 |

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## EdgeGuard



EdgeGuard beading strip is used to protect cables routed around sharp edged cut-out sections. It can also be used to provide an attractive finish to panel edges and protect cables from chafing on cut edges of panels. Manufactured from a flexible PVC compound that ensures ease of use.

HellermannTyton

New

Material Polyvinyl-chloride (PVC) Operating Temperature -65°C to +105°C continuous  
Colour Black (BK) Flammability UL94 HB

| Mfrs. List No. | Length | Width | Height | Order Code | 1+    | 5+    | 10+   |
|----------------|--------|-------|--------|------------|-------|-------|-------|
| SM1            | 75m    | 5mm   | 6.3mm  | 177-4269   | 25.36 | 24.60 | 23.86 |
| RA1            | 75m    | 6.4mm | 7.1mm  | 177-4271   | 20.89 | 20.26 | 19.65 |
| PS1            | 75m    | 5mm   | 5mm    | 177-4272   | 15.16 | 14.71 | 14.27 |

## Thermal Transfer Desktop Printer System



New

Panduit TDP43MY Thermal Transfer Printer produces a comprehensive range of labels and markers to meet manufacturing, maintenance and site installation applications. Supports Panduit's complete range of thermal transfer labels, including self-laminating, heat shrink, vinyl and polyolefin wire/cable markers, polyester and polyimide component labels, engraved plate replacement labels, and safety and facility markers. 300 dpi print resolution ensures durable, crisp, clear printing. Using Easy-Mark™ Labeling Software (included) ensures a fast, efficient and comprehensive solution to on-demand labelling needs.

- Hybrid - Recommended for use with self-laminating, heat shrink, component and non-laminated labels
- Wax - Recommended for use with self-laminating and non-laminated labels
- Resin - Recommended for use with component labels, marker plates, and continuous tape

**TDP43MY Contents:** Printer, Easy-Mark™ Labeling Software, RMH4BL hybrid black ribbon, USB cable, AC power adapter with UK and Europlug power cords, manual and quick start card.

| Mfrs. List No.     | Thermal Transfer Desktop Printer System | Order Code  | Price Each 1+  |
|--------------------|-----------------------------------------|-------------|----------------|
| TDP43MY/E          |                                         | 177-3903    | 791.00         |
| <b>Ribbons</b>     | <b>Colour</b>                           | <b>Type</b> |                |
| RMW4BL             | Black                                   | Wax         | 177-3905 17.52 |
| RMH4BL             | Black                                   | Hybrid      | 177-3906 17.52 |
| RMR4BL             | Black                                   | Resin       | 177-3907 17.52 |
| RMR4BU             | Blue                                    | Resin       | 177-3908 24.50 |
| RMR4GR             | Green                                   | Resin       | 177-3909 24.50 |
| RMR4RD             | Red                                     | Resin       | 177-3910 24.50 |
| RMR4WH             | White                                   | Resin       | 177-3911 43.26 |
| <b>Accessories</b> |                                         |             |                |
| TDP43M-RS          | 3" Label Stand                          | 177-3904    | 61.40          |
| PROG-EMCD3         | Easy-Mark Labelling Software (for PC)   | 177-3912    | 189.76         |

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## Thermal Transfer Self-Laminating Labels



New



- Panduit thermal transfer self-laminating labels provide a white print-on area and clear overlaminate to help protect the legend from abrasion, solvents, oils and chemicals for clear and durable identification
- Vinyl with acrylic adhesive
- For indoor/outdoor use, thin and conformable material suitable for general wire/cable labelling

- Supplied on rolls for use with TDP43MY Printer
- Recomend use with Panduit RMH4BL hybrid thermal transfer ribbon
- Use Panduit TDP43M-RS roll stand for part numbers ending TY

| Mfrs. List No. | Width (mm) | Length (mm) | Cable Diameter Min. (mm) Max. (mm) | Print On Area (mm) |
|----------------|------------|-------------|------------------------------------|--------------------|
| S050X075VA1Y   | 12.7       | 19.05       | 3.07 4.04                          | 12.7 x 6.35        |
| S050X125VA1Y   | 12.7       | 31.75       | 3.07 7.03                          | 12.7 x 9.65        |
| S050X150VA1Y   | 12.7       | 38.1        | 4.04 8.09                          | 12.7 x 12.7        |
| S075X075VA1Y   | 19.05      | 19.05       | 3.07 4.04                          | 19.05 x 6.35       |
| S075X125VA1Y   | 19.05      | 31.75       | 3.07 7.03                          | 19.05 x 9.65       |
| S075X150VA1Y   | 19.05      | 38.1        | 4.04 8.09                          | 19.05 x 12.7       |
| S100X075VA1Y   | 25.4       | 19.05       | 2.02 4.04                          | 25.4 x 6.35        |
| S100X125VA1Y   | 25.4       | 31.75       | 3.07 7.03                          | 25.4 x 9.65        |
| S100X150VA1Y   | 25.4       | 38.1        | 4.04 8.09                          | 25.4 x 12.7        |
| S100X225VA1Y   | 25.4       | 57.15       | 6.06 12.13                         | 25.4 x 19.05       |
| S100X400VA1Y   | 25.4       | 101.6       | 8.09 24.26                         | 25.4 x 25.4        |
| S100X650VA1Y   | 25.4       | 165.1       | 12.13 40.43                        | 25.4 x 38.1        |
| S150X150VA1Y   | 38.1       | 38.1        | 4.04 8.09                          | 38.1 x 12.7        |
| S150X225VA1Y   | 38.1       | 57.15       | 6.06 12.13                         | 38.1 x 19.05       |
| S150X400VA1Y   | 38.1       | 101.6       | 8.09 24.26                         | 38.1 x 25.4        |
| S200X225VA1Y   | 50.8       | 57.15       | 6.06 12.13                         | 50.8 x 19.05       |
| S200X400VA1Y   | 50.8       | 101.6       | 8.09 24.26                         | 50.8 x 25.4        |
| S200X650VA1Y   | 50.8       | 165.1       | 12.13 40.43                        | 50.8 x 38.1        |

| Mfrs. List No. | Pack Qty | Order Code | 1+     | 5+     | 10+    |
|----------------|----------|------------|--------|--------|--------|
| S050X075VA1Y   | 5000     | 177-3913   | 53.70  | 52.09  | 50.53  |
| S050X125VA1Y   | 5000     | 177-3915   | 64.80  | 62.86  | 60.97  |
| S050X150VA1Y   | 5000     | 177-3916   | 68.20  | 66.15  | 64.17  |
| S075X075VA1Y   | 5000     | 177-3917   | 66.80  | 64.80  | 62.86  |
| S075X125VA1Y   | 5000     | 177-3918   | 96.20  | 93.31  | 90.51  |
| S075X150VA1Y   | 5000     | 177-3919   | 115.40 | 111.94 | 108.58 |
| S100X075VA1Y   | 2500     | 177-3920   | 40.90  | 39.67  | 38.48  |
| S100X125VA1Y   | 2500     | 177-3921   | 59.45  | 57.67  | 55.94  |
| S100X150VA1Y   | 2500     | 177-3922   | 64.20  | 62.27  | 60.40  |
| S100X225VA1Y   | 1500     | 177-3923   | 65.10  | 63.15  | 61.26  |
| S100X400VA1Y   | 1000     | 177-3924   | 74.12  | 71.90  | 69.74  |
| S100X650VA1Y   | 250      | 177-3925   | 31.25  | 30.31  | 29.40  |
| S150X150VA1Y   | 5000     | 177-3927   | 217.00 | 210.49 | 204.18 |
| S150X225VA1Y   | 5000     | 177-3928   | 356.30 | 345.61 | 335.24 |
| S150X400VA1Y   | 2500     | 177-3929   | 295.05 | 286.20 | 277.61 |
| S200X225VA1Y   | 500      | 177-3930   | 51.31  | 49.77  | 48.28  |
| S200X400VA1Y   | 500      | 177-3931   | 77.18  | 74.86  | 72.61  |
| S200X650VA1Y   | 250      | 177-3932   | 60.53  | 58.71  | 56.95  |

## Thermal Transfer Polyester Component Labels



New



Panduit thermal transfer Component Labels are suitable for a wide variety of flat surface applications including electronics, equipment, panels, bins, etc.

- Operating temperature range: -40°C to 150°C
- For use with harsh solvents, oils, and chemicals without over-lamination
- White polyester material with permanent acrylic adhesive
- Halogen free meeting UL 969 requirements
- For indoor/outdoor use with high temperature resistance, dimensional stability, does not stretch or easily tear
- Supplied on rolls for use with TDP43MY Printer
- Use with Panduit RMR4 resin range of thermal transfer ribbons
- Use Panduit TDP43M-RS roll stand

| Mfrs. List No. | Width (mm) | Length (mm) | Mfrs. List No. | Width (mm) | Length (mm) |
|----------------|------------|-------------|----------------|------------|-------------|
| C025X025YJT    | 6.3        | 6.3         | C150X075YJT    | 38.1       | 19          |
| C038X038YJT    | 9.6        | 9.6         | C160X020YJT    | 40.6       | 5.1         |
| C050X044YJT    | 12.7       | 11.1        | C200X050YJT    | 50.8       | 12.7        |
| C060X020YJT    | 15.2       | 5.1         | C200X100YJT    | 50.8       | 25.4        |
| C075X025YJT    | 19         | 6.3         | C400X100YJT    | 101.6      | 25.4        |
| C080X020YJT    | 20.3       | 5.1         | C400X200YJT    | 101.6      | 50.8        |
| C100X025YJT    | 25.4       | 6.3         | C400X400YJT    | 101.6      | 101.6       |
| C100X050YJT    | 25.4       | 12.7        | C400X600YJT    | 101.6      | 152.4       |

Continues on next page



| Mfrs. List No. | Pack Qty | Order Code | 1+     | 5+     | 10+    |
|----------------|----------|------------|--------|--------|--------|
| C025X025YJT    | 10000    | 177-3933   | 16.80  | 16.30  | 15.81  |
| C038X038YJT    | 10000    | 177-3934   | 33.60  | 32.59  | 31.61  |
| C050X044YJT    | 10000    | 177-3935   | 47.20  | 45.78  | 44.41  |
| C060X020YJT    | 10000    | 177-3936   | 32.00  | 31.04  | 30.11  |
| C075X025YJT    | 10000    | 177-3937   | 46.00  | 44.62  | 43.28  |
| C080X020YJT    | 10000    | 177-3939   | 35.40  | 34.34  | 33.31  |
| C100X025YJT    | 10000    | 177-3941   | 48.20  | 46.75  | 45.35  |
| C100X050YJT    | 10000    | 177-3942   | 73.20  | 71.00  | 68.87  |
| C150X075YJT    | 5000     | 177-3943   | 70.70  | 68.58  | 66.52  |
| C160X020YJT    | 10000    | 177-3944   | 59.00  | 57.23  | 55.51  |
| C200X050YJT    | 5000     | 177-3945   | 72.60  | 70.42  | 68.31  |
| C200X100YJT    | 2500     | 177-3946   | 62.20  | 60.33  | 58.52  |
| C400X100YJT    | 2500     | 177-3947   | 124.00 | 120.28 | 116.67 |
| C400X200YJT    | 1000     | 177-3948   | 97.00  | 94.09  | 91.27  |
| C400X400YJT    | 1000     | 177-3949   | 163.76 | 158.85 | 154.08 |
| C400X600YJT    | 1000     | 177-3950   | 276.96 | 268.65 | 260.59 |

## PT-90 Label Printer



- Portable and Lightweight Design
- QWERTY Keyboard
- Built in cutter enables accurate tape length
- Utilises 2 Tape widths (M tapes) 9 & 12mm
- 12 character x 1 Line LCD display screen
- Prints 1 to 2 lines of text
- Prints up to 203 dpi
- Prints up to 7.5mm per second
- 7 Frame Styles
- 8 Font Styles
- Requires 4 x AAA batteries (not supplied)
- Dimensions (WxDxH): 156x111x57mm
- Weight: 0.25kg

| Description                  | Order Code | Price Each |
|------------------------------|------------|------------|
| Label Printer                | 178-1128   | 28.55      |
| 9mm Tapes<br>Black on White  | 379-9580   | 9.10       |
| 12mm Tapes<br>Black on White | 379-9645   | 9.88       |

## PT-1290DT Label Printer



The Brother P-touch 1290DT has been specifically designed to accommodate all of your labelling needs. This simple, easy-to-use desktop labelling machine will help you to create clear, professional labels with the minimum of fuss, leaving you free to use your time more efficiently. It sits neatly in the desk organiser provided and is easily accessible whenever you need to label as well as keeping your desk are tidy and clutter free.

- QWERTY Keyboard
- 15 character x 1 line LCD display
- Built-in tape cutter
- Maximum print height: 9mm
- 15 print sizes
- 8 print styles
- 7 framing and fill patterns
- 80 symbols
- 3 x 'favourite label' storage locations
- Double line printing
- Helsinki and Bohemia fonts
- Print image (preview)
- Print speed of 10mm/sec
- 180dpi print resolution
- Vertical and mirror printing
- Memory - 720 characters
- Multiple copies (1-9)
- Auto power off
- Utilises 4 Tape widths (TZ tape) - 3.5, 6, 9 & 12mm

| Mfrs. List No. | Order Code | Price Each |
|----------------|------------|------------|
| PT-1290DT      | 178-1132   | 61.19      |

## Self-Adhesive Write-On Labels

### Metalised Polyester



- For industrial, warehouse, QA and safety marking needs
- Easily applied to any clean, dry, oil free surface
- Each label is smudge-free and permanently debossed once marked
- Each pack contains 350 labels measuring 16x38mm
- Labels supplied on a backing card to provide a firm writing surface
- To select the correct label for your requirements, refer to the Farnell Order Code under the desired legend
- The Manufacturers List No. is shown in brackets after the relevant Farnell Order Code.

| APPLIANCE TESTED         | FAILED                   | TESTED FOR ELECTRICAL SAFETY | FIXED ASSET NO.    |
|--------------------------|--------------------------|------------------------------|--------------------|
| BY DATE<br>NEXT TEST DUE | BY DATE<br>NEXT TEST DUE | BY DATE<br>NEXT TEST DUE     |                    |
| 171-7336 (7827328)       | 171-7348 (7827338)       | 171-7361 (7827350)           | 171-7350 (7827340) |

| BLANK (Not printed)      | PASSED                   | DATE INSTALLED           | NOT CALIBRATED     |
|--------------------------|--------------------------|--------------------------|--------------------|
| BY DATE<br>NEXT TEST DUE | BY DATE<br>NEXT TEST DUE | BY DATE<br>NEXT TEST DUE |                    |
| 171-7337 (7827329)       | 171-7353 (7827342)       | 171-7344 (7827334)       | 171-7351 (7827341) |

| CALIBRATED               | SERIAL NO.               | DO NOT USE               | PROPERTY TAG       |
|--------------------------|--------------------------|--------------------------|--------------------|
| BY DATE<br>NEXT TEST DUE | BY DATE<br>NEXT TEST DUE | BY DATE<br>NEXT TEST DUE | ASSET NO.          |
| 171-7338 (7827330)       | 171-7355 (7827344)       | 171-7345 (7827335)       | 171-7354 (7827343) |

| NOT CALIBRATED INDICATOR ONLY | SERVICE RECORD           | ELECTRICAL APPLIANCE     | SERVICED BY:       |
|-------------------------------|--------------------------|--------------------------|--------------------|
| BY DATE<br>NEXT TEST DUE      | BY DATE<br>NEXT TEST DUE | BY DATE<br>NEXT TEST DUE | DATE               |
| 171-7341 (7827331)            | 171-7356 (7827345)       | 171-7346 (7827336)       | 171-7357 (7827346) |

| CALIBRATION              | TESTED                   | EQUIPMENT NO.            | SHELF LIFE         |
|--------------------------|--------------------------|--------------------------|--------------------|
| BY DATE<br>NEXT TEST DUE | BY DATE<br>NEXT TEST DUE | BY DATE<br>NEXT TEST DUE | EXP. DATE          |
| 171-7342 (7827332)       | 171-7359 (7827348)       | 171-7347 (7827337)       | 171-7358 (7827347) |

| CHECKED                  | TESTED FOR ELECTRICAL SAFETY | FAULTY             |
|--------------------------|------------------------------|--------------------|
| BY DATE<br>NEXT TEST DUE | BY DATE<br>NEXT TEST DUE     |                    |
| 171-7343 (7827333)       | 171-7360 (7827349)           | 171-7349 (7827339) |

| Pack Size  | Order Code      | 1+    | 5+    | 20+   | 50+   |
|------------|-----------------|-------|-------|-------|-------|
| 350 Labels | All Order Codes | 16.07 | 15.26 | 14.49 | 13.76 |

## General



| TESTED FOR ELECTRICAL SAFETY | BLANK (Not printed)      | PART NO.                 | REJECTED PART            |
|------------------------------|--------------------------|--------------------------|--------------------------|
| BY DATE<br>NEXT TEST DUE     | BY DATE<br>NEXT TEST DUE | BY DATE<br>NEXT TEST DUE | BY DATE<br>NEXT TEST DUE |
| 171-7343 (7827333)           | 171-7360 (7827349)       | 171-7349 (7827339)       | 171-7358 (7827347)       |

- Self-adhesive, cloth backed, white vinyl labels
- Pre-printed legends
- Supplied on dispenser cards
- Easily marked with a ball pen, typewriter or spirit based ink

| Mfrs List No. | Legend                           | Label Size | Labels Per Card | Label Colour |
|---------------|----------------------------------|------------|-----------------|--------------|
| 7827265       | Tested                           | 15x38mm    | 14              | Green        |
| 7827266       | Plain Label                      | 15x38mm    | 14              | Plain        |
| 7827267       | Accepted                         | 15x38mm    | 14              | Green        |
| 7827268       | Rejected                         | 15x38mm    | 14              | Red          |
| 7827269       | Serial No.                       | 15x38mm    | 14              | Black        |
| 7827270       | Calibration                      | 15x38mm    | 14              | Green        |
| 7827271       | Batch No                         | 15x38mm    | 14              | Blue         |
| 7827272       | Serviced By                      | 15x38mm    | 14              | Blue         |
| 7827273       | Calibration Not Required         | 15x38mm    | 14              | Red          |
| 7827274       | Inspected by                     | 15x38mm    | 14              | Black        |
| 7827276       | Tested for Electrical Safety (A) | 15x38mm    | 14              | Green        |
| 7827277       | Do Not Use                       | 15x38mm    | 14              | Red          |
| 7827278       | Part No                          | 15x38mm    | 18              | Blue         |
| 7827351       | Test for Electrical Safety (B)   | 15x38mm    | 14              | Green        |

| Mfrs. List No. | Legend                           | Order Code | 10+  | 100+ | 500+ | 1K+  |
|----------------|----------------------------------|------------|------|------|------|------|
| 7827265        | Tested                           | 171-7266   | 0.78 | 0.70 | 0.65 | 0.56 |
| 7827266        | Plain Label                      | 171-7267   | 0.78 | 0.70 | 0.65 | 0.56 |
| 7827267        | Accepted                         | 171-7268   | 0.78 | 0.70 | 0.65 | 0.56 |
| 7827268        | Rejected                         | 171-7269   | 0.78 | 0.70 | 0.65 | 0.56 |
| 7827269        | Serial No.                       | 171-7270   | 0.78 | 0.70 | 0.65 | 0.56 |
| 7827270        | Calibration                      | 171-7271   | 0.78 | 0.70 | 0.65 | 0.56 |
| 7827271        | Batch No                         | 171-7272   | 0.78 | 0.70 | 0.65 | 0.56 |
| 7827272        | Serviced By                      | 171-7273   | 0.78 | 0.70 | 0.65 | 0.56 |
| 7827273        | Calibration Not Required         | 171-7274   | 0.78 | 0.70 | 0.65 | 0.56 |
| 7827274        | Inspected by                     | 171-7275   | 0.78 | 0.70 | 0.65 | 0.56 |
| 7827276        | Tested for Electrical Safety (A) | 171-7276   | 0.78 | 0.70 | 0.65 | 0.56 |
| 7827277        | Do Not Use                       | 171-7277   | 0.78 | 0.70 | 0.65 | 0.56 |
| 7827278        | Part No                          | 171-7278   | 0.78 | 0.70 | 0.65 | 0.56 |
| 7827351        | Test for Electrical Safety (B)   | 171-7280   | 0.78 | 0.70 | 0.65 | 0.56 |

Over half a million products available online



## Self-Adhesive Numbers & Letters

BEAVERWOOD®



These self-adhesive numbers and letters are printed black on yellow, ensuring high visibility. Simple to apply, they can be quickly removed and leave no adhesive residue. They are suitable for a variety of uses throughout the warehouse including labelling of shelves, racking, bins and other areas.

- Clean peel - leaves no residue
- Bin numbering
- 1 card for each character
- Easy warehouse identification
- High Visibility

| Legend | Size (HxW) | Characters Per Card | Order Code | 1+    | 5+    | 10+   |
|--------|------------|---------------------|------------|-------|-------|-------|
| 0-9    | 19 x 14mm  | 36                  | 163-8346   | 9.53  | 9.24  | 8.97  |
| A-Z    | 19 x 14mm  | 36                  | 163-8347   | 22.92 | 22.24 | 21.56 |
| 0-9    | 38 x 21mm  | 12                  | 163-8349   | 9.53  | 9.24  | 8.97  |
| A-Z    | 38 x 21mm  | 12                  | 163-8351   | 21.20 | 20.57 | 19.94 |
| 0-9    | 56 x 21mm  | 12                  | 163-8352   | 13.50 | 13.09 | 12.70 |
| A-Z    | 56 x 21mm  | 12                  | 163-8353   | 35.09 | 34.04 | 33.01 |
| 0-9    | 90 x 38mm  | 6                   | 163-8354   | 18.73 | 18.17 | 17.62 |
| A-Z    | 90 x 38mm  | 6                   | 163-8355   | 48.69 | 47.22 | 45.81 |

## Magnetic Easy Wipe Location Markers

BEAVERWOOD®



White faced magnetic location markers supplied in packs of single sized markers. Use a wet-wipe marker pen, write on, update and move when required.

- Locates on steel surfaces
- Quick and easy re-location
- Write on - Wipe off

### Wet Wipe Marker Pens

The black marker pens allow for easy updates and text can be wiped clean with a damp cloth.

| Size (HxW)             | Pack Qty | Order Code | 1+    | 5+    | 10+   |
|------------------------|----------|------------|-------|-------|-------|
| 20 x 80mm              | 100      | 163-8404   | 21.17 | 20.53 | 19.91 |
| 25 x 80mm              | 100      | 163-8405   | 23.92 | 23.21 | 22.50 |
| 30 x 80mm              | 100      | 163-8406   | 27.29 | 26.47 | 25.67 |
| 40 x 80mm              | 100      | 163-8407   | 29.19 | 28.33 | 27.48 |
| 50 x 80mm              | 100      | 163-8408   | 34.35 | 33.32 | 32.32 |
| 30 x 100mm             | 100      | 163-8409   | 25.17 | 24.41 | 23.68 |
| 50 x 100mm             | 100      | 163-8410   | 45.69 | 44.31 | 42.98 |
| 50 x 150mm             | 100      | 163-8411   | 47.20 | 45.78 | 44.41 |
| 56 x 105mm             | 100      | 163-8412   | 60.70 | 58.87 | 57.11 |
| 90 x 210mm             | 10       | 163-8413   | 15.03 | 14.58 | 14.15 |
| Accessories Marker Pen | 5        | 163-8343   | 9.14  | 8.87  | 8.68  |

## Wireless Energy Monitor



New



Simply attach the sensor around the live power supply cable coming from the electricity meter to the consumer unit, and the product will measure the total electricity being used in the premises.

- Wireless monitor
- Measures energy usage in units or actual cost
- Saves money by reducing energy bills through simple and efficient energy saving practices

- Developed to meet community/government demands for energy efficiency
  - Assist in energy conservation
  - Separate displays for temperature and humidity
  - Identify whether appliances have inadvertently been left on
  - Easy to read, easy to use & easy to install
  - No additional wiring necessary
- Contents; Remote monitor, sender box, sensor, 6 x AAA batteries, user manual

| Order Code | 1+    | 5+    |
|------------|-------|-------|
| 173-4572   | 34.67 | 32.13 |

## FREE technical support

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Live technical chat at  
www.farnell.co.uk

## Wireless Micro Electricity Monitor



New



- Owl Micro is a portable wireless electricity monitor which shows you how

much electricity you are using at any time

- It can help you to save money off your electricity bill by providing up to the second information on the amount of electricity you are using in pounds and pence
- Whether it's turning off at the plug rather than

just using standby or simply turning off a light

- The OWL shows you the how changing your behavior can save you money and so help the environment

- No additional wiring required

Contents: Remote monitor, sender box, sensor, 6 x AAA batteries, user manual

| Order Code | 1+    | 5+    |
|------------|-------|-------|
| 173-4573   | 25.49 | 23.45 |

## Conduit Contractor Packs

Adaptalok

New



- Adaptalok conduit with one-piece, fast fit, push & twist fittings

- Protection class IP66

- Polyamide (Nylon) 6

- Kit includes:  
10m Conduit  
10 x Straight Fitting  
10 x Locknuts

- Available in 20mm and 25mm conduit sizes

| Mfrs. List No. | Conduit Size | Order Code | 1+    | 10+   |
|----------------|--------------|------------|-------|-------|
| CP-AF20A       | 20mm         | 173-4610   | 36.35 | 34.33 |
| CP-AF25A       | 25mm         | 173-4612   | 48.47 | 45.44 |

## Protective Split Corrugated Polyamide Conduit

PRO-ELEC



The split conduit is ideal for protecting assembled cables after installation.

- Highly flexible
- Split remains closed under torsion
- UV resistant for photovoltaic applications
- Easy installation
- Operating temperature -40°C to 140°C
- Supplied in 25m Coils

| Mfrs. List No. | Diameter      |               | Order Code | Price Per Coil |        |
|----------------|---------------|---------------|------------|----------------|--------|
|                | Internal (mm) | External (mm) |            | 1+             | 5+     |
| 61806560       | 9.9           | 13            | 164-2142   | 46.21          | 44.81  |
| 61806565       | 12.2          | 15.7          | 164-2143   | 55.80          | 54.13  |
| 61806570       | 16.6          | 21.2          | 164-2144   | 85.95          | 83.39  |
| 61806580       | 23.2          | 28.3          | 164-2146   | 125.75         | 121.97 |

## Self-Adhesive Mico One Piece Trunking

D-LINE

New



Semi-circular Mico 16 x 8mm trunking is a perfect solution for hiding low voltage and single cables. The patented hinged and click-lock lid in a unique single piece design makes the product easy to handle and easy to later add or remove cables. The pack includes a range of flush-fit accessories (couplers, bends, tees, end caps etc.) for the perfect finish.

Applications:

- Cabinets and Display
- Hiding low voltage and singles cables
- Speaker Systems

Kit Contents: 2m lengths of 16x8mm (Pk 10), Assorted flush fit accessories (Pk 24)

| Order Code | 1+    | 5+    | 10+   |
|------------|-------|-------|-------|
| 170-2083   | 21.48 | 20.84 | 20.21 |



## IEE Wiring Regulations

17th Edition

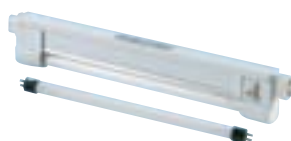


The IEE Wiring Regulations (BS 7671) are the national standard to which all domestic and industrial wiring must conform. The 17th Edition reflects significant changes to both the technical content and structure of the book. Key changes in the volume include: a change allowing a socket outlet in bathrooms extension of the Regulations to cover new special locations: exhibition shows, photovoltaic (pv) power supply systems, floor and heating systems, marinas and fairgrounds and amusement parks; and, re-numbering and restructuring of chapters to align with international standards.



| Order Code | Price Each  |
|------------|-------------|
| 154-2083   | 1+<br>68.64 |

## Ultralim Link Triphosphor Fittings



- Ultralim fluorescent fittings for all manner of display lighting, particularly kitchen cabinets
- White plastic or aluminium construction with on/off rocker switch
- Universal mounting brackets
- IP20 rated
- Each fitting supplied with 1 x T4 fluorescent tube (3400K)
- Up to 6 fittings can be linked to a 6-way connector block
- 6-way connector block comes complete with 2m mains cable and 3 amp fused plug
- Various lengths of link lead available to run between fittings and connector blocks
- Fitting dimensions (H x D): 43 x 19mm

| Watts                         | Length | Order Code | 1+    | Price Each | 5+    | 10+ |
|-------------------------------|--------|------------|-------|------------|-------|-----|
| <b>White Plastic Fittings</b> |        |            |       |            |       |     |
| 6W                            | 270mm  | 177-4181   | 7.09  | 6.81       | 6.45  |     |
| 10W                           | 390mm  | 177-4178   | 8.63  | 8.29       | 7.85  |     |
| 16W                           | 520mm  | 177-4179   | 9.60  | 9.24       | 8.73  |     |
| 20W                           | 620mm  | 177-4180   | 11.15 | 10.72      | 10.13 |     |
| <b>Spare Tubes</b>            |        |            |       |            |       |     |
| 6W                            | 220mm  | 177-4184   | 2.74  | 2.64       | 2.49  |     |
| 10W                           | 341mm  | 177-4185   | 3.07  | 2.94       | 2.79  |     |
| 16W                           | 468mm  | 177-4186   | 3.57  | 3.43       | 3.25  |     |
| 20W                           | 567mm  | 177-4187   | 3.80  | 3.65       | 3.45  |     |
| <b>Accessories</b>            |        |            |       |            |       |     |
| Link Lead                     | 250mm  | 177-4183   | 1.46  | 1.40       | 1.33  |     |
| Link Lead                     | 1m     | 177-4182   | 2.01  | 1.93       | 1.83  |     |

## Halogen Twin Spot Emergency Light



Supply Voltage 230V  
Lamp 12V 20W BA 15S  
IP Rating IP20  
Battery 1 x 12V 7Ah  
Dimensions (WxHxD) 310 x 310 x 70mm

- Non-maintained emergency light with twin halogen spots
- 3 hours continuous illumination
- Steel box construction
- Individual LED health lamp indicators
- Conforms to BS EN 60598-2-22
- Supplied with 2 x 20W lamps and battery

| Order Code | Price Each | 1+    | 5+    | 10+ |
|------------|------------|-------|-------|-----|
| 177-4174   | 59.28      | 56.99 | 53.89 |     |

## 2220 Versabrite™ III LED Zone 1



- Ex Code: ATEX Ex II 2 G EEx ib IIC T6
- 2 X 5mm White Nichia LEDs
- Head flips up to activate LEDs and rotates 180 for aiming light where you need it
- Body made of virtually indestructible Xylex®
- Multiple use built in clip
- Attaches to surface up to 10mm thick
- Tested Lumen Value: 6
- Power: 0.6 Watts
- 2 x CR2032 3v Lithium coin-cell Batteries (included)
- 100 hours of battery burn time
- Length: 89mm

| Order Code | Price Each | 1+    | 5+ |
|------------|------------|-------|----|
| 175-3233   | 22.84      | 21.99 |    |

## Industrial ATEX LED Torch



- Uses 2 x AA batteries
- 3 x Nichia LEDs
- 18 Lumens. 19 metres beam distance
- Designed to produce a "flood" type beam, ideal for close up inspection work
- Completely Water Proof and Dustproof (IEC standard IP67) IP6X (dust and solid bodies) and IPX7 (waterproof)
- Robust: survives 2.5m drop
- ATEX approval for Intrinsically Safe
- MSHA certified (US Mine Safety and Health Administration)
- UL approved as Intrinsically Safe for Class 1 Div 1 (highest rating possible)
- Ex I M2 / II 1 G, EEx ia I/IIC T4, DEMKO 07, ATEX 0618226

| Mfrs. List No. | Order Code | Price Each | 1+    | 5+ |
|----------------|------------|------------|-------|----|
| 628908         | 177-5673   | 11.03      | 10.45 |    |

## ATEX LED Headlight



- 80 lumens
- 2 red LEDs (night vision)
- 1 green LED (pipe inspection)
- Adjustable light (from spot to diffuser)
- Weatherproof IPX4
- 2m drop test
- 60m beam distance
- Shatterproof Lens
- ATEX certified
- 3 x AA batteries needed not included
- Ex I M2 / II 1 G, EEx ia I/IIC T4, DEMKO 08, ATEX 0803999

| Mfrs. List No. | Order Code | Price Each | 1+    | 5+ |
|----------------|------------|------------|-------|----|
| 632026         | 177-5676   | 34.78      | 32.99 |    |

## LED Head Torch



- Compact LED head-torch
- 12 x high intensity LEDs (100,000 hours average life)
- 4 mode operation - 4 LED, 8 LED, 12 LED, 12 LED Flashing
- Adjustable head strap with padded front section for comfort
- Adjustable position head for work area focus

- Torch head dimensions (WxHxD): 70 x 55 x 60mm
- Requires 3 x AAA batteries (not supplied- part number 1712514)

| Order Code | Price Each | 1+   | 5+ |
|------------|------------|------|----|
| 173-6638   | 5.17       | 4.55 |    |

## Premium service without a premium price



We regularly review our prices so that you receive the very best value. Go online to see our most up-to-date pricing at [www.farnell.co.uk](http://www.farnell.co.uk)

## Solid Brass Padlocks

55 Series



- Solid brass body
- Hardened steel shackle
- Option of 3, 4, or 5 pin tumbler mechanism manufactured from all rust-free components
- Automatic locking
- Paracentric keyway (55 series)
- Precision, mushroom pins & paracentric keyway for anti-pick protection (65 series)
- Keyed alike padlocks available
- Supplied with 2 keys
- Internal standard security applications

**ABUS**
**New**

| Order Code | Tumbler Mechanism | Dimensions |      |      | Shackle Dia. | Shackle Height | Shackle Width |
|------------|-------------------|------------|------|------|--------------|----------------|---------------|
|            |                   | H          | W    | D    |              |                |               |
| 177-7119   | 3 Pin             | 44mm       | 29mm | 12mm | 4.5mm        | 13.5mm         | 14.5mm        |
| 177-7120   | 3 Pin             | 44mm       | 29mm | 12mm | 4.5mm        | 13.5mm         | 14.5mm        |
| 177-7123   | 5 Pin             | 60mm       | 38mm | 13mm | 6.5mm        | 21.5mm         | 20.5mm        |
| 177-7132   | 5 Pin             | 102mm      | 38mm | 13mm | 6.5mm        | 63mm           | 20.5mm        |
| 177-7124   | 4 Pin             | 60mm       | 38mm | 13mm | 6.5mm        | 21.5mm         | 20.5mm        |
| 177-7133   | 5 Pin             | 102mm      | 38mm | 13mm | 6.5mm        | 63mm           | 20.5mm        |
| 177-7127   | 5 Pin             | 68mm       | 48mm | 14mm | 7mm          | 24mm           | 25mm          |
| 177-7128   | 5 Pin             | 68mm       | 48mm | 14mm | 7mm          | 24mm           | 25mm          |

| Description               | Mfrs. List No.    | Order Code      | Price Each |      |      |      |
|---------------------------|-------------------|-----------------|------------|------|------|------|
|                           |                   |                 | 1 +        | 5 +  | 10 + | 25 + |
| <b>30mm Padlocks</b>      |                   |                 |            |      |      |      |
| Standard                  | 55/30             | <b>177-7119</b> | 3.96       | 3.82 | 3.67 | 3.55 |
| Keyed Alike               | 55/30 KA 5303     | <b>177-7120</b> | 4.35       | 4.19 | 4.05 | 3.91 |
| <b>40mm Padlocks</b>      |                   |                 |            |      |      |      |
| Standard                  | 55/40             | <b>177-7123</b> | 4.74       | 4.57 | 4.41 | 4.25 |
| Standard, Long Shackle    | 55/40HB63         | <b>177-7132</b> | 5.71       | 5.51 | 5.31 | 5.13 |
| Keyed Alike               | 55/40 KA 5403     | <b>177-7124</b> | 5.23       | 5.03 | 4.85 | 4.69 |
| Keyed Alike, Long Shackle | 55/40HB63 KA 5402 | <b>177-7133</b> | 6.29       | 6.07 | 5.85 | 5.64 |
| <b>50mm Padlocks</b>      |                   |                 |            |      |      |      |
| Standard                  | 55/50             | <b>177-7127</b> | 7.33       | 7.05 | 6.80 | 6.57 |
| Keyed Alike               | 55/50 KA 5503     | <b>177-7128</b> | 8.06       | 7.76 | 7.48 | 7.22 |

## Solid Brass Padlocks

65 Series


**ABUS**
**New**

- Solid brass body
- Hardened Steel / Brass / Stainless Steel shackle
- Option of 3, 4, or 5 pin tumbler mechanism manufactured from all rustfree components
- Automatic locking
- Precision, mushroom pins & paracentric keyway for anti-pick protection
- Standard, Keyed Alike, Anti-Spark & Marine Quality padlocks available
- Supplied with 2 keys

| Order Code | Tumbler Mechanism | H     | Dimensions |        |       | Shackle Dia. | Shackle Height | Shackle Width |
|------------|-------------------|-------|------------|--------|-------|--------------|----------------|---------------|
|            |                   |       | W          | D      |       |              |                |               |
| 177-7114   | 3 Pin             | 34mm  | 20mm       | 10mm   | 3.5mm | 11.5mm       | 9.5mm          |               |
| 177-7115   | 4 Pin             | 42mm  | 25mm       | 12mm   | 4mm   | 13.5mm       | 13.5mm         |               |
| 177-7116   | 4 Pin             | 50mm  | 30mm       | 12mm   | 5mm   | 17.5mm       | 16mm           |               |
| 177-7121   | 5 Pin             | 62mm  | 40mm       | 15mm   | 6.5mm | 22.5mm       | 22mm           |               |
| 177-7118   | 4 Pin             | 50mm  | 30mm       | 14mm   | 5mm   | 17.5mm       | 16mm           |               |
| 177-7122   | 5 Pin             | 62mm  | 40mm       | 15mm   | 6.5mm | 22.5mm       | 22mm           |               |
| 177-7131   | 4 Pin             | 93mm  | 30mm       | 14mm   | 5mm   | 70mm         | 16mm           |               |
| 177-7134   | 5 Pin             | 103mm | 40mm       | 15mm   | 6mm   | 63mm         | 22mm           |               |
| 177-7126   | 5 Pin             | 74mm  | 50mm       | 14.5mm | 8.5mm | 20.5mm       | 18.5mm         |               |
| 177-7125   | 5 Pin             | 62mm  | 40mm       | 15mm   | 6.5mm | 22.5mm       | 22mm           |               |

| Size                                           | Mfrs. List No. | Order Code | Price Each |       |       |       |
|------------------------------------------------|----------------|------------|------------|-------|-------|-------|
|                                                |                |            | 1+         | 5+    | 10+   | 25+   |
| <b>Standard, Hardened Steel Shackle</b>        |                |            |            |       |       |       |
| 20mm                                           | 65/20          | 177-7114   | 3.43       | 3.31  | 3.19  | 3.08  |
| 25mm                                           | 65/25          | 177-7115   | 3.82       | 3.67  | 3.55  | 3.43  |
| 30mm                                           | 65/30          | 177-7116   | 4.31       | 4.17  | 4.02  | 3.89  |
| 40mm                                           | 65/40          | 177-7121   | 5.40       | 5.21  | 5.02  | 4.86  |
| <b>Keyed Alike, Hardened Steel Shackle</b>     |                |            |            |       |       |       |
| 30mm                                           | 65/30 KA 6301  | 177-7118   | 4.93       | 4.75  | 4.59  | 4.43  |
| 40mm                                           | 65/40 KA 6401  | 177-7122   | 6.17       | 5.94  | 5.73  | 5.53  |
| <b>Anti-Spark, Long Brass Shackle</b>          |                |            |            |       |       |       |
| 30mm                                           | 65MB/30HB70 C  | 177-7131   | 5.40       | 5.21  | 5.02  | 4.86  |
| 40mm                                           | 65MB/40HB63 C  | 177-7134   | 7.51       | 7.24  | 6.97  | 6.73  |
| <b>Closed, Hardened Steel Shackle</b>          |                |            |            |       |       |       |
| 50mm                                           | 65CS/50        | 177-7126   | 11.52      | 11.01 | 10.40 | 10.10 |
| <b>Marine Quality, Stainless Steel Shackle</b> |                |            |            |       |       |       |
| 40mm                                           | 65IB/40        | 177-7125   | 8.22       | 7.61  | 7.31  | 7.05  |

## Heavy Duty Service Padlocks

83 Series


**ABUS**
**New**

- Through hardened steel body
- 11mm through hardened steel shackle
- Ball bearing locking resists pulling attacks
- Raised shoulders on p/n 177-6517 protects shackle from cutting & torsion attacks
- 5 pin tumbler mechanism manufactured from all rustfree components
- Hardened steel base plate to protect against drill attack
- Supplied automatic locking & non-key retaining
- Features a patented 'Z' bar which allows the lock to be changed to dead locking & key retaining
- Supplied with 2 keys
- For medium to high security applications

| Order Code | Material             | Dimensions |      |      | Shackle Dia. | Shackle Height | Shackle Width |
|------------|----------------------|------------|------|------|--------------|----------------|---------------|
|            |                      | H          | W    | D    |              |                |               |
| 177-6517   | Hardened Steel Alloy | 91.5mm     | 55mm | 25mm | 11mm         | 26.5mm         | 25mm          |
| 177-7110   | Hardened Steel Alloy | 103.5mm    | 55mm | 25mm | 11mm         | 26.5mm         | 25.5mm        |

| Shackle  | Mfrs. List No. | Order Code | Price Each |       |       |       |
|----------|----------------|------------|------------|-------|-------|-------|
|          |                |            | 1+         | 5+    | 10+   | 25+   |
| Closed   | 83CS/55        | 177-6517   | 44.15      | 41.82 | 41.31 | 39.08 |
| Standard | 83/55          | 177-7110   | 40.40      | 37.76 | 37.35 | 35.02 |

## Aluminium Combination Padlocks

145 Series


**ABUS**
**New**

- Precision extruded, cut & drilled pure aluminium body - Light & strong
- Mechanism & shackle coated to prevent chemical corrosion
- Corrosion resistant anodised coating
- 6mm hardened steel shackle
- 3 or 4 wheel resettable combination - Set your own pin
- Security with the convenience of an easy to set combination
- For internal & external standard security applications

| Size | Combination | H    | Dimensions |      |     | Shackle Dia. | Shackle Height | Shackle Width |
|------|-------------|------|------------|------|-----|--------------|----------------|---------------|
|      |             |      | W          | D    |     |              |                |               |
| 20mm | 3 Wheel     | 52mm | 20mm       | 14mm | 3mm | 22mm         | 9mm            |               |
| 30mm | 3 Wheel     | 65mm | 30mm       | 13mm | 5mm | 26mm         | 14mm           |               |
| 40mm | 4 Wheel     | 81mm | 40mm       | 18mm | 6mm | 27.5mm       | 21.5mm         |               |

| Size | Colour | Mfrs. List No.  | Order Code | Price Each |      |      |      |
|------|--------|-----------------|------------|------------|------|------|------|
|      |        |                 |            | 1+         | 5+   | 10+  | 25+  |
| 20mm | Blue   | 145/20 BLUE C   | 177-7137   | 5.31       | 5.11 | 4.92 | 4.76 |
| 20mm | Brown  | 145/20 BROWN C  | 177-7138   | 5.31       | 5.11 | 4.92 | 4.76 |
| 20mm | Green  | 145/20 GREEN C  | 177-7139   | 5.31       | 5.11 | 4.92 | 4.76 |
| 20mm | Red    | 145/20 RED C    | 177-7140   | 5.31       | 5.11 | 4.92 | 4.76 |
| 20mm | Silver | 145/20 SILVER C | 177-7141   | 5.31       | 5.11 | 4.92 | 4.76 |
| 20mm | Yellow | 145/20 YELLOW C | 177-7143   | 5.31       | 5.11 | 4.92 | 4.76 |
| 30mm | Blue   | 145/30 BLUE C   | 177-7144   | 6.07       | 5.85 | 5.63 | 5.44 |
| 30mm | Brown  | 145/30 BROWN C  | 177-7145   | 6.07       | 5.85 | 5.63 | 5.44 |
| 30mm | Green  | 145/30 GREEN C  | 177-7146   | 6.07       | 5.85 | 5.63 | 5.44 |
| 30mm | Red    | 145/30 RED C    | 177-7147   | 6.07       | 5.85 | 5.63 | 5.44 |
| 30mm | Silver | 145/30 SILVER C | 177-7148   | 6.07       | 5.85 | 5.63 | 5.44 |
| 30mm | Yellow | 145/30 YELLOW C | 177-7149   | 6.07       | 5.85 | 5.63 | 5.44 |
| 40mm | Blue   | 145/40 BLUE C   | 177-7150   | 8.76       | 8.44 | 8.14 | 7.86 |
| 40mm | Brown  | 145/40 BROWN C  | 177-7151   | 8.76       | 8.44 | 8.14 | 7.86 |
| 40mm | Green  | 145/40 GREEN C  | 177-7152   | 8.76       | 8.44 | 8.14 | 7.86 |
| 40mm | Red    | 145/40 RED C    | 177-7153   | 8.76       | 8.44 | 8.14 | 7.86 |
| 40mm | Silver | 145/40 SILVER C | 177-7155   | 8.76       | 8.44 | 8.14 | 7.86 |
| 40mm | Yellow | 145/40 YELLOW C | 177-7156   | 8.76       | 8.44 | 8.14 | 7.86 |

## Hasp & Staples

**ABUS**


1777-183 - 1777-185

1777-186

1777-187

- Steel construction
- Hardened steel hinge pin & staple
- Concealed hinge pin
- Hidden screws deters opportunist thieves
- Including all fixings

**New**

Continues on next page



| Order Code | Material | Height | Width | Dia.   |
|------------|----------|--------|-------|--------|
| 177-7183   | Steel    | 76mm   | 29mm  | 9.5mm  |
| 177-7184   | Steel    | 97mm   | 39mm  | 13.5mm |
| 177-7185   | Steel    | 116mm  | 47mm  | 13.5mm |
| 177-7186   | Steel    | 155mm  | 45mm  | 12.5mm |
| 177-7187   | Steel    | 120mm  | 56mm  | 12.5mm |

| Mfrs. List No. | Order Code | 1+    | 5+    | 10+   | 25+   |
|----------------|------------|-------|-------|-------|-------|
| 200/75 C       | 177-7183   | 2.91  | 2.81  | 2.71  | 2.62  |
| 200/95 C       | 177-7184   | 4.29  | 4.14  | 3.99  | 3.85  |
| 200/115 C      | 177-7185   | 5.50  | 5.30  | 5.11  | 4.93  |
| 110/155 C      | 177-7186   | 11.17 | 10.45 | 10.15 | 10.10 |
| 140/120 C      | 177-7187   | 11.17 | 10.00 | 9.95  | 8.63  |

## 3 Way Mains Connector

Quick Connect



A high temperature and corrosive resistant connector, suitable for rigorous Mains applications.

- Same size contact in each position
- Designed to BS EN 60320-2-2
- Positive Location
- Withstands heat, dust and moisture

Contact Rating 13A @ 240V ac  
Housing Ultem®  
Contacts Copper Alloy / Gold Plated

Temperature Rating -55°C to 150°C  
IP Rating IP68

535817

| Description            | Mfrs. List No. | Order Code | 1+   | 10+  | 50+  |
|------------------------|----------------|------------|------|------|------|
| Receptacle             | QC24-1603X     | 171-1298   | 3.20 | 3.04 | 2.89 |
| Plug                   | QC26-1603X     | 171-1299   | 1.74 | 1.65 | 1.57 |
| Wire Seal              | QC220-03       | 171-1300   | 0.98 | 0.93 | 0.88 |
| Crimp Contact - Pin    | 429913-31      | 171-1302   | 0.98 | 0.93 | 0.88 |
| Crimp Contact - Socket | 429915         | 171-1303   | 1.40 | 1.33 | 1.26 |

## Helios H4 Photovoltaic Connectors



- Meets all new NEC 2008 requirements
- Quick and easy snap lock mating
- Long term UV and Ozone resistance
- Low contact resistance means low power loss
- Self Cleaning contact grid
- IP68 - water and weather proof
- TUV 'Touch-Proof' Design
- RoHS Compliant

Specifications:-  
Rated Current 40 A  
Contact Material Copper, Nickel Plated  
Contact Type 4mm High Efficiency Grid  
Operating Temp. -40°C to +105°C

Rated Voltage 1000 V  
Insulation Material PBT  
IP Rating IP67

| Description | Order Code | 1+    | 10+   | 25+   | 50+   |
|-------------|------------|-------|-------|-------|-------|
| Socket      | 175-6342   | 1.74  | 1.68  | 1.62  | 1.56  |
| Pin         | 175-6343   | 1.19  | 1.15  | 1.11  | 1.07  |
| Tooling     |            |       |       |       |       |
| Wrench      | 175-6344   | 1.83  | 1.77  | 1.71  | 1.64  |
| Crimp Tool  | 175-6346   | 34.73 | 33.57 | 32.41 | 31.26 |

## Panel Mount Photovoltaic Power Systems

LC3 Series



- Panel mount connectors for system components such as inverters, generator isolation housings or accumulation boxes
- Quick and easy assembly
- Manual crimping tool allows for cost effective assembly
- Rugged and durable for permanently reliable system operation
- Optional locking according to NEC 2008 NFPA 70
- With contact-voltage protection
- UV and ozone-resistant
- Halogen-free

Specifications:-  
Current Rating 35A (12 AWG) / 40A (10 AWG)  
Contact Resistance 5mohm  
IP Rating IP68  
Operating Temp. -40°C to 85°C

Voltage Rating 1000VDC  
Housing Material TPU  
Wire Size 10 / 12 AWG

| Mfrs. List No.     | Wire Size   | Polarity | Order Code | 1+     | Price Each 10+ | 25+  |
|--------------------|-------------|----------|------------|--------|----------------|------|
| <b>Plugs</b>       |             |          |            |        |                |      |
| LC3-CP 10-1 4.0    | 12AWG       | Positive | 174-0193   | 2.20   | 1.77           | 1.61 |
| LC3-CP 10-1 6.0    | 10AWG       | Positive | 174-0194   | 2.39   | 1.92           | 1.75 |
| LC3-CP 10-2 4.0    | 12AWG       | Negative | 174-0195   | 2.20   | 1.77           | 1.61 |
| LC3-CP 10-2 6.0    | 10AWG       | Negative | 174-0196   | 2.39   | 1.92           | 1.75 |
| <b>Sockets</b>     |             |          |            |        |                |      |
| LC3-CP 11-1 4.0    | 12AWG       | Positive | 174-0197   | 2.76   | 2.20           | 2.00 |
| LC3-CP 11-1 6.0    | 10AWG       | Positive | 174-0198   | 2.76   | 2.21           | 2.01 |
| LC3-CP 11-2 4.0    | 12AWG       | Negative | 174-0199   | 2.76   | 2.20           | 2.00 |
| LC3-CP 11-2 6.0    | 10AWG       | Negative | 174-0200   | 2.76   | 2.21           | 2.01 |
| <b>Dust Caps</b>   |             |          |            |        |                |      |
| LC3-CX 91          | For Sockets |          | 174-0211   | 0.49   | 0.39           | 0.35 |
| LC3-CX 92          | For Plugs   |          | 174-0212   | 0.47   | 0.37           | 0.34 |
| <b>Crimp Tools</b> |             |          |            |        |                |      |
| LC3-CX CZ47-4      | 12AWG       |          | 174-0221   | 284.73 | --             | --   |
| LC3-CX CZ47-6      | 10AWG       |          | 174-0223   | 281.65 | --             | --   |

## Field Attachable Photovoltaic Power Systems

LC3 Series



- Can be assembled anywhere on-site
- Convenient for smaller installations
- Complements the wiring concept with pre-assembled, overmolded connectors
- Quick and easy assembly
- Only one tool necessary for stripping and crimping
- Rugged and durable for permanently reliable system operation
- With contact-voltage protection
- Optional locking according to NEC 2008 NFPA 70
- UV and ozone-resistant, halogen-free

Specifications:-  
Current Rating 35A (12 AWG) / 40A (10 AWG)  
Contact Resistance 5mohm  
IP Rating IP67  
Operating Temp. -40°C to 85°C

Voltage Rating 1000VDC  
Housing Material TPU  
Wire Size 10 / 12 AWG

| Mfrs. List No.     | Wire Size   | Polarity | Order Code | 1+     | Price Each 10+ | 25+  |
|--------------------|-------------|----------|------------|--------|----------------|------|
| <b>Plugs</b>       |             |          |            |        |                |      |
| LC3-CP 30-1 4.0    | 12AWG       | Positive | 174-0201   | 2.74   | 2.19           | 1.99 |
| LC3-CP 30-1 6.0    | 10AWG       | Positive | 174-0202   | 2.90   | 2.32           | 2.11 |
| LC3-CP 30-2 4.0    | 12AWG       | Negative | 174-0203   | 2.74   | 2.19           | 1.99 |
| LC3-CP 30-2 6.0    | 10AWG       | Negative | 174-0204   | 2.90   | 2.32           | 2.11 |
| <b>Sockets</b>     |             |          |            |        |                |      |
| LC3-CP 31-1 4.0    | 12AWG       | Positive | 174-0205   | 2.95   | 2.36           | 2.14 |
| LC3-CP 31-1 6.0    | 10AWG       | Positive | 174-0206   | 2.96   | 2.36           | 2.15 |
| LC3-CP 31-2 4.0    | 12AWG       | Negative | 174-0207   | 2.95   | 2.36           | 2.14 |
| LC3-CP 31-2 6.0    | 10AWG       | Negative | 174-0208   | 2.96   | 2.36           | 2.15 |
| <b>Dust Caps</b>   |             |          |            |        |                |      |
| LC3-CX 91          | For Sockets |          | 174-0211   | 0.49   | 0.39           | 0.35 |
| LC3-CX 92          | For Plugs   |          | 174-0212   | 0.47   | 0.37           | 0.34 |
| <b>Crimp Tools</b> |             |          |            |        |                |      |
| LC3-CX CZ47-4      | 12AWG       |          | 174-0221   | 284.73 | --             | --   |
| LC3-CX CZ47-6      | 10AWG       |          | 174-0223   | 281.65 | --             | --   |

## Panel Mount Photovoltaic Power Systems

LC4 Series



- Panel mount connectors for system components such as inverters, generator isolation housings or accumulation boxes
- Quick and easy assembly
- Manual crimping tool allows for cost effective assembly
- Rugged and durable for permanently reliable system operation
- With contact-voltage protection
- UV and ozone-resistant
- Halogen-free

Specifications:-  
Current Rating 35A (12 AWG) / 40A (10 AWG)  
Contact Resistance 5mohm  
IP Rating IP68  
Operating Temp. -40°C to 90°C

Voltage Rating 1000VDC  
Housing Material PPE  
Wire Size 10-12 AWG  
No. of Mating Cycles 50

Continues on next page

| Mfrs. List No.      | Wire Size | Polarity | Order Code | 1+     | Price Each 10+ | 25+  |
|---------------------|-----------|----------|------------|--------|----------------|------|
| <b>Plugs</b>        |           |          |            |        |                |      |
| LC4-CP 10-1 4.0/6.0 | 10-12 AWG | Positive | 174-0213   | 1.87   | 1.50           | 1.35 |
| LC4-CP 10-2 4.0/6.0 | 10-12 AWG | Negative | 174-0214   | 1.87   | 1.50           | 1.35 |
| <b>Sockets</b>      |           |          |            |        |                |      |
| LC4-CP 11-1 4.0/6.0 | 10-12 AWG | Positive | 174-0215   | 1.90   | 1.53           | 1.38 |
| LC4-CP 11-2 4.0/6.0 | 10-12 AWG | Negative | 174-0216   | 1.90   | 1.53           | 1.38 |
| <b>Crimp Tool</b>   |           |          |            |        |                |      |
| LC4-CX CZK48        | 10-12 AWG |          | 174-0224   | 293.35 | --             | --   |

## Field Attachable Photovoltaic Power Systems LC4 Series



Plug

Socket

- Can be assembled anywhere on-site
- Convenient for smaller installations
- Complements the wiring concept with pre-assembled, overmolded connectors
- Quick and easy assembly
- Rugged and durable for permanently reliable system operation
- With contact-voltage protection
- UV and ozone-resistant
- Halogen-free

|                         |                             |                      |           |
|-------------------------|-----------------------------|----------------------|-----------|
| <b>Specifications:-</b> |                             |                      |           |
| Current Rating          | 35A (12 AWG) / 40A (10 AWG) | Voltage Rating       | 1000VDC   |
| Contact Resistance      | 5mohm                       | Housing Material     | TPU       |
| IP Rating               | IP67                        | Wire Size            | 10-12 AWG |
| Operating Temp.         | -40°C to 90°C               | No. of Mating Cycles | 50        |

| Mfrs. List No.      | Wire Size | Polarity | Order Code | 1+     | Price Each 10+ | 25+  |
|---------------------|-----------|----------|------------|--------|----------------|------|
| <b>Plugs</b>        |           |          |            |        |                |      |
| LC4-CP 30-1 4.0/6.0 | 10-12 AWG | Positive | 174-0217   | 1.82   | 1.45           | 1.32 |
| LC4-CP 30-2 4.0/6.0 | 10-12 AWG | Negative | 174-0218   | 1.82   | 1.51           | 1.47 |
| <b>Sockets</b>      |           |          |            |        |                |      |
| LC4-CP 31-1 4.0/6.0 | 10-12 AWG | Positive | 174-0219   | 2.24   | 1.80           | 1.63 |
| LC4-CP 31-2 4.0/6.0 | 10-12 AWG | Negative | 174-0220   | 2.24   | 1.80           | 1.63 |
| <b>Crimp Tool</b>   |           |          |            |        |                |      |
| LC4-CX CZK48        | 10-12 AWG |          | 174-0224   | 293.35 | --             | --   |

## Multifunction Meter



- Single or 3 phase system
- Fully programmable CT & VT ratios
- Security code access for programming
- Blue LED display
- Input voltage range 28-570V
- Replacement for M802 and M812 Series meters

Bezel = 96 x 96 x 19, Panel cut-out = 92 x 92mm

Parameters measured Phase Voltage (V), Phase to Neutral Voltage (V), Phase Current (I), Frequency (Hz), Active Power (W), Active Energy (kWh), Reactive Power (VAR), Apparent Power (VA), Reactive Energy (VARh), Power Factor (PF), Instantaneous Amp Demand, Instantaneous Watt Demand, Instantaneous VA Demand, Maximum Amp Demand, Maximum Watt Demand, Maximum VA Demand, Neutral Current Measurement

| Type                   | Mfrs. List No. | Order Code | 1+    | Price Each 5+ |
|------------------------|----------------|------------|-------|---------------|
| Standard               | M850-MP1       | 175-8713   | 99.00 | 80.00         |
| <b>Plug-In Options</b> |                |            |       |               |
| RS485                  | RS485-M850     | 175-8714   | 35.00 | 28.00         |
| Pulse                  | PULSE-M850     | 175-8715   | 18.00 | 13.50         |

## FREE technical support

Our trained engineers are here to help!



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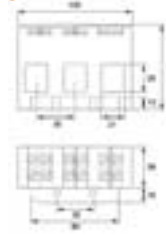


techsales@farnell.co.uk



Live technical chat at  
www.farnell.co.uk

## 3 Phase Current Transformers



New

- Moulded case current transformers
- Input ranges from 100A to 250A
- Secondary outputs 5A
- For conductors up to 25mm
- Foot mounted
- Rated system voltage 0.72/3kV
- Continuous current 1.2 x rated current
- Ambient temperature range -30°C to +80°C
- Conforms to IEC185, BS 7626, BSEN 60044-1 and IEC 60044-1.
- CE Marked

| Order Code | Mfrs. List No.     | Primary Current | VA  | Class |
|------------|--------------------|-----------------|-----|-------|
| 175-8716   | CT105F-100/5-2.5/1 | 100A            | 2.5 | 1     |
| 175-8717   | CT105F-125/5-2.5/1 | 125A            | 2.5 | 1     |
| 175-8719   | CT105F-150/5-2.5/1 | 150A            | 2.5 | 1     |
| 175-8721   | CT105F-200/5-2.5/1 | 200A            | 2.5 | 1     |
| 175-8722   | CT105F-250/5-2.5/1 | 250A            | 2.5 | 1     |

| Ratio Input/Output | Order Code | 1+    | Price Each 5+ | 10+   |
|--------------------|------------|-------|---------------|-------|
| 100A/5A            | 175-8716   | 25.00 | 23.81         | 22.05 |
| 125A/5A            | 175-8717   | 25.50 | 24.29         | 22.50 |
| 150A/5A            | 175-8719   | 26.00 | 24.76         | 22.94 |
| 200A/5A            | 175-8721   | 26.50 | 25.24         | 23.38 |
| 250A/5A            | 175-8722   | 27.00 | 25.71         | 23.80 |

## 3½ Digit - LED Voltmeter

- Daylight-readable LED display with automatic brightness adjustment
- Operates from universal 85-264Vac or 110-300Vdc
- Input circuit fully isolated from operating ac power source
- Red LED backlighting

|                 |              |                       |                         |
|-----------------|--------------|-----------------------|-------------------------|
| Supply Voltage  | 85 to 264Vac | Rated Voltage         | 300Vac                  |
| Supply Current: |              | Sampling Rate         | 2.5 readings per second |
| Total Darkness  | 4mA          | Accuracy              | ±0.4%FS ± 2 counts      |
| Full Sunlight   | 40mA         | Operating Temperature | -25°C to 60°C           |

| Input Range             | Order Code | 1+    | 5+    | Price Each 10+ | 25+   | 50+   |
|-------------------------|------------|-------|-------|----------------|-------|-------|
| <b>DMU-30ACV Series</b> |            |       |       |                |       |       |
| 0 to 19.33              | 169-2063   | 89.98 | 85.50 | 77.50          | 76.00 | 74.99 |
| 0 to 199.9              | 169-2064   | 89.98 | 85.50 | 77.50          | 76.00 | 74.99 |
| 0 to 300                | 169-2065   | 89.98 | 85.50 | 77.50          | 76.00 | 74.99 |
| <b>DMU-30DCV Series</b> |            |       |       |                |       |       |
| 0 to ±1.999             | 169-2066   | 84.68 | 79.50 | 72.50          | 71.75 | 70.45 |
| 0 to ±19.99             | 169-2067   | 84.68 | 79.50 | 72.50          | 71.75 | 70.45 |
| 0 to ±199.9             | 169-2068   | 84.68 | 79.50 | 72.50          | 71.75 | 70.45 |

## 10A to 82.5A DIN Rail & Surface Mount

### HS Series



- Combined AC output ratings from 5 to 80 amps rms @ 40°C
- 24 to 280 & 48 to 660 VAC 50/60 Hz AC line rated SSRs available
- Single, dual and 3 channel output models available
- AC or DC control models available
- Ready to use, no assembly required

Continues on next page



| Mfrs. List No.                      | Line Voltage Range | Load Current Range | Control Voltage Range | Control Current |
|-------------------------------------|--------------------|--------------------|-----------------------|-----------------|
| <b>Single Channel - DIN Rail</b>    |                    |                    |                       |                 |
| HS501DR-D2425                       | 24 to 280V         | 40mA to 10A        | 3V to 32V             | 3.4mA @ 5Vdc    |
| HS501DR-HD6025                      | 48 to 660V         | 40mA to 10A        | 3V to 32V             | 2.0mA @ 5Vdc    |
| HS351DR-D2425                       | 24 to 280V         | 40mA to 20A        | 3V to 32V             | 3.4mA @ 5Vdc    |
| HS351DR-HD6025                      | 48 to 660V         | 40mA to 20A        | 3V to 32V             | 2.0mA @ 5Vdc    |
| HS301DR-D2425                       | 24 to 280V         | 40mA to 24A        | 3V to 32V             | 3.4mA @ 5Vdc    |
| HS301DR-HD6025                      | 48 to 660V         | 40mA to 24A        | 3V to 32V             | 2.0mA @ 5Vdc    |
| HS271DR-D2425                       | 24 to 280V         | 40mA to 25A        | 3V to 32V             | 3.4mA @ 5Vdc    |
| HS271DR-HD6025                      | 48 to 660V         | 40mA to 25A        | 3V to 32V             | 2.0mA @ 5Vdc    |
| HS202DR-D2450                       | 24 to 280V         | 40mA to 35A        | 3V to 32V             | 3.4mA @ 5Vdc    |
| HS202DR-HD6050                      | 48 to 660V         | 40mA to 35A        | 3V to 32V             | 2.0mA @ 5Vdc    |
| HS201DR-D2450                       | 24 to 280V         | 40mA to 35A        | 3V to 32V             | 3.4mA @ 5Vdc    |
| HS151DR-D2450                       | 24 to 280V         | 40mA to 40A        | 3V to 32V             | 3.4mA @ 5Vdc    |
| HS151DR-HD6050                      | 48 to 660V         | 40mA to 40A        | 3V to 32V             | 2.0mA @ 5Vdc    |
| HS122DR-D2450                       | 24 to 280V         | 40mA to 45A        | 3V to 32V             | 3.4mA @ 5Vdc    |
| HS103DR-D2490                       | 24 to 280V         | 40mA to 55A        | 3V to 32V             | 3.4mA @ 5Vdc    |
| HS103DR-HD6090                      | 48 to 660V         | 40mA to 55A        | 3V to 32V             | 2.0mA @ 5Vdc    |
| <b>Dual Channel - DIN Rail</b>      |                    |                    |                       |                 |
| HS201DR-CC2425W3U                   | 24 to 280V         | 150mA to 35A       | 4V to 32V             | 10mA @ 12Vdc    |
| HS122DR-CC2450W3U                   | 24 to 280V         | 150mA to 45A       | 4V to 32V             | 10mA @ 12Vdc    |
| <b>3 Phase - DIN Rail</b>           |                    |                    |                       |                 |
| HS103-D53TP25D                      | 48 to 530V         | 50mA to 55A        | 3V to 32V             | 10mA @ 5Vdc     |
| <b>Single Channel - Panel Mount</b> |                    |                    |                       |                 |
| HS251-D2450                         | 24 to 280V         | 40mA to 28A        | 3V to 32V             | 3.4mA @ 5Vdc    |
| HS251-HD6050                        | 48 to 660V         | 40mA to 28A        | 3V to 32V             | 2.0mA @ 5Vdc    |
| HS172-D2450                         | 24 to 280V         | 40mA to 36A        | 3V to 32V             | 3.4mA @ 5Vdc    |
| HS172-HD6050                        | 48 to 660V         | 40mA to 36A        | 3V to 32V             | 2.0mA @ 5Vdc    |
| HS072-D2490                         | 24 to 280V         | 40mA to 65A        | 3V to 32V             | 3.4mA @ 5Vdc    |
| HS072-HD6090                        | 48 to 660V         | 40mA to 65A        | 3V to 32V             | 2.0mA @ 5Vdc    |
| <b>3 Phase - Panel Mount</b>        |                    |                    |                       |                 |
| HS053-D53TP50D                      | 48 to 530V         | 50mA to 82.5A      | 3V to 32V             | 10mA @ 5Vdc     |

| Mfrs. List No.                      | Order Code | 1+     | 5+     | 10+    | 25+    |
|-------------------------------------|------------|--------|--------|--------|--------|
| <b>Single Channel - DIN Rail</b>    |            |        |        |        |        |
| HS501DR-D2425                       | 177-5208   | 42.18  | 40.63  | 39.18  | 37.84  |
| HS501DR-HD6025                      | 177-5209   | 50.36  | 48.50  | 46.78  | 45.18  |
| HS351DR-D2425                       | 177-5210   | 42.64  | 41.07  | 39.61  | 38.25  |
| HS351DR-HD6025                      | 177-5211   | 50.82  | 48.95  | 47.21  | 45.59  |
| HS301DR-D2425                       | 177-5213   | 49.70  | 47.87  | 46.17  | 44.58  |
| HS301DR-HD6025                      | 177-5214   | 57.88  | 55.75  | 53.77  | 51.92  |
| HS271DR-D2425                       | 177-5215   | 43.90  | 42.28  | 40.78  | 39.38  |
| HS271DR-HD6025                      | 177-5216   | 52.10  | 50.15  | 48.37  | 46.71  |
| HS202DR-D2450                       | 177-5219   | 62.77  | 60.46  | 58.31  | 56.31  |
| HS202DR-HD6050                      | 177-5220   | 70.79  | 68.18  | 65.76  | 63.50  |
| HS201DR-D2450                       | 177-5221   | 59.36  | 57.17  | 55.14  | 53.25  |
| HS151DR-D2450                       | 177-5226   | 60.72  | 58.48  | 56.41  | 54.47  |
| HS151DR-HD6050                      | 177-5227   | 68.75  | 66.22  | 63.87  | 61.67  |
| HS122DR-D2450                       | 177-5228   | 68.23  | 65.72  | 63.38  | 61.21  |
| HS103DR-D2490                       | 177-5230   | 107.94 | 103.96 | 100.27 | 96.83  |
| HS103DR-HD6090                      | 177-5231   | 116.87 | 112.56 | 108.56 | 104.84 |
| <b>Dual Channel - DIN Rail</b>      |            |        |        |        |        |
| HS201DR-CC2425W3U                   | 177-5222   | 79.36  | 76.44  | 73.72  | 71.19  |
| HS122DR-CC2450W3U                   | 177-5229   | 97.00  | 93.43  | 90.11  | 87.02  |
| <b>3 Phase - DIN Rail</b>           |            |        |        |        |        |
| HS103-D53TP25D                      | 177-5232   | 155.72 | 149.98 | 144.66 | 139.69 |
| <b>Single Channel - Panel Mount</b> |            |        |        |        |        |
| HS251-D2450                         | 177-5217   | 46.22  | 44.52  | 42.94  | 41.46  |
| HS251-HD6050                        | 177-5218   | 54.24  | 52.24  | 50.39  | 48.66  |
| HS172-D2450                         | 177-5223   | 48.73  | 46.93  | 45.27  | 43.71  |
| HS172-HD6050                        | 177-5225   | 56.75  | 54.66  | 52.72  | 50.91  |
| HS072-D2490                         | 177-5233   | 82.88  | 79.83  | 76.99  | 74.35  |
| HS072-HD6090                        | 177-5234   | 99.33  | 95.67  | 92.27  | 89.10  |
| <b>3 Phase - Panel Mount</b>        |            |        |        |        |        |
| HS053-D53TP50D                      | 177-5235   | 190.29 | 183.28 | 176.77 | 170.70 |

## Multipurpose (Standard & Flanged)

IP68, Diecast



- A range of die cast aluminium enclosures sealed to IP66, IP67 and IP68
- Neoprene rubber seal with self adhesive backing
- Lid secured by M3.5 x 12 fixing screws
- Pre-drilled flange option
- Min. Seal thickness: 3mm
- Min. seal frame width: 4mm
- Min enclosure wall thickness: 1.5mm
- Min enclosure lid thickness: 1.5mm



New

| Mfrs. List No.  | Length | Dimensions (mm) | Height | Internal Guide Slot | Order Code |
|-----------------|--------|-----------------|--------|---------------------|------------|
| <b>Standard</b> |        |                 |        |                     |            |
| 480-0010        | 88.9   | 34.9            | 30.5   | x                   | 177-4842   |
| 480-0020        | 114.3  | 63.5            | 30.5   | x                   | 177-4843   |
| 480-0030        | 114.3  | 88.9            | 55.9   | x                   | 177-4844   |
| 480-0040        | 114.3  | 64.5            | 55.9   | x                   | 177-4845   |
| 480-0050        | 171.5  | 120.6           | 55.9   | x                   | 177-4846   |
| 480-0060        | 171.5  | 120.6           | 106.7  | x                   | 177-4847   |
| 480-0070        | 222.3  | 146             | 56     | x                   | 177-4848   |
| 480-0080        | 222.3  | 146             | 106.7  | x                   | 177-4849   |
| 480-0090        | 275    | 175             | 66     | ✓                   | 177-4850   |
| 480-0100        | 139.7  | 101.6           | 77     | ✓                   | 177-4851   |
| 480-0110        | 165    | 127             | 77     | ✓                   | 177-4853   |
| 480-0120        | 120    | 100             | 36     | ✓                   | 177-4854   |
| 480-0130        | 250    | 250             | 100.3  | ✓                   | 177-4855   |
| 480-0140        | 80     | 55              | 26     | ✓                   | 177-4856   |
| 480-0150        | 60     | 55              | 31     | ✓                   | 177-4857   |

| Mfrs. List No. | Dimensions (mm) | Internal |
|----------------|-----------------|----------|
| <b>Flanged</b> |                 |          |
| 483-0010       | 114.3           | 35.15    |
| 483-0020       | 139.7           | 63.6     |
| 483-0030       | 139.7           | 63.7     |
| 483-0040       | 139.7           | 89.15    |
| 483-0050       | 202             | 120.8    |
| 483-0060       | 202             | 120.8    |
| 483-0070       | 252             | 146.4    |
| 483-0100       | 170             | 101.6    |
| 483-0120       | 152             | 100.2    |

| Mfrs. List No.  | Order Code | 1+    | 10+   | 25+   | 50+   |
|-----------------|------------|-------|-------|-------|-------|
| <b>Standard</b> |            |       |       |       |       |
| 480-0010        | 177-4842   | 9.80  | 9.42  | 8.75  | 8.17  |
| 480-0020        | 177-4843   | 12.84 | 12.35 | 11.46 | 10.70 |
| 480-0030        | 177-4844   | 20.40 | 19.62 | 18.21 | 17.00 |
| 480-0040        | 177-4845   | 17.92 | 17.23 | 16.00 | 14.93 |
| 480-0050        | 177-4846   | 25.83 | 25.00 | 23.48 | 22.14 |
| 480-0060        | 177-4847   | 31.00 | 30.00 | 28.21 | 26.60 |
| 480-0070        | 177-4848   | 35.93 | 34.77 | 32.67 | 30.80 |
| 480-0080        | 177-4849   | 42.87 | 41.48 | 38.97 | 36.74 |
| 480-0090        | 177-4850   | 47.00 | 45.55 | 42.79 | 40.34 |
| 480-0100        | 177-4851   | 22.47 | 21.74 | 20.42 | 19.26 |
| 480-0110        | 177-4853   | 46.47 | 44.97 | 42.24 | 39.83 |
| 480-0120        | 177-4854   | 20.80 | 20.10 | 18.91 | 17.83 |
| 480-0130        | 177-4855   | 78.95 | 76.92 | 73.17 | 69.77 |
| 480-0140        | 177-4856   | 8.72  | 8.38  | 7.79  | 7.27  |
| 480-0150        | 177-4857   | 8.52  | 8.19  | 7.61  | 7.10  |
| <b>Flanged</b>  |            |       |       |       |       |
| 483-0010        | 177-4858   | 12.28 | 11.81 | 10.96 | 10.23 |
| 483-0020        | 177-4859   | 13.64 | 13.12 | 12.18 | 11.37 |
| 483-0030        | 177-4860   | 22.36 | 21.50 | 19.96 | 18.63 |
| 483-0040        | 177-4861   | 18.72 | 18.00 | 16.71 | 15.60 |
| 483-0050        | 177-4862   | 30.88 | 29.69 | 27.57 | 25.73 |
| 483-0060        | 177-4863   | 39.40 | 37.88 | 35.18 | 32.83 |
| 483-0070        | 177-4865   | 36.10 | 34.94 | 32.82 | 30.94 |
| 483-0100        | 177-4866   | 29.84 | 28.69 | 26.64 | 24.87 |
| 483-0120        | 177-4867   | 20.00 | 19.35 | 18.18 | 17.14 |

## Micro Vibration Sensor

Omnidirectional



H = 1.7, W = 2.85,  
D = 2.45mm

The micro vibration sensor is used for the detection of slight movements and vibrations by means of a mobile micro sphere. With the aid of tool-specific evaluation electronics, the micro vibration sensor controls the operation of movement-sensitive tools. The micro vibration sensor is utilised for converting many systems to environmentally friendly devices by implementing wake-up and power-down logic to conserve battery power and bringing energy consumption to a minimum, pushing the availability of green technology and green electronics into new areas of design and application. The sensor is typically used for applications such as front and rear bicycle lights, bike computers, remote controls, electronic lock systems, transponders, mobile GPS systems, bluetooth-car-kits, wireless sensor networks, wireless PC mice and headsets, digital multimeters and tools provided with digital displays that are only switched on when in motion.

- Silent sphere motion
- SMD mount
- Gilded sphere and contact areas
- No mercury
- R\_ON < 100 Ohm
- R\_OFF > 30 Mega Ohm
- Max. +15V dc operation
- Response level approx. 50 mg
- Temperature range -20°C to +70°C

| Mfrs. List No. | Order Code | 1+   | 10+  | 25+  | 50+  | 100+ |
|----------------|------------|------|------|------|------|------|
| MVS0608.02     | 176-8152   | 3.90 | 3.58 | 3.30 | 3.05 | 2.75 |

## Humidity and Temperature Sensor

Surface Mount - SOP 14 Package



Body - H = 3.22, W = 6,  
D = 9.5mm

- Surface mount, SOP 14 package
- Simultaneous relative humidity and temperature outputs
- Resolution 0.4% RH
- Factory calibrated, ready to use
- Designed for automated assembly
- Supply voltage 3.0V to 5.5V dc
- Low quiescent current: 0.5mA@5V, 25°C
- Operating temperature -40°C to +85°C

ChipCap is based on a capacitive polymer sensing technology, this device offers signal conditioning and temperature compensation for a single SoC (System-on-Chip) solution. The device is very simple to use, fully tested and calibrated for accuracy on delivery and no further calibration is needed.

ChipCap can be incorporated into an assembly or finished sensor to meet customer specifications. The measurement is accurate to  $\pm 2\%$  from 20% to 80%RH and  $\pm 3\%$  across the entire humidity range. Long term stability is excellent. The temperature accuracy is  $\pm 1^\circ\text{C}$  from 0°C to +70°C. Dual outputs provide humidity and temperature as 0V to 1V, or 0.5V to 4.5V ratiometric or available with digital output via the ZACwire one-wire interface.

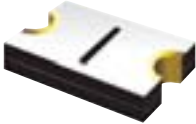
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| Pressure Type                                            | Pressure Range            | Mfrs. List No.   | Order Code | 1+    | 10+   | 25+   |
|----------------------------------------------------------|---------------------------|------------------|------------|-------|-------|-------|
| <b>0 to 1V dc Linear Output</b>                          |                           |                  |            |       |       |       |
| Differential                                             | 0 to 10" H <sub>2</sub> O | NPA-100-B-010W-D | 177-6493   | 23.95 | 22.15 | 20.60 |
| <b>0.5 to 4.5V dc Ratiometric Output (5V dc nominal)</b> |                           |                  |            |       |       |       |
| Absolute                                                 | 0 to 15 PSI               | NPA-500-B-015-A  | 177-6503   | 28.89 | 26.70 | 24.85 |
| <b>Digital Output</b>                                    |                           |                  |            |       |       |       |
| Differential                                             | 0 to 15 PSI               | NPA-600-B-010W-D | 177-6504   | 36.00 | 33.30 | 31.00 |
| Differential                                             | 0 to 15 PSI               | NPA-600-B-015-D  | 177-6505   | 30.00 | 27.75 | 25.80 |
| Absolute                                                 | 0 to 15 PSI               | NPA-600-B-015-A  | 177-6506   | 30.00 | 27.75 | 25.80 |

## Fast Acting PTC Resettable Fuse

SMD - Case Style 0603



- Compact space saving 0603 footprint
- Very fast reaction time to fault events
- low profile
- V<sub>Max</sub> 9V
- I<sub>Max</sub> 40A

|                               |                |                             |      |
|-------------------------------|----------------|-----------------------------|------|
| Operating temperature         | -40°C to +85°C | Max Operating Current       | 40A  |
| Surface temperature (Tripped) | 125°C          | Power Dissipation (Tripped) | 0.5W |

| (A) *         | (A) **        | R <sub>Min</sub> | R <sub>Max</sub> | Time to Trip | Tripped Power Dissip. | Mfrs. List No. |
|---------------|---------------|------------------|------------------|--------------|-----------------------|----------------|
| I Hold @ 23°C | I Trip @ 23°C | (R) @ 23°C       | (R) @ 23°C       | (s) @ 23°C   | (W) @ 23°C            |                |
| 0.2           | 0.5           | 0.55             | 3.5              | 0.6          | 0.5                   | MF-FSMF020X-2  |
| 0.35          | 0.75          | 0.2              | 1.4              | 0.1          | 0.5                   | MF-FSMF035X-2  |
| 0.5           | 1             | 0.1              | 0.8              | 0.1          | 0.5                   | MF-FSMF050X-2  |

\* I Hold - Current at which Fuse will not trip  
\*\* I Trip - Current at which Fuse will trip

| Order Multiple=5 | Mfrs. List No. | Order Code | 5+   | 50+  | 100+ | 250+ | 500+ |
|------------------|----------------|------------|------|------|------|------|------|
| Hold Current     |                |            |      |      |      |      |      |
| 0.2A             | MF-FSMF020X-2  | 171-7225   | 0.44 | 0.34 | 0.29 | 0.24 | 0.21 |
| 0.35A            | MF-FSMF035X-2  | 171-7226   | 0.44 | 0.34 | 0.29 | 0.24 | 0.21 |
| 0.5A             | MF-FSMF050X-2  | 171-7227   | 0.44 | 0.34 | 0.29 | 0.24 | 0.21 |

## Biometric Switch - 22mm

Harmony XB5 - Plastic



- 24V dc supply
- Dark gray plastic body
- Available with 2m cable or M12 connector output
- PNP output, available with either Bistable or Monostable circuit
- IP65
- CE, CSA Approved, UL Recognised

Body - H = 42.3, W = 69.3, D = 38.8mm Depth behind pannel = 39.7, Panel cut-out = 22mm

The XB5 Biometric control and signalling unit is designed for use in industry to protect access to systems or machines. No interface is required for programming and operating the switch: it is an independent stand alone unit.

The biometric switch is aimed at two types of user:

The administrator who manages the registration and deletion of users.

The operator who, once registered, uses the device as a control unit.

The product is of monolithic design and is mounted by means of a hand tightened nut (no need for tools) in a standard 22mm diameter hole. Installation can be on either a horizontal or vertical surface.

534902

| Output           | Connection    | Mfrs. List No. | Order Code | Price Each 1+ |
|------------------|---------------|----------------|------------|---------------|
| PNP - Bistable   | 2m cable      | XB5S1B2L2      | 170-6643   | 342.95        |
| PNP - Bistable   | M12 Connector | XB5S1B2M12     | 170-6644   | 317.23        |
| PNP - Monostable | 2m cable      | XB5S2B2L2      | 170-6645   | 317.23        |
| PNP - Monostable | M12 Connector | XB5S2B2M12     | 170-6646   | 317.23        |

## Micro PLC - CP1L Series

Starter Kit



The CP1L Starter Kit is complete with programming software, USB connecting cable and a CPU unit. Two CPU versions are available, AC and DC. The CP1L CPU Series offers the compactness of a micro-PLC with the capability of a modular PLC.

CPU Unit - H = 90, W = 86, D = 85mm

The CPU has the following features:

- 4 high speed encoder inputs
- Instruction set compatible with CP1H, CJ1 and CS1 series PLC
- USB programming port
- Scalable with a wide range of I/O ports
- Motion functionality
- The same software as other Omron controllers

**KIT Contents:**

- CPU AC Version - CP1L-J14DR-A
- CPU DC Version - CPL1-J14DT1-D
- RS-232 Option Port
- CX-one lite software
- USB Cable
- Promo CD
- Input Switchboard

| Operating Voltage Range | Mfrs. List No.   | Order Code | Price Each 1+ |
|-------------------------|------------------|------------|---------------|
| 85 to 264V ac           | CP1LSTARTERKITAC | 168-7710   | 509.85        |
| 20.4 to 26.4V dc        | CP1LSTARTERKITDC | 168-7711   | 509.85        |

## Temperature and Process Controller

1/16 DIN - PID



H = 48, W = 48, D = 70mm

This controller has a reduced behind panel depth of 70mm and capability expected from higher end products. This includes a universal input for all sensor types allowing flexible utilisation, 2 or 3 outputs (including relay, SSR driver, linear DC), full PID control and a simple user interface with easy to read LED display consisting of 4 digits upper and lower, 4 button membrane keypad including function button that can be configured for auto/manual, tuning or profiler control and 3 output status LED's.

A programmer function has the capability of 2 profiles of up to 16 segments incorporating delay timer, auto holdback for guaranteed dwell and easy control via the controller's function button providing easy implementation of temperature profile control. Furthermore, alarms and diagnostics help to prevent problems before they happen: relay life, high ambient warning and absolute or deviation limit alarms allow preventative maintenance actions to be taken instead of needing emergency replacements should a controller fail.

- Universal Input - Thermocouple, RTD and linear DC
- Full PID with auto/manual pre-tune
- Heat or Heat/Cool operation
- Up to 3 outputs - Relay, SSR Driver and linear DC
- Programmer function
- Alarms and Diagnostics
- Only 70mm depth behind panel
- CE Approvals

**Programmer Functions**

- 2 programs of up to 16 segments
- Delay timer
- Auto holdback function - guaranteed soak
- Ramp, dwell, step, events, loop
- Function button for profiler control (run, hold, stop, reset)

| Supply Voltage                                             | Mfrs. List No. | Order Code | Price Each 1+ |
|------------------------------------------------------------|----------------|------------|---------------|
| <b>Relay - Outputs 1 &amp; 2</b>                           |                |            |               |
| 100 to 240V ac                                             | E6C0RR002      | 179-1025   | 95.00         |
| 20 to 48V ac                                               | E6C0RR022      | 179-1026   | 95.00         |
| <b>SSR &amp; Relay - Outputs 1 &amp; 2</b>                 |                |            |               |
| 100 to 240V ac                                             | E6C0SR002      | 179-1027   | 95.00         |
| 20 to 48V ac                                               | E6C0SR022      | 179-1028   | 95.00         |
| <b>Relay - Outputs 1, 2 &amp; 3</b>                        |                |            |               |
| 100 to 240V ac                                             | E6C0RRR02      | 179-1029   | 105.00        |
| 20 to 48V ac                                               | E6C0RRR22      | 179-1030   | 105.00        |
| <b>SSR, Relay &amp; Relay - Outputs 1, 2 &amp; 3</b>       |                |            |               |
| 100 to 240V ac                                             | E6C0SRR02      | 179-1031   | 105.00        |
| 20 to 48V ac                                               | E6C0SRR22      | 179-1032   | 105.00        |
| <b>Relay, Relay &amp; Linear DC - Outputs 1, 2 &amp; 3</b> |                |            |               |
| 100 to 240V ac                                             | E6C0SSR02      | 179-1033   | 105.00        |
| <b>Relay - Outputs 1, 2 &amp; 3</b>                        |                |            |               |
| 100 to 240V ac                                             | E6C0RRL02      | 179-1034   | 130.00        |

## Solid State Contactor Relay

3 Phase - 53TP Series IP20



Panel mounted three phase AC output Solid State Contactor Relays feature IP20 touch safe covers with load current ratings of either 25 or 50 amps per channel at 530 V ac.

H = 35.4, W = 101.3, D = 79.7mm

- Three-phase solid-state relay
- 48 to 530V<sub>rms</sub> Operating Voltage
- Ratings 25A and 50A per phase
- IP20 Package style
- SCR output for heavy industrial loads
- AC or DC control
- Zero-crossing (resistive loads) or random-fire (inductive loads) output
- LED input status indicator
- Transient protection built in
- EMC Compliant for reliable operation in harsh environments
- 100k-cycle UL508 endurance rating for enhanced reliability
- CSA and TUV Approved, UL Recognised

Continues on next page

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European Electronics Industry Awards  
**WINNER**

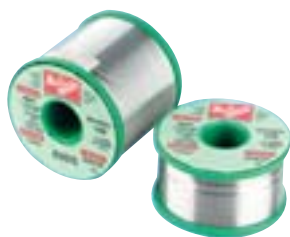
Distributor of the Year



A Premier Farnell Company

Design with the best

## Lead Free 97SC (SAC305), 309 Rosin Cored Solder wire



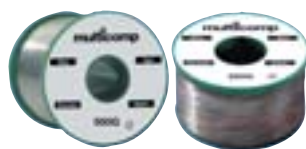
- Pale coloured residues do not require cleaning
- Mild odour
- Halide content < 1.0%
- Contains five cores of non-corrosive 309 Rosin based flux
- Complies with all lead-free legislative requirements

Lead Free (97SC) SAC305, 309 Rosin Cored Solder wire was developed in response to customer requests for a cored solder wire that will solder difficult surfaces (good spread on nickel, stainless steel, chromel, monel, constantin etc.) whilst leaving pale post soldering residues. Heat stable - low fuming with a mild odour.

|                           |                                              |
|---------------------------|----------------------------------------------|
| Alloy                     | Lead Free, 96.5% Tin, 0.5% Copper, 3% Silver |
| Flux Type                 | 309, Rosin based                             |
| Melting Temperature       | 217°C                                        |
| Tip Temperature (Approx.) | 340°C - 420°C                                |

| Wire Diameter | Order Code | Price Per Reel |       |
|---------------|------------|----------------|-------|
|               |            | 1+             | 10+   |
| 0.5mm         | 125-7142   | 35.98          | 32.39 |
| 0.7mm         | 125-7143   | 27.23          | 24.50 |
| 1.0mm         | 125-7144   | 28.16          | 25.35 |
| 1.2mm         | 125-7145   | 27.69          | 24.93 |
| 1.6mm         | 125-7148   | 27.44          | 24.69 |

## Lead Free Alloy, Rosin Flux



- Lead free
- Contains multiple cores of rosin based flux
- Amber coloured (rosin) residues do not require cleaning
- For all general purpose lead-free electronic assembly and re-work applications

- Complies with all lead-free legislative requirements

|                     |                                        |                           |       |
|---------------------|----------------------------------------|---------------------------|-------|
| Alloy               | Lead Free 99.3% Tin, 0.7% Copper Alloy | Tip Temperature (Approx.) | 350°C |
| Melting Temperature | 227°C                                  |                           |       |

| Weight     | Wire Diameter | Order Code | Price Per Reel |       |
|------------|---------------|------------|----------------|-------|
|            |               |            | 1+             | 10+   |
| 250g Reels | 0.5mm         | 507-1290   | 14.16          | 13.14 |
|            | 0.7mm         | 507-1306   | 11.64          | 10.79 |
|            | 0.9mm         | 507-1318   | 8.31           | 7.71  |
|            | 1.2mm         | 507-1320   | 10.40          | 9.65  |
| 500g Reels | 0.7mm         | 507-1343   | 19.73          | 18.31 |
|            | 0.9mm         | 507-1355   | 17.83          | 16.55 |
|            | 1.2mm         | 507-1367   | 17.36          | 16.12 |

## WS200 Water Washable Solder Paste



- General purpose for stencil printing applications
- Wide printing and reflow process windows (air and nitrogen)
- Good tack performance, excellent slump resistance
- Easy to remove water soluble residues
- 88.5% metal content

Alloy 62% Tin, 36% Lead, 2% Silver Alloy

| Size | Mfrs. List No. | Order Code | 1+     | 10+    |
|------|----------------|------------|--------|--------|
| 500g | 1303125        | 169-7892   | 132.22 | 123.88 |

## LF318 Lead Free No-Clean Solder Paste



- Lead free, Halide free solder paste
- No clean residues
- 88.5% metal content
- Suitable for reflow in air or nitrogen
- 96SC (SAC 387) 95.5% Tin, 3.8% Silver, 0.7% Copper
- Melting point 217 °C

| Size     | Order Code | 1+    | 10+   |
|----------|------------|-------|-------|
| 500g Jar | 125-7149   | 52.00 | 49.40 |

## Electrical kit CM.ELEC1PB



- Indispensable kit for electrical maintenance
- Supplied with 10 tools for stripping, cutting, tightening etc.
- Supplied in a compact and practical vinyl case
- Quick and easy access to tools
- Elastic band for securing tools

**Kit containing:**  
Protwist 1000V screwdrivers (x4; 2slotted and 2 PZ)

Stripping pliers  
28mm sheath stripper  
3x16 tape measure  
Hard wire insulated cutting pliers  
A-D3E 90-480V tester screwdriver  
Electrician stripping knife  
Case

Mfr Part No.  
A3,5x100VE;  
A5,5x125VE;  
AD1x100VE;  
AD2x125VE)  
793936  
985956  
893.316  
192.16VE  
AV.HT1B  
840.1  
N.38-16

| Mfr Part No. | Order Code | 1+     | 5+     | 10+    |
|--------------|------------|--------|--------|--------|
| CM.ELEC1PB   | 169-8914   | 120.94 | 116.10 | 111.46 |

## Micro-tech® kit MT.J4PB



- Indispensable kit for IT and office equipment maintenance
- Supplied with 15 precision tools
- Supplied in a compact and practical vinyl case
- Quick and easy access to tools
- Elastic band for securing tools

**Kit containing:**  
Precision screwdrivers (x5)  
Torch  
Hinged and flexible mirror  
Pliers (x2)  
Tweezers (x2)  
Reversible blade holder  
Reversible blades (x2)  
Adjustable wrench 6  
Case

Mfr Part No.  
AEF.2,5x35; AEF.1,8x35; AEF.1,5x35; AEF.2x35; AEFP.00x35  
836  
834.R1  
405.10MT; 422.MT  
140.AA; 152.Y  
AM.D  
Slotted (AMZ.S5,5-7); Phillips (AMZ.P1-2)  
113A.6C  
N.38-16

| Mfr Part No. | Order Code | 1+     | 5+     | 10+   |
|--------------|------------|--------|--------|-------|
| MT.J4PB      | 169-8913   | 107.30 | 103.01 | 98.90 |

## Ultra compact 1/4" "RADIO" Square Drive Socket Set R2 Nano



- Ultra-compact, fits pockets or portable toolboxes
- Immediate tool selection with pictograms of screw head patterns
- For a variety of applications
- Full range of 1/4" socketry
- Sockets can easily removed with a tilting action
- Bit storage bar automatically straightens when the case is opened
- Easy to clean

- Tough, metal hinge rod, self closing, metal clasp
  - Plastic case resistant to workshop chemicals
- Set Contents:-** Sockets R 5.5 - 6 - 7 - 8 - 9 - 10 - 11 - 12 - 13 - 14 mm  
- Selection of screwdriver bits  
- With pictogrammes for fast identification  
- Security Torx 10 - 15 - 20 - 25 - 27 - 30 - 40  
- Hex 3 - 4 - 5 - 6 - 7 mm  
- PH No. 1 - 2 - 3  
- PZ No. 1 - 2 - 3  
- Slotted 4.5 - 6.5 - 8 mm  
- 1/4" spinner handle

Continues on next page

- Bit holder for screwdriver bits
- Ratchet
- 2 x Extensions
- Universal Joint

| Mfrs List No. | Order Code | 1+     | Price Each | 5+     | 10+ |
|---------------|------------|--------|------------|--------|-----|
| R2NANO        | 178-1007   | 184.80 | 175.35     | 166.95 |     |

## Electronic Tool Kit

**Pro'sKit**



- A well equipped tool kit for the electronics engineer
- Supplied in a sturdy zipper case
- Exclusive to Farnell

### Content

Micro-Cutting Plier  
Clean Cut Micro Nipper  
Heavy Duty Long Nose Plier  
Desoldering Pump  
Solder Aid Tool Kit  
Slot Screwdrivers 2.0mm, 2.5mm, 3.0mm  
Phillips Screwdrivers PH0, PH00  
Tamperfree Torx Screwdrivers T5, T6, T7, T8, T10, T15  
Extremely Fine And Sharp Tip Tweezer  
Super Fine Tip Straight Tweezer  
2 SMD Tweezers

4 PCS Plastic Tweezer Set  
Precision Knife  
40W Soldering Iron  
Soldering Tip Cleaner  
Helping Hand with Soldering Stand  
3 PCS Anti-Static Alignment Tool Kit  
Quick-Fasten ESD Wrist Band  
Vacuum pick-up Tool  
PLCC Extractor  
IC Extractor  
Inspection Mirror  
Flux Bottle

| Description                        | Mfrs. List No. | Order Code | 1+    | Price Each | 5+    | 10+ |
|------------------------------------|----------------|------------|-------|------------|-------|-----|
| Tool Kit (sold. iron with UK plug) | PK-4025C-40    | 166-6225   | 73.08 | 69.42      | 65.81 |     |
| Tool Kit (sold. iron with EU plug) | PK-4025B-40    | 166-6226   | 73.08 | 69.42      | 65.81 |     |

## Maintenance Tool Kit

**Pro'sKit**



- A well equipped tool kit for the maintenance engineer
- Supplied in a durable, soft nylon zipper case
- Exclusive to Farnell

### Content

Digital Multimeter  
Mains Tester  
40W Soldering Iron  
Soldering Tip Cleaner  
Desoldering Pump  
VDE Combination Pliers  
VDE Side Cutter  
VDE Long Nose Pliers

VDE Cable Stripper  
Electrician Scissors  
Utility Knife  
2 VDE Slot Screwdrivers: 3.0, 5.5  
2 VDE Phillips Screwdrivers: PH1, PH2  
Ball-Point Hex Key Set: 2.5, 3, 4, 5, 6, 8, 10  
2 PCS Tweezer Set  
Utility Component Storage Box  
Adjustable Wrench

| Description                        | Mfrs. List No. | Order Code | 1+    | Price Each | 5+    | 10+ |
|------------------------------------|----------------|------------|-------|------------|-------|-----|
| Tool Kit (sold. iron with UK plug) | PK-2807C-40    | 166-6227   | 62.63 | 59.49      | 56.36 |     |
| Tool Kit (sold. iron with EU plug) | PK-2807B-40    | 166-6229   | 62.63 | 59.49      | 56.36 |     |

## Vacuum Swivel Vice

**DRAPER**



Versatile swivel vice with powerful section base which fixes to any smooth surface. Swivelling head allows many varied positions. V grooved jaws for holding cylindrical and irregular shapes. Supplied with removable soft rubber safety jaw covers.

| Mfrs. List No. | Order Code | 1+    | Price Each | 5+    | 10+ |
|----------------|------------|-------|------------|-------|-----|
| VAC10/L        | 170-6192   | 30.55 | 29.02      | 27.49 |     |

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## 1/4" Square Drive Socket Set

**BRITool**



**New**

13 Piece 1/4" Square Drive Metric Socket Set

Kit Contents:

13 1/4" SD Cold forged metric hexagon sockets 4, 4.5, 5, 5.5, 6, 7, 8, 9, 10, 11, 12, 13, 14mm

| SOCKET SET, 1/4", 13PC | Driver Size | Mfrs. List No. | Order Code | 1+    | Price Each | 3+    | 5+ |
|------------------------|-------------|----------------|------------|-------|------------|-------|----|
|                        | 1/4"        | 708010         | 177-1860   | 16.27 | 15.61      | 14.94 |    |

## Fatmax Snap Off Knife

**STANLEY FatMax**



- Stainless steel barrel
- Up to 20kg/50lbs push back force
- Push button cartridge release stores spare blades
- Push button blade clamp reduces blade wobble
- Bi-material slider
- Blade wiper removes excess debris
- Removable blade snapper for faster and safer removal of a worn segment
- Cartridge holds up to 6 blades
- Instant blade replacement

**New**

|       | Mfrs. List No. | Order Code | 1+   | Price Each | 6+   | 12+ |
|-------|----------------|------------|------|------------|------|-----|
| 9.5mm | 10-475         | 169-6665   | 7.03 | 6.70       | 6.32 |     |
| 18mm  | 10-481         | 169-6666   | 8.22 | 7.79       | 7.42 |     |
| 25mm  | 10-486         | 169-6667   | 9.47 | 8.98       | 8.54 |     |

## Wire Stripper Super No 5

**DURATool**



- Automatic wire stripper for all common stranded and solid conductors of 0.2 to 6.0 mm<sup>2</sup> (24-10 AWG).
- Adjustable length stop of 5 to 12 mm (removable of required).
- Easily accessible built-in side cutter for max 2mm

**New**

| Mfrs. List No. | Order Code | 1+    | Price Each | 5+    | 10+ |
|----------------|------------|-------|------------|-------|-----|
| D01022         | 169-6726   | 19.07 | 18.11      | 17.19 |     |

## Adjustable Wrench Set, 3-PC

**BAHCO**



**New**

Set of 3 80-Series Phosphated Adjustable Wrenches. Precision-hardened and anti-corrosion treated.

| ADJUSTABLE WRENCH SET, 3-PC | Mfrs. List No. | Order Code | 1+    | Price Each | 5+    | 10+ |
|-----------------------------|----------------|------------|-------|------------|-------|-----|
|                             | ADJUST 3       | 171-8741   | 40.75 | 38.71      | 36.67 |     |

**40,000 PRICES REDUCED**



## Ratchet Screwdriver Set



- 40 piece set in robust moulded compact case
- Containing one of each
  - Sockets: metric 6, 7, 8, 9, 10, 11, 12 and inch 3/16; 1/4; 5/16; 11/32; 3/8; 7/16; 1/2"
  - Screwdriver bits: Slotted 3/16; 1/4; 8/32 - PH 1; 2; 3 - Hex 1,5; 2; 2,5; 3; 4,0; 5; 5,5; 6 - PZD/SDV 1, 2, 3; - Torx T10; T15; T20; T27; T30; T40 - Square drive 1 and 2
  - Comfort Grip Ratchet Driver, 1/4" Drive Adaptor, Magnetic Extension

**New**

|                         | Mfrs. List No. | Order Code | 1+    | 5+    | 10+   |
|-------------------------|----------------|------------|-------|-------|-------|
| Ratchet Screwdriver Set | T4819          | 172-5402   | 17.60 | 16.73 | 15.81 |

## Tape Measure, Micropowerlock 5M/16"

**STANLEY**



- Versatile wide blades
- Mylar™ polyester film extends life of entire blade
- High-impact, ABS case with rubber over mold withstand rugged conditions
- Stronger spring ensures extra-long life and smooth blade recoil

**New**

- Riveted, corrosion-resistant hook moves to allow for accurate inside/outside measurements
- easy-to-read, high-contrast blade for all light conditions
- Top-forward blade lock designed for easy locking and unlocking

|  | Mfrs. List No. | Order Code | 1+    | 3+    | 6+   |
|--|----------------|------------|-------|-------|------|
|  | 33-553         | 169-6684   | 10.71 | 10.20 | 9.64 |

## Wireless Inspection Camera with LCD Monitor

ITALECO



The water-proof Mini Camera with lighting LEDs allows easy visual inspection in hard-to-reach areas. Lightweight, handheld design. Enabling the person to locate diagnose and solve problems with the flexible extended tube and useful attachments.

**New**

### Application:

- Checking for internal leaks
- Reading the model number of the back of hard to reach appliances
- Retrieving lost objects in hard to reach areas
- Internal inspection of pipes and wall cavities

| Technical Specifications |                                                                                                                                                   |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Display                  | 4" TFT-LCD                                                                                                                                        |
| Resolution               | 480 x 240 Pixel                                                                                                                                   |
| Videosystem              | PAL                                                                                                                                               |
| Transmission frequency   | 2468MHZ                                                                                                                                           |
| Power Supply             | Monitor: built-in Li-Ion battery<br>Hand grip: 4xAA batteries                                                                                     |
| External Power supply    | 8V-36V/450mA                                                                                                                                      |
| Video output level       | 0,9-1,3Vpp an 750hm                                                                                                                               |
| Dimensions (HxWxD)       | Monitor: 100x70x30mm<br>Hand grip: 186x145x41mm (without flexible tube)<br>Camera Diameter: 16mm                                                  |
| Content:                 | Detachable LCD Monitor, Handheld Grip, Flexible 1m Endoscope incorporating 4 LEDs, Mirror, Magnet, Hook, Adaptor for Monitor, Power Adaptor Cable |

|                            |      |            | Price Each    |
|----------------------------|------|------------|---------------|
| Description                | Type | Order Code |               |
| Wireless Inspection Camera | WIC  | 173-6046   | 250.95 225.75 |

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Phone: 08447 11 11 11

## Wall Organiser Cabinet

41 Compartments

**DURATOOL**



- 40 clear compartment pull out trays
- 1 large transparent tray
- Robust impact resistant plastic
- Suitable for wall or desk mounting
- Dimensions: (LxWxH) 310 x 138 x 490mm

|  | Order Code | 1+    | 5+    | 10+   | 20+  |
|--|------------|-------|-------|-------|------|
|  | 144-7384   | 12.05 | 10.98 | 10.07 | 9.61 |

## FatMax™ Lock & Stock Storage Solution

**FatMax**



**New**

- Unique, storage solution for all equipment
- 6 individual, removable storage compartments for huge variety of items
- Large adjustable organiser featuring saw groove
- Large lower pull out bin for bulky items
- Strong structural foam construction for long life
- Large lower bin ideal for bulky materials and equipment such as paint cans, large components and power tools.

|                                  | Mfrs. List No. | Order Code | 1+    | 5+    | 10+   |
|----------------------------------|----------------|------------|-------|-------|-------|
| LOCK & STOCK STORAGE SOLUTION    | 94-747         | 171-8761   | 89.91 | 85.41 | 80.91 |
| STOCK & CARRY BINS (TRIPLE PACK) | 94-746         | 171-8765   | 10.76 | 10.22 | 9.68  |

## FatMax™ Waterproof Toolbox

**FatMax**



**New**

- NEW waterproof storage solution
- All round water seal ensures safe and dry storage
- Constructed of structural foam for extra strength
- Extra large storage capacity
- Portable Tote tray designed to carry tools and small parts, yet enables large tool storage inside the tool box as it is 3/4 length
- Integrated V-Groove on top lid for sawing work needed, suitable for working with pipes and lumber
- Tough Ergonomic soft grip handle allows heavy loads to be carried with ease
- Large metal rust proof latches with padlock for locking possibilities

|  | Mfrs. List No. | Order Code | 1+    | 5+    | 10+   |
|--|----------------|------------|-------|-------|-------|
|  | 93-935         | 171-8763   | 28.80 | 27.36 | 25.92 |
|  | 94-749         | 171-8764   | 21.60 | 20.52 | 19.44 |

## Technicians Tool Case PLUS



- A further development of the award winning case offering protection for tools, manuals, and sensitive electronic equipment
- 50 Internal and external pockets
- Padded central compartment with divider
- Separate side compartments for tools
- Two internal zipped document pockets
- New rubber waterproof base
- Heavy weight zips
- Soft and comfortable carrying handle
- More capacity

525110

|                           | Mfrs.<br>List No. | Order Code      | 1+    | 5+    | 10+   |
|---------------------------|-------------------|-----------------|-------|-------|-------|
| TECHNICIAN TOOL CASE PLUS | T1632             | <b>166-0782</b> | 41.32 | 39.16 | 36.96 |

## Explorer Cases



Virtually indestructible, durable waterproof, dustproof cases providing a solution for any equipment requiring a high level of protection. Applications range from valuable industrial equipment to military, aerospace or computer. All cases feature manual pressure release valve, corrosion proof metal reinforced hinges and lid stay feature, sealing O-Ring, load tested handle, high resistance latches and precubed foam interior. Temperature rating -33/+90°C, or -27/+194°F. Colour black. Order code 137-1606 includes a computer bag with shoulder strap.

Conforms to IP67 dustproof/waterproof, Defence Standard 81-41

Level J pt4 and STANAG 4280 edition 2.

Conformity with the directive 2002/95/EC.

|        | Removable<br>Lid | Wheel<br>Base | Internal Dimension<br>L x H x W<br>(mm) | External Dimensions<br>L x H x W<br>(mm) | Weight<br>(kg) | Volume<br>(litres) |
|--------|------------------|---------------|-----------------------------------------|------------------------------------------|----------------|--------------------|
| Model  |                  |               |                                         |                                          |                |                    |
| 1908B  | No               | No            | 190 x 125 x 85                          | 216 x 180 x 102                          | 0.8            | 2                  |
| 1913B  | No               | No            | 190 x 125 x 135                         | 216 x 180 x 152                          | 0.92           | 3.2                |
| 2209B  | No               | No            | 220 x 160 x 95                          | 246 x 215 x 112                          | 0.99           | 3.3                |
| 2214B  | No               | No            | 220 x 160 x 145                         | 246 x 215 x 162                          | 1.29           | 5.1                |
| 2712B  | Yes              | No            | 276 x 200 x 120                         | 305 x 270 x 144                          | 1.83           | 6.6                |
| 2717B  | Yes              | No            | 276 x 200 x 170                         | 305 x 270 x 194                          | 2.12           | 9.3                |
| 3317B  | Yes              | No            | 330 x 234 x 170                         | 360 x 304 x 194                          | 2.51           | 13.1               |
| 3818B  | No               | No            | 380 x 270 x 180                         | 410 x 340 x 205                          | 3.58           | 18.4               |
| 4412B  | Yes              | No            | 445 x 345 x 125                         | 474 x 415 x 149                          | 3.9            | 19.2               |
| 4419B  | Yes              | No            | 445 x 345 x 190                         | 474 x 415 x 214                          | 4.7            | 29.2               |
| 4820B  | No               | No            | 480 x 370 x 205                         | 520 x 435 x 230                          | 5.4            | 35.5               |
| 5117B  | Yes              | No            | 517 x 277 x 173                         | 546 x 347 x 197                          | 4.5            | 24.7               |
| 5122B  | Yes              | Yes           | 517 x 277 x 217                         | 546 x 347 x 247                          | 7              | 31                 |
| 5822B  | No               | No            | 580 x 440 x 220                         | 650 x 510 x 242                          | 8.19           | 56.1               |
| 5833B  | No               | Yes           | 580 x 440 x 330                         | 682 x 510 x 355                          | 11.66          | 84.2               |
| 7630B  | No               | Yes           | 765 x 485 x 305                         | 860 x 560 x 330                          | 14.03          | 113.1              |
| 7641B  | No               | Yes           | 765 x 485 x 415                         | 860 x 560 x 435                          | 15.92          | 153.9              |
| 13515B | No               | Yes           | 1350 x 350 x 135                        | 1410 x 415 x 159                         | 9.95           | 63.7               |
| 4412BC | Yes              | No            | 445 x 345 x 125                         | 474 x 415 x 149                          | 4.2            | 19.2               |

|        |                 | Price Each |       |       |
|--------|-----------------|------------|-------|-------|
| Model  | Order Code      | 1+         | 5+    | 10+   |
| 1908.B | <b>137-1594</b> | 29.65      | 28.15 | 26.66 |
| 1913.B | <b>137-1595</b> | 31.64      | 30.09 | 28.45 |
| 2209.B | <b>137-1596</b> | 32.20      | 30.57 | 28.96 |
| 2214.B | <b>137-1597</b> | 35.98      | 34.18 | 32.35 |
| 2712.B | <b>753-6550</b> | 42.33      | --    | --    |

| Model   | Order Code      | 1+     | 5+     | 10+    |
|---------|-----------------|--------|--------|--------|
| 2717.B  | <b>753-6569</b> | 47.43  | --     | --     |
| 3317.B  | <b>137-1598</b> | 77.44  | 73.70  | 69.75  |
| 3818.B  | <b>753-6577</b> | 77.47  | --     | --     |
| 4412.B  | <b>137-1600</b> | 110.30 | 104.89 | 99.33  |
| 4419.B  | <b>137-1601</b> | 123.85 | 117.78 | 111.60 |
| 4820.B  | <b>753-6585</b> | 111.18 | --     | --     |
| 5117.B  | <b>137-1602</b> | 130.31 | 123.76 | 117.25 |
| 5122.B  | <b>137-1603</b> | 189.05 | 179.32 | 169.96 |
| 5822.B  | <b>753-6593</b> | 164.35 | --     | --     |
| 5833.B  | <b>753-6607</b> | 229.90 | --     | --     |
| 7630.B  | <b>753-6615</b> | 255.55 | --     | --     |
| 7641.B  | <b>753-6623</b> | 295.45 | --     | --     |
| 13513.B | <b>137-1604</b> | 208.47 | 202.98 | 197.78 |
| 4412.BC | <b>137-1606</b> | 165.02 | 156.76 | 148.55 |
| 5823.B  | <b>164-1786</b> | 179.00 | 169.00 | 161.10 |
| 11413.B | <b>164-1787</b> | 185.00 | 175.00 | 166.50 |
| 13527.B | <b>164-1788</b> | 299.00 | 284.00 | 269.10 |

## Loctite® 3430

**LOCTITE**
**New**


- Medium viscosity
- Ultra clear
- Toughened
- Water resistant
- Working time: 5 - 10 min.
- Fixture time: 15 min.
- Service temperature range: -55°C - +100°C
- Colour mix: ultra clear

Loctite® 3430 structural bonding - 2K Epoxy, multiple purpose bonder, fast, ultra clear A&B is a five-minute, 2K-Epoxy adhesive, suitable for applications requiring an optically clear bond line. Ideal for bonding glass, decorative panels and displays and general DIY applications.

|                    | Mfrs.<br>List No. | Order Code      | 1+   | 5+   |
|--------------------|-------------------|-----------------|------|------|
| LOCTITE 3430, 24ML | 142517            | <b>176-9530</b> | 6.53 | 6.26 |

## Glue Remover Gel

**LOCTITE**
**New**


Loctite Glue remover is suitable for the removal of super glue and many other glues from badly bonded objects, stained surfaces, fabrics and accidentally bonded fingers. It can also remove traces of sticky labels, inks and permanent marker stains. Non-drip gel formula quick and easy to use. The non drip formula is suitable for application to vertical surfaces

|                                      | Mfrs.<br>List No. | Order Code      | 1+   | 5+   | 12+  |
|--------------------------------------|-------------------|-----------------|------|------|------|
| ADHESIVE, GLUE REMOVING GEL 5GM PACK | 853360.1          | <b>177-4199</b> | 2.92 | 2.62 | 2.53 |

## Adhesive Glass Bond

**LOCTITE**
**New**


Applications:

- Glassware - bowls, jars, bottles, vases, drinking glasses
  - Glass furniture - tables, display cabinets, TV stands, sideboards, worktops
  - Art glass - figurines, beads, jewellery
  - Optical industry - lenses, mirrors
  - Medical industry - syringes, catheters
  - General industry - electric lighting, displays
- Designed specifically for glass to glass or glass to metal applications. Clear bond line. Water and detergent resistant. Triggered by UV rays in normal daylight.

|                               | Mfrs.<br>List No. | Order Code      | 1+   | 5+   | 12+  |
|-------------------------------|-------------------|-----------------|------|------|------|
| ADHESIVE, GLASS BOND 3GM PACK | 853358.1          | <b>177-4200</b> | 3.36 | 3.20 | 3.04 |

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## Adhesive, Thermal Conductive, 2 part



- Boron nitride filled, two-part, thermally conductive epoxy adhesive
- Low Outgassing
- Low Chloride Ion content compared to standard epoxies.



3M™ Thermally Conductive Epoxy Adhesive TC 2810 is a boron nitride filled, two-part, thermally conductive epoxy adhesive.

|                                      | Mfrs.<br>List No. | Order Code | 1+    | 5+    | 10+   |
|--------------------------------------|-------------------|------------|-------|-------|-------|
| ADHESIVE, THERMAL CONDUCTIVE, 2 PART | TC2810            | 173-6089   | 39.43 | 37.47 | 37.34 |

## Adhesive, Epoxy, 2 part



- Aluminium metal filled, two-part, thermally conductive epoxy adhesive
- Low Outgassing
- Low Chloride Ion content compared to standard epoxies.



3M™ Thermally Conductive Epoxy Adhesive TC-2707 is an aluminum metal filled, two-part, thermally conductive epoxy adhesive.

|                         | Mfrs.<br>List No. | Order Code | 1+    | 5+    | 10+   |
|-------------------------|-------------------|------------|-------|-------|-------|
| ADHESIVE, EPOXY, 2 PART | TC2707            | 173-6090   | 31.24 | 29.67 | 29.61 |

## 3M™ Polyimide Film Electrical Kapton Tape 92



Tape is amber with a 1 mil polyimide film backing with a silicone adhesive system for exceptional heat resistance, and may be applied at very low temperatures. Can be imprinted. On a 3 inch plastic core and sold in minicase.



|                                   | Mfrs.<br>List No.  | Order Code | 1+    | 10+   | 36+   |
|-----------------------------------|--------------------|------------|-------|-------|-------|
| 92 TAPE, KAPTON, 12MMX33MM, AMBER | 92 TAPE 12MM X 33M | 330-9691   | 22.26 | 21.08 | 19.97 |
| 92 TAPE, KAPTON, 19MMX33MM, AMBER | 92 TAPE 19MM X 33M | 330-9708   | 31.14 | 28.85 | 27.72 |
| 92 TAPE, KAPTON, 25MMX33MM, AMBER | 92 TAPE 25MM X 33M | 330-9710   | 43.79 | 42.07 | 40.48 |

## Tape, Foam Sealer, Black



Medium density PVC foam air, dust and weatherseal, coated on the face side with an acrylic pressure sensitive adhesive for easy positioning. A removable support liner on the other side prevents stretch during application. For general sealing and cushioning applications, can be cleanly drilled through for mechanical fixing.



- Cushioning
- Sound insulation
- Water seals
- Air seals
- Dust seals
- Light seals
- Abrasive protection
- Electrolytic insulation
- Draught seals
- Anti-vibration insulation
- Security bonding

|                                         | Mfrs.<br>List No. | Order Code | 1+   | 5+   | 10+  |
|-----------------------------------------|-------------------|------------|------|------|------|
| TAPE FOAM SEALER 3MMX6MM ROLL, BLACK    | PPC116            | 176-0686   | 3.31 | 2.98 | 2.68 |
| TAPE FOAM SEALER 4.5MMX12MM ROLL, BLACK | PPC117            | 176-0687   | 4.30 | 3.86 | 3.47 |
| TAPE FOAM SEALER 4.5MMX19MM ROLL, BLACK | PPC118            | 176-0688   | 6.88 | 6.19 | 5.57 |
| TAPE FOAM SEALER 6MMX19MM ROLL, BLACK   | PPC119            | 176-0689   | 6.78 | 6.10 | 5.49 |

## Switch and Contact Cleaner



- Removes dirt, grease, oil and other contaminants
- Leaves a residual oil film, which increases with the contact area and reduces resistance
- Compatible with most plastics and rubber compounds
- Supplied with a plastic applicator to reach inaccessible components

|                        |            | Price Each |      |
|------------------------|------------|------------|------|
| Description            | Order Code | 1+         | 12+  |
| Contact Cleaner, 200ml | 120-6544   | 2.00       | 1.81 |

## IPA Cleaning Solvent



- Powerful electronic cleaning solvent
- Removes moisture from components by forming an azeotrope
- Leaves no visible residue
- Ideal for cleaning PCB's, optical equipment, precision instruments, photocopier drums and most delicate components
- Available in a 400ml aerosol and a 1 litre tin

|              |            | Price Each |      |
|--------------|------------|------------|------|
| Description  | Order Code | 1+         | 12+  |
| IPA, 400ml   | 120-6535   | 2.65       | 2.35 |
| IPA, 1 Litre | 120-6536   | 6.47       | 6.14 |

## Freezer Spray



- Aids rapid fault detection in electronic components
- Provides heat sink protection during soldering and calibration
- Tests trace continuity in PCB's
- Cools components to -50°C

|                       |            | Price Each |      |
|-----------------------|------------|------------|------|
| Description           | Order Code | 1+         | 12+  |
| Freezer Spray, 400 ml | 120-6534   | 7.95       | 7.29 |

## Flux Remover 400ml

An acrylic resin based coating used to protect PCB's and electrical components from the effects of humidity and moisture



- Insulates and seals PCB's and electrical components from the effects of humidity
- Transparent film
- Provides protection from environmental attack
- Can be soldered through without the need to remove
- Effective from -40°C to +60°C



|                                     | Mfrs.<br>List No. | Order Code | 1+   | 5+   | 10+  |
|-------------------------------------|-------------------|------------|------|------|------|
| PROPOWER FLUX REMOVER 400ML AEROSOL | PPC120            | 173-6213   | 3.99 | 3.59 | 3.30 |



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## Conformal Coating 400ml

A Blend of Solvents designed to remove flux residues from PCB's



- Removal of flux residues from PCB's and components
- Evaporates quickly leaving no residue
- Fast and effective in use
- Also removes uncured surface mount adhesive

New

| Description                        | Mfrs. List No. | Order Code | Price Each |      |      |
|------------------------------------|----------------|------------|------------|------|------|
|                                    |                |            | 1+         | 5+   | 10+  |
| PRO-POWER CONFORMAL COATING, 400ML | PPC121         | 176-5265   | 4.63       | 4.16 | 3.75 |

## Thermal Management



### HTCP – Non Silicone Heat Transfer Paste PLUS

- Silicone free
- High thermal conductivity – 2.5W/mK
- Wide operating temperature range -50°C to +130°C
- Non-melting and non-hardening

### HTSP – Silicone Heat Transfer Paste PLUS

- High thermal conductivity – 3.0W/mK
- Wide operating temperature range -50°C to +200°C
- Non-melting and non-hardening

### HTC – Non-Silicone Heat Transfer Paste

- Silicone free
- 35ml Luer Lock syringe and 10ml syringe dispensers
- Excellent non-creep properties
- High thermal conductivity - 0.9W/mK

### HTS – Silicone Heat Transfer Paste

- High thermal conductivity – 0.9W/mK
- Luer Lock syringe for hand or automatic application
- Wide operating temperature range -50°C to +200°C
- Non-melting and non-hardening

| Description   | Mfrs. List No. | Order Code | Price Each |       |       |       |
|---------------|----------------|------------|------------|-------|-------|-------|
|               |                |            | 1+         | 12+   | 36+   | 144+  |
| 10 ML Syringe | HTC10S         | 317-950    | 2.41       | 2.15  | 1.90  | 1.76  |
| 35 ML Syringe | HTC35S         | 317-962    | 4.90       | 4.39  | 3.97  | 3.78  |
| 35 ML Syringe | HTS35SL        | 891-344    | 5.14       | 4.69  | 4.52  | 4.27  |
| 20 ML         | HTCP20S        | 634-920    | 10.40      | 9.53  | 9.19  | 8.59  |
|               |                |            | 1+         | 5+    | 10+   | 20+   |
| 50 ML Tube    | HTSP50T        | 725-572    | 21.90      | 20.43 | 18.86 | 16.58 |

## ULS - Ultrasolve Cleaning Solvent



- Fast drying solvent blend
- Removes flux, dirt and grease
- Suitable for PCB and electronic assembly cleaning
- Safe on most plastics
- 100% Ozone Friendly

725-651 - Aero Brush

| Size             | Mfrs. List No. | Order Code | Price Each |       |       |       |
|------------------|----------------|------------|------------|-------|-------|-------|
|                  |                |            | 1+         | 12+   | 36+   | 144+  |
| 200ml Aerosol    | ULS200D        | 298-335    | 4.29       | 4.07  | 3.99  | 3.75  |
| 400ml Aerosol    | ULS400D        | 298-207    | 7.13       | 6.78  | 6.60  | 6.10  |
| 400ml Aero-Brush | ULS400DB       | 725-651    | 7.33       | 7.01  | 6.57  | 6.15  |
| 1 Litre Tin      | ULS01L         | 298-219    | 12.68      | 12.17 | 11.72 | 10.91 |

## CRC Minus 50-Non Flammable Freezer



Coolant for electrical and electronic use. CRC Minus 50 is a non-flammable, inert dry coolant-spray for maintenance, trouble shooting and repair. Used to cool down parts and components to temperatures below 0°C to a minimum of -50°C; the tracking of intermittent faults, the detection of hairline cracks, and the locating of defective components becomes easier.

- Protects heat sensitive components from high temperatures during soldering and desoldering.
- Facilitates precision fitting of metal parts : a short spray will shrink one part so a slip fit becomes possible.
- Saves maintenance cost and downtime.
- Non-flammable and inert.
- No chemical attack of components.
- Evaporates completely, leaving no residue.
- Invaluable for testing thermostats and all systems responding to temperature changes

| Description                          | Mfrs. List No. | Order Code | Price Each |       |
|--------------------------------------|----------------|------------|------------|-------|
|                                      |                |            | 1+         | 12+   |
| MINUS 50-NON FLAMMABLE FREEZER-500ML | 108393161231   | 177-2078   | 15.84      | 15.05 |

## CRC Contact Cleaner



CRC Contact Cleaner is a high purity, effective precision cleaning solvent designed to meet today's environmental challenges. Based on fast drying naphthenic solvents without chlorinated, alcohol or glycol ether components. CRC Contact Cleaner improves the performance and reliability of electrical/electronic equipment by cleaning contacts and components quickly and effectively. Prevents contact failures or malfunctions by dissolving and/or rinsing away contaminants, which holds moisture and causes corrosion or arcing.

- Fast cleaning action for removal of flux traces, light oils, finger prints and other contaminants.
- No ozone-depleting action (ODP = 0.00).
- Periodic planned application prolongs the life expectancy of components.
- Non-conductive and non-corrosive.
- Evaporates completely, leaving no residue.
- Safe for all metal surfaces, most rubbers, plastics and coatings. Test on sensitive plastics,
- adhesive-mounted or stressed parts.
- Convenient 360° (upside-down) spray valve for aerosols.
- High purity CO2 propellant, giving an active product content of 97%.

| Description                       | Mfrs. List No. | Order Code | Price Each |       |       |
|-----------------------------------|----------------|------------|------------|-------|-------|
|                                   |                |            | 1+         | 12+   | 24+   |
| CONTACT CLEANER-HIGH PURITY-500ML | 101513161231   | 177-2066   | 14.99      | 14.24 | 13.53 |

## CRC Silicone-Synthetic Lubricant



- Forms a colorless, non-staining film.
- Highly water-resistant; repels water from glass, ceramics, fabrics and leather.
- Eliminates squeaking, binding and sticking.
- Protects metals, plastics, rubbers and other surfaces.
- Low surface tension gives better coverage and deeper penetration.
- Effective over a wide temperature range (-40°C to +200°C).
- Excellent release properties.
- NSF H1 registered N°126501.

Lubricates, protects, waterproofs and restores. A blend of high quality stable silicone oils. The highly versatile, non-corrosive formula lubricates, protects, waterproofs and restores a wide range of parts and equipment. Ensures superior lubrication of plastics and provides excellent separation and release properties.

| Description                       | Mfrs. List No. | Order Code | Price Each |      |      |
|-----------------------------------|----------------|------------|------------|------|------|
|                                   |                |            | 1+         | 12+  | 24+  |
| FPS SILICONE-SYNTHETIC LUB-500 ML | 190755161231   | 177-2069   | 10.27      | 9.76 | 9.27 |



## CRC Professional Degreaser



- Cleans and degreases all metal parts.
- Fast evaporation to minimize downtime.
- Does not leave a residue.
- Safe on all metal surfaces, does not stain.
- Safe on most rubbers, plastics and coatings. Test on sensitive or stressed materials before use.
- Convenient 360° (including inverted position) spray valve for aerosols.
- High purity CO2 propellant, giving an active product content of 95%.

Fast and powerful cleaner. Removes oil, brake fluid, grease, dirt and stains. Without chlorinated solvents.



| Mfrs. List No.                                      | Order Code | 1+    | 12+   | 24+   |
|-----------------------------------------------------|------------|-------|-------|-------|
| PROFESSIONAL DEGREASER-UNIV USE 500ML 1012631612311 | 177-2072   | 3.42  | 3.25  | 3.09  |
| PROFESSIONAL DEGREASER-UNIV USE 2.5L 1012636901311  | 177-2071   | 13.70 | 13.02 | 12.37 |

## WD40 Smart Straw 420ml



The WD-40 Smart Straw's contemporary sleek design delivers product quickly and efficiently and ensures you will never lose the straw again! WD-40 Smart Straw sprays two ways: simply flip the straw up for a precision stream for hard to reach jobs and fold it down for a regular wide spray action to cover a larger surface area. A revolutionary packaging design, the new WD-40 Smart Straw comes in a 420ml can and is available in most leading retailers

- **CLEANS:** WD-40 gets under dirt, marks and grease making it easy to wipe away. It also dissolves adhesives, allowing easy removal of labels, tape, and stickers
- **PROTECTS:** WD-40 protects metal surfaces with corrosion-resistant ingredients to shield against moisture and other corrosive elements
- **LUBRICATES:** WD-40's lubricating ingredients are widely dispersed and hold firmly to all moving parts
- **PENETRATES:** WD-40 loosens rust-to-metal bonds and frees stuck, frozen or rusted metal parts
- **DISPLACES MOISTURE:** Because WD-40 displaces moisture, it quickly dries out electrical systems to eliminate moisture-induced short circuits.

| Mfrs. List No.          | Order Code | 1+   | 5+   | 10+  |
|-------------------------|------------|------|------|------|
| WD40 SMART STRAW 44736. | 174-2153   | 4.52 | 4.07 | 3.86 |

## Safety Helmet A-59

4 point plastic suspension and sweatband. HDPE shell



Safety helmet with 4 point plastic suspension with forehead comfort band, 4 - point chin-strap anchorage and 3 - level height adjustment. The 30mm accessory slots fits most available accessories.



| Mfrs. List No.                          | Order Code | Price Each |
|-----------------------------------------|------------|------------|
| HELMET, SAFETY, A-59, RED 933152        | 169-6171   | 2.67       |
| HELMET, SAFETY, A-59, SKY BLUE 933154.2 | 169-6172   | 2.88       |
| HELMET, SAFETY, A-59, ORANGE 933155     | 169-6173   | 2.88       |
| HELMET, SAFETY, A-59, GREY 933156       | 169-6174   | 2.88       |

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## Cold Grip Glove, Knitted, Pair



Seamless knitted and brushed winter liner with black PVC knuckle coating. High flexibility also in temperatures below -25C. High comfort, fit and good dexterity compared to other winter gloves.

- Cold Grip
- Seamless knitted and brushed winter liner
- Special PVC foam knuckle coating

| Mfrs. List No.                                    | Order Code | Price Each |
|---------------------------------------------------|------------|------------|
| GLOVE, COLD GRIP, KNITTED, L, PAIR NF11HD/9L      | 169-6156   | 3.39       |
| GLOVE, COLD GRIP, KNITTED, XL, PAIR NF11HD/10XL   | 169-6157   | 3.39       |
| GLOVE, COLD GRIP, KNITTED, XL, PAIR NF11HD, 11XXL | 169-7032   | 3.34       |

## Nitrile Glove, Blue, Powder Free, Pk 100.



Nitrile examination glove 24cm long with rolled cuff. Packed per 100 pieces. High chemical resistance. Available in AQL 1.5 for medical application powder free version. 100 gloves per box.

- Nitrile powder free textured examination gloves
- AQL 1.5
- Roll Cuf

| Mfrs. List No.                                  | Order Code | Price Each |
|-------------------------------------------------|------------|------------|
| GLOVE, NITRILE POWDER FREE S PK100 LA049PF/S    | 169-6147   | 8.18       |
| GLOVE, NITRILE POWDER FREE, M, PK100 LA049PF/M  | 169-6148   | 8.18       |
| GLOVE, NITRILE POWDER FREE, L PK100 LA049PF/L   | 169-6149   | 8.18       |
| GLOVE, NITRILE POWDER FREE, XL PK100 LA049PF/XL | 169-6150   | 8.18       |

## Statutory First Aid Kit

1-10 persons



**Contains:** 1 first aid guidance leaflet, 20 sterile washproof plasters, 2 sterile eye pads with bandage, 4 triangular bandages, 6 safety pins, 8 sterile dressings with pad (assorted), 10 moist wipes, 1 pair latex gloves.

| Description      | Order Code | Price Each |
|------------------|------------|------------|
| 1-10 Persons Kit | 137-6441   | 30.44      |
| 1-10 Refill      | 137-6487   | 6.04       |

## Deb InstantFoam™ Alcohol Hand Wash

Revolutionary alcohol skin sanitiser delivered as a foam



Deb InstantFOAM™ has been tested and found to be effective against H1N1.

1. 12 x 47ml personal issue pack 1712674
2. 12 x 250ml desk top pack 1712675
3. 6 x 1 Litre cartridge 1712677
4. 1 litre Deb InstantFOAM Manual Dispenser 1712678
5. 1 Litre InstantFOAM TouchFREE Dispenser 1712679

- Instant Action - Spreads rapidly to cover hands quickly, killing 99.999% of many common germs in just 15 seconds.
- Convenient - Available in a range of sizes for use in different working environments. No water required, so can be used anywhere.
- Dermatologically Tested - 48hr single patch test, with results validated by a dermatologist, shows the product to be 'non-irritant'. Meets the requirements of European Cosmetic regulation.
- Unique Foam Format - Quickly and easily rubs across the hands with no drips or splashes.

| Mfrs. List No.                               | Order Code | 1+    | 5+    | 10+   |
|----------------------------------------------|------------|-------|-------|-------|
| SANITISER, HAND, A/BACTERIAL, 47ML DIS47ML   | 171-2674   | 2.00  | 1.86  | 1.77  |
| SANITISER, HAND, A/BACTERIAL, 250ML DIS250ML | 171-2675   | 6.98  | 6.52  | 6.18  |
| SANITISER, HAND, A/BACTERIAL, 1L DIS1000ML   | 171-2677   | 9.96  | 9.33  | 8.83  |
| DISPENSER, FOAM, MANUAL, 1L INF01CON         | 171-2678   | 4.62  | 4.32  | 4.09  |
| DISPENSER, FOAM, AUTOMATIC, 1L AUTOINFCON    | 171-2679   | 35.82 | 33.42 | 31.69 |

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| Memory      | 20 kpts                                 |
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