

# Digi Connect EM<sup>®</sup> Family

Wired and Wireless Embedded Modules

The industry's first interchangeable secure device server module, delivering wired and wireless Ethernet network connectivity that is cost-effective and easy to implement.

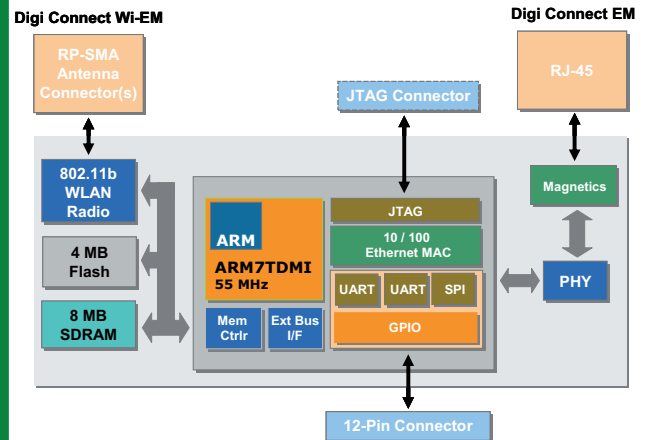


## Overview

Based on a common platform design approach, the Digi Connect EM and Digi Connect<sup>®</sup> Wi-EM offer complete drop-in integration combined with true long-term product availability. This allows you to build future-proof products based on single design by simply selecting between the 10/100 wired and 802.11b module. The Digi Connect EM family makes this possible without the traditional complexities of hardware and software integration work, and at a fraction of the time and cost required to create custom solutions.

Built on Digi's leading 32-bit NET+ARM processor technology, the Digi Connect EM family offers two-port serial-to-Ethernet functionality through Digi's plug-and-play firmware, and the freedom and flexibility of professional embedded software development provided by the easy-to-use, cost-effective and complete Digi JumpStart Kits<sup>®</sup> for NET+OS<sup>®</sup>.

## Block Diagram



## Features/Benefits

- Compact and secure 32-bit device server modules
- Family of low-profile and pin-compatible modules
- 10/100 Ethernet interface or 802.11b WLAN interface
- 2 UART ports and integrated SPI option
- Strong WPA2/802.11i security (PSK and Enterprise)
- Proven low-emission design (FCC Class B)
- Extended/industrial operating temperature
- Digi processor and WLAN technology for true long-term availability
- Seamless migration path to NET+ARM chip design

## Platforms and Services



Design Services

Accessory Kits

Support

NET + OS

PLUG -and- PLAY  
FIRMWARE

Supported Software Platforms



## Integration Kits / Development Kits

### Integration Kit and Digi JumpStart Kit®: Overview

#### Plug-and-Play Integration Kit

Digi Integration Kits provide everything needed for evaluation, rapid prototyping and integration of Digi Connect device server modules using the feature-rich Digi plug-and-play device server firmware. They deliver fully transparent wired and wireless serial-to-network functionality and allow you to quickly network-enable your existing and new product designs.

Digi plug-and-play firmware offers industry-leading features such as a robust IPv6-ready TCP/IP stack, fully-featured serial tunneling, Modbus/TCP, web user interface with private labeling/branding options, user management, file system, SSL/TLS, SSH, Modbus/TCP, intelligent device management via SNMP, configurable e-mail alarms, and patented RealPort® COM/TTY port redirection.

- Complete kit for product evaluation, rapid prototyping, and integration
- Digi plug-and-play firmware eliminates embedded software development
- Transparent wired and wireless device server functionality
- Full private-labeling/branding supported out-of-the-box



#### Digi JumpStart Kit® for NET+OS®

This royalty-free turnkey solution for embedded software development is based on the ThreadX Real-Time Operating System (RTOS), 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 product solutions with leading network security using Digi embedded modules and microprocessors.

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

- Royalty-free turnkey solution for embedded software development
- Built on field-proven and compact ThreadX RTOS
- Fully integrated support for secure, IPv4/IPv6 networking applications
- Professional software development using Windows-based Digi ESP IDE



### Application Kit and Digi JumpStart Kit® Contents

Software Platform	Plug-and-Play Firmware	NET+OS®
<b>Module</b>	Digi Connect EM or Digi Connect Wi-EM module w/ 4 MB Flash, 8 MB SDRAM, 2 dBi dipole antenna (Digi Connect Wi-EM)	
<b>Development Board</b>	2 RS-232 serial ports, 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), SPI header, JTAG header (JTAG modules)	
<b>CD/DVD</b>	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)	Digi NET+OS CD: NET+OS 7, Digi ESP IDE, BSP source code, Sample code, Green Hills MULTI IDE support files, User documentation
<b>Documentation</b>	Getting started, Hardware reference manual, Development board schematics Digi Connect user's guide, Command line reference, RCI specification	Quick start guide, Getting started guide, Hardware reference manual, Development board schematics
<b>Power Supply</b>	External wall power supply (110/240VAC to 12VDC @ 850 mA) with interchangeable outlet adapters (North America, EU, UK, and Australia)	
<b>Accessories</b>	Crossover serial cable, Ethernet cable or 2 dBi dipole antenna	
<b>Other</b>	—	Digi JTAG link USB 2.0 hardware debugger
<b>Kit Part Numbers</b>		
<b>Ethernet Only</b>	DC-EM-KT	DC-EM-NET
<b>802.11b WLAN + Ethernet</b>	DC-WEM-KT	DC-WEM-NET

Please refer to the feature specs on our website for detailed information about the specific software platform capabilities.

## Platform

## Digi Connect EM®

## Digi Connect® Wi-EM

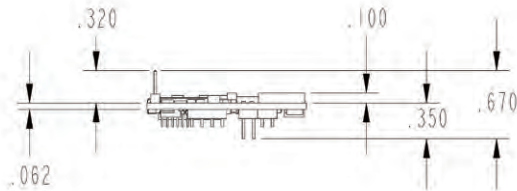
Hardware		
Processor Type	32-bit Digi NS7520 processor	
ARM Core	ARM7TDMI	
Processor Speed	55 MHz	
Memory Base Population	4 MB NOR flash	
	8 MB SDRAM	
Population Options	LED array, LED pin header, Ethernet (RJ-45) connector, Ethernet pin header, Antenna connectors	
Pins/Form Factor	PCB-style module with 12-pin main pin header	
High-Speed TTL Serial Interface	2 with up to 230 Kbps data rate	
	First port with full signal support for TXD, RXD, RTS, CTS, DTR, DSR and DCD, including hardware/software flow control Second port RXD/TXD only	
GPIO	9 shared	
SPI	Master mode (Available through NET+OS development kit only)	
On-Board Power Supervisor	•	
JTAG Interface	NET+OS development modules only (P/N DC-EM-02T-JT, DC-WEM-02T-JT)	
Dimensions (L x W x H)	1.935 in (49.149 mm) x 1.575 in (40.005 mm) x 0.670 in (17.018 mm) Height and width (overhang) varies depending on connector population. See hardware reference manual for additional information.	1.935 in (49.149 mm) x 1.855" (47.117 mm) x 0.0653" (16.586 mm) Height and width (overhang) varies depending on connector population. See hardware reference manual for additional information.
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	RJ-45 or Pin Header	-
Integrated Ethernet MAC/PHY	•	-
Network Interface – Wireless LAN		
Standard	-	IEEE 802.11b
Frequency	-	2.4 GHz
Data Rate	-	Up to 11 Mbps with fallback
Modulation	-	DBPSK (1 Mbps), DQPSK (2 Mbps), CCK (11,5.5 Mbps)
Typical Transmit Power	-	16 dBm
Receive Sensitivity	-	-82 dBm @ 11 Mbps
Connector	-	1/2 x RP-SMA
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

• Module Feature

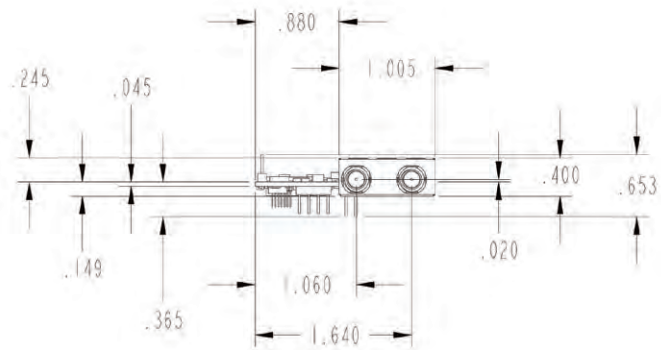
Platform	Digi Connect EM®	Digi Connect® Wi-EM
<b>Environmental</b>		
Operating Temperature	-40° C to +85° C (-40° F to +185° F)	-30° C to +85° C (-22° F to +185° F)
Storage Temperature	-50° C to +125° C (-58° F to +257° F)	
Relative Humidity	5% to 90% (non-condensing)	
Altitude	12,000 feet (3,658 meters)	
<b>Power Requirements @3.3VDC</b>		
Maximum	270 mA (891 mW)	400 mA (1.32 W)
<b>Regulatory Approvals</b>		
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		•

• Module Feature

**Digi Connect EM® - Front**



**Digi Connect® Wi-EM - Front**



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

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