Embedded Solutions

Modules, Development Tools and Microprocessors

Digi's embedded products enable device intelligence and connectivity in a broad range of industries, including industrial automation, building automation and security, medical, retail/POS, office automation, and others. They deliver fast and easy integration and uncompromising performance. Regular hardware and software updates also ensure a future-proof design in the customer's end product.

Embedded Modules and Microprocessors

Digi offers ARM-based, ZigBee and proprietary RF embedded modules. The NET+ARM-based Digi Connect® and ConnectCore™ families are the industry's first interchangeable wired and wireless embedded modules, enabling OEMs to design in both wired 10/100 Ethernet and secure wireless 802.11b/g network connectivity with a single design effort. Our low-cost RF modules are ideal for long-range wireless data communications and mesh networking.

Modules built on our 32-bit NET+ARM microprocessors are fully supported by the royalty-free NET+OS development environment. A highly integrated "system-on-chip" approach seamlessly combines system-on-silicon and software for Internet- and Ethernet-connected products.

Development Tools

Development Kits and extensive support options lower the risk and increase productivity when using Digi embedded products. Digi JumpStart Kits™ (available for selected embedded modules) are a new breed of development kit designed to enable rapid prototyping and application development within 30 minutes of installation. They include a module, baseboard and complete development hardware and software environment for out-of-the-box product development. These easy-to-use, cost-effective and complete development solutions dramatically shorten traditional time-to-market aspects of your embedded product.

For maximum flexibility, Digi JumpStart Kits support multiple operating environments, including Microsoft® Windows® CE, Linux®, Microsoft .NET Micro Framework and our own ThreadX®-based NET+OS®.

Seamless Migration to Total Integration

Digi embedded modules combine true plug-and-play functionality with the freedom and flexibility of complete software customization. Software applications developed with NET+OS APIs and other operating systems can fully migrate across Digi Connect and ConnectCore hardware platforms, maximizing your initial investment and reducing the overall development effort.

+ Embedded Solutions – Modules, Development Tools and Microprocessors

Embedded Modules

ARM-Based Networking Modules

OEM RF Modules

Development Kits

ARM-Based Networking Modules

OEM RF Modules

Software and Support

Microprocessors

ARM-Based Networking Modules Features Chart

	Digi Connect ME	Digi Connect EM	Digi Connect Wi-ME	Digi Connect Wi-EM
Processor Type	Digi NS7520	Digi NS7520	Digi NS7520	Digi NS7520
ARM Core	ARM7TDMI	ARM7TDMI	ARM7TDMI	ARM7TDMI
Processor Speed	55 MHz	55 MHz	55 MHz	55 MHz
Memory Base Population	2 MB Flash	4 MB Flash	4 MB Flash	4 MB Flash
	8 MB SDRAM	8 MB SDRAM	8 MB SDRAM	8 MB SDRAM
Additional Population Options	4 MB Flash	None	None	None
	None	None	None	None
Power Req @ 3.3V (typ/max)	250 mA typ	270 mA max	400 mA max	400 mA max
Power Over Ethernet (PoE)	Mid-span			
Standard Operating Temp	-40° to 85° C	-40° to 85° C	-30° C to 75° C	-30° C to 75° C
Pins/Form Factor	20-pin connector	12-pin connector	20-pin connector	12-pin connector
10/100 Ethernet Support	RJ-45 included	RJ-45 included		
802.11b			•	•
UART	1	2	1	2
GPIO	Up to 5	Up to 9	Up to 5	Up to 9
SPI		•		•
I^2C				

Legend:
• Module Feature

ARM-Based Networking Modules Features Chart

	ConnectCore 7U	ConnectCore 9U	ConnectCore 9C	ConnectCore Wi-9C
Processor Type	Digi NS7520	Atmel AT91RM200	Digi NS9360	Digi NS9360
ARM Core	ARM7TDMI	ARM920T	ARM926EJ-S	ARM926EJ-S
Processor Speed	55 MHz	160 MHz	155 MHz	155 MHz
Memory Base Population	2 MB Flash	16 MB Flash	4 MB Flash	4 MB Flash
	16 MB SDRAM	32 MB SDRAM	16 MB SDRAM	16 MB SDRAM
Additional Population Options	8 MB Flash	None	Up tp 256 MB Flash	Up tp 256 MB Flash
	None	None	Up tp 128 MB RAM	Up tp 128 MB RAM
Power Req @ 3.3V (typ/max)	280 mA	152 mA	450 mA	800 mA max
Power Over Ethernet (PoE)	Capable	Capable	End- and mid-span	End- and mid-span
Standard Operating Temp	0° C to 70° C	0° C to 70° C	-40° C to 85° C	-30° C to 75° C
Pins/Form Factor	48-pin DIL	48-pin DIL	144-pin SO-DIMM	144-pin SO-DIMM
10/100 Ethernet Support	MAC/PHY	MAC/PHY	RJ-45 included	RJ-45 included
802.11b/g				•
UART	Up to 2	Up to 2	Up to 4	Up to 4
GPIO	Up to 16	Up to 16	Up to 55	Up to 55
SPI	•	•	•	•
I^2C	•	•	•	•
USB Host/Device (2.0 Full Speed)		•	•	•
Integrated USB Connectors			2 Host	2 Host
LCD Controller			•	•
Special Features	• Industrial temperature rated module available			

Legend:
• Module Feature

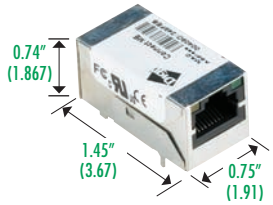
ARM-Based Networking Modules Features Chart

	ConnectCore 9P 9360	ConnectCore 9P 9750	ConnectCore 9M	ConnectCore XP
Processor Type	Digi NS9360	Digi NS9750	Samsung S3C2440	Marvell PXA270
ARM Core	ARM926EJ-S	ARM926EJ-S	ARM920T	XScale
Processor Speed	177 MHz	200 MHz	300/400 MHz	520 MHz
Memory Base Population	32 MB Flash 32 MB RAM	32 MB Flash 16 MB RAM	32 MB Flash 32 MB RAM	32 MB Flash 64 MB RAM
Additional Population Options	Up to 128 MB Flash Up to 128 MB SDRAM	Up to 128 MB Flash Up to 256 MB SDRAM	Up to 2 GB Flash Up to 512 MB RAM	None 128 MB RAM
Power Req @ 3.3V (typ/max)	400 mA	600 mA	26/280 mA	190/350 mA
Power Over Ethernet (PoE)	Capable	Capable	Capable	Capable
Standard Operating Temp	0° C to 70° C	0° C to 70° C	-25° C to 75° C	-25° C to 75° C
Pins/Form Factor	120-pin HD (2)	120-pin HD (2)	120-pin HD (2)	100-pin HD (2)
10/100 Ethernet Support	MAC/PHY	MAC/PHY	10 Mbit MAC/PHY	MAC/PHY
UART	Up to 4	Up to 4	Up to 3	Up to 3
GPIO	Up to 55	Up to 50	Up to 75	Up to 75
SPI	•	•	•	•
I^2C	•	•	•	•
USB Host/Device (2.0 Full Speed)	•	•	•	USB OTG
Integrated USB Connectors				
LCD Controller	•	•	•	•
Touch Controller	†	°	•	•
I^2S/AC97 Audio		°	•	•
Special Features	• Extended temperature model available	• PCI bus support	• SD/SDIO	• SD/SDIO • PCMCIA/ Compact Flash • Memory stick/ MMC

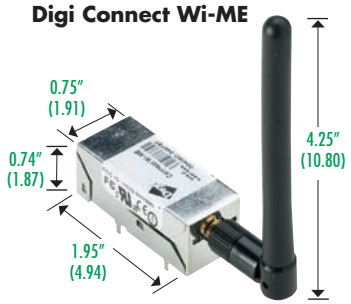
Legend:
- • Module Feature
- ° Dev Board Feature
- † Application Kit Feature

ARM-Based Networking Modules

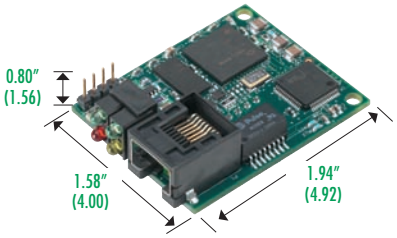
Digi Connect ME



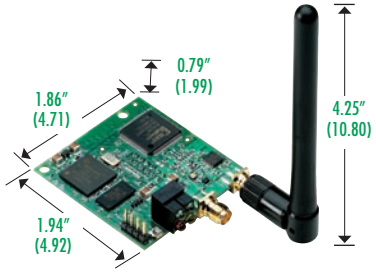
Digi Connect Wi-ME



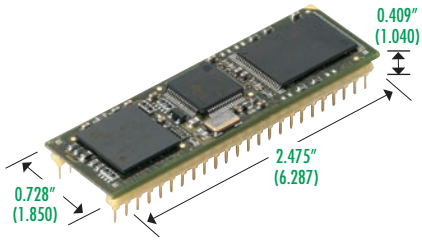
Digi Connect EM



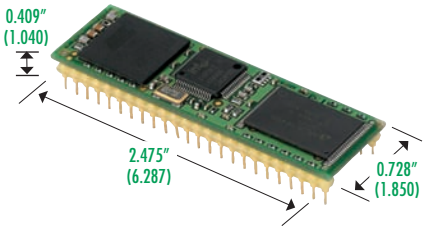
Digi Connect Wi-EM



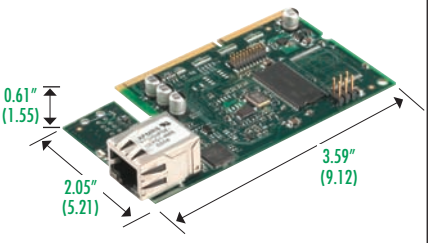
ConnectCore 7U



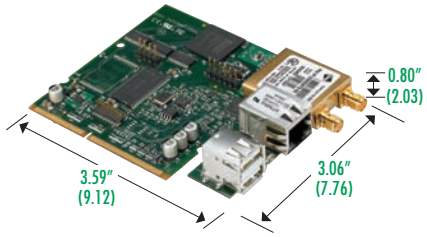
ConnectCore 9U



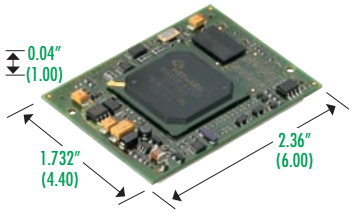
ConnectCore 9C



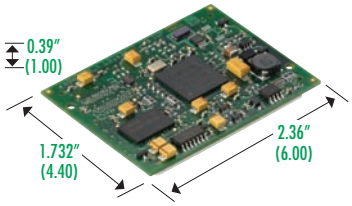
ConnectCore Wi-9C



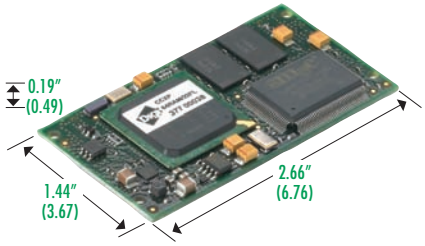
ConnectCore 9P



ConnectCore 9M



ConnectCore XP



Measurements: inch
(cm)

Digi Connect ME® Family :: Wired & Wireless Embedded Modules

Overview :: Based on a common platform design approach, the Digi Connect ME and Digi Connect® Wi-ME embedded modules offer pin-compatible "drop-in" integration. This allows you to build future-proof products based on a single design supporting both wired 10/100Base-T and 802.11b wireless Ethernet connectivity. These connector-style modules include all the functionality you need in a single component solution to cost-effectively and easily implement in existing and new product designs, while powerful enough to meet your future product performance needs.

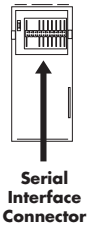
Features ::

- Highly integrated 32-bit network co-processor module
- Family of interchangeable and pin-compatible solutions
- 2/4 MB Flash and 8MB RAM
- High-speed serial interface with up to 230 kbps throughput
- 5 shared GPIO port options
- 10/100 Mbit Ethernet or 802.11b WLAN with WPA2/802.11i security
- Fully pre-certified radio reduces overall design cost/risk and time-to-market
- Industrial operating temp and FCC Class B low-emission design
- NIST-certified 256-bit AES encryption based on SSL 3.0/TLS 1.0
- ThreadX-based NET+OS® software development platform
- Digi's plug-and-play firmware option eliminates software development effort
- Designed with Digi's' own ARM processor and WLAN technology for true long-term product availability
- Seamless migration path to Digi NET+ARM system-on-chip
- RoHS compliant

Digi Connect ME - Back

Digi Connect Wi-ME - Front

Digi Connect ME - Bottom



Digi Connect Wi-ME - Bottom

Specifications ::

Hardware

- 32-bit NET+ARM high-performance RISC processor (NS7520 @ 55 MHz)
- On-board memory: 2/4 MB (wired) or 4 MB (wireless) Flash and 8 MB RAM
- On-board power supervisor
- 1 high-speed TTL serial interface
  - Up to 230 Bps (921 Kbps optional available)
  - Full signal for TXD, RXD, RTS, CTS, DTR, DSR and DCD
  - Hardware and software flow control
- 5 shared General Purpose Input/Output (GPIO) ports
- LEDs for link integrity, diagnostic, serial activity and network activity
- Operating temperature
  - Digi Connect ME: -40° C to 85° C (-40° F to 185° F)
  - Digi Connect Wi-ME: -30° C to 75° C (-22° F to 167° F)
- 2.4 MHz RP-SMA dipole antenna sold separately (Digi Connect Wi-ME)
- Wave-solderable design (no clean flux process)

Network Interface - Digi Connect ME

- Standard: IEEE 802.3
- Physical Layer 10/100Base-T
- Data rate: 10/100Mbps (auto-sensing)
- Mode: Full or half duplex (auto-sensing)
- Connector RJ-45

Network Interface - Digi Connect Wi-ME

- Standard: IEEE 802.11b
- Frequency: 2.4 GHz
- Data rate: Up to 11 Mbps with automatic fallback
- Modulation: CCK (11/5 Mbps), DQPSK (2 Mbps), DBPSK (1 Mbps)
- Transmit power: 16 dBm typical
- Receive sensitivity: -82 dBm @11 Mbps
- Antenna connector: 1 x RP-SMA

See page 165 for antennas.

Power and Device Interface Connector Pin Assignments

PIN #	Signal
1*	VETH+
2*	VETH-
3-6	—
7	RXD
8	TXD
9	RTS/GPIO 4
10	DTR/GPIO 5
11	CTS/GPIO 2
12	DSR/GPIO 3
13	DCD/GPIO 1
14	RESET
15	+3.3V
16	GND
17-19	—
20	/INIT

* Positions 1 and 2 apply to Digi Connect ME only.

:: Product

Digi Connect ME
Digi Connect Wi-ME

Part Numbers ::

Worldwide

Modules with Plug-and-Play Firmware	
Digi Connect ME w/2 MB Flash, 8 MB RAM (single-unit pack)	DC-ME-01T-S
Digi Connect ME w/2 MB Flash, 8 MB RAM (10-unit pack)	DC-ME-01T-S-10
Digi Connect ME w/2 MB Flash, 8 MB RAM (50-unit pack)	DC-ME-01T-S-50
Digi Connect Wi-ME (single-unit pack with antenna)	DC-WME-01T-S
Digi Connect Wi-ME (10-unit pack with antennas)	DC-WME-01T-S-10
Digi Connect Wi-ME (50-unit pack with antennas)	DC-WME-01T-S-50
Modules for Custom Applications with NET+OS	
Digi Connect ME w/2 MB Flash, 8 MB RAM (single-unit pack)	DC-ME-01T-C
Digi Connect ME w/4 MB Flash, 8 MB RAM (single-unit pack)	DC-ME4-01T-C
Digi Connect ME w/2 MB Flash, 8 MB RAM (10-unit pack)	DC-ME-01T-C-10
Digi Connect ME w/4 MB Flash, 8 MB RAM (10-unit pack)	DC-ME4-01T-C-10
Digi Connect ME w/2 MB Flash, 8 MB RAM (50-unit pack)	DC-ME-01T-C-50
Digi Connect ME w/4 MB Flash, 8 MB RAM (50-unit pack)	DC-ME4-01T-C-50
Digi Connect Wi-ME (single-unit pack with antenna)	DC-WME-01T-C
Digi Connect Wi-ME (10-unit pack with antennas)	DC-WME-01T-C-10
Digi Connect Wi-ME (50-unit pack with antennas)	DC-WME-01T-C-50
Modules for Custom Applications Using Microsoft .NET Micro Framework	
Digi Connect ME w/8 MB SDRAM, 2 MB Flash, for .NET Micro Framework	DC-ME-01T-MF2-VS
for development use with Visual Studio (single-unit pack)	
Digi Connect ME w/8 MB SDRAM, 2 MB Flash, for .NET Micro Framework (single-unit pack)	DC-ME-01T-MF2
Digi Connect ME w/8 MB SDRAM, 2 MB Flash, .NET Micro Framework (10-unit pack)	DC-ME-01T-MF2-10
Digi Connect ME w/8 MB SDRAM, 2 MB Flash, .NET Micro Framework (50-unit pack)	DC-ME-01T-MF2-50

Single-unit and bulk packs include modules only. Please order Integration Kits/Digi JumpStart Kits for product evaluation and development purposes.
Modules for Microsoft .NET Micro Framework include .NET Micro Framework license.
See page 64 for Digi JumpStart Kits and page 63 for Integration Kits.
See page 165 for accessories.

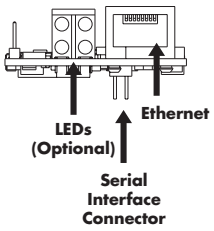
Digi Connect EM® Family :: Wired and Wireless Embedded Modules

Overview :: Digi Connect EM and Digi Connect Wi-EM are pin-compatible, interchangeable embedded modules that deliver cost-effective and easy-to-implement wired and wireless Ethernet network connectivity. These board-mount modules feature pin-headers for a variety of connector options and an SPI port, as well as a lower profile, higher data rate and more Flash memory than the Digi Connect ME® family. Easily web- and network-enable any electronic device with these flexible embedded modules.

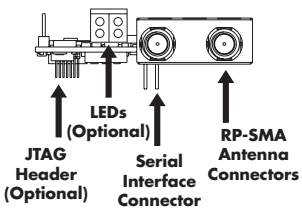
+ Features ::

- Highly integrated 32-bit network co-processor module
- Pin-compatible single component solutions
- 4 MB Flash and 8MB RAM on board
- 2 high-speed serial interfaces
- Shared SPI and 9 shared
- GPIO option
- 10/100 Mbit Ethernet or 802.11b WLAN with WPA2/802.11i security
- Fully pre-certified radio reduces overall design cost/risk and time-to-market
- Industrial operating temperature and FCC Class B compliant low-emission design
- NIST-certified 256-bit AES encryption based on SSL/TLS
- ThreadX-based NET+OS® software development platform
- Digi plug-and-play firmware option eliminates software development effort
- Digi's own ARM processor and WLAN technology for true long-term product availability
- Seamless migration path to Digi NET+ARM system-on-chip

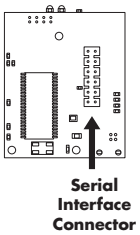
Digi Connect EM



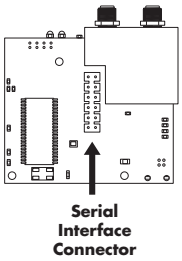
Digi Connect Wi-EM



Digi Connect EM - Bottom



Digi Connect Wi-EM - Bottom



+ Specifications ::

Hardware

- 32-bit NET+ARM high-performance RISC processor (NS7520 @ 55 MHz)
- On-board memory: 4 MB Flash and 8 MB RAM
- On-board power supervisor
- 2 high-speed TTL serial interfaces
  - Throughput up to 230 Kbps
  - Full signal support for TXD, RXD, RTS, CTS, DTR, DSR and DCD on port 1
  - TXD/RXD signals support on port 2
  - Hardware and software flow control
- SPI port option
- 9 shared General Purpose Input/Output (GPIO) ports
- Wave-solderable design (no clean flux process)
- LEDs for link integrity, diagnostic, serial activity and network activity
- Operating temperature
  - Digi Connect EM: -40° C to 85° C (-40° F to 185° F)
  - Digi Connect Wi-EM: -30° C to 75° C (-22° F to 167° F)
- 2.4 MHz RP-SMA dipole antenna sold separately (Digi Connect Wi-EM)

Network Interface - Digi Connect EM

- Standard: IEEE 802.3
- Physical Layer 10/100Base-T
- Data rate: 10/100Mbps (auto-sensing)
- Mode: Full or half duplex (auto-sensing)
- Connector RJ-45 or pin-header

Network Interface - Digi Connect Wi-EM

- Standard: IEEE 802.11b
- Frequency: 2.4 GHz
- Data rate: Up to 11 Mbps with automatic fallback
- Modulation: CCK (11/5 Mbps), DQPSK (2 Mbps), DBPSK (1 Mbps)
- Transmit power: 16 dBm typical
- Receive sensitivity: -82 dBm @11 Mbps
- Antenna connector: 2 x RP-SMA

See page 165 for antennas.

Power and Serial Interface Connector Pin Assignments

PIN #	Signal
1	+3.3V
2	GND
3	RXD/GPIO-7
4	TXD/GPIO-6
5	RTS/GPIO-4/SPI_CLK
6	DTR/GPIO-5
7	CTS/GPIO-2
8	DCD/GPIO-1/SPI_EN
9	DSR/GPIO-3
10	/RST
11	RXD/GPIO-9
12	TXD/GPIO-8

:: Product

Digi Connect EM
Digi Connect Wi-EM

Part Numbers ::

Worldwide

Modules with Plug-and-Play Firmware	
Digi Connect EM w/LED array and RJ-45 connector (single-unit pack)	DC-EM-02T-S
Digi Connect EM w/LED array and RJ-45 connector (25-unit pack)	DC-EM-02T-S-25
Digi Connect EM w/pin headers (single-unit pack)	DC-EM-02T-NS
Digi Connect EM w/pin headers (25-unit pack)	DC-EM-02T-NS-25
Digi Connect Wi-EM w/LED array (single-unit pack w/o antennas)	DC-WEM-02T-S
Digi Connect Wi-EM w/LED array (25-unit pack w/o antennas)	DC-WEM-02T-S-25
Modules for Custom Applications Using NET+OS	
Digi Connect EM w/LED array and RJ-45 connector (single-unit pack)	DC-EM-02T-C
Digi Connect EM w/LED array and RJ-45 connector (25-unit pack)	DC-EM-02T-C-25
Digi Connect EM w/pin headers (single-unit pack)	DC-EM-02T-NC
Digi Connect EM w/pin headers (25-unit pack)	DC-EM-02T-NC-25
Digi Connect Wi-EM w/LED array (single-unit pack w/o antennas)	DC-WEM-02T-C
Digi Connect Wi-EM w/LED array (25-unit pack w/o antennas)	DC-WEM-02T-C-25
Digi Connect Wi-EM w/pin headers (single-unit pack w/o antennas)	DC-WEM-02T-NC
Digi Connect Wi-EM w/pin headers (25-unit pack w/o antennas)	DC-WEM-02T-NC-25

Single-unit and bulk packs include modules only. Please order Integration Kits/Digi JumpStart Kits for product evaluation and development purposes.

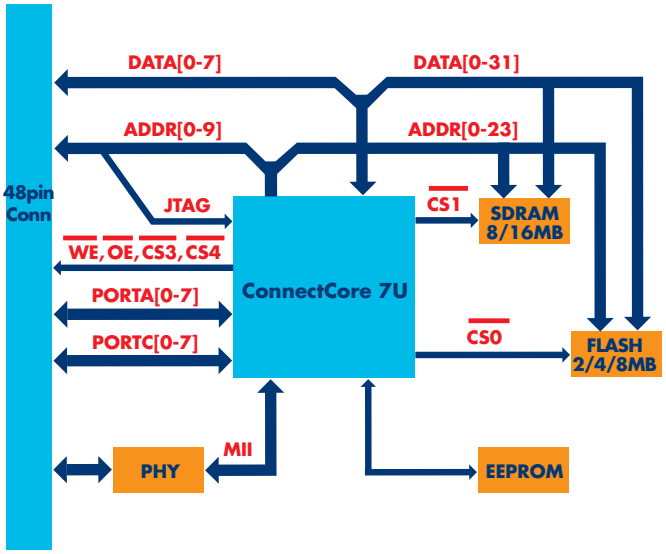
See page 64 for Digi JumpStart Kits and page 63 for Integration Kits.
See page 165 for accessories.

ConnectCore™ 7U and ConnectCore 9U :: ARM-Based Modules

Overview :: The ConnectCore 7U is based on the NET+ARM NS7520 processor, with a 32-bit ARM7TDMI core. It offers an integrated Ethernet connection and a variety of connection options for system peripherals in an ultra-compact and economical 48-pin DIP package. It is ideal as the core of a networked product that requires more features than a Digi Connect ME® or Digi Connect EM® module. The Digi JumpStart Kit™ for NET+OS® is available for the ConnectCore 7U. Linux support is available for both the ConnectCore 7U and ConnectCore 9U.

+ Features ::

- Core processor module in compact 48-pin DIP form factor
- Powerful 32-bit ARM processors
- Integrated 10/100 Ethernet MAC/PHY
- Up to 2 high-speed serial ports – UART and SPI (Master) configurations
- Standard mode I²C software interface
- 16 shared GPIO port options
- External memory bus interface
- Software design flexibility through royalty-free development platforms



+ Specifications ::

Hardware - ConnectCore 7U

- 32-bit NET+ARM NS7520 @ 55 MHz ARM7TDMI core
- 2/8 MB Flash and 16 MB RAM onboard
- Integrated 10/100 Mbps Ethernet MAC/PHY
- 2 serial interfaces
  - UART mode w/data rates up to 230 Kbps
  - SPI mode (Master only)
- 8 KB serial EEPROM for configuration storage
- Standard mode I²C software bus interface (100 kHz)
- External memory bus interface
- 2 independent 27-bit timers (IRQ/FIQ, 2 microseconds to 20 hours)
- On-board JTAG interface
- Operating temperature range: 0° C to 70° C
- Industrial temperature module available

Hardware - ConnectCore 9U

- 32-bit processor Atmel AT91RM200 @ 160 MHz
- 16 MB Flash and 32 MB RAM on-board
- Integrated 10/100 Mbps Ethernet MAC/PHY
- 2 serial interfaces
- USB 2.0 compliant full speed Host and Device interfaces

Network Interface

- Standard: IEEE 802.3
- Physical layer: 10/100Base-T
- Data rate: 10/100 Mbps (auto-sensing)
- Mode: Full or half duplex (auto-sensing)

Part Numbers :: Worldwide

Modules	
ConnectCore 7U module w/2 MB Flash and 16 MB RAM, for NET+OS development	CC-7U-Z111
ConnectCore 7U module w/8 MB Flash and 16 MB RAM, for NET+OS development	CC-7U-Z113
ConnectCore 7U w/2 MB Flash and 16 MB RAM, for Linux development	FS-355
ConnectCore 7U w/8 MB Flash and 16 MB RAM, for Linux development	FS-352
ConnectCore 9U w/16 MB Flash and 32 MB RAM	FS-373

See page 65 for Digi JumpStart Kits.

Overview :: The ConnectCore 9C and ConnectCore Wi-9C are highly integrated, compact SO-DIMM form factor core modules based on the powerful NET+ARM NS9360 ARM9 processor. The modules combine main processing functionality with on-board secure wireless and wired network connectivity. The modules are pin-compatible; the ConnectCore 9C includes connectors for USB and an RJ-45 for 10/100 Ethernet, while the ConnectCore Wi-9C adds 802.11b/g wireless networking support. The modules can be ordered with or without any of these connectors.

+ Features ::

- Compact SO-DIMM form factor
- Powerful 32-bit NS9360 w/ARM926EJ-S core
- Up to 256 MB Flash/128 MB SDRAM
- 802.11b/g or 802.11a/b/g with strong WPA2/802.11i security
- 10/100 Mbit Ethernet interface
- I/O connectivity options: USB,
- UART, I²C, SPI, PWM, GPIO
- On-chip LCD controller
- Industrial operating temperature
- Pre-certified radio reduces cost, design risk and time to market
- FCC Class B compliant low emissions design
- Population options for unique design flexibility
- Complete embedded software platform offering with support and design services: ThreadX-based NET+OS®, Microsoft Windows Embedded CE 6.0, Embedded Linux

+ Specifications ::

Hardware

- NET+ARM 32-bit NS9360 high-performance RISC processor @ 155 MHz
- Up to 256 MB Flash and 128 MB SDRAM
- Up to 4 serial and SPI ports
- I²C v1.0 bus interface
- USB 2.0 host/device full speed interface
- On-chip LCD controller for TFT / STN LCD
- Up to 8 programmable timers/counters
- Up to 4 PWM functions
- 4 programmable external interrupts
- Up to 55 shared General Purpose
- Input/Output (GPIO) ports
- Real-time clock

Network Interface - Wired

- Standard: IEEE 802.3

+ Specifications ::

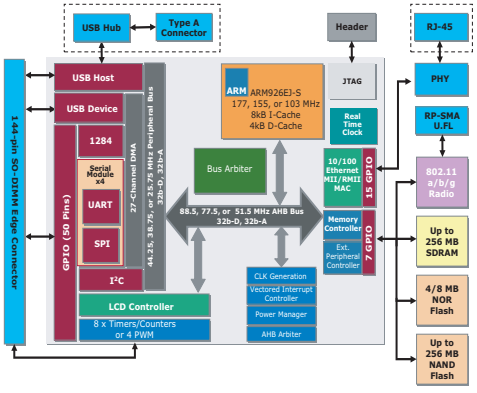
- Physical layer: 10/100Base T
- Data rate: 10/100 Mbps (auto-sensing)
- Mode: Full or half duplex (autosensing)
- Connector: RJ-45 with magnetics (optional)

Network Interface - Wireless

- Standard: IEEE 802.11b/g
  - Frequency: 2.4 GHz
  - Data rate: Up to 54 Mbps w/fallback
- Connector: 1/2 x RP-SMA or 2 x U.FL
- Operating temperature range:
  - ConnectCore 9C: -40° C to 85° C
  - ConnectCore Wi-9C: -30° C to 75° C

Wireless Security (NET+OS)

- WEP (Wired Equivalent Privacy)
- 64/128-bit encryption (RC4)
- WPA/WPA2/802.11i
- 128-bit TKIP/CCMP(AES) encryption
- 802.1x EAP authentication
  - LEAP (WEP only), PEAP, TTLS, TLS
  - GTC, MD5, OTP, PAP, CHAP, MSCHAP,
- MSCHAPv2, TTLS-MSCHAPv2
  - Pre-shared key mode (PSK)



Part Numbers :: Worldwide

Modules	
ConnectCore 9C w/4 MB Flash, 16 MB SDRAM, USB, Ethernet	CC-9C-V212-Z6
ConnectCore 9C w/4 MB Flash, 16 MB SDRAM, USB, Ethernet only	CC-9C-V212-ZA
ConnectCore 9C w/4 MB Flash, 16 MB SDRAM, no on-module connectors	CC-9C-V212-Z1
ConnectCore Wi-9C, 16 MB SDRAM, 4 MB Flash, USB, Ethernet, 2 x RP-SMA antenna connectors (antennas not included)	CC-W9C-V212-Y9

Additional population options available. Please contact Digi for more information.

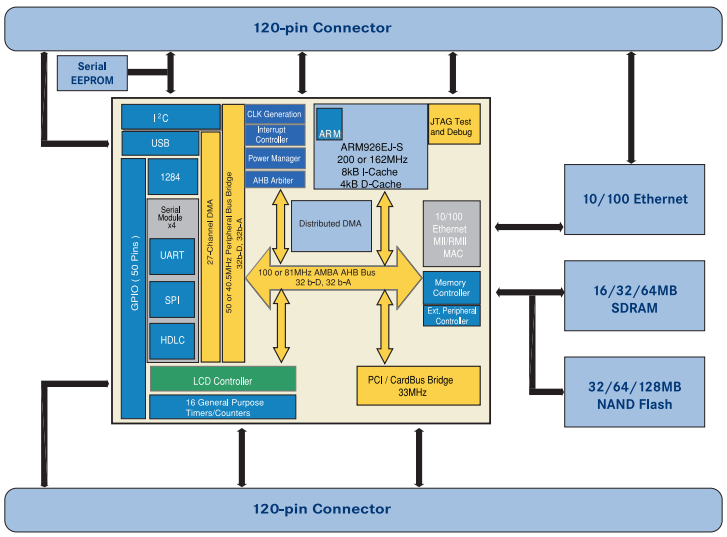
See page 66 for Digi JumpStart Kits.

ConnectCore™ 9P 9360 :: Embedded Modules

Overview :: Built on Digi's leading 32-bit NET+ARM technology, the network-enabled ConnectCore 9P 9360 provides a modular and scalable core processor solution in a compact form factor that significantly minimizes software and hardware design risk and dramatically improves the time-to-market aspects of your product development process. The wide range of available embedded software platform options (NET+OS, Linux, Microsoft Windows Embedded CE 6.0) makes the ConnectCore 9P 9360 the ideal choice for rapid development of your network-enabled products.

+ Features ::

- 240-pin core processor module in compact 60 x 44 mm form factor
- Powerful 32-bit NS9360 NET+ARM processor with ARM926EJ-S core
- Up to 128 MB Flash/128 MB RAM
- On-board 10/100 Ethernet MAC/PHY
- Up to 4 high-speed serial ports
  - UART and SPI configurations
- USB host and device mode support
- Fast-mode I²C hardware interface
- On-chip LCD controller (TFT/STN)
- Integrated real-time clock w/support for external battery
- Up to 73 shared GPIO port options
- External memory bus interface
- Complete software support for NET+OS, Linux and Microsoft Windows Embedded CE 6.0



+ Specifications ::

Hardware

- 32-bit NET+ARM (ARM926EJ-S) RISC processor NS9360 @ 177 MHz
- Up to 128 MB NAND Flash and 512 MB SDRAM
- 8 General Purpose Timers/Counters or 4 PWM functions
- Up to 73 GPIO port options
- Integrated 10/100 Mbps Ethernet MAC/PHY
- Up to 4 serial interfaces w/UART and SPI mode
- Integrated USB 2.0 compliant host/device interface
  - Full speed (12 Mbps) and low speed (1.5 Mbps) mode
- On-chip I²C bus interface (100/400 kHz)
- Flexible LCD controller with support for TFT/STN displays
  - Up to SVGA resolution with up to 18/24 bpp
- External memory bus interface
  - 32-bit data bus and 28-bit address bus
- Real-Time Clock (RTC) w/support for external battery backup
- 8 KB serial EEPROM for configuration storage
- On-board JTAG interface

Network Interface

- Standard: IEEE 802.3
- Physical layer: 10/100Base-T
- Data rate: 10/100 Mbps (auto-sensing)
- Mode: Full or half duplex (auto-sensing)

Part Numbers :: Worldwide

Modules

ConnectCore 9P 9360 w/32 MB Flash and 32 MB RAM	CC-9P-T225-Z1
ConnectCore 9P 9360 Module, 64 MB SDRAM, 64 MB Flash	CC-9P-T236-Z1
ConnectCore 9P 9360 Module 64 MB SDRAM, 128 MB Flash	CC-9P-T237-Z1

Additional population options available. Please contact Digi for more information.

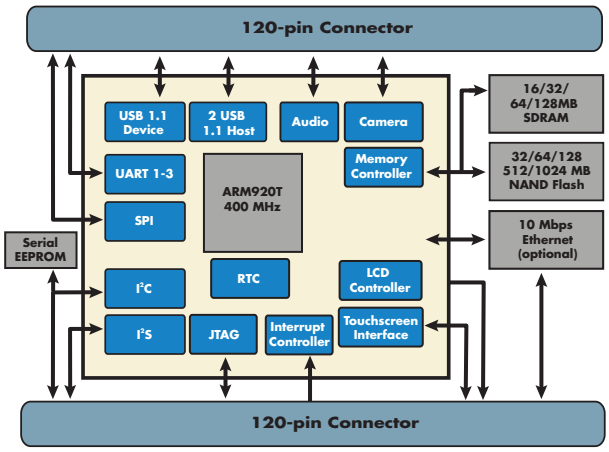
See page 67 for Digi JumpStart Kits.

ConnectCore™ 9M :: Embedded Modules

Overview :: The ConnectCore 9M is a powerful ARM9-based core module that enables OEMs to design in core processing functionality with a single, high-performance solution. The module features a high performance 400 MHz ARM920T core that requires very low power. It is ideal for mobile devices, such as automotive or remote instrumentation, or products situated in remote locations that operate of battery or solar power. The module can be put into an "idle mode" to reduce power consumption further when the product is inactive.

+ Features ::

- High-performance core processor module in compact form factor
- Powerful 32-bit RISC processor with on-chip peripheral options
- 300/400 MHz Samsung S3C2440 microprocessor with ARM920T core
- Very low-power operation modes with Dynamic Voltage Scaling
- Up to 2 GB Flash and 512 MB SDRAM
- Optional 10 Mbit Ethernet MAC/PHY
- Strong multimedia capabilities with integrated LCD and touch screen controller and audio interfaces
- USB host/device support
- Memory/expansion card interfaces
- Complete embedded software platform offering with support and design services
- Microsoft Windows CE and Linux Development Kits available



+ Specifications ::

Hardware

- 32-bit Samsung S3C2440 ARM920T high-performance RISC processor @400 or 300 MHz
- Up to 2 GB NAND Flash and 512 MB SDRAM on-board
- 1024-bit 1-Wire® EEPROM
- Optional 10 Mbps Ethernet MAC/PHY (Cirrus Logic CS8900A)
- On-chip LCD controller for TFT/STN LCD panels
  - Up to VGA (640x480) resolution w/up to 24bpp color depth
- On-board USB 1.1 host/device
  - Full speed (12 Mbps) and low speed (1.5 Mbps) modes
- 3 RS-232 interfaces
- SD/SDIO Card interface
- One I²C bus interface w/fast mode (400 KHz) support
- I²S interface and AC'97 audio controller
- 32-bit external memory bus interface
- Up to 75 GPIO port options
- On-board JTAG interface

Network Interface

- Standard: IEEE 802.3
- Physical layer: 10 Base-T
- Data rate: 10 Mbps (auto-sensing)
- Mode: Full duplex

Part Numbers :: Worldwide

Modules

ConnectCore 9M 2440 Module w/32 MB SDRAM 32 MB Flash, no Ethernet	FS-3007
ConnectCore 9M 2440 Module w/128 MB SDRAM 128 MB Flash, no Ethernet	FS-3003
ConnectCore 9M 2440 Module w/32 MB SDRAM 32 MB Flash, 10 Mbps Ethernet	FS-372
ConnectCore 9M 2440 Module w/64 MB SDRAM 64 MB Flash, 10 Mbps Ethernet	FS-3006
ConnectCore 9M 2440 Module w/128 MB SDRAM 128 MB Flash, 10 Mbps Ethernet	FS-385

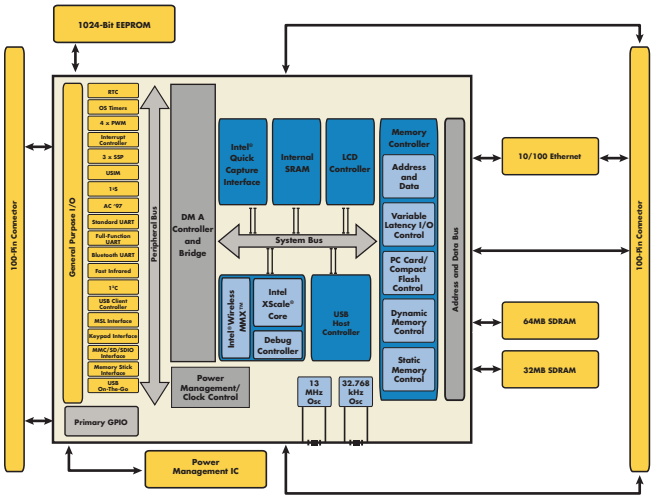
Additional population options available. Please contact Digi for more information.

See page 68 for Development Kits.

Overview :: The ConnectCore XP module introduces high-performance Marvell XScale® technology to the ConnectCore family of network-enabled embedded core processor modules. It provides the core processor platform solution of choice for applications demanding the combination of scalable Intel PXA270 performance at speeds up to 520 MHz, on-chip video and audio capabilities, low power requirements, integrated network connectivity, and complete embedded software platform flexibility.

Features ::

- Marvell PXA270 processor with Marvell XScale microarchitecture core
- 64 MB SDRAM and 32 MB Intel StrataFlash®
- Wide variety of I/O connectivity options
- Strong multimedia capabilities w/LCD controller and audio interfaces
- Comprehensive USB 1.1 host/device interface support, plus USB 2.0 OTG
- Memory/expansion card interfaces
- External 32-bit memory bus interface
- Low-power requirements
- Complete Microsoft Windows CE and Embedded Linux software platform offering w/support and design services



Specifications ::

Hardware

- 32-bit Marvell XScale PXA270 high-performance RISC processor @ 520 MHz
- 32 MB Intel StrataFlash and 64 MB SDRAM on-board
- 1024-bit 1-Wire® EEPROM
- Integrated 10/100 Mbps Ethernet MAC/PHY
- On-chip LCD controller for TFT/STN LCD panels
  - Up to SVGA (800x600) resolution w/up to 24 bpp color depth
- On-board USB 1.1 host/device and USB 2.0 OTG interface
  - Full speed (12 Mbps) and low speed (1.5 Mbps) modes
- 2 SSP/NSSP ports
  - Synchronous Serial Protocol (SSP), Serial Peripheral Interface (SPI), Microwire, Programmable Serial Protocol (PSP) modes
- 1 full-function UART w/maximum data rate of 921kbps
  - TX, RX, RTS, CTS, DTR, DSR, DCD, RI
- 1 Bluetooth UART w/maximum data rate of 921kbps
  - TX, RX, RTS, CTS
- Fast Infrared Communications Port (FICP)
  - Up to 4 Mbps half-duplex operation
- 1 I^2C bus interface w/fast mode (400 KHz) support
- I^2S interface and AC'97 audio controller
- 2 Pulse Width Modulator (PWM) signals
- Memory and expansion card interfaces
  - PCMCIA/CompactFlash®, SD/SDIO, MMC, and Memory Stick
- 32-bit external memory bus interface
- Up to 75 GPIO port options
- On-board JTAG interface

Network Interface

- Standard: IEEE 802.3
- Physical layer: 10/100Base-T
- Data rate: 10/100 Mbps (auto-sensing)
- Mode: Full or half duplex (auto-sensing)

Part Numbers ::

Worldwide

Modules

ConnectCore XP 270 (520 MHz, 32 MB StrataFlash, 64 MB SDRAM)	FS-377

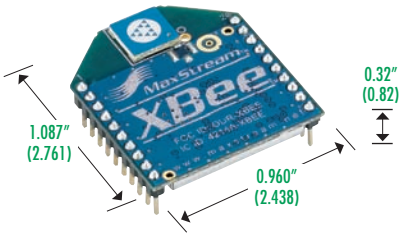
See page 69 for Development Kits.

OEM RF Modules Features Chart

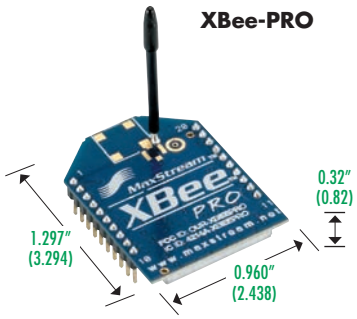
	XBee ZigBee (2.4 GHz) OEM RF Module	XBee-PRO ZigBee (2.4 GHz) OEM RF Module	XTend (900 MHz) OEM RF Module		9XStream (900 MHz) OEM RF Module		24XStream (2.4 GHz) OEM RF Module		XCite (900 MHz) OEM RF Module	
Transmit Power Outage	1 mW (0 dBm)	60 mW (18 dBm), 100 mW (20 dBm) EIRP	1 Watt (30 dBm)		100 mW (20 dBm)		50 mW (17 dBm)		4 mW (6 dBm)	
Indoor/Urban Range	up to 100 ft (30 m)	up to 300 ft (100 m)	up to 3000 ft (900 m)		up to 1500 ft (450 m)		up to 600 ft (180 m)		up to 300 ft (90 m)	
Outdoor RF Line-of-Sight Range	up to 300 ft (100 m)	up to 1 mi (1.6 km)	up to 14 miles (22 km)		up to 7 mi (11 km)		up to 3 mi (5 km)		up to 1000 ft (300 m)	
Outdoor RF Line-of-Sight Range (w/ high gain antenna)			up to 40 mi (64 km) @ 9600 bps RF data rate		up to 20 mi (32 km)		up to 10 mi (16 km)			
Serial Interface Data Rate (Software Selectable)	1200-115200 bps (non-standard baud rates also supported)		1200-230400 bps (non-standard baud rates also supported)		1200-57600 bps (non-standard baud rates also supported)				1200-57600 bps	
Throughput Data Rate	80000 bps		9600 bps	115200 bps	9600 bps	19200 bps	9600 bps	19200 bps	9600 bps	38400 bps
RF Data Rate	250000 bps		10000 bps	125000 bps	10000 bps	20000 bps	10000 bps	20000 bps	10000 bps	41666 bps
Receiver Sensitivity	-92 dBm (1% packet error rate)	-100 dBm (1% packet error rate)	-110 dBm	-100 dBm	-110 dBm	-107 dBm	-105 dBm	-102 dBm	-108 dBm	-104 dBm
Serial Data Interface	3V CMOS UART interface		3V - 5V CMOS UART interface		5V CMOS UART interface				3V - 5V CMOS UART interface	
Frequency Range	2.405 - 2.480 GHz		905 - 925 MHz		910 - 917 MHz		2.45 - 2.46 GHz		910 - 917 MHz	
Channels (Software Selectable)	16 direct sequence channels	12 direct sequence channels	10 hop sequences share 50 frequencies		7 hop sequences share 25 frequencies				7 hop sequences or 25 single frequency channels	
Spread Spectrum Type	DSSS (Direct Sequence Spread Spectrum)		FHSS (Frequency Hopping Spread Spectrum)							
Encryption	AES 128-bit		AES 256-bit		N/A					
Supported Network Types	Point-to-point, point-to-multipoint, peer-to-peer & Mesh		Point-to-point, point-to-multipoint, peer-to-peer & repeater (XTend & XStream only)							
Supply Voltage	2.80 - 3.40 VDC regulated		2.80 - 5.50 VDC regulated		4.75 - 5.25 VDC regulated				2.85 - 5.50 VDC regulated	
Operating Current (Transmit)	45 mA (@ 3.3V)	215 mA (@ 3.3VDC)	90 mA (3.3V, 1 mW), 110 mA (5V, 1 mW), 730 mA (5 V, 1W)		150 mA (@ 5V)				55 mA (@ 2.85 V)	
Operating Current (Receive/Idle)	50 mA (@ 3.3V)	55 mA (@ 3.3V)	80 mA (@ 5V)		50 mA (@ 5V)				45 mA (@ 2.85 V), 55 mA (@ 5 V)	
Cyclic Sleep Current (when Sleeping)	< 50 µA (@ 3.0 V)		< 1.6 mA		< 76 µA (@ 5.0 V)				< 76 µA	
Pin Sleep Current	< 10 µA (@ 3.0 V)		<147 uA, <10 uA (Shutdown pin)		< 26 µA (@ 5.0 V)				< 20 µA	
Antenna Connector Options	U.FL connector, chip antenna or integrated whip antenna		RPSMA or MMCX		RPSMA, MMCX or integrated whip antenna				RPSMA or integrated whip antenna	
Operation Temperature	Industrial (-40° to 85° C)		Industrial or tested industrial (-40° to 85° C)		Commercial (0° to 70° C), industrial or tested industrial (-40° to 85° C)				Commercial (0° to 70° C) or industrial (-40° to 85° C)	
Agency & Industry Approvals	FCC, IC, ETSI, CID2, RoHS	FCC, IC, ETSI, CID2, RoHS	FCC, IC, CID2, RoHS		FCC, IC, CID2, RoHS		FCC, IC, ETSI, CID2, RoHS		FCC, IC, CID2, RoHS	

OEM RF Modules

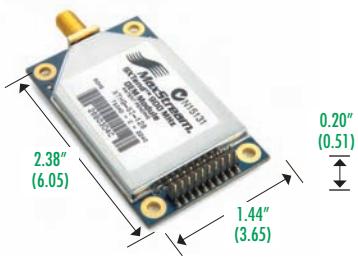
XBee



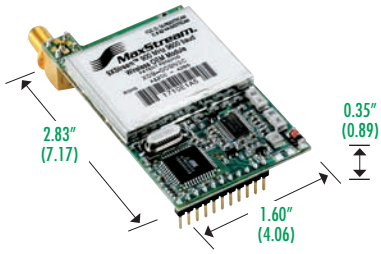
XBee-PRO



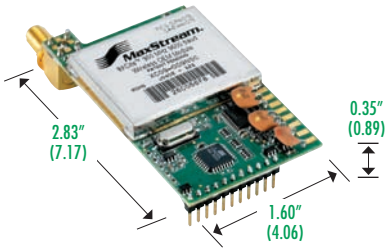
XTend



XStream



XCite



Measurements: inch
(cm)

XBee™ and XBee-PRO™ :: ZigBee/802.15.4 OEM RF Modules

Overview :: The XBee and XBee-PRO ZigBee OEM RF modules are ZigBee/IEEE 802.15.4 compliant solutions that offer low-cost, low-power mesh networking and other topologies needed for sensor networks, industrial automation, medical monitoring and other applications. The pin-for-pin compatible modules are easy-to-use, require minimal power and provide reliable delivery of critical data between devices. XBee and XBee-PRO are housed in a small form factor to save valuable board space.

+ Features ::

- ZigBee/IEEE 802.15.4 compliant solution
- No configuration necessary for out-of-the-box RF operation
- Indoor/Urban range up to 100 feet (XBee) or 300 feet (XBee-PRO)
- Outdoor line-of-sight range up to 300 feet (XBee) or 1 mile (XBee-PRO)
- Advanced networking and low-power modes supported
- Superior receiver sensitivity
- Industrial operating temperature for demanding environments
- Performs retries and acknowledgments for reliable packet delivery
- Available with PCB chip antenna, 1/4 wave monopole integrated whip antenna, or U.FL antenna connector that allows for connection to a dipole or other external antenna
- RS-232 and USB interface packages available
- 1-year product warranty

+ Specifications ::

Performance
- Transmit power output
  - XBee: 1mW (0 dBm)
  - XBee-PRO: 60 mW (18 dBm), 100 mW EIRP
- Indoor/Urban range
  - XBee: Up to 100 ft (30 m)
  - XBee-PRO: Up to 300 ft (100 m)
- Outdoor/RF line-of-sight range
  - XBee: Up to 300 ft (100 m)
  - XBee-PRO: Up to 1 mi (1.6 km)
- RF data rate: 250 Kbps
- Interface data rate: up to 115.2 Kbps
- Operating frequency: 2.4 GHz
- Receiver sensitivity
  - XBEE: -92 dBm
  - XBee-PRO: -100 dBm

+ Specifications cont. ::

Networking
- DSSS (Direct Sequence Spread Spectrum)
- Networking topology: Peer-to-peer, point-to-point, point-to-multipoint and mesh (beta)
- Error handling: Retries and acknowledgements
- Filtration options: PAN ID, channel and addresses
- Direct sequence channel capacity
  - XBee: 16 (software selectable)
  - XBee-PRO: 12 (software selectable)
- Addressing: 65,000 network addresses available for each channel
- 64-bit IEEE 802.15.4 MAC address on each module
- Encryption: 128-bit AES

Power
- Supply voltage: 2.8 - 3.4 V
- Transmit current
  - XBEE: 45 mA (@ 3.3 V)
  - XBee-PRO: 215 mA (@ 3.3 V)
- Receive current:
  - XBee: 50 mA (@ 3.3 V)
  - XBee-PRO: 55mA (@3.3 V)
- Power-down sleep current: <10 µA

General
- Frequency band: 2.405 - 2.480 GHz
- Serial data interface: 3V CMOS UART - No configuration required
- Antenna options: U.FL RF connector, chip antenna, whip antenna
- Operating temperature: -40° C to 85° C (industrial)
- Approved for use in the United States, Canada, Europe, Australia and Japan

We also offer the XBee™ XTender, which combines the strengths of the XBee-PRO™ and XTend™ product lines to provide a long-range backhaul (up to 40 miles line-of-sight with a high-gain antenna) for low-power XBee networks.

Part Numbers :: Worldwide

Modules

Please see page 199 for part numbers.

See page 70 for XBee and XBee-PRO Development Kits.

XTend™ :: Proprietary OEM RF Modules

Overview :: The XTend OEM RF module provides unprecedented range in a low-cost wireless data solution. The module is easy-to-use, requires minimal power and provides reliable delivery of critical data between devices. Due to innovations stamped in its design, the XTend Module supplies two- to eight-times the range of other modules operating within the unlicensed 900 MHz frequency band. The range gained by OEMs and integrators is due to proprietary technologies embedded into each module including superior RX sensitivity, interference immunity, and modulation/demodulation techniques.

+ Features ::

- No configuration necessary for out-of-the-box RF operation
- Indoor/Urban range up to 3000 feet
- Outdoor line-of-sight range up to 40 miles
- Advanced networking and low-power modes supported
- Superior receiver sensitivity
- Advanced repeater and polling modes
- Industrial operating temperature for demanding environments
- Performs retries and acknowledgments for reliable packet delivery
- Available with standard MMCX or RPSMA connector
- RS-232 and USB interface packages available
- 1-year product warranty

We also offer XBee™ XTender, which combines the strengths of the XBee-PRO™ and XTend™ product lines to provide a long-range backhaul (up to 40 miles line-of-sight with a high-gain antenna) for low-power XBee networks.

+ Specifications ::

Performance
- Transmit power output: 1 mW to 1 W (0 to 30 dBm), software selectable
- Indoor/Urban range: Up to 3000 ft (900 m)
- Outdoor/RF line-of-sight range: Up to 40 mi (64 km)
- RF data rate: 9.6 or 115.2 Kbps
- Interface data rate: up to 230.4 Kbps
- Operating frequency: 900 MHz
- Receiver sensitivity: -110 dBm (@9600 bps)

Networking
- FHSS (Frequency Hopping Spread Spectrum)
- Networking topology: Peer-to-peer, point-to-point, point-to-multipoint and repeater
- Error handling: Retries and acknowledgements, multiple transmissions
- Filtration options: VID (Vendor ID Number), channels and addressing
- Frequency hopping channel capacity: 10 hop sequences share 50 frequencies
- Addressing: 65,000 network addresses available for each channel
- Encryption: 256-bit AES

Power
- Supply voltage: 2.8 - 5.5 VDC regulated
- Transmit current: 730 mA (@ 5V, 1W TX Power Output)
- Receive current: 80 mA (@ 5V, 1W TX Power Output)
- Shutdown power current: 5 µA typical

General
- Frequency band: 905-925 MHz
- Serial data interface: 3V – 5V CMOS UART - No configuration required
- Antenna options: RPSMA or MMCX connections
- Operating temperature: -40° C to 85° C (industrial)
- Approved for use in the United States, Canada, Australia

Part Numbers :: Worldwide

Modules

Please see page 199-200 for part numbers.

See page 71 for XTend Development Kits.

XStream™ :: Proprietary OEM RF Modules

Overview :: The XStream OEM RF module provides OEMs and integrators with reliable, long-range wireless data communications. It is smaller than a credit card and is available as a 900 MHz (North America) and 2.4 GHz (worldwide) RF solution. The 9XStream (900 MHz) is pin-for-pin and software compatible with the 24XStream (2.4 GHz), allowing for flexible deployment of your products throughout the world – with only one OEM board design.

+ Features ::

- No configuration necessary for out-of-the-box RF operation
- Indoor/Urban range up to 1500 feet (9XStream) or 600 feet (24XStream)
- Outdoor line-of-sight range up to 20 miles (9XStream) or 10 miles (24XStream)
- Advanced networking and low-power modes supported
- Superior receiver sensitivity
- Industrial operating temperature for demanding environments
- Performs retries and acknowledgments for reliable packet delivery
- Antenna options include RPSMA, MMCX and integrated whip antenna
- RS-232 serial, USB and RJ-11 telephone interface packages available
- 1-year product warranty

+ Specifications ::

Performance

- Transmit power output
  - 9XStream: 100 mW (20 dBm)
  - 24XStream: 50 mW (17 dBm)
- Indoor/Urban range
  - 9XStream: Up to 1500 ft (450 m)
  - 24XStream: Up to 600 ft (180 m)
- Outdoor/RF line-of-sight range
  - 9XStream: Up to 20 mi (32 km)
  - 24XStream: Up to 10 mi (16 km)
- RF data rate: 9.6 or 19.2 Kbps
- Interface data rate: Up to 57.6 Kbps
- Operating frequency:
  - 9XStream: 900 MHz
  - 24XStream: 2.4 GHz
- Receiver sensitivity
  - 9XStream: -110 dBm (@9600 bps)
  - 24XStream: -105 dBm (@9600 bps)

+ Specifications cont. ::

Networking

- FHSS (Frequency Hopping Spread Spectrum)
- Networking topology: Peer-to-peer, point-to-point, point-to-multipoint, repeater
- Error handling: Retries and acknowledgements
- Filtration options: VID (Vendor ID Number), channels, addressing
- Channel capacity: 7 hop sequences share 25 frequencies
- Addressing: 65,000 network addresses available for each channel

Power

- Supply voltage: 5VDC regulated (+/- 0.25 V)
- Transmit current: 150 mA
- Receive current: 50 mA
- Power-down sleep current: 26 µA

General

- Frequency band:
  - 9XStream: 910-917 MHz
  - 24XStream: 2.45-2.46 GHz
- Serial data interface: 5V CMOS UART (no configuration required)
- Antenna options: RPSMA, MMCX, integrated whip antenna
- Operating temperature: -40° C to 85° C (industrial)
- Approved for use in the United States, Canada, Europe (2.4 GHz version)

Part Numbers :: Worldwide

Modules

Please see page 198-199 for part numbers.

See page 71 for XStream Development Kits.

Overview :: The XCite OEM RF module is engineered to provide reliable low-cost wireless communications for OEMs and integrators. It is smaller than a credit card and supplies wireless links between devices that require minimal setup, power and cost. The module is optimized to operate in the ISM 900 MHz frequency bands for agency-approved use throughout North America. The 9XCite (900 MHz) is pin-for-pin and software compatible with the 9XStream (900 MHz) OEM RF module, allowing for flexible deployment of your products throughout the world – with only one OEM board design.

+ Features ::

- No configuration necessary for out-of-the-box RF operation
- Indoor/Urban range up to 300 feet
- Outdoor line-of-sight range up to 1000 feet
- Advanced networking and low-power modes supported
- Superior receiver sensitivity
- Industrial operating temperature for demanding environments
- Available with RPSMA or integrated whip antenna
- RS-232 and USB interface packages available
- 1-year product warranty

+ Specifications ::

Performance
- Transmit power output: 4 mW (6 dBm)
- Indoor/Urban range: 300 ft (90 m)
- Outdoor/RF line-of-sight range: Up to 1000 ft (300 m)
- RF data rate: 9.6 or 38.4 Kbps
- Interface data rate: Up to 57.6 Kbps
- Operating frequency: 900 MHz
- Receiver sensitivity: -108 dBm (@9600 bps)

Networking
- FHSS (Frequency Hopping Spread Spectrum)
- Networking topology: Peer-to-peer, point-to-point, point-to-multipoint
- Filtration options: VID (Vendor ID Number), channels, addressing
- Channel capacity: 7 frequency hopping or 25 single frequency channels
- Addressing: 65,000 network addresses available for each channel

Power
- Supply voltage: 2.85 - 5.5 VDC regulated
- Transmit current: 55 mA (@ 2.85 V)
- Receive current: 45 mA (@ 2.85 V)
- Power-down sleep current: 20 µA

General
- Frequency band: 910-917 MHz
- Serial data interface: 3V/5V CMOS UART (no configuration required)
- Antenna options: RPSMA or integrated whip antenna
- Operating temperature: -40° C to 85° C (industrial)
- Approved for use in the United States, Canada

Part Numbers ::

Worldwide

Modules

Please see page 199 for part numbers.

See page 71 for XCite Development Kits.

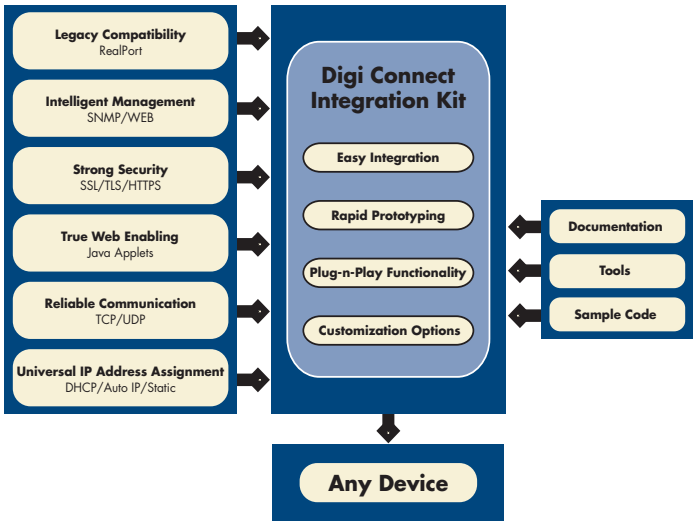
Overview :: Digi Integration Kits provide everything needed for evaluation, rapid prototyping and integration of Digi Connect embedded modules using the feature-rich and field-proven Digi plug-and-play firmware.

The Digi plug-and-play firmware in combination with the design of the Digi Connect ME® and Digi Connect® Wi-ME modules dramatically reduces time-to-market by eliminating time-consuming embedded hardware and software development. They deliver instant and fully transparent wired and wireless device server networking functionality for all existing and new product designs, and allow you to quickly network enable your products while focusing on your core product design competency.

Digi plug-and-play firmware offers industry-leading features that make it an ideal solution for every network-enabled application that requires ready-made versatility and performance.

Features ::

- Digi Connect ME or Digi Connect Wi-ME module
  - 4 MB Flash, 8 MB SDRAM, 2 dBi dipole antenna (Digi Connect Wi-ME)
- Development board
  - 1 RS-2323 serial port, GPIO configuration/test switches (hi/lo), screw terminal for GPIO signals, status LEDs (serial, GPIO, power), logic signal header, test points, reset button, 9-30VDC power supply w/Power-over- Ethernet support (mid-span), JTAG header and RS-232 console/ debug port (JTAG modules)
- Digi Connect Integration Kit CD
  - Device discovery tool w/source code, device configuration wizard w/source code, RCI library, device discovery (ADDP) library, Java applet sample source code, C/C++ sample source code (TCP, UDP, SSL)
- Documentation
  - Getting started, hardware reference manual, development board schematics Digi Connect user's guide, command line reference, RCI specification
- Power supply and accessories
  - External wall power supply (110/240VAC to 12VDC @ 850 mA) with interchangeable outlet adapters (North America, EU, UK, and Australia), JTAG adapter, crossover serial cable, Ethernet cable (Digi Connect ME)



Part Numbers :: Worldwide

Integration Kits	
Digi Connect ME Integration Kit	DC-ME-01T-KT
Digi Connect Wi-ME Integration Kit	DC-WME-01T-KT
Digi Connect EM Integration Kit	DC-EM-02T-KT
Digi Connect Wi-EM Integration Kit	DC-WEM-02T-KT

Bulk packs and customer-specific packaging configurations available.

Contents ::

- Digi Connect ME/Wi-ME, Digi Connect EM/WI-EM or Digi Connect SP/Wi-SP Ethernet/serial adapter
- Development board
  - 1 RS-2323 serial port, GPIO configuration/test switches (hi/lo), screw terminal for GPIO signals, status LEDs (serial, GPIO, power), logic signal header, test points, reset button, 9-30VDC power supply w/Power-over-Ethernet support (mid-span), JTAG header and RS232 console/debug port (JTAG modules)
- Digi JTAG link USB 2.0 hardware debugger
- Digi NET+OS® CD
  - NET+OS 7.x, Digi ESP IDE, Microcross GNU tools, BSP source code, sample code, Green Hills MULTI* IDE support, documentation
- Documentation
  - Quick start guide, Digi ESP™ tutorial, NET+OS porting guide, NET+OS API documentation, Advanced Web Server, hardware reference manual, development board schematics
- Power supply and accessories
  - External wall power supply (110/240VAC to 12VDC @ 850 mA) with interchangeable outlet adapters (North America, EU, UK, and Australia), JTAG adapter, crossover serial cable, Ethernet cable (Digi Connect ME)

* Requires purchase of third party product. See website for additional information.

Overview :: The easy-to-use, cost-effective and complete Digi JumpStart Kits for NET+OS deliver a royalty-free turnkey solution for embedded software development based on the ThreadX Real-Time Operating System (RTOS).

With over 400 million deployments in products worldwide, ThreadX is one of the most reliable and field-proven RTOS solutions available. In addition to ThreadX, NET+OS provides the integrated building blocks needed to create secure and fully network-enabled product solutions using Digi embedded modules and microprocessors. This includes a dual-mode IPv4/IPv6 TCP/IP stack, integrated web server, SNMPv3, POP/SMTP mail, PPP, XML, LDAP, SSL/TLS, and support for enterprise-grade WPA2/802.11i wireless LAN security.

The Digi JumpStart Kit for NET+OS minimizes product design risks and dramatically shortens traditional time-to-market aspects of your C-based embedded product development by providing all needed software and hardware components right out of the box.

Digi ESP for NET+OS, an Eclipse-based Integrated Development Environment for use with Microsoft Windows, offers an easy-to-use graphical interface with editor, single-step debugging, managed make files, build environment, online help, and innovative features like the Digi project builder wizard. Through simple point-and-click operation it generates a completely functional, customized application framework with ready-to-use software components such as web-based network interface configuration, FTP-based firmware upgrade, SSL/TLS, serial and Telnet Command Line Interface (CLI), and more.

Part Numbers :: Worldwide

Digi JumpStart Kits	
Digi Connect ME Digi JumpStart Kit for NET+OS	DC-ME-NET
Digi Connect Wi-ME Digi JumpStart Kit for NET+OS 7	DC-WME-NET
Digi Connect EM Digi JumpStart Kit for NET+OS 7	DC-EM-NET
Digi Connect Wi-EM Digi JumpStart Kit for NET+OS 7	DC-WEM-NET
Digi Connect SP Digi JumpStart Kit for NET+OS 7	DC-SP-NET
Digi Connect Wi-SP Digi JumpStart Kit for NET+OS	DC-WSP-NET

See pages 48-51 for modules.

ConnectCore™ 7U :: Digi JumpStart Kits™

Overview :: The ConnectCore 7U Digi JumpStart Kit provides immediate access to the features of the ConnectCore 7U embedded modules, allowing application development to begin immediately. The ConnectCore 7U Digi JumpStart Kit is based on NET+OS® 7. Linux support is available on request.

+ Features ::

- Ideal for simple 10/100 networking applications with additional peripheral support
- ConnectCore 7U module included
- Powerful 32-bit RISC processor with on-chip peripheral options
- Digi JTAG Link included in Digi JumpStart Kit
- Development baseboard for immediate prototyping and application development
- Schematics included for custom baseboard design
- Support for NET+OS 7
- Digi NET+OS CD
  - NET+OS 7.x, Digi ESP™ IDE, Microcross GNU tools, BSP source code, sample code, Green Hills MULTI* IDE support, documentation
- Documentation
  - Quick start guide, Digi ESP tutorial, NET+OS porting guide,
- NET+OS API documentation, Advanced Web Server, hardware reference manual, development board schematics
- Power supply and accessories
  - External wall power supply (110/240VAC to 12VDC @ 850 mA) with interchangeable outlet adapters (North America, EU, UK, and Australia), JTAG adapter, crossover serial cable, Ethernet cable

* Requires purchase of third party product. See website for additional information.

+ Specifications ::

ConnectCore 7U Digi JumpStart Kit

- ConnectCore 7U module
  - NET+ARM NS7520 32-bit 55 MHz with ARM7TDMI core
  - 16 MB SDRAM, 8 MB Flash
- Development board
  - 10/100 Ethernet networking support
- RJ-45 connector and pulse transformer
  - RS-232 connection for serial port 1
  - TTL connector for serial port 2
- Support for baud rates up to 250 Kbps
  - 14- and 20-pin JTAG interface for tool support
  - Serial LCD interface (no LCD included)
  - Prototyping area and module signal breakout
  - LEDs for power and communication
  - 2 switches for use by application
  - Manual reset switch/reset generator

Network Interface (All Models)

- Standard: IEEE 802.3
- Physical layer: 10/100 Base-T
- Data rate: 10/100 Mbps (auto-sensing)
- Mode: Full or half duplex (auto-sensing)

Part Numbers :: Worldwide

Digi JumpStart Kits	
ConnectCore 7U Digi JumpStart Kit for NET+OS 7	CC-7U-NET

See page 52 for modules.

ConnectCore™ 9C/Wi-9C :: Digi JumpStart Kits™

Overview :: The ConnectCore 9C and ConnectCore Wi-9C Digi JumpStart Kits are designed to allow wireless application development within 30 minutes after installation begins. They are ideal for quickly integrating both wired and wireless networking into any product design, or for investigating embedded networking. The powerful ARM9 core includes enough processing power for both network and application processing, and the integrated peripherals include ample connectivity features, including LCDs. Kits for NET+OS, Microsoft Windows Embedded CE 6.0 and Linux are available.

Features ::

- Ideal for high-performance embedded networking applications
- Integrated peripherals and LCD controller
- ConnectCore 9C or ConnectCore Wi-9C module included
- Powerful 32-bit RISC processor with on-chip peripheral options
- Development baseboard for immediate prototyping and application development
- Schematics included for custom baseboard design
- Support for NET+OS® 7, Linux and Microsoft Windows CE
- Power supplies and cables included

Specifications ::

- ConnectCore 9C/Wi-9C module
  - Digi NET+ARM NS9360 32-bit 155 MHz with ARM926EJ-S Core
  - 16 MB SDRAM, 4 MB Flash (NET+OS Kits)
  - 64 MB SDRAM, 128 MB Flash (Linux and Windows CE Kits)
- Digi ESP™ Eclipse-based Integrated Development Environment (NET+OS and Linux)
- Digi JTAG Link – JTAG debugger with USB 2.0 support (NET+OS only)
- Development board
  - 10/100 Ethernet networking support
- RJ-45 connector and transformer (on module)
  - 802.11b/g WLAN wireless networking support
- WLAN radio, transceiver and antenna(s) (on module)
  - 4 serial ports
- RS-232/422/485 connection for serial port 1 (DB-9)

Specifications cont. ::

- RS-232 for serial port 2 (DB-9)
- TTL connectors for serial ports 3 and 4
- Support for baud rates up to 921 Kbps
  - I²C and SPI header connectors
  - USB Host connectors (on module)
  - USB device connector (on development board)
  - VGA connector
  - LCD application board header (no LCD included)
  - Application expansion headers
  - Prototyping area and module signal breakout
  - 12-pin digital I/O connector
  - LEDs for power/serial/user applications
  - Reset switch

Wired Network Interface

- Standard: IEEE 802.3
- Physical layer: 10/100 Base-T
- Data rate: 10/100 Mbps (auto-sensing)
- Mode: Full or half duplex (auto-sensing)
- Connector: RJ-45 with magnetics (on module)
- 802.3af POE Power pass-through (mid-span and end-span)

Wireless Network Interface (ConnectCore Wi-9C Only)

- Standard: IEEE802.11b/g
- Frequency: 2.4 GHz
- Data rate: Up to 54 Mbps with fallback
- Transmit power: 16 dBm typical
- Receive sensitivity: -73 dBm @ 54 Mbps
- Connector: 1or 2 x RP-SMA or 2 x U.FL
- Dual-diversity option

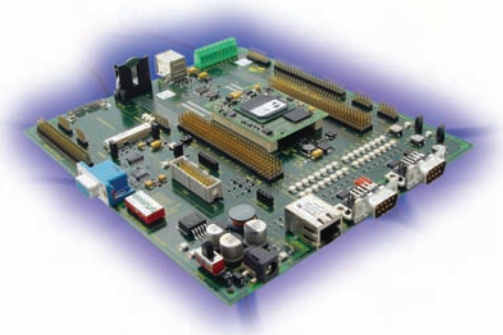
Part Numbers :: Worldwide

Digi JumpStart Kits	
ConnectCore 9C Digi JumpStart Kit for NET+OS 7	CC-9C-NET
ConnectCore 9C Digi JumpStart Kit for Linux	CC-9C-LX
ConnectCore 9C Digi JumpStart Kit for Windows CE 6.x	CC-9C-CE6
ConnectCore Wi-9C Digi JumpStart Kit for NET+OS 7	CC-W9C-NET
ConnectCore Wi-9C Digi JumpStart Kit for Linux	CC-W9C-LX
ConnectCore Wi-9C Digi JumpStart Kit for Windows CE 6.x	CC-W9C-CE6
LCD Application Kits	
ConnectCore LCD Add-On Kit w/6.4" VGA and Touchscreen	CC-ACC-LCDV-64
ConnectCore LCD Add-On Kit w/5.7" QVGA and Touchscreen	CC-ACC-LCDQ-57

See page 53 for modules.

ConnectCore™ 9P 9360 :: Digi JumpStart Kits™

Overview :: ConnectCore 9P Digi JumpStart Kits are designed to allow embedded application development within 30 minutes after installation begins. The module has a powerful ARM9 core with enough processing power for both network and application processing, and the integrated peripherals include ample connectivity features, including LCD controllers. Support is available for NET+OS®, Microsoft Windows Embedded CE 6.0 and Embedded Linux.



+ Features ::

- Core module for high-performance embedded networking applications
- Compact size fits in wide variety of applications
- Powerful 32-bit RISC processor with integrated peripherals and LCD controller
- ConnectCore 9P module included
- Development baseboard for immediate prototyping and application development
- Schematics incuded for custom baseboard design
- Support for Digi's NET+OS, Microsoft Windows Embedded CE 6.0 and Embedded Linux
- All power supplies and cables included

+ Specifications ::

- ConnectCore 9P 9360 module:
  - NET+ARM NS9360 32-bit 155 MHz with ARM926EJ-S core
  - 64 MB SDRAM, 128 MB Flash (Linux and Windows CE Kits)
- Digi ESP™ Eclipse-based Integrated Development Environment (NET+OS and Linux)
- Digi JTAG Link – JTAG debugger with USB 2.0 support (NET+OS kits only)
- Development board
  - 10/100 Ethernet networking support
  - RJ-45 connector and transformer
  - 4 serial ports
- RS-232/422/485 connection for serial port 1 (DB-9)
- RS-232 for serial port 2 (DB-9)
- TTL connectors for serial ports 3 and 4
- Support for baud rates up to 921 Kbps
  - USB Host and Device connectors
  - I^2C and SPI header connectors
  - VGA connector
  - LCD application board header (No LCD included)
  - Application expansion headers
  - Prototyping area and module signal breakout
  - 12-pin digital I/O connector
  - LEDs for power/serial/user applications
  - Reset switch

Wired Network Interface

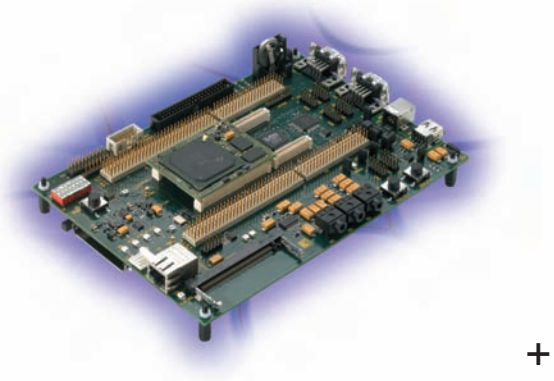
- Standard: IEEE 802.3
- Physical layer: 10/100 Base-T
- Data rate: 10/100 Mbps (auto-sensing)
- Mode: Full or half duplex (auto-sensing)
- Connector: RJ-45 with magnetics (on module)
- PoE capable

Part Numbers :: Worldwide

Digi JumpStart Kits	
ConnectCore 9C Digi JumpStart Kit for NET+OS 7	CC-9P-NET
ConnectCore 9C Digi JumpStart Kit for Linux	CC-9P-LX
ConnectCore 9C Digi JumpStart Kit for Windows CE 6.x	CC-9P-CE6
LCD Application Kits	
ConnectCore LCD Add-On Kit w/6.4" VGA and Touchscreen	CC-ACC-LCDV-64
ConnectCore LCD Add-On Kit w/5.7" QVGA and Touchscreen	CC-ACC-LCDQ-57

See page 54 for modules.

ConnectCore™ 9M :: Development Kits



Overview :: The ConnectCore 9M Development Kit provides immediate access to the features of the ConnectCore 9M module and allows embedded application development to begin immediately. The ConnectCore 9M is best suited to applications which require high performance and low power, and where network connectivity is not a priority. Typical applications for the ConnectCore 9M are remote or mobile devices. Development Kits for Linux and Microsoft Windows CE 5.0 are available.

Features ::

- Ideal for very low-power applications with extensive peripheral support required
- ConnectCore 9M module included
- Powerful 32-bit RISC processor with on-chip peripheral options
- Development baseboard for immediate prototyping and application development
- Schematics and bill of material included for custom baseboard design
- Support for Linux and Microsoft Windows CE 5.0
- All power supplies and cables included

Specifications ::

- ConnectCore 9M module
  - Samsung S3C2440 32-bit 400 MHz with ARM920T core
  - 32 MB SDRAM, 32 MB Flash
- Digi JTAG Booster for flash memory reprogramming
- Development board
  - 10 Mbit Ethernet networking support
- RJ-45 connector and Pulse transformer
  - 2 - RS-232 interfaces
  - LCD interface (5.7" Sharp TFT LCD included)
  - Prototyping area and module signal breakout
  - USB connectors for host and device
  - CompactFlash type-II slot
  - SD Interface with normal type connector
  - Audio codec (UDA1341TS) with speaker jack and connector for microphone
  - CAN driver with 10-pin header
  - Connector for 5V power supply
  - JTAG 20-pin connector and 8-pin JTAG Booster connector
  - Two user buttons
  - LEDs for power and communication
  - 2 switches for use by application
  - Manual reset switch/reset generator

Network Interface

- Standard: IEEE 802.3
- Physical layer: 10 Base-T
- Data rate: 10 Mbps (auto-sensing)
- Mode: Full or half duplex (auto-sensing)

Part Numbers :: Worldwide

Development Kits	
ConnectCore 9M Development Kit for Linux	FS-9071
ConnectCore 9M Development Kit for Microsoft Windows CE 5.0	FS-9093

See page 55 for modules.

ConnectCore™ XP :: Development Kits

Overview :: The ConnectCore XP Development Kit is ideal for demanding embedded applications that require both the high processor speed and low power demands of the ConnectCore XP. The ConnectCore XP module is based on the Marvell® XScale® PXA270. ConnectCore XP Development Kits are available with support for Linux and Microsoft Windows CE 5.0.

+ Features ::

- Ideal for low-power applications with extensive peripheral support
- ConnectCore XP Module included
- Powerful 32-bit RISC XScale 520 MHz processor with on-chip peripheral options
- Development baseboard for immediate prototyping and application development
- Schematics and bill of material included for custom baseboard design
- Support for Linux and Microsoft Windows CE 5.0
- Power supply and cables included

+ Specifications ::

- ConnectCore XP module:
  - Marvell PXA270 32-bit 520 MHz with XScale core
  - 64 MB SDRAM, 32 MB Flash
- Digi JTAG Booster for flash memory reprogramming
- Development board
  - 10/100 Mbit Ethernet networking support
- RJ-45 connector and transformer
  - Serial and parallel ports
- DB-9 and DB-25 connectors
  - LCD Interface (5.7" Sharp TFT LCD included)
  - Prototyping area and module signal breakout
  - USB connectors for host and device
  - CompactFlash type-II slot
  - SD Interface with normal type connector
  - Connector for 5V power supply
  - JTAG 20-pin connector and 8-pin JTAG Booster connector
  - 2 user buttons

Network Interface

- Standard: IEEE 802.3
- Physical layer: 10/100 Base-T
- Data rate: 10/100 Mbps (auto-sensing)
- Mode: Full or half duplex (auto-sensing)

Part Numbers :: Worldwide

Development Kits	
ConnectCore XP Development Kit for Linux	FS-9077
ConnectCore XP Development Kit for Microsoft Windows CE 5.0	FS-9090

See page 56 for modules.

XBee™ and XBee-PRO™ :: Development Kits

Overview :: The ZigBee/IEEE 802.15.4 compliant XBee and XBee-PRO modules are available in Development Kits, with a range of antenna options and RF cable assemblies. They include all of the hardware and software needed to rapidly create and test long-range wireless data links. Starter Kits with two modules and integrated whip antennas are also available. These kits provide an inexpensive means of experiencing the best in wireless data communications.

Features ::

- Professional Development Kit include 3 XBee modules, 2 XBee-PRO modules and 5 development boards
- Starter Kits include two XBee or XBee-PRO modules and 2 development boards
- Antenna options include PCB chip antenna, 1/4 wave monopole integrated whip antenna, or U.FL antenna connector that allows for connection to a dipole or other external antenna
- All the necessary cables, software and accessories included
- Free unlimited technical support
- ZigBee/IEEE 802.15.4 compliant modules satisfy unique needs of low-cost, low-power wireless sensor networks
- 30-day satisfaction guarantee

Specifications ::

XBee Professional Development Kit

- 1 XBee-PRO OEM RF module with integrated whip antenna
- 1 XBee-PRO OEM RF module with U.FL RF Connector (to RPSMA antenna)
- 1 XBee module with chip antenna
- 1 XBee module with integrated whip antenna
- 1 XBee module with U.FL RF connector (to RPSMA antenna)
- 4 RS-232 development boards w/antenna clips
- 1 RS-232 cable
- 1 USB development board w/antenna clip
- 1 USB cable
- 2 half-wave, 4.5", dipole antennas w/RPSMA connectors
- 4 9V 1A power adapters
- 3 9V battery clips
- 1 serial loopback adapter
- 1 null modem adapter (male-to-male)
- 1 null modem adapter (female-to-female)
- 1 Quick Start Guide
- 1 CD (testing and configuration software and documentation)
- 2 RF cable assemblies (adapter for connecting RPSMA antenna to U.FL connector)

XBee and XBee-PRO Starter Kits

- 2 XBee or XBee-PRO OEM RF modules with integrated whip antenna
- 1 RS-232 development board w/antenna clip
- 1 RS-232 cable
- 1 USB development board w/antenna clip
- 1 USB cable
- 1 9V 1A power adapter
- 1 9V battery clip
- 1 serial loopback adapter
- 1 Quick Start Guide
- 1 CD (testing and configuration software and documentation)

* Development kits that are sent to international customers do not include a power supply.

Part Numbers :: Worldwide

Development Kits

Please see page 199 for part numbers.

See page 59 for modules.

XTend™, XStream™ and XCite™ :: Development Kits

Overview :: The XTend, XStream and XCite Development Kits include two RF modules with antenna options and all of the hardware and software needed to rapidly create and test long range wireless data links. Each Development Kit also includes free and unlimited access to our knowledgebase and responsive technical support team.

+ Features ::

- 2 RF modules included with antenna options
- All the necessary cables, software and accessories included
- Free unlimited technical support
- Low-cost radio modems provide unprecedented performance
- 30-day satisfaction guarantee

+ Specifications ::

Development Kit Contents – Radio Modems

XTend
- 1 XTend OEM RF module w/RPSMA connector
- 1 XTend OEM RF module w/MMCX connector

XStream
- 1 XStream OEM RF module w/integrated whip antenna
- 1 XStream OEM RF module w/RPSMA connector

XCite
- 1 XCite OEM RF module w/RPSMA connector
- 1 XCite OEM RF module w/integrated wire antenna

Development Kit Contents – Accessories
- 2 RS-232/RS-485/RS-422 interface boards
- 2 RS-232 cables
- 1 9V battery clip
- Power adapters
  - 2 9V 400 mA (XStream, XCite)
  - 2 9V 1A (XTend)
- 1 serial loopback adapter
- 1 null modem adapter (male-to-male)
- 1 null modem adapter (female-to-female)
- 1 RS-485/RS-422 adapter (female RJ-45 to male DB-9)
- 1 RS-485/RS-422 adapter (female RJ-45 to female DB-9)
- 1 quick start guide
- 1 CD with testing and configuration software, documentation and development tools

* Development kits that are sent to international customers do not include a power supply.

Part Numbers :: Worldwide

Development Kits

Please see page 198-200 for part numbers.

See pages 60-62 for modules.

Overview :: NET+OS delivers a royalty-free solution for embedded software development based on the ThreadX Real-Time Operating System (RTOS). In addition to ThreadX, NET+OS provides the integrated building blocks needed to create secure and fully network-enabled product solutions using Digi embedded modules and microprocessors. This includes an IPv4/IPv6 capable TCP/IP stack, web server, SNMP, SSL/TLS, and support for WPA2/802.11i wireless LAN security.

+ Features ::

- Based on Express Logic ThreadX Real-Time Operating System
- Includes TCP/IP stack and extensive device networking protocol applications
- Specifically optimized for Digi embedded modules and microprocessors with comprehensive toolset across all Digi hardware platforms
- Royalty-free binary distribution minimizes overall product cost
- Rich variety of networking and security services for wired and wireless connectivity are integrated into NET+OS
- Extensive sample applications and documentation included to expedite application development and reduce time-to-market

+ Ekahau Support ::

NET+OS 7 includes support for Ekahau client software, which provides integrated support for Ekahau's Wi-Fi device-location solution. Ekahau offers a complete access point vendor-independent real-time location system for wireless LAN devices. The solution provides floor-, room- and door-level accuracy of up to 3.5 ft (1 m).The patented Ekahau positioning technology is based on simple signal-strength calibration maps, and enables customers to fully leverage an existing wireless LAN infrastructure without any need for proprietary hardware components.
For more information see www.ekahau.com.

+ What's New in NET+OS 7 ::

- Digi ESP™ is a full featured Interactive Development Environment (IDE) that facilitates the development of embedded NET+OS applications. Built on the popular and proven Eclipse platform, Digi ESP provides a complete and easy-to-use graphical user interface for embedded development.
- Support for new TCP/IP stack, with increased performance and support for IPv6, IPsec and a Zero-Copy sockets-like API.
- Updated 802.11 wireless driver support that includes a new API for scanning access points, and wireless security features, including support for WPA/WPA2 (802.11i)
- WPA2 Encryption includes AES-based CCMP, which provides confidentiality, integrity and origin authentication.
- NET+OS Command Line Interface (CLI) API provides functions for building and processing a user-defined CLI. NET+OS is equipped with a set of default CLI commands that the user can use in conjunction with custom commands or overwrite.
- With external hardware support, a deep sleep mode is now available. The deep sleep mode is a very low power mode, and requires an external trigger to provide a wake-up.

+ Specifications ::

- Microcross
  - Command line GDB debugger
  - Visual GDB source level debugger (Insight)
  - C run-time libraries
  - GCC compiler, assembler and linker
- Utilities
  - HTML compiler
  - MIB compiler
  - FTP client for PC-based download of Flash images
  - NET+OS programmer for device discovery
- Hardware debuggers
  - Support for Digi JTAG Link, Mentor Graphics MAJIC and Macraigor Raven
- NET+OS run-time software
  - BSP
    - Ethernet
    - I^2C
    - Flash
    - Cache
    - LCD
    - RTC
    - USB host (keyboard, mouse, mass storage)
    - Serial
    - SPI
    - Parallel IEEE 1284
    - NVRAM
    - USB device
    - PCI/CardBus
    - PWM
  - ThreadX RTOS kernel

+ Specifications cont. ::

  - Basic Internet protocols (TCP/IP stack)
    - TCP/IP (IPv4/IPv6), UDP/IP
    - ARP
    - IGMPv2 Multicasting
    - DHCP
    - ICMP
    - RARP
    - BOOTP
    - PPP
  - Higher level protocols and services
    - FTP server and client
    - LDAP v3
    - TCP and UDP Sockets API
    - Advanced Web ServerHTTP v1.1
    - Email (POP3, SMTP and ESMTP)
    - SNMPv3
    - MIBII for remote management
    - SNTP
    - DNS
    - Telnet
    - SLPv2
    - SSL
  - Stack bypass filtering
  - Integrated file system
  - Address Configuration Executive (ACE
  - WEP/WPA/WPA2/802.11i wireless security
  - Advanced Web Server
- Support available for Green Hills Software development tools

See Development Kit pages for part numbers.

Microsoft® Windows® Embedded CE 6.0 :: Software and Support

Overview :: Microsoft Windows Embedded CE 6.0 is a highly componentized operating system offering pre- tested technology components designed to create sophisticated embedded applications with minimized design effort and risk. It includes a wide range of ready-to-use components such as a graphical user interface, networking, web browser, and multimedia. Microsoft Visual Studio 2005 development tools are used to create applications with excellent user interface capabilities and real-time performance.

+ Features ::

- BSPs are custom-developed to support Digi microprocessor and module peripherals
- Ongoing development and support of Windows CE BSPs by Digi's engineering group that is certified as a Gold Level Member of the Microsoft Windows Embedded Partners Program (WEP)
- Sources are included with Digi BSPs in development kits, enabling embedded developers to debug code or execute the exact features needed
- BSPs are royalty-free, as long as they are used by hardware provided by Digi
- Support available from Digi for integrated hardware/software issues, eliminating any question among vendors of who "owns" the problem
- Hardware design review, TFT LCD device drivers, bootloader modification and board bring-up services available (see Digi Professional Services)
- Windows Embedded CE 6.0 support available for ConnectCore™ 9P, ConnectCore™ 9C/Wi-9C modules

+ Specifications ::

- Complete support for module peripherals
- Drivers for LCD and touchscreen
- Exclusive Ethernet debugging channel
- BSP software catalog file contents
  - Ethernet NDIS driver
  - Serial ports (for internal and external UARTs and for external UARTs memory (mapped on)
  - PC card driver (ConnectCore 9P)
  - CPU type (NS9360/NS9750)
  - USB host
  - USB device
  - Flash file system for on-board Flash
  - Touch
  - Audio

+ Specifications cont. ::

- Features for selective integration
  - .NET Compact Framework
  - Windows applications (Internet Explorer, etc.)
  - Core OS services (USB Host and display support)
  - Communication support and networking
    Network Utilities: ipconfig, ping, etc.
  - Wired Local Area Network - 10/100 Ethernet networking
  - Servers: Telnet, FTP Server
  - FAT File system
  - Font support
  - Language support
  - Internet client services
  - Graphics and multimedia technology
  - Security
  - Shell/QVGA support
  - Error reporting
  - VoIP services
  - Local support defines default language, currency formats, date and time format specific to each country
  - Virtual keyboard
  - USB mouse or keyboard support

Windows® Embedded
Gold Partner

See Development Kit pages for part numbers.

Digi Embedded Linux® :: Software and Support

Overview :: Built around a standard Linux 2.6 kernel distribution, Digi's support is tailored to the specific needs of embedded Linux development and provides an easy-to-use, complete off-the-shelf development platform. It includes all components that are required to build secure network-enabled embedded products. This includes software components such as a customizable boot loader, a web server, file system support, SSL/TLS, WPA2/802.11i security, a fully Linux-hosted IDE, and others.

+ Features ::

- Integrated BSPs for Digi's embedded hardware platforms eliminates extensive adaptation and porting effort for low-level device drivers with the same software cross-development tools across the entire ARM-based product line
- Optimized support for Digi's processors and embedded modules
- Embedded operating system based on a recent version of the Linux 2.6 kernel with all the latest embedded Linux features, patches and bug fixes
- Single source for hardware and software support eliminates support delays and passing of problems between hardware and software vendors
- Complete development tool chain included
- Developers can leverage availability of additional software components or network services provided by the open source community, and adapt them for specific projects
- Distribution via live DVD (based on Kubuntu), can be executed via DVD or USB stick without installation for evaluation or transportability
- Secure wireless support with encryption (WPA/WPA2/WPA supplicant)

+ Specifications ::

- Linux kernel
  - Version 2.6.17

Digi ESP™ Integrated Development Environment

- Based on Eclipse 3.1.2 and CDT 3.0.2
- C/C++ application and library wizards
  - Managed project builds w/automatic makefile generation and maintenance
- CVS source code management support
- Visual source code debugging via Ethernet
- Target monitor extensions
  - File system view, flash update, register inspection, target. reset, remote console
- Online help and cheat sheets

Network Services

- TCP/UDP, ICMP, ARP, RARP, BOOTP, DNS, TFTP, Telnet
- DHCP Server/Client (BusyBox applet)
- PPP (pppd) and chat
  - Version 2.4.4
- Boa Web Server
  - Version 0.94

+ Specifications cont. ::

Secure Communication

- OpenSSL library
  - Version 0.9.7
- Very Secure FTP server (vsftpd)
  - Version 2.0.5
- Dropbear SSH Server/Client
  - Version 0.4.8

Wireless LAN

- Wireless tools
  - Version 28
- WPA Supplicant
  - Version 0.5.7

GUI

- Qtopia® Core, with touch screen support
  - Version 4.2.2

USB

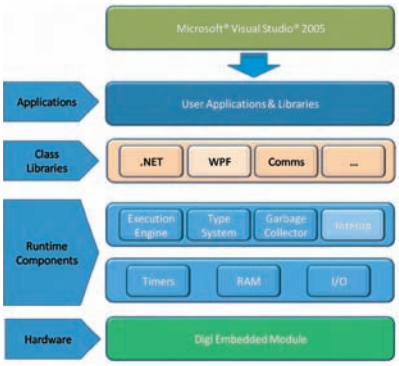
- Usbutils
  - Version 0.72

Miscellaneous

- Flash partition update tool (update_flash)
- Read/write NVRAM settings tool (ubootenv)
- Pciutils
  - Version 2.1.11
- mii-tool
  - Version 1.9.1
- mtd utils, tools for NAND/NOR memory
  - Version 1.0.0
- UART
- SPI (Master)
- I^2C, including GPIO Expander and EEPROM
- GPIO (Processor)
- USB Host
- Watchdog
- RTC
- Ethernet
- WLAN (ConnectCore™ Wi-9C)
- Display (Framebuffer Driver)
  - CRT: ADI ADV7125 (VGA)
  - LCD: Sharp® LQ57Q3DC2 (QVGA), LQ64V3DG01 (VGA)
- Touch Screen
  - TI™ ADS7843 via SPI
- NAND
  - MTD Driver for Memory on Module

See Development Kit pages for part numbers.

Microsoft® .NET Micro Framework 2.0 :: Software and Support



Features ::

- Royalty-free and complete embedded development solution tailored for network-enabled devices
- Robust C# application platform based on .NET programming model and managed code environment
- State-of-the-art software development environment using Microsoft Visual Studio 2005 tools
- Immediate productivity improvements realized through existing software and tools know-how
- Digi-exclusive support for Ethernet networking with dual-mode IPv4/IPv6 TCP/IP stack integration
- Free 90-day Microsoft Visual Studio 2005 evaluation license included in every Digi JumpStart Kit
- Reliable and efficient C# managed code application environment
- Small memory footprint of about 300 KB
- Managed-code driver development
- Serial (UART) and GPIO interface support
- Optimized Garbage Collection
- Persistent storage (flash) support
- Time-sliced thread management
- Extended timer support
- Native code integration (mixed-mode/Interop)
- Application image deployment through serial port or network

About Digi's .NET Micro Framework Support ::

Digi support for Microsoft .NET Micro Framework 2.0 provides an easy-to-use and complete out-of-box solution for embedded development, including a fully functional 90-day trial of Microsoft Visual Studio 2005, plus sample code and user documentation.

With its small memory footprint, focused support for all critical features, and Digi's exclusive support for Ethernet network connectivity, .NET Micro Framework is the ideal choice for smaller network-connected devices utilizing Digi embedded modules in applications that do not require the capabilities of a Real-Time Operating System (RTOS) or more advanced operating system environments such as Microsoft Windows® Embedded CE or Linux.

Overview :: The Microsoft .NET Micro Framework greatly simplifies the complex task of embedded software development. Seamless integration with Visual Studio tools makes rapid embedded development accessible to software designers that are already familiar with server and desktop application development on existing Microsoft platforms. In addition, sharing existing .NET code across multiple product lines and platforms results in a even more shortened development cycle and significantly improved productivity.

Specifications ::

Networking

- Digi IPv4/IPv6 dual-mode TCP/IP stack
  - DNS, DHCP, TCP, UDP, IGMP, ICMP, ARP
- Static, DHCP, or Auto-IP address assignment

Security

- Data encryption and decryption services
  - Strong RSA-based asymmetric encryption
  - Symmetric XTEA encryption

Class library namespaces

- .NET Base
  - System
  - System.Collections
  - System.Diagnostics
  - System.Globalization
  - System.IO
  - System.Net
  - System.Net.Sockets
  - System.Reflection
  - System.Resources
  - System.Runtime.CompilerServices
  - System.Runtime.InteropServices
  - System.Runtime.Remoting
  - System.Runtime.Text

.NET Micro Framework

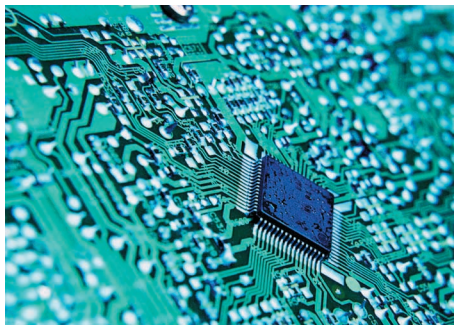
- .NET Micro Framework
- Microsoft.SPOT
- Microsoft.SPOT.Cryptography
- Microsoft.SPOT.Hardware
- Microsoft.SPOT.Input
- Microsoft.SPOT.Net.NetworkInformation
- Microsoft.SPOT.Presentation
- Microsoft.SPOT.Presentation.Controls
- Microsoft.SPOT.Presentation.Media
- Microsoft.SPOT.Presentation.Shapes

Supported Hardware Platforms

- Digi Connect ME®
- Additional platforms coming soon

Digi Custom Design :: Software and Support

Overview :: Digi Custom Design is intended to extend your internal development process, our services relieve you of low-level "infrastructure" development on your project. These are tasks that require a great deal of hardware and operating system-specific knowledge, but can be implemented in a short time frame. By leveraging our existing product expertise, we can offer services that will reduce your overall development time, bring your product to market faster, and enable your developers to concentrate on adding unique applications and features to your products.



+ Features ::

- Extensive development services in Linux and Microsoft Windows CE and modifications to NET+OS® operating environment
- Embedded infrastructure offerings include device drivers for LCDs and other peripherals, porting of security or networking services, and integration of middleware
- Hardware design reviews for Digi Connect® and ConnectCore™ module implementations
- More cost-effective than hiring outside consultants
- Custom design offered at a fixed price with a product part number that can be ordered easily, even through our distributors

+ Packaged Custom Design ::

We have defined some of the most common custom design requests and offer them for order by part number at a fixed price through our distribution channel. These designs are ready-made and can be delivered soon after the order is received to provide a "quick turn" for key deliverables in an embedded project, eliminating potential delays and disastrous bottlenecks.

Hardware Design Review
Prior to manufacturing of first hardware, an experienced Digi engineer will review the schematics of a design based on Digi schematics provided in our development kits. This "peer review" provides an analysis of a baseboard for Digi module or microprocessor-based design, using Digi-supplied schematics. The Hardware Design Review will concentrate on the connections and power supplied to Digi devices, with an overview of the rest of the board. We will provide a detailed written report of findings, recommending changes and

+ Packaged Custom Design Cont. ::

suggestions for improvements. We guarantee that each design review will identify problems that would have required repairs or even a re-spin.

Bootloader Modifications/Board Bring-up
For customers who have purchased a Hardware Design Review, we will make modifications to the bootloader so it will initialize the custom board correctly. In a board bring-up, we will make the necessary modifications to the bootloader and install the desired operating system on the custom board. Within a matter of days after production, the custom board will be ready for application development. We will provide the bootloader and operating system running on the custom board and the modified operating system files.

LCD Device Driver
For embedded products requiring an LCD user interface, a device driver is required before data can be displayed by an application. We will provide a driver for the exact LCD chosen, providing support for the LCD's specific features. This specialized task is needed only once. Because Digi engineers already possess the expertise required, the cost of outsourcing this to Digi is many times less than the time it will take to implement internally. Drivers for touchscreens are not included with this, but can also be provided.

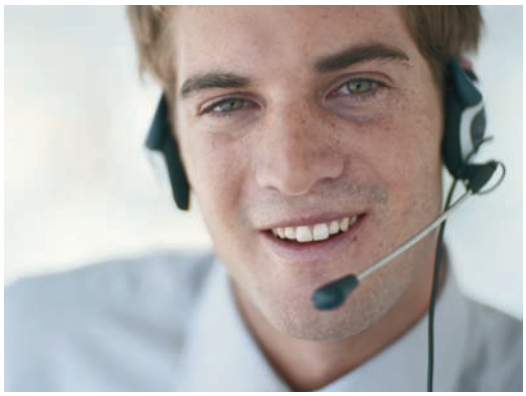
Part Numbers ::

Worldwide

Model	
Hardware Design Review - Module-Based	FS-7700
Hardware Design Review - Microprocessor-Based	NSHWREVIEW
Bootloader Modifications - Linux	FS-7705
Bootloader Modifications - Windows CE	FS-7706
Board Bring-up – Linux	FS-7707
Board Bring-up - Windows CE	FS-7708
LCD Device Driver - Microsoft Windows CE	FS-7701
LCD Device Driver - Digi Embedded Linux	FS-7702

Note: Bootloader Modifications/Board Bring-up require a Hardware Design Review.

Embedded Technical Support :: Software and Support



Overview :: Our technical support professionals provide expert assistance to resolve all technical problems you might encounter while using Digi's embedded development kits for our embedded modules or NET+ARM processors. Critical issues are escalated as necessary to properly address situations in the shortest time possible. All Digi development kits include basic installation and initial setup support without extra charge. In addition, Digi delivers two levels of technical support plans covering customers beyond installation and setup – Essential Support and Premium Support.

+ Features ::

- Free Support for Installation and startup of all Digi embedded products
- Quick escalation path for resolution of critical issues
- Free access to online web forum support services
- Complete support plan offering
  - Cost-effective Essential Support plan (modules only)
  - Comprehensive Premium Support
  - Pay-Per-Incident option
- Focused on embedded product solutions
  - Digi Connect® and ConnectCore™ embedded modules
  - NET+ARM processors
- Support options independent of software platform
  - NET+OS®
  - Microsoft Windows CE
  - Linux

+ Types of Plans ::

Essential Support Plan

- Up to ten (10) incidents of unrestricted technical support
- Phone or email access for up to two (2) named contacts
- Web access to incident status through eservice account
- Covering all Digi provided development platforms
  - NET+OS
  - Microsoft Windows CE
  - Microsoft .NET Micro Framework
  - Linux
- Available to embedded module customers only
- Additional technical support available through Pay-Per-Incident or plan renewal/purchase

+ Types of Plans cont. ::

Premium Support Plan

- Annual support plan with unrestricted technical support
- Unlimited number of incidents
- Phone or email access for up to two (2) named contacts
- Web access to incident status through e-service account
- Covering all Digi provided development platforms
  - NET+OS
  - Microsoft Windows CE
  - Microsoft .NET Micro Framework
  - Linux
- Development platform software maintenance
  - Major and minor releases, including development tools
  - Electronic or media distribution
- Available to embedded module and NET+ARM processor customers

Pay-Per-Incident

- Single incident without restrictions
- Phone or email access for one (1) named contact
- Web access to incident status through e-service account
- Covering all Digi provided development platforms
  - NET+OS
  - Microsoft Windows CE
  - Microsoft .NET Micro Framework
  - Linux
- Available to embedded module customers only
- Purchase through initial call to Digi technical support

Part Numbers :: Worldwide

Models	
Essential Support Plan (embedded modules only)	DG-ESUP-ESS
Premium Support Plan	DG-ESUP-PRM

Pay-Per-Incident support is available by calling Digi technical support.

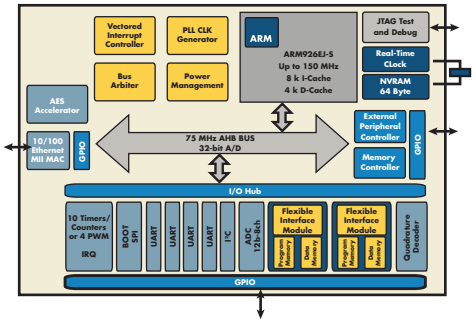
An incident is defined as a single support issue and the time and effort needed to resolve the issue. A single support issue is defined as a specific issue that cannot be separated into subordinate issues. Subordinate issues are considered separate incidents.

NS9215/NS9210 :: The NS9215 and NS9210 are the ideal choice for applications requiring a cost-efficient 32-bit processor solution, high performance and secure network connectivity — combined with power management options and an additional level of truly unique I/O flexibility. The NS9210 is a pin-compatible upgrade for existing NS7520 designs.

- High-performance, low cost and small footprint combined with Ethernet and on-chip peripherals
- 75-150 MHz ARM926EJ-S CPU with MMU, 4 KB I-Cache and 4 KB D-Cache
- Strong off-the-shelf operating software platform support (NET+OS®, based on ThreadX, Linux, and Microsoft .NET Micro Framework)
- 256-bit AES high-performance on-chip accelerator supports state-of-the-art security
- Sleep modes and on-the-fly clock scaling for power-efficient product designs
- Unique flexible interface modules offer software configurable I/O flexibility

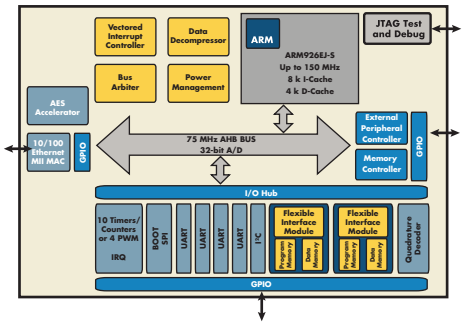
NS9215

177-pin BGA package, 13 x 13 mm, 0.18 process



NS9210

177-pin BGA package, 13 x 13 mm, 0.18 process

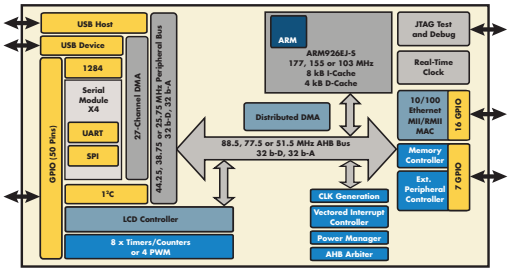


NS9360 :: The NS9360 is a highly integrated 32-bit network-attached processor specifically designed for use where price, performance and a rich set of peripherals are important.

- High performance ARM9-based processor provides compute bandwidth for demanding embedded device networking applications
- 103-177 MHz ARM926EJ-S CPU with MMU and 8 kB/4 kB instruction/data cache
- High level of peripheral integration provides glueless interfaces to a rich set of industry standard devices: 10/100Base-T Ethernet, USBd, USBh, LCD, 4xUART/SPI, I²C, IEEE 1284, serial ports and GPIO.
- Supported by the comprehensive, integrated and royalty-free NET+OS development suite

NS9360

272-pin BGA, lead-free, RoHS compliant

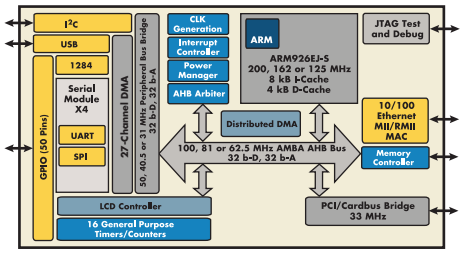


NS9750 :: The NS9750 is a highly integrated 32-bit network-attached processor specifically designed for use in intelligent networked devices and Internet appliances where performance, price and a rich set of peripherals including CardBus and PCI are needed.

- High performance ARM9 32-bit processor provides compute bandwidth for the most demanding embedded device networking applications
- 125-200 MHz ARM926EJ-S processor with 8 kB/4 kB instruction/data cache and MMU
- High level of peripheral integration provides glueless interfaces to a rich set of industry standard devices: USB, PCI or CardBus, I²C, IEEE 1284, serial ports, a high performance LCD controller and GPIO
- Supported by the comprehensive, integrated and royalty-free NET+OS development suite

NS9750

388-pin BGA; lead-free, RoHS compliant



NS9775 :: The NS9775 is a highly integrated processor specially designed for color laser printers.

- High performance 32-bit processor provides networking and decompression bandwidth for raster printer applications
- ARM926EJ processor with 8 kB/4 kB instruction/data cache and MMU
- High level of peripheral integration provides glueless interfaces to a rich set of industry standard devices: USB, PCI or CardBus, I²C, IEEE 1284, serial ports, a high performance LCD controller and GPIO
- Supported by the comprehensive, integrated and royalty-free NET+OS® development suite

NS7520 :: The NS7520 is a low-cost, easy to integrate, 32-bit network-attached processor specifically designed for connecting serial devices to IP networks.

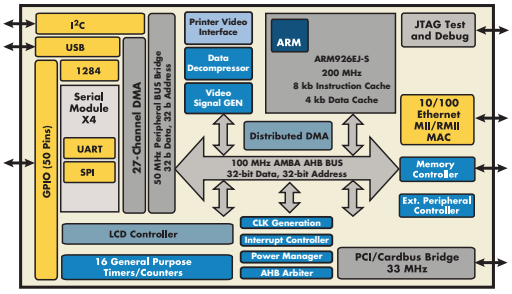
- Low-cost 32-bit ARM7-based processor provides all interfaces necessary to easily connect serial devices to a network
- 33-55 MHz ARM7 TDMI CPU
- Offers glueless interfaces to 10/100Base-T Ethernet, UART, SPI serial ports and GPIO
- Supported by the comprehensive, integrated and royalty-free NET+OS development suite

NET+50 :: The NET+50 is a processor developed especially for print servers.

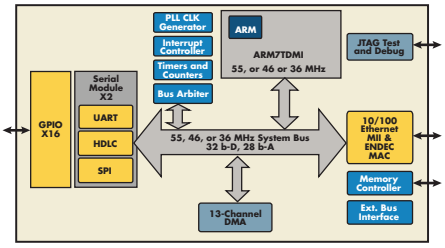
- Specialized ARM7-based processor for use in developing networked print servers
- 44 MHz ARM7 TDMI CPU with 8 kB cache
- Provides glueless interfaces to UART, SPI serial ports and GPIO combined with four IEEE 1284 host ports and a co-processor interface
- Supported by the comprehensive, integrated and royalty-free NET+OS development suite

Microprocessor Development Tools :: Digi's NET+ARM processors are fully supported by the royalty-free NET+OS suite of advanced networking development tools and software. Support for Linux and Windows CE is also available. Please contact your Digi sales representative for details.

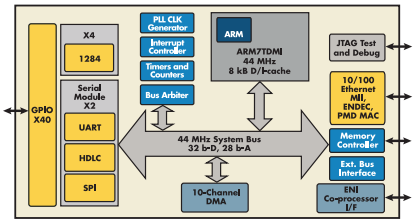
NS9775
352-pin BGA; lead-free, RoHS compliant



NS7520
177-pin BGA; lead-free, RoHS compliant



NET+50
208-pin BGA or PQFP; lead-free, RoHS compliant



Part Numbers ::

Worldwide

Model	
NS9210	
75 MHz, -40° C to 85° C	NS9210B-0-I75
150 MHz, -40° C to 85° C	NS9210B-0-I150
NS9215	
75 MHz, -40° C to 85° C	NS9215B-0-I75
150 MHz, -40° C to 85° C	NS9215B-0-I150
NS9360	
103 MHz, 0° C to 70° C	NS9360B-0-C103
155 MHz, -40° C to 85° C	NS9360B-0-I155
177 MHz, 0° C to 70° C	NS9360B-0-C177
NS9750	
125 MHz, 0° C to 70° C	NS9750B-A1-C125
162 MHz, -40° C to 85° C	NS9750B-A1-I162
200 MHz, 0° C to 70° C	NS9750B-A1-C200
NS9775	
125 MHz, 0° C to 70° C	NS9750B-0-C125
162 MHz, -40° C to 85° C	NS9750B-0-I162
200 MHz, 0° C to 70° C	NS9750B-0-C200
NS7520	
36 MHz, 0° C to 70° C	NS7520B-1-C36
46 MHz, -40° C to 85° C	NS7520B-1-I46
55 MHz, 0° C to 70° C	NS7520B-1-C55
55 MHz, -40° C to 85° C	NS7520B-1-I55
NET+50	
For NET+OS Operating System (BGA)	NET+50-BIT
For NET+OS Operating System (PQFP)	NET+50-QIT-3
With pSOS License (BGA)	NET+50-BINP
With pSOS License (PQFP)	NET+50-QINP-3
For No Operating System (BGA)	NET+50-BIN
For No Operating System (PQFP)	NET+50-QIN-3

Note: OS versions contain paid fees for the run-time license.
All at 44 MHz and -40° C to 85° C operation.