

Manage this device with Digi Remote Manager

# DIGI CONNECTCORE 6UL

Intelligent and connected embedded system-on-module based on the NXP i.MX6 UL, with turnkey Linux software support in a stamp-sized form factor

The **Digi ConnectCore® 6UL** module delivers a secure and extremely cost-effective connected System-on-Module platform that is slightly bigger than a postage stamp.

Its patent-pending Digi SMTplus® surface mount form factor allows you to choose simplified design integration leveraging proven and easy-to-use edge-castellated SMT technology, or a versatile LGA option for ultimate design flexibility with access to virtually all interfaces.

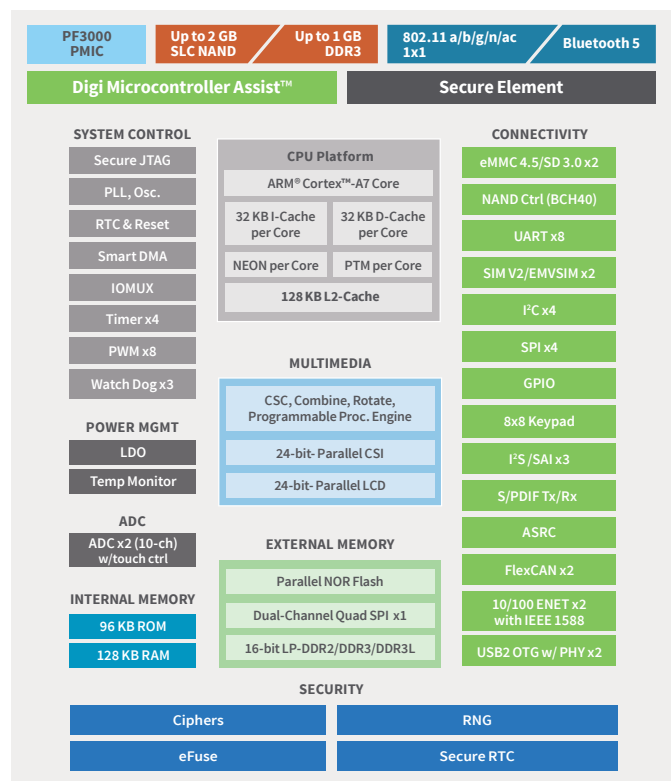
Built on the NXP® i.MX6UL application processor, the module is the intelligent communication engine for today’s secure connected devices. It seamlessly integrates dual-Ethernet and pre-certified dual-band Wi-Fi (802.11a/b/g/n/ac) with Bluetooth® 5 connectivity.

Embedded device security is a critical design aspect for the growing number of connected applications (“IoT”) and the ConnectCore 6UL removes the implementation barriers by providing you with **Digi TrustFence®**, a fully integrated secure module platform with complete Linux® software support.

## BENEFITS

- Stamp-sized, secure, connected System-on-Module platform
  - NXP® i.MX6UL-2, Cortex®-A7 @ 528 MHz
  - Up to 1 GB NAND flash, up to 1 GB DDR3
- Patent-pending low-profile Digi SMTplus® form factor
- Integrated Digi Microcontroller Assist™ for 2.5 µA ultra-low power modes
- Pre-certified 802.11a/b/g/n/ac + Bluetooth® 5 option
- Integrated dual 10/100 Ethernet connectivity
- **Digi TrustFence®** embedded device security framework
- Royalty-free embedded Linux® software platform
- Turnkey development available from **Digi WDS**

## BLOCK DIAGRAM



## RELATED PRODUCTS



## SPECIFICATIONS

## Digi ConnectCore® 6UL

## FEATURES

<b>APPLICATION PROCESSOR</b>	NXP® i.MX6UL-2, ARM® Cortex®-A7 @ 528 MHz, 128 KB L2 cache, with NEON™ MPE (Media Processor Engine) co-processor and programmable smart DMA (SDMA) controller
<b>MEMORY</b>	256 MB / 512 MB / 1 GB NAND flash, 256 MB / 512 MB / 1 GB DDR3
<b>PMIC</b>	NXP® PF3000
<b>VIDEO/GRAPHICS</b>	2D Pixel Processing Pipeline (PXP) for color-space conversion, scaling, alpha-blending, and rotation, 8-/16-/18-/24-bit parallel LCD Display up to WXGA (1366x768), 8- /10- /16- /24-bit Parallel CSI with BT.656 support
<b>SECURITY</b>	Dedicated cryptographic co-processor (Secure Element) with hardware assisted Elliptic Curve support: FIPS 186-4 Elliptic Curve Digital Signature (ECDSA), NIST SP800-56A Elliptic Curve Diffie-Hellman (ECDH), NIST Standard P256 Elliptic Curve, 256-bit SHA/HMAC, X.509 certificate support, Multilevel RNG (NIST SP 800-90A DRBG), Tamper Monitor, 72-bit unique device ID, i.MX6UL Cryptographic Acceleration and Assurance Module (CAAM): AES 128/256, DES/3DES, ARC4, RSA (4096), MD5, SHA-1/224/256, HMAC, AES-CMAC, AES-XCBC-MAC, AES-CCM, TRNG with hardware entropy source (NIST SP-800-90A), Digi TrustFence® Embedded Security Framework
<b>PERIPHERALS/INTERFACES</b>	1 x dedicated MMC 4.5/SD 3.0/SDIO Port (1-/2-4-bit), 2 x USB 2.0 OTG with PHY, 3x I2S/SAI, 1 x S/PDIF Tx/Rx, 2 x FlexCAN (2.0b), 4 x I2C, 4 x SPI, 7 x UART, 4 x Timer, 8 x PWM, 3 x Watchdog, 2 x 12-bit ADC (10 channels) with 4-wire/5-wire touch controller, up to 103 GPIOs
<b>EXTERNAL BUS</b>	16-bit address / up to 16-bit data (multiplexed and non-multiplexed modes)
<b>ETHERNET</b>	Dual 10/100 Mbit Ethernet MAC + IEEE 1588
<b>WIRELESS</b>	802.11a/b/g/n/ac 1x1 (MCS 0-9), Bluetooth® 5 with strong WPA2-Enterprise authentication/encryption for Wi-Fi connections
<b>MCA™ MICROCONTROLLER ASSIST</b>	Ultra-low power ARM® Cortex®-M0+, up to 48 MHz (NXP Kinetis KL03: KL03P24M48SF0)
<b>OPERATING TEMPERATURE</b>	Industrial: -40° C to 85° C (-40° F to 185° F); depending on use case and enclosure/system design
<b>STORAGE TEMPERATURE</b>	-50° C to 125° C (-58° F to 257° F)
<b>RELATIVE HUMIDITY</b>	Relative humidity 5% to 90% (non-condensing)
<b>RADIO APPROVALS***</b>	US, Canada, EU, Japan, Australia/New Zealand
<b>EMISSIONS / IMMUNITY / SAFETY</b>	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, EN 55024, EN 301 489-3, Safety UL/UR (or equivalent)
<b>DESIGN VERIFICATION</b>	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, HALT
<b>MOUNTING / PIN COUNT</b>	Common Digi SMTplus® surface mount footprint using 76-pad edge castellated pads (1.27 mm pitch) or 245-pad LGA (1.27 mm pitch) option
<b>MECHANICAL DIMENSIONS</b>	29 mm x 29 mm x 3.5 mm (1.14 in x 1.14 in x 0.14 in)
<b>POWER CONSUMPTION</b>	Idle Mode (Linux® up, no networking): 100 mA @ 5 V Idle Mode (Linux® up, with 25% Wi-Fi transmit): 118 mA @ 5 V Standby Mode (w/memory refresh): 6 mA @ 5 V
<b>ULTRA LOW-POWER MODES</b>	Event Trigger Mode: 2.5 µA @ 3 V (i.MX6UL off, MCA LLS w/HS Comparator active)** Scheduled Wake-Up Mode: 25 µA @ 3 V (i.MX6UL off, MCA LLS w/HS Comparator active)**
<b>MAXIMUM RADIO-FREQUENCY POWER</b>	63.1 mW
<b>OPERATING FREQUENCY BAND</b>	2402 - 2480 MHz; 5.250 - 5.350 GHz; 5.470 - 5.725 GHz
<b>PRODUCT WARRANTY</b>	3-year

PART NUMBERS	DESCRIPTION
<b>KITS</b>	
CC-WMX6UL-START	ConnectCore 6UL SBC Express, 87 x 63 mm, Industrial temp, 256 MB SLC NAND, 256 MB DDR3, single 10/100 Ethernet, 802.11a/b/g/n/ac, Bluetooth 5, PCB antenna, USB , UART, microSD, Pi HAT and Grove connectors, power (USB + header), and accessories
CC-WMX6UL-KIT	ConnectCore 6UL SBC Pro, Pico-ITX (100 x 72 mm), Industrial temp, 256 MB SLC NAND, 256 MB DDR3, Dual 10/100 Ethernet, 802.11a/b/g/n/ac, Bluetooth 5, XBee socket, cellular connectivity support via PCI Express Mini Card, SIM, NFC, microSD, USB Host, USB OTG, UART, DualCAN, SPI, I <sup>2</sup> C, LVDS, camera, antenna connector, battery connector, power supply, and accessories
<b>CONNECTCORE 6UL – SECURE WIRELESS MODULE</b>	
CC-WMX-JN7A-NE	ConnectCore 6UL-2, 528 MHz, Industrial temp, 1 GB SLC NAND, 1 GB DDR3, Dual 10/100 Ethernet, 802.11a/b/g/n/ac, Bluetooth 5
CC-WMX-JN69-NN	ConnectCore 6UL-2, 528 MHz, Industrial temp, 512 MB SLC NAND, 512 MB DDR3, Dual 10/100 Ethernet, 802.11a/b/g/n/ac, Bluetooth 5
CC-WMX-JN59-NN	ConnectCore 6UL-2, 528 MHz, Industrial temp, 512 MB SLC NAND, 256 MB DDR3, Dual 10/100 Ethernet, 802.11a/b/g/n/ac, Bluetooth 5
CC-WMX-JN58-NE	ConnectCore 6UL-2, 528 MHz, Industrial temp, 256 MB SLC NAND, 256 MB DDR3, Dual 10/100 Ethernet, 802.11a/b/g/n/ac, Bluetooth 5
<b>CONNECTCORE 6UL – SECURE ETHERNET MODULE</b>	
CC-MX-JN7A-Z1	ConnectCore 6UL-2, 528 MHz, Industrial temp, 1 GB SLC NAND, 1 GB DDR3, Dual 10/100 Ethernet
CC-MX-JN69-ZN	ConnectCore 6UL-2, 528 MHz, Industrial temp, 512 MB SLC NAND, 512 MB DDR3, Dual 10/100 Ethernet
CC-MX-JN58-Z1	ConnectCore 6UL-2, 528 MHz, Industrial temp, 256 MB SLC NAND, 256 MB DDR3, Dual 10/100 Ethernet
<b>ACCESSORIES</b>	
CC-ACC-LCDH-10	LCD Application Kit, including 10 in WXGA (high resolution) LCD panel

\* Patent-Pending \*\* Estimated, based on use-case \*\*\* Final certifications pending

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