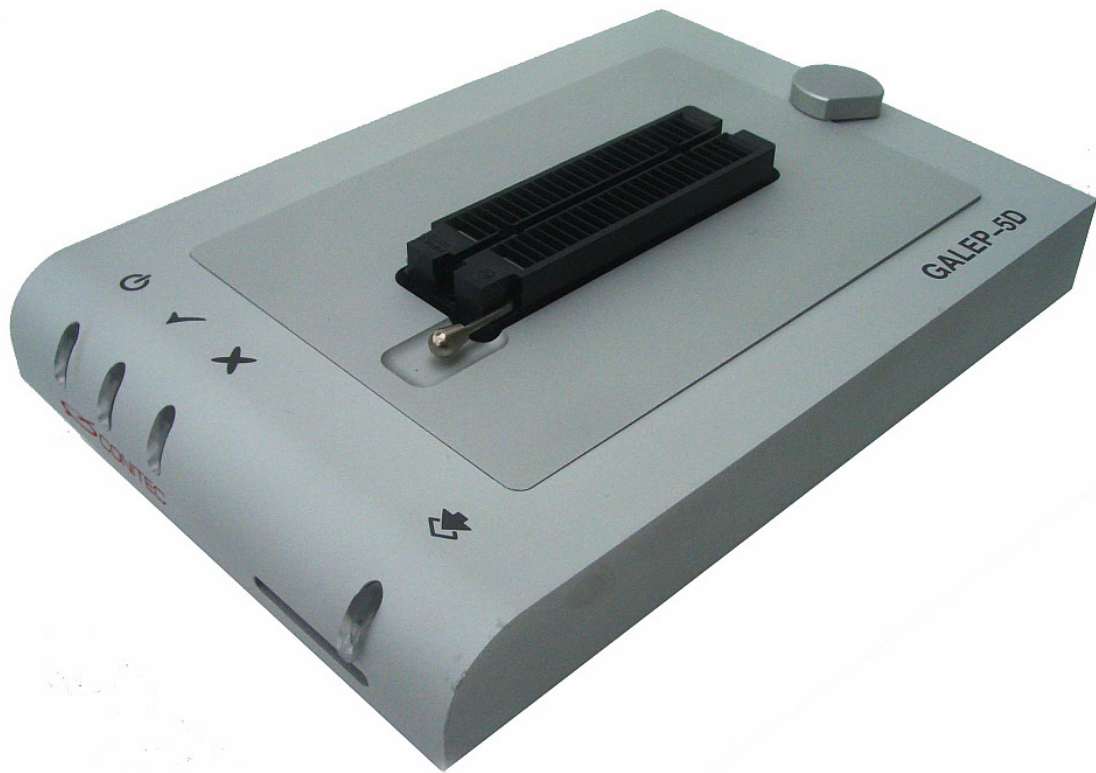**GALEP-5D**
Heavy Duty Device Programmer
Up to 240 pin drivers, LAN and USB port

GALEP-5D is a high end device programmer for heavy-duty use in production and development. Its unique module concept for sockets with up to 240 pins, its LAN port and its stand alone capability make it the ideal solution for almost all programming tasks.

Supported Devices
GALEP-5D is a universal programmer for programmable devices of the following types: PROM, EPROM, EEPROM, FLASH memory, serial EEPROM, NV-RAM, LPC, FPGA, PLD, EPLD, GAL, PALCE, PIC, Microcontroller (MCU) with up to 240 pins.

Ultra-Compact Hardware
The GALEP-5D device programmer series is packed into an extremely rigid, but lightweight single-block milled-aluminium case. The wallet-sized unit weighs only 750g / 1.65 lbs, compared to 3..4 lbs of bulky competitor products.

High-Speed Programming
GALEP-5D is uncompromisingly designed for speed. Communication and programming is handled by a 200 MIPS ARM-9 processor under Embedded Linux. Up to 4 FPGA (user-programmable logic) devices control the pin drivers and support hardware acceleration of the programming algorithms by setting up internal state machines and UARTs. This way, even time-critical devices can be programmed in a speed that could never be reached by pure software.

The hardware acceleration makes GALEP-5D one of the fastest device programmers on the market today. For instance, a MB90F947 Microcontroller by Fujitsu (128KB) needs only 13 seconds for a program/verify cycle including data transfer - close to the theoretical minimum specified by the manufacturer. The Ethernet port allows data transfer at LAN speed of up to 100 MB/sec. The internal 128 MB RAM serves as data storage and allows to transfer the data only once for programming multiple devices.

240 universal pin drivers
A custom-designed universal pin driver circuit guarantees optimal signal quality at the output pins, and allows the small size and low power consumption of all GALEP chip programmers. Each of the 240 pins can generate the following signals:

- Logical high, adjustable between 1.2V ... 5.0V
- Logical input, threshold adjustable between 0.5V … 5.0V
- Three supply / programming voltages between 1.3V .. 25.0V
- Ground
- Three switchable resistors for pullup and pulldown
- Adjustable clock rate

The switching regulators for the programming voltages are controlled by D/A converters in 100 mV steps. Further D/A converters are used to control the logic levels and the input threshold. For maximum protection of the programmable device, all voltages are permanently monitored by an independent circuit.
A universal pin driver concept with as many pins as possible reduces the number of required adapters and thus minimizes the overall costs of the programming system.

Stand alone and Network operation
The programming operation is totally transparent. GALEP-5D can be connected at any place in your LAN, and accessed from any PC in the network.
The stand alone mode (currently in development for a future free software update) allows using GALEP-5D in mass production without a PC! The programming data can be stored on SD card or on a local server on the LAN.
For programming multiple components, several GALEP-5D devices can be controlled simultaneously (cluster- or gang-programming).

In System Programming
The signals for in-system programming (ISP) can be taken from a separately available ISP adapter or directly from the 48-pin ZIF socket. The help system provides information about the wiring of the target system for all supported components.

Software
The GALEP-5D program runs under Windows 95, 98, ME, NT4, 2000, XP, and Vista. Besides basic functions such as read, program, compare and delete, it features easy-to-use custom configuration options for any special functions required by the selected device. The editor supports binary, Intel-Hex, Motorola-S or JEDEC file format. Mass production is supported by providing statistics functions and serial number generation.
JTAG Support: Delete, program and verify components with JTAG interface (joint test action group, IEEE Std. 1149.1). The following formats are supported: SVF-Script in XSVF(Xilinx) format; JAM byte code player (ALTERA).

Batch mode: Run GALEP-5D from the command line, or implement GALEP-5 commands in your own production software. The programmer can be completely controlled by a set of powerful batch commands.

Updates: The software is permanently improved for supporting new components (device list). If you need a certain device that's not yet supported, use our free Device on Demand Service or ask on the Forum. Free updates are available on our website in regular intervals.

JTAG Debugger

With GALEP-5D you can debug all Microcontrollers with JTAG interface that are supported by the OpenOCD (On Chip Debugger) software - ARM7, ARM9, XScale, and Cortex-M3 MCUs. The chip to debug is simply put into GALEP's programming socket or connected with GALEP through a cable or ISP adapter (please find details in the OpenOCD documentation). Additionally you can easily define test algorithms for in circuit testing of complete circuit boards (Boundary Scan) for small series production. This way your GALEP-5D becomes a complete development, test and production system!

Security

Prior to each function, GALEP checks the power consumption, correct positioning, and the contacts of all pins of the selected component. This prevents accidental damage to the component or the device.

Modules and Adapters

A main advantage of GALEP-5D is the innovative module concept. In seconds the DIL module can be replaced with a module for a different socket. Due to the high output pin count, only a single module or adapter is required for supporting all programmable devices with a certain socket. For instance, one QFP-120 GALEP module replaces about 30 specialized QFP-120 adapters required by competitor products. When frequently programming high pin components, a GALEP-5D-240 has quickly brought in its price.

GALEP-5D comes with a DIL-48 module for all components in DIL sockets of up to 48 Pins. All existing GALEP-4 and GALEP-5 adapters can be used with the DIL-48 module of GALEP-5D.

Technical Specifications

- Format: ca. 118x172x22mm (+7mm socket)
- Weight: ca. 750 g, single block aluminium case
- DIL Module with 48-pin ZIF socket included
- Up to 240 universal pin drivers
- Programs low-voltage components down to 1.3V
- Mini USB 2.0 high-speed port, plus Ethernet 10/100 port
- SD memory card slot
- 200 MIPS ARM-9 RISC processor, 128 MB RAM, 8 MB Flash
- Hardware acceleration through FPGA (50K gates, 64Kb RAM)
- 3 linear voltage regulators for internal power supply
- 4 switching regulators for programming voltages
- 2 linear voltage regulators for logic levels and input threshold
- 2 Microcontrollers for internal voltage monitoring
- 8-channel D/A converter, 16-channel A/D converter
- Embedded Linux 2.6 inside

Kit contains
- § GALEP-5D device
- § DIL-48 module
- § Ethernet & Mini USB cables
- § AC adaptor
- § CD with manual and software

System Requirements
Windows 32 Bit OS, 98SE / ME / NT4 / 2000 / XP / Vista
USB 1.0 or USB 2.0 port, or Ethernet port

Warranty: 24 Months. Certification: CE, RoHS, UL.