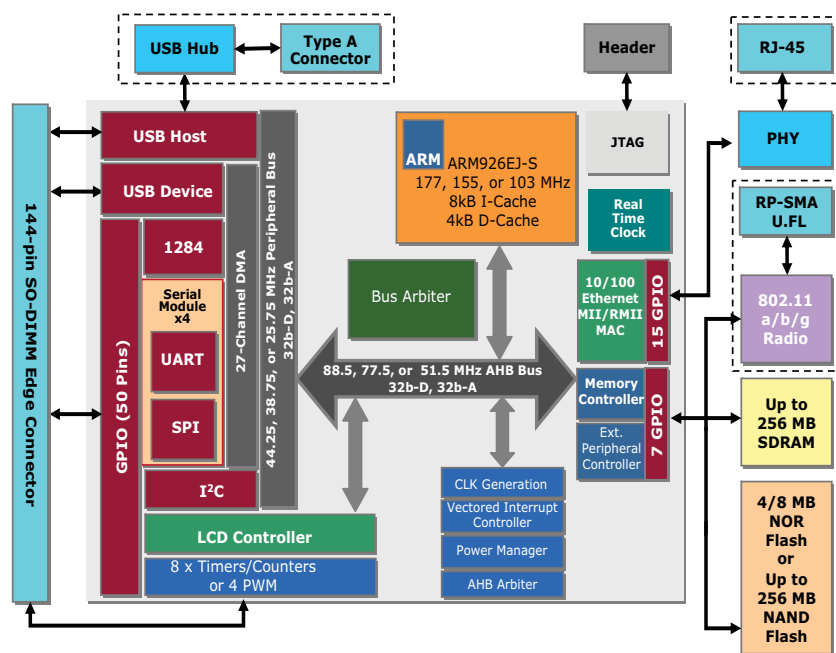# ConnectCore™ 9C Family

Interchangeable Wired/Wireless Core Modules

Highly integrated, compact ARM® core module family based on the powerful Digi NS9360 processor. Combines main processing functionality and integrated peripherals with on-board secure wireless/wired network connectivity.

Features/Benefits

- Pin-compatible wired and wireless modules

- True long-term availability through Digi's own ARM processor and WLAN technology

- Compact ARM core module design in SO-DIMM form factor

- 32-bit Digi NS9360 processor with powerful ARM926EJ-S core

- Up to 128 MB SDRAM and 256 MB Flash

- 10/100 Mbit Ethernet interface

- 802.11b/g w/strong WPA2/802.11i security

- On-chip LCD controller for TFT/STN (SVGA/18bpp)

- Wide range of connectivity options

- Extended operating temperature range

- Population options for design flexibility

- Fully pre-certified radio

- FCC Class B low-emission

- Complete embedded software platform offering - ThreadX®-based NET+OS®, Microsoft® Windows® CE, Linux®

Overview

Built on leading Digi 32-bit NET+ARM technology, the ConnectCore 9C family of modules provides a powerful network-enabled core processor solution. Its unique design combines main processor performance, secure wired/wireless LAN connectivity, embedded software and hardware design flexibility, and a seamless migration path to a fully integrated system-on-chip solution.

Utilizing Digi's own ARM processor and WLAN technology, the ConnectCore 9C family offers the industry's first network-enabled core modules with the long-term product availability matching the extended life cycle of embedded product designs.

The ConnectCore 9C and ConnectCore Wi-9C deliver a pre-certified, flexible and secure network-enabled system on a module for a wide variety of sophisticated applications. These include medical devices, retail systems, transportation, security/access control, building and industrial automation, warehousing, networked displays, and more.

The easy-to-use, cost-effective and complete Digi JumpStart Kit development solutions enable you to begin your embedded product development right out of the box. They minimize product design risks and dramatically shorten traditional time-to-market aspects, whether you want to leverage the small footprint and efficiency of the royalty-free and complete ThreadX-based NET+OS platform, the feature-complete selection of high-level software components and applications of Windows Embedded CE, or take advantage of the open Linux environment with its community support and readily available library of software.

For your project-specific development needs Digi also offers professional technical support as well as a wide range of hardware and software design services.

www.digi.com

Digi®

Development Kits

DIGI JUMPSTART KIT FOR NET+OS: OVERVIEW

The ConnectCore 9C/Wi-9C Digi JumpStart Kit for NET+OS delivers 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, it is one of most reliable and field-proven RTOS solutions available on the market. 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.

For professional NET+OS software development, the Microsoft Windows-based "Digi ESP for NET+OS" Integrated Development Environment (IDE) with graphical user interface and a high-speed USB 2.0 hardware debugger are provided out-of-the-box.

- **Royalty-free turnkey solution for embedded software development**

- **Built on field-proven and compact ThreadX Real-Time Operating System**

- **Fully integrated support for secure wired and wireless networking**

- **Professional software development using Microsoft Windows-based Digi ESP or Green Hills MULTI* development tools**

DIGI JUMPSTART KIT FOR EMBEDDED LINUX: OVERVIEW

Built around a standard Linux 2.6 kernel distriubtion, the ConnectCore 9C/Wi-9C Digi JumpStart Kit for Embedded Linux 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, and others. These come without the complexities typically associated with Linux development, such as building and maintaining tool chains or kernel environments.

Based on the open Eclipse™ framework, the powerful and fully Linux-hosted Integrated Development Environment (IDE) "Digi ESP for Embedded Linux" included in the kit significantly improves software design productivity by accelerating and greatly simplify-ing the application development process through a user-friendly graphical interface.

- **Off-the-shelf development platform for network-enabled embedded systems**

- **Royalty-free and with optimized 2.6 kernel and services support**

- **Full source code included**

- **Linux-based Digi ESP Integrated Development Environment for highly accelerated application development**

DIGI JUMPSTART KIT FOR MICROSOFT WINDOWS EMBEDDED CE 6.0: OVERVIEW

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. The professional Microsoft Visual Studio 2005 development tools also support native and managed code applications using various programming languages.

The Digi JumpStart Kit for Microsoft Windows Embedded CE 6.0 provides a complete kit with all hardware and software components needed to start immediate software development on the ConnectCore 9C/Wi-9C core module platforms. Included are a module w/development board, Board Support Package (BSP) sources, a customizable boot loader, Ethernet-based debugging, documentation, and a 180-day trial of Windows Embedded CE 6.0 with development tools. An integrated VGA interface on the development board also allows utilizing standard monitors rather than LCD panels in the initial evaluation/prototyping phase.

- **Complete kit for immediate Windows Embedded CE 6.0 development**

- **Ethernet-based debugging capabilities**

- **Seamless integration into Microsoft Windows Embedded CE environment**

- **Full Digi Board Support Package (BSP) related source code included**

- **Includes free 180-day Visual Studio 2005 and Windows Embedded CE 6.0 evaluation**

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

Development Kits

- ConnectCore 9C or ConnectCore Wi-9C module
  - 4 MB NOR Flash, 16 MB SDRAM, USB Host connector, Ethernet connector, 2 x antenna connectors, 2 dBi dipole antenna (ConnectCore Wi-9C)
- Jump Start Kit development board
  - 4 serial ports (1 x RS-232/422/485, 1 x RS-232, 2 x TTL), VGA interface, LCD/Touchscreen connector, user/application connectors, I^{2}C/SPI headers, screw terminal for access to 8 GPIO signals, 2 user push-buttons, 2 user LEDs, 9-30VDC power supply, power switch
- Digi JTAG Link USB 2.0 hardware debugger
- Digi NET+OS CD
  - NET+OS 7.x, Digi ESP IDE, 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, Ethernet cable, serial cable

- ConnectCore 9C or ConnectCore Wi-9C module
  - 128 MB NAND Flash, 64 MB SDRAM, USB Host connector, Ethernet connector, 2 x antenna connectors, 2 dBi dipole antenna (ConnectCore Wi-9C)
- Jump Start Kit development board
  - 4 serial ports (1 x RS-232/422/485, 1 x RS-232, 2 x TTL), VGA interface, LCD/Touchscreen connector, user/application connectors, I^{2}C/SPI headers, screw terminal for access to 8 GPIO signals, 2 user push-buttons, 2 user LEDs, 9-30VDC power supply, power switch
- Digi Embedded Linux DVD
  - Digi Embedded Linux, Digi ESP IDE, Linux and platform specific source code, Universal boot loader source code (U-Boot), sample code, documentation
- Documentation
  - Quick start guide, Digi Embedded Linux User's Guide, 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), Ethernet cable, serial cable

- ConnectCore 9C or ConnectCore Wi-9C module
  - 128 MB NAND Flash, 64 MB SDRAM, USB Host connector, Ethernet connector, 2 x antenna connectors, 2 dBi dipole antenna (ConnectCore Wi-9C)
- Jump Start Kit development board
  - 4 serial ports (1 x RS-232/422/485, 1 x RS-232, 2 x TTL), VGA interface, LCD/Touchscreen connector, user/application connectors, I^{2}C/SPI headers, screw terminal for access to 8 GPIO signals, 2 user push-buttons, 2 user LEDs, 9-30VDC power supply, power switch
- Digi Windows CE 6.0 CD
  - Microsoft Windows Embedded CE 6.0 BSP w/source code, Universal Boot Loader (U-Boot) source code, sample code, documentation
- Microsoft Embedded Windows CE 6.0 evaluation DVD
  - 180-day trial of Microsoft Embedded Windows CE 6.0, Platform Builder, Visual Studio 2005
- Documentation
  - Quick start guide, Digi Windows CE 6.0 BSP User's Guide, 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), Ethernet cable, serial cable

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

Features/Specifications

HARDWARE

- 32-bit Digi NS9360 processor @ 155 MHz (ARM926EJ-S)
- Up to 256 MB Flash/Max 128 MB SDRAM
  - Flash: 4 MB / 8MB NOR or 32-256 MB NAND
  - RAM: 16-256 MB SDRAM
- Up to 4 high-speed UARTs
  - Maximum data rate 921 kbps
- Up to 4 Serial Peripheral Interface (SPI) ports
  - Master data rate 11.25 Mbps
  - Slave data rate 5.5 Mbps
- I^2C v1.0 bus interface
  - 7-bit and 10-bit address modes
- 8-bit address and data bus with external chip select
- USB 2.0 Host/Device low/full speed interface
  - Through on-board connector (optional) or edge connector
- On-chip LCD controller for TFT / STN LCD panels (SVGA/18bpp)
- Up to 8 16-/32-bit timers/counters
- Up to 4 PWM functions
- Four external interrupts
- Up to 55 shared GPIOs
  - Up to 7 high-current (8 mA) pins
- Real-time clock

DIMENSIONS

ConnectCore 9C
- Length: 3.59 in (91.19 mm)
- Width: 2.055 in (52.2 mm)
- Height: 0.712 in (18.08 mm)

ConnectCore Wi-9C
- Length: 3.59 in (91.19 mm)
- Width: 3.055 in (77.60 mm)
- Height: 0.712 in (18.08 mm)

Height and width (overhang) varies depending on connector population.

NETWORK INTERFACE

Wired
- Standard: IEEE 802.3
- Physical layer: 10/100Base-T
- Data rate: 10/100 Mbps (auto-sensing)
- Mode: Full or half duplex (auto-sensing)
- Connector: On-board RJ-45 with magnetics (optional)
- 802.3af compliant power pass-through

Wireless LAN
- Standard: IEEE 802.11b/g
- Frequency: 2.4 GHz
- Data rate: Up to 54 Mbps w/fallback
- Modulation: DBPSK (1 Mbps), DQPSK (2 Mbps), CCK (11,5.5 Mbps), BPSK (6,9 Mbps), QPSK (12,18 Mbps), 16-QAM (24,36 Mbps), 64-QAM (48, 54 Mbps)
- Transmit power: 16 dBm typical
- Receive sensitivity: -73 dBm at 54Mbps
- Connector: 1/2 x RP-SMA or 2 x U.FL

WLAN SECURITY

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

ENVIRONMENTAL

ConnectCore 9C
- Operating temperature: -40° C to 85° C (-40° F to 185° F)
- Storage temperature: -50° C to 125° C (-58° F to 257° F)
- Relative humidity: 5% to 95% (non-condensing)
- Altitude: 12,000 feet (3,658 meters)

ConnectCore Wi-9C
- Operating temperature: -30° C to 75° C (-22° F to 167° F)
- Storage temperature: -50° C to 125° C (-58° F to 257° F)
- Relative humidity: 5% to 90% (non-condensing)
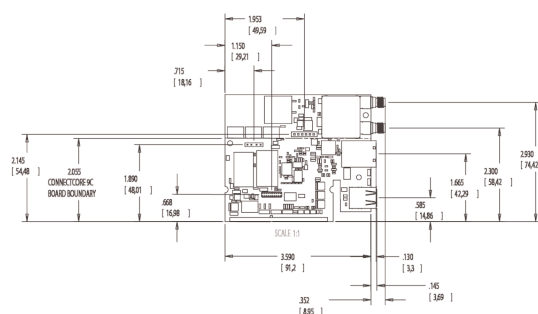- Altitude: 12,000 feet (3,658 meters)

REGULATORY APPROVALS

- FCC Part 15 Class B, EN 55022 Class B
- EN 61000-3-2 and EN 61000-3-3
- ICES-003 Class B, VCCI Class II, AS 3548
- FCC Part 15 Sub C Section 15.247
- IC RSS-210 Issue 5 Section 6.2.2(o)
- EN 300 328, EN 301 489-17
- UL 60950-1, EN 60950 (EU)
- CSA C22.2, No. 60950
- EN 55024

POWER REQUIREMENTS

- ConnectCore 9C: 3.3VDC @ 750 mA max.
- ConnectCore Wi-9C: 3.3VDC @ 900 mA max.
- USB Host: 5VDC ± 10% @ 1A max. (optional)

MODEL......................PART NUMBERS

	Development Kit	ConnectCore 9C	ConnectCore Wi-9C
	ConnectCore 9C Family Digi JumpStart Kit for NET+OS	CC-9C-NET	CC-W9C-NET
	ConnectCore 9C Family Digi JumpStart Kit for Embedded Linux	CC-9C-LX	CC-W9C-LX
	ConnectCore 9C Family Digi JumpStart Kit for Microsoft Windows Embedded CE 6.0	CC-9C-CE6	CC-W9C-CE6

Please visit our website for a complete list of available part numbers and accessories.

DIGI SERVICE AND SUPPORT - You can purchase with confidence knowing that Digi is here to support you with expert technical support and a strong five-year warranty. www.digi.com/support

WHEN **RELIABILITY** **M**ATTERS™

Digi International, the leader in device networking for business, develops reliable products and technologies to connect and securely manage local or remote electronic devices over the network or via the web. With over 20 million ports shipped worldwide since 1985, Digi offers the highest levels of performance, flexibility and quality.

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