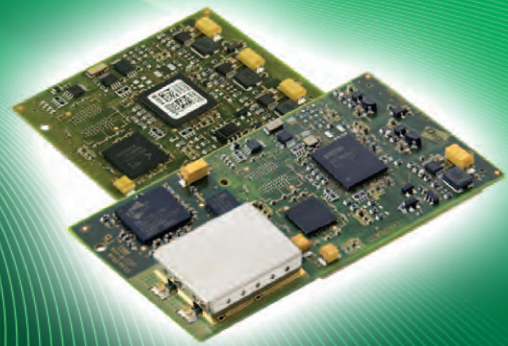


# ConnectCore™ 9M 2443 Family

Network-Enabled High-End ARM9 Core Modules

Compact, power-efficient high-end ARM9 core module with complete software platform support, superior performance and integrated wired/wireless networking.



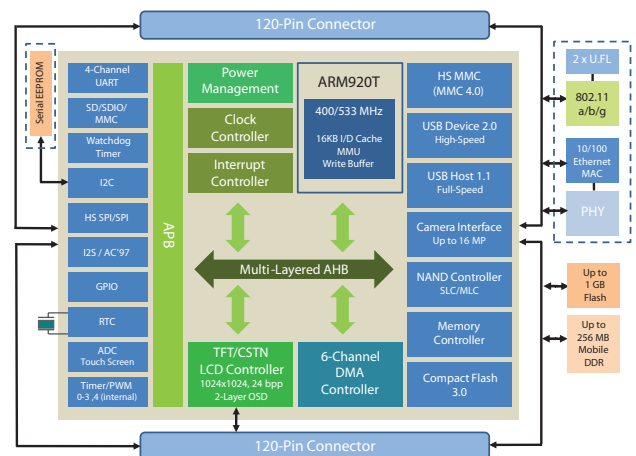
## Overview

The ConnectCore 9M 2443 core module family delivers secure Ethernet and 802.11a/b/g connectivity, leading performance, low-power operation, and rich peripheral interface support for a wide variety of applications such as medical, transportation, security/access control, networked displays and more.

It is an ideal system platform for mobile and battery-operated product designs with full hardware and software support for power management. Based on a 400/533 MHz S3C2443 ARM9 processor, the module offers a wide variety of on-board peripherals such as a TFT/CSTN LCD controller, camera interface, audio codec interfaces, hi-speed USB device, full-speed USB host, high speed memory card support, external mass storage, and other interfaces. On-module 10/100 Mbit Ethernet and 802.11a/b/g interface options allow completely seamless integration into existing network infrastructures.

Digi JumpStart Kits® for Microsoft® Windows® Embedded CE and Digi Embedded Linux® allow immediate and professional embedded product development right out of the box.

## Block Diagram



## Features/Benefits

- High-performance 32-bit core module family
- Bandwidth optimized processor architecture
- Compact and power-efficient design
- Integrated 10/100 Mbit Ethernet networking
- On-module 802.11a/b/g wireless LAN connectivity
- Complete multimedia interface options
- Power-efficient design for low power operation
- Extended/Industrial operating temperature
- FCC Class B low-emission design
- Complete Microsoft Windows Embedded CE 6.0 and Linux platform support with full BSP source code

## Related Items



Design Services



Accessory Kits



Support



Supported Software Platforms



## Development Kits

### Digi JumpStart Kits Overview

#### Digi JumpStart Kit for Embedded Linux

Built around a standard Linux 2.6 kernel distribution, the 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 embedded development platform. It includes all components that are required to build secure network-enabled products based on the ConnectCore 9M 2443 family of wired and wireless core modules.

The kit includes Digi ESP™ for Embedded Linux, a powerful and fully Linux-hosted Integrated Development Environment based on the open Eclipse™ framework. Ideal for new and experienced Linux developers, Digi ESP improves software design productivity by accelerating and greatly simplifying driver and application development through a user-friendly graphical interface.

- Complete Linux development platform for embedded systems
- Royalty-free and with optimized 2.6 kernel and services support
- Linux-based Digi ESP IDE for rapid product development
- Full Linux and Digi Board Support Package (BSP) source code



#### Digi JumpStart Kit for Microsoft Windows Embedded CE 6.0

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. 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 9M 2443 core module family platforms. This includes support for key processor platform features such as power management modes.

- Complete kit for immediate Windows Embedded CE 6.0 development
- Seamless integration into Microsoft Windows Embedded CE environment
- Full Digi Board Support Package (BSP) source code
- 180-day Visual Studio 2005 and Windows Embedded CE 6.0 evaluation



### Digi JumpStart Kit Contents

| Software Platform              | Embedded Linux                                                                                                                                                                                                                                                                                                                                                                                                          | Microsoft Windows Embedded CE 6.0                                                                                                                                                                                                                                                                                       |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Module                         | ConnectCore 9M/Wi-9M 2443 w/128 MB NAND Flash and 64 MB mDDR                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                         |
| Development Board              | 4 serial ports (1 x RS-232/422/485, 1 x RS-232, 2 x TTL), VGA interface, LCD/Touchscreen connector, camera connector, user/application connectors, SD/MMC socket, HS-MMC socket, USB host/device connectors, I <sup>2</sup> C/SPI headers, antenna connectors, screw terminal for access to 8 GPIO signals, 2 user push-buttons, 2 user LEDs, battery, 802.3af (PoE) module support, 9-30VDC power supply, power switch |                                                                                                                                                                                                                                                                                                                         |
| CD/DVD                         | Digi Embedded Linux with Live DVD support, Digi ESP IDE, Linux and platform specific source code, Universal boot loader source code (U-Boot), sample code, documentation                                                                                                                                                                                                                                                | <p>Digi Windows CE 6.0 CD:<br/>Microsoft Windows Embedded CE 6.0 BSP w/source code, Universal Boot Loader (U-Boot) source code, sample code, documentation</p> <p>Microsoft Embedded Windows CE 6.0 R2 evaluation DVD:<br/>180-day trial of Microsoft Embedded Windows CE 6.0, Platform Builder, Visual Studio 2005</p> |
| Documentation                  | Quick start guide, Digi Embedded Linux user's guide, hardware reference manual, development board schematics                                                                                                                                                                                                                                                                                                            | Quick start guide, Digi Windows CE 6.0 BSP user's guide, hardware reference manual, development board schematics                                                                                                                                                                                                        |
| Power Supplies and Accessories | External wall power supply (110/240VAC to 12VDC @ 1.5A) with interchangeable outlet adapters (North America, EU, UK, and Australia), Ethernet cable, serial cable, antennas                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                         |
| Ethernet only                  | CC-9M-2443-LX                                                                                                                                                                                                                                                                                                                                                                                                           | CC-9M-2443-CE6                                                                                                                                                                                                                                                                                                          |
| WLAN + Ethernet                | CC-W9M-2443-LX                                                                                                                                                                                                                                                                                                                                                                                                          | CC-W9M-2443-CE6                                                                                                                                                                                                                                                                                                         |

## Hardware

|                                                    |                                                                                                                                                                  |                                                          |
|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| Processor Type                                     | 32-bit Samsung S3C2443                                                                                                                                           |                                                          |
| Cache                                              | 16k I-/D-cache                                                                                                                                                   |                                                          |
| ARM Core                                           | ARM920T                                                                                                                                                          |                                                          |
| Processor Speed                                    | 400/533 MHz                                                                                                                                                      |                                                          |
| Memory Base Population                             | Up to 1 GB NAND flash                                                                                                                                            |                                                          |
|                                                    | 256 MB mDDR                                                                                                                                                      |                                                          |
| Additional Population Options                      | Memory/processor speed grade/operating temperature                                                                                                               |                                                          |
| Power Over Ethernet                                | Yes, on carrier board                                                                                                                                            |                                                          |
| Pins/Form Factor                                   | Small-footprint module with 2 x 120-pin board-to-board connectors                                                                                                |                                                          |
| UART                                               | 4-channel; Up to 921 Kbps, IrDA 1.0 SIR mode                                                                                                                     |                                                          |
| GPIO                                               | 24 external IRQs, 147 multiplexed IRQs                                                                                                                           |                                                          |
| SPI/HS-SPI                                         | Master and slave mode                                                                                                                                            |                                                          |
| I <sup>2</sup> C                                   | Standard and fast mode                                                                                                                                           |                                                          |
| SD/SDIO/MMC                                        | 1-/4-bit and block/stream, up to 25 MHz                                                                                                                          |                                                          |
| High-Speed (HS) MMC                                | SD HC 1.0, SD MC 2.1, SDIO 1.0, MMC 4.2<br>1-/4-/8-bit modes, up to 50 MHz<br>CE-ATA mode support                                                                |                                                          |
| CF/ATA                                             | Compact Flash 3.0 PC card mode<br>ATA/ATAPI-6 mode w/ PIO/UDMA                                                                                                   |                                                          |
| USB Support with Integrated PHYs                   | USB 2.0 device, 1-port, high-/full-speed<br>USB 1.1 host, 2-port, low-/full-speed                                                                                |                                                          |
| LCD Controller                                     | Up 1024x1024 pixels resolution<br>Up to 16 grey levels/4096 colors (STN)<br>Up to 24 bpp, 2 overlay windows (TFT)                                                |                                                          |
| Camera Interface                                   | ITU-R BT 601/656 8-bit mode support<br>4096x4096 pixels / 2048x2048 scaling<br>Mirror, 180° rotation, digital zoom in<br>RGB 16/24-bit, YCbCr 4:2:0/4:2:2 output |                                                          |
| I <sup>2</sup> S and AC'97 Audio Codec Controllers | •                                                                                                                                                                |                                                          |
| 10-bit ADC & Touch Screen Interface                | 10-channel multiplexed, 500k samples/s                                                                                                                           |                                                          |
| Timers/PWM                                         | 4-ch 16-bit timer/PWM, 1-ch 16-bit internal                                                                                                                      |                                                          |
| 8-/16-bit External Memory Bus Interface            | •                                                                                                                                                                |                                                          |
| Power Management Modes                             | Normal, idle, stop, sleep<br>Ext IRQ, RTC alarm, tick interrupt wake-up                                                                                          |                                                          |
| Watchdog Timer (16-bit)                            | •                                                                                                                                                                |                                                          |
| Real-Time Clock                                    | •                                                                                                                                                                |                                                          |
| Dimensions (L x W x H)                             | 2.362 in (60 mm) x 1.732 in (44 mm) x 0.266 in (6.75 mm)                                                                                                         | 3.662 in (92 mm) x 1.732 in (44 mm) x 0.266 in (6.75 mm) |
| Network Interface - Wired                          |                                                                                                                                                                  |                                                          |
| Physical Layer                                     | 10/100Base-T                                                                                                                                                     |                                                          |
| Data Rate                                          | 10/100 Mbps (auto-sensing)                                                                                                                                       |                                                          |
| Mode                                               | Full or half duplex (auto-sensing)                                                                                                                               |                                                          |

## Specifications

ConnectCore™ 9M 2443

ConnectCore™ Wi-9M 2443

### Network Interface - Wireless LAN

|                             |                                                                                                                                      |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Standard                    | 802.11a/b/g                                                                                                                          |
| Security                    | WEP/WPA/WPA2/802.11i                                                                                                                 |
| Frequency                   | 2.4/5 GHz                                                                                                                            |
| Data Rate                   | Up to 54 Mbps with automatic rate 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) |
| Typical Transmit Power      | 15 dBm @ 54 Mbps (802.11b) / 13 dBm @ 54 Mbps (802.11g) / 9 dBm @ 54 Mbps (802.11a) <sup>1</sup>                                     |
| Typical Receive Sensitivity | -87 dBm @ 1 Mbps (802.11b) / -70 dBm @ 54 Mbps (802.11g) / -70 dBm (802.11a)                                                         |
| Antenna Connectors          | 2 x U.FL                                                                                                                             |

### Power Requirements (3.3V)

|         |        |         |
|---------|--------|---------|
| Maximum | 554 mA | 1200 mA |
| Typical | 279 mA | 504 mA  |
| Suspend | 53 mA  | 173 mA  |

### Environmental

|                                    |                                                                             |                                                                                                               |
|------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Operating Temperature <sup>2</sup> | -40° C to +85° C (-40° F to +185° F)<br>-20° C to +70° C (-4° F to +158° F) | -40° C to +65° C @ 33% duty cycle (-40° F to +149° F)<br>-20° C to +65° C @ 33% duty cycle (-4° F to +149° 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, EN55022:2006 Class B                | • |
| ICES-003 Class B, VCCI Class II, AS 3548                 | • |
| EN61000-3-3:1995 +A1:2001, A2:2005                       | • |
| EN61000-3-2:2006                                         | • |
| EN55024:1998 +A1:2001, A2:2003                           | • |
| FCC Part 15 Sub C Section 15.247                         | • |
| EN 300 328, EN 301 489-17                                | • |
| IC RSS-210 Issue 5 Section 6.2.2(o)                      | • |
| EN60950-1:2001 (UL60950-equivalent), CSA C22.2 No. 60950 | • |

<sup>1</sup> Depending on 5 GHz channel selected. See Hardware Reference Manual for additional information.

<sup>2</sup> Depending on actual Tcase. See Hardware Reference Manual for additional information.

• Module Feature



Visit [www.digiembedded.com](http://www.digiembedded.com) for part numbers.

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