Digi - CC-MX-PE47-ZM-B Datasheet

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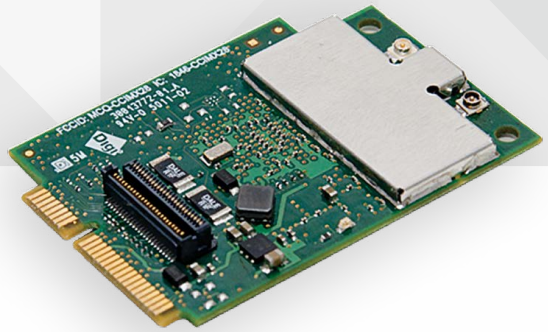
Understanding Embedded - Microcontroller, Microprocessor, FPGA Modules

Embedded - Microcontroller, Microprocessor, and FPGA Modules are fundamental components in modern electronic systems, offering a wide range of functionalities and capabilities. Microcontrollers are compact integrated circuits designed to execute specific control tasks within an embedded system. They typically include a processor, memory, and input/output peripherals on a single chip. Microprocessors, on the other hand, are more powerful processing units used in complex computing tasks, often requiring external memory and peripherals. FPGAs (Field Programmable Gate Arrays) are highly flexible devices that can be configured by the user to perform specific logic functions, making them invaluable in applications requiring customization and adaptability.

Applications of Embedded - Microcontroller,

Details	
Product Status	Obsolete
Module/Board Type	MPU Core
Core Processor	ARM926EJ-S i.mx287
Co-Processor	-
Speed	454MHz
Flash Size	128MB
RAM Size	128MB
Connector Type	Edge Connector - 52
Size / Dimension	2" x 1.38" (51mm x 35mm)
Operating Temperature	-40°C ~ 85°C
Purchase URL	https://www.e-xfl.com/product-detail/digi-international/cc-mx-pe47-zm-b

COMPACT CORE MODULE WITH WIRELESS AND WIRED CONNECTIVITY



CONNECTCARD™ FOR i.MX28

Cost-effective small-footprint System-on-Module solution delivers performance, low-power operation and integrated 802.11a/b/g/n, Bluetooth 4.0 and Ethernet connectivity

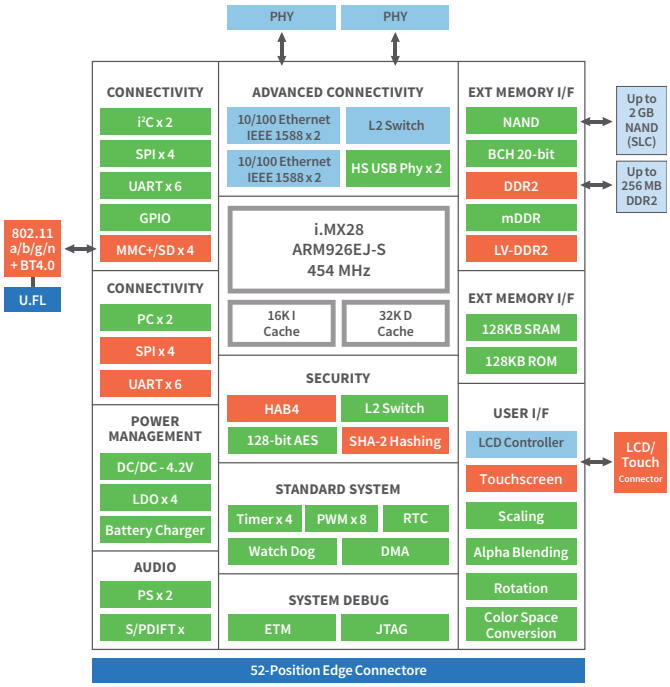
Based on the NXP i.MX28 processor family, the ConnectCard for i.MX28 is an ideal embedded platform solution for connected applications in medical and healthcare, energy, transportation and industrial/building automation.

It offers easy design integration and unique peripheral/interface flexibility in an extremely compact and cost-effective form factor. This module is suitable for a wide range of different devices, including battery powered product designs.

The module is equipped with a highly integrated 32-bit ARM core running at up to 454 MHz, on-chip power management, dual Ethernet and 802.11a/b/g/n networking options, Bluetooth 4.0 connectivity, dual FlexCAN options, GPIO, ADC, UART, USB high-speed, SPI, I2C, I2S, 1-Wire, PWM and JTAG/ETM.

The Digi JumpStart Kit® for Digi Embedded Linux provides a complete turnkey embedded development solution allowing immediate and successful product development with accelerated time-to-market and reduced design risk.

BLOCK DIAGRAM



BENEFITS

- Cost-effective design in compact form factor
- 32-bit ARM processor at up to 454 MHz
- Single/dual 10/100 Ethernet connectivity options
- Pre-approved 802.11a/b/g/n Wi-Fi + Bluetooth 4.0
  - Includes Wi-Fi® Access Point mode + Wi-Fi Direct™
  - Support for Bluetooth 3.0 + HS and Bluetooth LE
  - Ready for Cisco CCX and Wi-Fi Logo certification
- Digi Embedded Linux platform
  - Digi Device Cloud℠ enabled
  - Includes complete Digi BSP source code
- Long-term product availability
- Additional ZigBee®, 802.15.4, cellular and satellite connectivity options (off-module)

RELATED PRODUCTS


ConnectCore® 6


ConnectCore® for i.MX53


ConnectCore® 6 SBC


XBee®


Development Kits

DIGI JUMPSTART KIT® FOR DIGI EMBEDDED LINUX OVERVIEW

Built on a standard Linux 2.6 kernel distribution, the Digi JumpStart Kit for Embedded Linux is tailored to the specific needs of embedded Linux product development and provides an easy-to-use, complete off-the-shelf embedded development platform. It integrates all relevant software components required to build secure network-enabled products, including extended capabilities such as fast system startup, secure boot, enterprise-grade Wi-Fi security, Wi-Fi Direct, Wi-Fi Access Point mode, Bluetooth stack (with HDP), Sun Java SE for Embedded, HAPI HL7 parser and fully integrated Device Cloud support for remote device management and web services for cloud based applications.

The Digi JumpStart Kit for Digi Embedded Linux also provides Digi ESP™ for Embedded Linux, a fully Linux-hosted Integrated Development Environment (IDE) based on the open Eclipse™ framework. Ideal for new and powerful enough for experienced Linux developers, Digi ESP significantly improves the overall software design productivity by accelerating and greatly simplifying driver and application development through a user-friendly and graphically oriented development environment.

- 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

DEVELOPMENT KIT CONTENTS	
MODULE	NXP i.MX287, up to 454 MHz, 256 MB NAND flash (SLC), 256 MB DDR2, Dual Ethernet, 802.11a/b/g/n + BT 4.0, dual CAN Bus, on-module LCD + touchscreen connector, JTAG/ETM
DEVELOPMENT BOARD	4 serial ports (2 x RS-232 Tx/RX, 2 x TTL Tx/Rx), 2 FlexCAN (DB9), VGA connector, external LCD/Touchscreen connectors, user/application connectors, Ethernet RJ-45 connectors, Wi-Fi/Bluetooth antenna connectors (RP-SMA), MicroSD slot, USB OTG connector (micro-B), 1 x USB Host (Type A), I2C/SPI/ADC/PWM headers, 1-Wire connector, Audio: line in/out and headphone in (3.5 mm), user push-buttons, user LEDs, Digi XBee® module sockets (SMT and through-hole) with antenna connector option, 802.3af (PoE) module socket (PoE module sold separately), JTAG connector, 9-30 VDC power supply, battery connector, power switch
CD/DVD	Digi Embedded Linux with Live DVD support, Eclipse-based 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 users guide, hardware reference manual, development board schematics and BOM
ACCESSORIES	External wall power supply with interchangeable outlet adapters (North America, EU, UK, Australia), Ethernet cable, antennas and serial cable
PART NUMBERS	CC-WMX28-LX

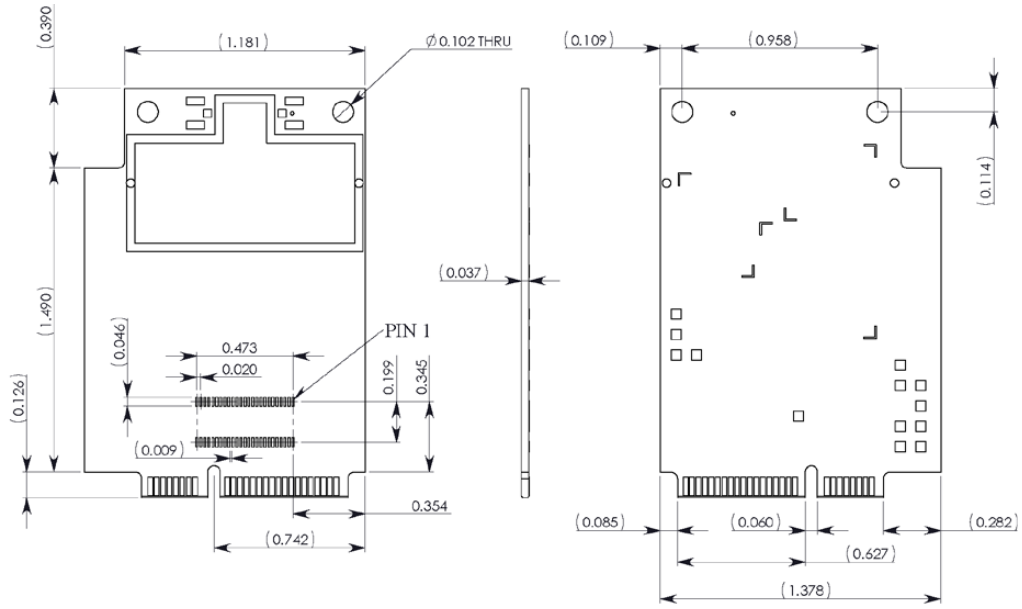
OVERVIEW	ConnectCard™ i.MX28 | ConnectCard™ Wi-i.MX28
PROCESSOR	
PROCESSOR MODELS	NXP® i.MX280, i.MX287
SPEED GRADE	Up to 454 MHz
CORE TYPE	ARM926EJ-S
CACHE MEMORY	16k I-Cache, 32k D-Cache
INTERNAL RAM	128 KB SRAM
INTERNAL ROM (OCOTP)	1,280 Bits
MEMORY	
FLASH	Up to 2 GB NAND flash
RAM	Up to 256 MB DDR2
DEBUG	
JTAG	Yes
ETM/ETB	Yes

SPECIFICATIONS	ConnectCard™ i.MX28 | ConnectCard™ Wi-i.MX28
POWER MANAGEMENT	
POWER MODES	Run, Standby, Deep Sleep
WAKE-UP EVENTS	RTC, GPIO, CAN, USB, Ethernet
AUTO SLOW	Yes
LI-ION BATTERY CHARGER / MONITOR	Yes
CLOCK AND WATCHDOG	
REAL-TIME CLOCK	Yes
ALARM	Yes
WATCHDOG	Yes
SECURITY	
DATA CO-PROCESSOR (DCP)	128-bit AES encryption; SHA-1 / SHA256 hashing
FUSEBOX (OCOTP)	1280 bits
HIGH-ASSURANCE BOOT (HAB4)	Yes
SECURE BOOT	128-bit AES decryption
PERIPHERALS	
UART	Up to 4 channels with bit rates up to 3.25 Mbps (AUART) Up to 1 channel with bit rate up to 115 kbps (DUART)
CAN BUS	Up to 2 channels, CAN Bus 2.0B, bit rates up to 1 Mbps, 64 message buffers (0-8 bytes), low-power modes with wake-up
SPI	Up to 2, master/slave modes
I2S	Up to 1
I2C	Up to 2 channels, master/slave (7-/10-bit addressing), standard (100 kbps) and fast (400 kbps) mode
SD/SDIO/MMC	Up to 4 ports, 1-/4-/8-bit modes, up to 48 MHz
USB 2.0 HIGH-SPEED	Up to 1 USB 2.0 High-Speed Host (with PHY) ; Up to 1 USB 2.0 OTG port (with PHY)
1-WIRE	Maxim DS2482-100+
PWM	Up to 4
ADC	HSADC: Up to 1 channel, up to 2 Mbps sample rate, 8-/10-/12-bit resolution LRADC: Up to 6 channels, 12-bit resolution
GPIO	Up to 128 GPIOs, selectable voltage (1.8/3.3V), interrupt capable
DISPLAY	
RESOLUTION	800x480 (WVGA)
REFRESH RATE	Up to 60 Hz
COLOR DEPTH	8/16/24 bpp
MODES	RGB/DOTCK/SYSTEM
COLOR SPACE CONVERSION	Yes
SCALING	Yes
ROTATION	Yes
TOUCH SCREEN	
TOUCH SCREEN CONTROLLER	4-/5-wire (LRADC)
ETHERNET	
PHYSICAL LAYER	10/100Base-T
DATA RATES	10/100 Mbps, auto-sensing
DUPLEX MODE	Full or half duplex, auto-sensing
IEEE 1588	Yes (i.MX287 only)
POWER OVER ETHERNET (802.3AF)	
POWER OVER ETHERNET	Development board ready for 802.3af PoE application kit (sold separately)

SPECIFICATIONS	ConnectCard™ i.MX28	ConnectCard™ Wi-i.MX28
WI-FI[2]		
STANDARD	N/A	802.11a/b/g/n
ANTENNA CONNECTORS	N/A	2 x U.FL
DUAL DIVERSITY	N/A	Yes
FREQUENCY BANDS	N/A	2.412 - 2.484 GHz; 4.900 - 5.850 GHz
DATA RATES	N/A	802.11b: 1, 2, 5.5, 11 Mbps 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: 15, 30, 45, 60, 90, 120, 135, 150 Mbps (HT40, MCS 0-7)
MODULATION	N/A	DBPSK, DQPSK, CCK, BPSK, QPSK, 16-QAM, 64-QAM
TRANSMIT POWER (±2 DBM)	N/A	802.11b: 17 dBm typical 802.11g/n: 15 dBm typical 802.11a/n: 12 dBm typical
SECURITY	N/A	WEP, WPA-PSK/WPA2-Personal, WPA/WPA2 Enterprise, 802.11i
WI-FI LOGO CERTIFICATION	N/A	Ready
CCXV4 ASD	N/A	Ready
BLUETOOTH[2]		
MODES	N/A	Bluetooth 4.0 (Bluetooth 2.1 + EDR, Bluetooth 3.0 + HS 802.11 AMP, Bluetooth Low Energy)
CLASS	N/A	1.5
PROFILES	N/A	GAP, SPP, HSP, HFP, FTP, PAN, OPP, HID, A2DP, AVRCP, HDP
COEXISTENCE	N/A	Yes
POWER REQUIREMENTS (USE-CASE ESTIMATES)		
WI-FI 2.4 GHZ TRANSMIT, CPU 454 MHZ @ 50%, UART ACTIVE	406 mA @ 5V	
WI-FI 2.4 GHZ RECEIVE, CPU IDLE (AUTO SLOW)	100 mA @ 5V	
WI-FI STANDBY (SLEEP), CPU STANDBY (IRQ)	8 mA @ 5V	
WI-FI STANDBY (HOST OFF), CPU DEEP SLEEP (RTC)	112 µA @ 5V	
MODULE VARIANTS[1]		
POPULATION OPTIONS	Processor models (i.MX280, i.MX281, i.MX283, i.MX285, i.MX286, i.MX287), flash, RAM, Single 10/100 Ethernet, dual 10/100 Ethernet w/1588, 802.11a/b/g/n Wi-Fi with Bluetooth 4.0, 1-Wire, LCD connector, CAN bus	
MECHANICAL		
DIMENSIONS (L X W X H) W/O JTAG/LCD CONNECTOR	51 mm x 35 mm x 2.6 mm	51 mm x 35 mm x 3 mm
MATING CONNECTOR FOR MODULE	Molex, P/N 67910-5700; Tyco, P/N 2041119-x	
RETAINING CLIP FOR MODULE (OPTIONAL)	Molex, P/N 480995701; Tyco, P/N 1717832	
JTAG/LCD CONNECTOR ON MODULE (OPTIONAL)	FCI, P/N SFV31R-1STE1LF; Tyco, P/N 3-1734839-1	
ENVIRONMENTAL		
OPERATING TEMPERATURE	-40° C up to +85° C (-40° F to +185° F) Upper temperature ceilings may require active and/or passive thermal management such as lower clock speed, thermal pads, airflow, etc.	
STORAGE TEMPERATURE	-40° C up to +85° C (-40° F to +185° F)	
RELATIVE HUMIDITY	5% to 90% (non-condensing)	
ALTITUDE	12,000 feet (3,658 meters)	
APPROVALS AND CERTIFICATIONS		
EMISSIONS	FCC Part 15 Class B, EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, ICES-003 Class B, VCCI Class II, AS 3548, FCC Part 15 Subpart C Section 15.247, IC (Industry Canada), RSS-210 Issue 5 Section 6.2.2(o), EN 300 328, EN 301 489-17	
IMMUNITY	EN 55024, EN 301 489-3	
SAFETY	UL/UR, or equivalent	
RADIO	US, Canada, EU, Japan, Australia/New Zealand	
TEMPERATURE	IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-78	
VIBRATION/SHOCK	IEC 60068-2-6, IEC 60068-2-64, IEC 60068-2-27	
DESIGN TEST	HALT	

1 All options available on development module. Production modules may require custom variants. Contact your local distributor or Digi sales office for details.
2 Transmit power and channel availability depending on regulatory requirements and corresponding module variants.

PRODUCT DIMENSIONS



PART NUMBERS	DESCRIPTION
CC-WMX28-LX	ConnectCard for i.MX28 JumpStart Kit for Digi Embedded Linux, installation and setup support package
CC-ACC-LCDW-70	7" WVGA LCD application kit w/resistive touch screen for ConnectCore for i.MX51/i.MX53 and ConnectCard for i.MX28 family
CC-WMX-PF47-RM	ConnectCore for i.MX28 module, i.MX287, 454 MHz, up to 85°C, 128 MB flash, 128 MB DDR2, 802.11a/b/g/n, Ethernet, LCD (International)
CC-WMX-PF47-TK	ConnectCard for i.MX28 module, i.MX287, 454 MHz, up to 85°C, 128 MB flash, 128 MB DDR2, 802.11a/b/g/n, Bluetooth 4.0, dual Ethernet, LCD
CC-WMX-PF47-VM	ConnectCard for i.MX28 module, i.MX287, 454 MHz, up to 85°C, 128 MB flash, 128 MB DDR2, 802.11abgn, Ethernet, LCD
CC-WMX-PF58-JT	ConnectCard for i.MX28 module, i.MX287, 454 MHz, up to 85°C, 256 MB flash, 256 MB DDR2, 802.11a/b/g/n, Bluetooth 4.0, dual Ethernet, LCD
CC-WMX-PF58-QK	ConnectCard for i.MX28 module, i.MX287, 454 MHz, up to 85°C, 256 MB flash, 256 MB DDR2, 802.11a/b/g/n, Bluetooth 4.0, dual Ethernet, LCD (International)
CC-MX-PF47-ZK	ConnectCore for i.MX28 module, i.MX287, 454 MHz, up to 85°C, 128 MB flash, 128 MB DDR2, dual Ethernet, LCD
CC-MX-PF58-ZK	ConnectCore for i.MX28 module, i.MX287, 454 MHz, up to 85°C, 256 MB flash, 256 MB DDR2, dual Ethernet, LCD
CC-WMX-PE47-JT	ConnectCard for i.MX28 module, i.MX280, 454 MHz, up to 85°C, 128 MB flash, 128 MB DDR2, 802.11abgn, Ethernet
CC-WMX-PE47-RM	ConnectCore for i.MX28 module, i.MX280, 454 MHz, up to 85°C, 128 MB flash, 128 MB DDR2, 802.11a/b/g/n, Ethernet (International)
CC-WMX-PE47-TM	ConnectCard for i.MX28 module, i.MX280, 454 MHz, up to 85°C, 128 MB flash, 128 MB DDR2, 802.11a/b/g/n, Bluetooth 4.0, Ethernet
CC-MX-PE47-ZM	ConnectCore for i.MX28 module, i.MX280, 454 MHz, up to 85°C, 128 MB flash, 128 MB DDR2, Ethernet

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