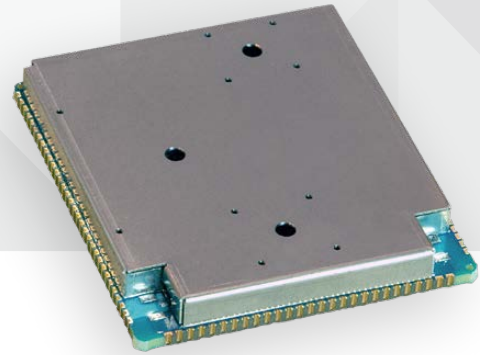




SECURE, CONNECTED  
SYSTEM-ON-MODULE



# DIGI CONNECTCORE 8X

Intelligent and connected embedded system-on-module based on the NXP i.MX 8X with scalable dual/quad-core performance for industrial IoT applications

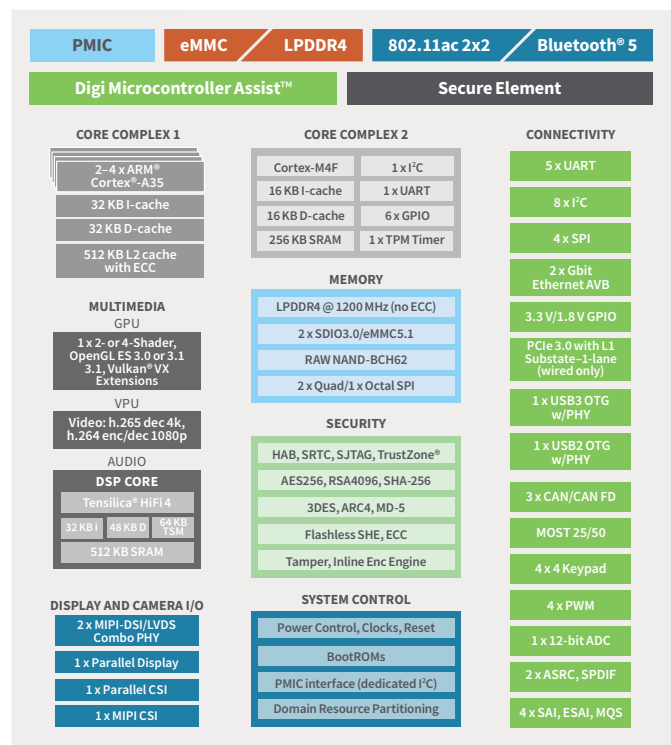
Digi ConnectCore® 8X delivers a secure and cost-effective connected system-on-module platform that measures in at just 40 mm x 45 mm. The Digi SMTplus® surface mount form factor allows you to choose simplified design integration leveraging proven and easy-to-use edge-castellated SMT technology, or a versatile LGA option for ultimate design flexibility with access to virtually all interfaces.

Built on the NXP® i.MX 8X application processor, the module is the intelligent communication engine for today's secure connected devices. Digi ConnectCore 8X can help jump-start the development of streaming video/audio devices, voice control and general human-machine interface solutions. With a multitude of high performance interconnecting options, including 1x USB 3.0 port, dual Gigabit Ethernet, PCIe 3.0, and pre-certified dual-band 2x2 MU-MIMO WLAN, Digi ConnectCore 8X is ideal for developing a wide range of embedded and IoT applications.

## BENEFITS

- Industrial i.MX 8X quad/dual-core SOM and SBC platform family
- Digi SMTplus® form factor (40 mm x 45 mm) for ultimate reliability and design freedom
- Power management with both hardware and software support for low-power designs
- Multi-display and camera capabilities with hardware acceleration
- Pre-certified dual-band 802.11a/b/g/n/ac 2x2 and Bluetooth® 5 connectivity
- Seamless cellular modem and Digi XBee® 3 integration
- Cloud and edge-compute services integration
- Built-in device security with Digi TrustFence®
- Yocto Project® Linux® and Android™ support

## BLOCK DIAGRAM



(See table for Dual SOM differences)

## RELATED PRODUCTS



ConnectCore® 6UL



ConnectCore® 6+



ConnectCore® 8X SBC PRO



Digi XBee® Modules



ConnectCore® 8X Kits

SPECIFICATIONS	Digi ConnectCore® 8X Quad	Digi ConnectCore® 8X Dual
<b>APPLICATION PROCESSOR</b>	NXP® i.MX8QuadXPlus <ul style="list-style-type: none"> <li>• 4x Cortex®-A35 cores @ 1.2 GHz</li> <li>• 1x Cortex-M4F @ 266 MHz core for real-time processing</li> <li>• 1x Tensilica® Hi-Fi 4 DSP</li> </ul>	NXP® i.MX8DualXZ <ul style="list-style-type: none"> <li>• 2x Cortex®-A35 cores @ 1.2 GHz</li> </ul>
<b>MEMORY</b>	Up to 64 GB eMMC, up to 4 GB of LPDDR4	
<b>PMIC</b>	NXP PF8100	
<b>GRAPHICS</b>	Multi-stream-capable HD video engine with H.265 (4Kp30), H.264 (1080p60), VP6/VP8 (1080p60), MPEG-2 (1080p60), MPEG4 (1080p), RealVideo (1080p) decode and H.264 (1080p30) encode; 3D video playback in HD in high-performance families; Superior 3D graphics performance with up to four shaders	H.264 (1080p60), VP6/VP8 (1080p60), MPEG-2 (1080p60), MPEG4 (1080p), RealVideo (1080p) decode and H.264 (1080p30) encode; 3D video playback in HD in high-performance families; Superior 3D graphics performance with up to four shaders
<b>SECURITY</b>	Digi TrustFence®, TRNG, TrustZone, ciphers, security control, secure RTC, secure JTAG, eFuses (OTP)	
<b>PERIPHERALS/INTERFACES**</b>	1x SD 3.0 card interface handles SD/SDIO/MMC protocols (1x additional one reserved on the SOM for supporting eMMC); 5x UARTs (4x UARTs from Cortex-A35 core, 1x UART from Cortex-M4), S/PDIF Tx/Rx; 8x I <sup>2</sup> C (4x I <sup>2</sup> C high-speed DMA support 4x I <sup>2</sup> C low-speed no DMA support); 4x SPI, ESAI, 4x I <sup>2</sup> S/SSI, 3x FlexCAN, MLB150 + DTCP, USB 3.0 OTG with PHY, USB 2.0 OTG with PHY; 4x PWM, GPIO, Keypad, PCIe 3.0 (x1 lane)*, 2x MIPI DSI/LVDS, MIPI CSI, 8/10-bit CSI; 24-bit RGB, RTC, Watchdog, Timers, JTAG	1x SD 3.0 card interface handles SD/SDIO/MMC protocols (1x additional one reserved on the SOM for supporting eMMC); 5x UARTs (4x UARTs from Cortex-A35 core, 1x UART from Cortex-M4), S/PDIF Tx/Rx; 8x I <sup>2</sup> C (4x I <sup>2</sup> C high-speed DMA support 4x I <sup>2</sup> C low-speed no DMA support); 4x SPI, ESAI, 4x I <sup>2</sup> S/SSI, 3x FlexCAN, MLB150 + DTCP, USB 2.0 OTG with PHY; 4x PWM, GPIO, Keypad, PCIe 3.0 (x1 lane)*, 1x MIPI DSI/LVDS, MIPI CSI, 8/10-bit CSI; 24-bit RGB, RTC, Watchdog, Timers, JTAG
<b>ETHERNET</b>	2x 10/100/1000M Ethernet + AVB	
<b>WI-FI</b>	802.11a/b/g/n/ac: 2.412 - 2.484 GHz, 4.900 - 5.850 GHz 802.11b: 1, 2, 5.5, 11 Mbps (17 dBm typical ±2 dBm) 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps (15 dBm typical ±2 dBm) 802.11n: 15, 30, 45, 60, 90, 120, 135, 150 Mbps (12 dBm typical ±2 dBm) HT40, MCS 0-7 802.11ac: 15, 30, 45, 60, 90, 120, 135, 150, 180, 200 Mbps (10 dBm typical ±2 dBm) HT40, MCS 0-9 Note: All data rates provided above are for 1x spatial stream (double the data rate for 2x spatial streams) Security: WEP, WPA-PSK/WPA2 personal, WPA/WPA2 enterprise, 802.11i, access point mode (up to 10 clients), Wi-Fi Direct Industry certifications: Wi-Fi Alliance Logo Certification Ready, CCXv4 ASD Ready	
<b>BLUETOOTH®</b>	Bluetooth® 5	
<b>ON-MODULE MICROCONTROLLER ASSIST</b>	Digi Microcontroller Assist™ <ul style="list-style-type: none"> <li>• Independent Cortex-M0+ microcontroller subsystem</li> <li>• Supporting ultra-low power modes @ &lt;3µA</li> </ul>	
<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>	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	
<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>MECHANICAL DIMENSIONS</b>	118 castellated vias, LGA-474, 1.27 mm pitch, fully shielded for radio emissions and thermal management (heat-spreading) 40 mm x 45 mm x 3.5 mm (1.6 in x 1.8 in x 0.1 in)	
<b>PRODUCT WARRANTY</b>	3-year	

\*PCIe is only supported on wired variants.

\*\*Each single PHY can either be a 1 x 4 lane MIPI-DSI or a 1 x 1 channel LVDS interface for a total of 2 display interfaces. In combination, the two PHYs can be configured to be a single 2-channel LVDS interface.

PART NUMBERS	DESCRIPTION
<b>DIGI CONNECTCORE® 8X DEVELOPMENT KITS</b>	
CC-WMX8-KIT	Digi ConnectCore® 8X SBC Pro development kit - SBC PRO baseboard with Digi ConnectCore 8X module, Pico-ITX (100 x 72 mm), industrial temp, 16 GB eMMC, 2 GB LPDDR4, dual 1 Gbit Ethernet, 802.11a/b/g/n/ac 2x2, Bluetooth® 5, Digi XBee® socket, cellular connectivity support via PCI Express Mini Card, SIM, microSD, USB Host, USB OTG, UART, DualCAN, SPI, I2C, LVDS, camera, antenna connector, battery connector, UART console cable, power supply and antennas, software support for Yocto Project® Linux® and Android™, Digi Microcontroller Assist™
<b>DIGI CONNECTCORE 8X SBC PRO</b>	
CC-SBP-WMX-JM8E	Digi ConnectCore 8X SBC Pro - i.MX8QuadXPlus, 1.2 Ghz, -40° C to 85° C (-40° F to 185° F), 16 GB flash, 2 GB LPDDR4, 802.11a/b/g/n/ac 2x2, Bluetooth 5, dual Gigabit Ethernet
<b>DIGI CONNECTCORE 8X QUAD SOMS</b>	
CC-MX-JM7D-ZN	Digi ConnectCore 8X SOM - Digi ConnectCore8X SOM QuadXPlus 1.2 GHz, 8 GB eMMC, 1 GB LPDDR4, -40° C to 85° C (-40° F to 185° F)
CC-MX-JM8D-ZN	Digi ConnectCore 8X SOM - Digi ConnectCore 8X SOM QuadXPlus 1.2 GHz, 8 GB eMMC, 2 GB LPDDR4, -40° C to 85° C (-40° F to 185° F)
CC-WMX-JM7D-NN	Digi ConnectCore 8X SOM - Digi ConnectCore 8X SOM QuadXPlus 1.2 GHz, 8 GB eMMC, 1 GB LPDDR4, -40° C to 85° C (-40° F to 185° F), 802.11a/b/g/n/ac 2x2, Bluetooth 5
CC-WMX-JM8E-NN	Digi ConnectCore 8X SOM - Digi ConnectCore8X SOM QuadXPlus 1.2 GHz, 16 GB eMMC, 2 GB LPDDR4, -40° C to 85° C (-40° F to 185° F), 802.11a/b/g/n/ac 2x2, Bluetooth 5
<b>DIGI CONNECTCORE 8X DUAL SOMS</b>	
CC-MX-JQ6D-ZN	Digi ConnectCore 8X SOM - Digi ConnectCore 8X SOM DualXZ 1.2 GHz, 8 GB eMMC, 512 MB LPDDR4, -40° C to 85° C (-40° F to 185° F)
CC-MX-JQ7D-ZN	Digi ConnectCore 8X SOM - Digi ConnectCore 8X SOM DualXZ 1.2 GHz, 8 GB eMMC, 1 GB LPDDR4, -40° C to 85° C (-40° F to 185° F)
CC-WMX-JQ7D-ZN	Digi ConnectCore 8X SOM - Digi ConnectCore 8X SOM DualXZ 1.2 GHz, 8 GB eMMC, 1 GB LPDDR4, -40° C to 85° C (-40° F to 185° F), 802.11a/b/g/n/ac 2x2, Bluetooth 5

ACCESSORIES	DESCRIPTION
CC-ACC-LCDH-10	LCD application kit, including 10 in WXGA (High Resolution)

