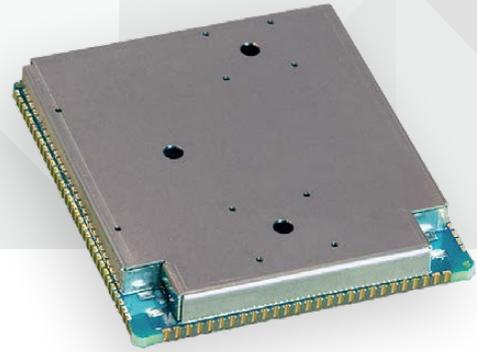SECURE, CONNECTED
SYSTEM-ON-MODULE
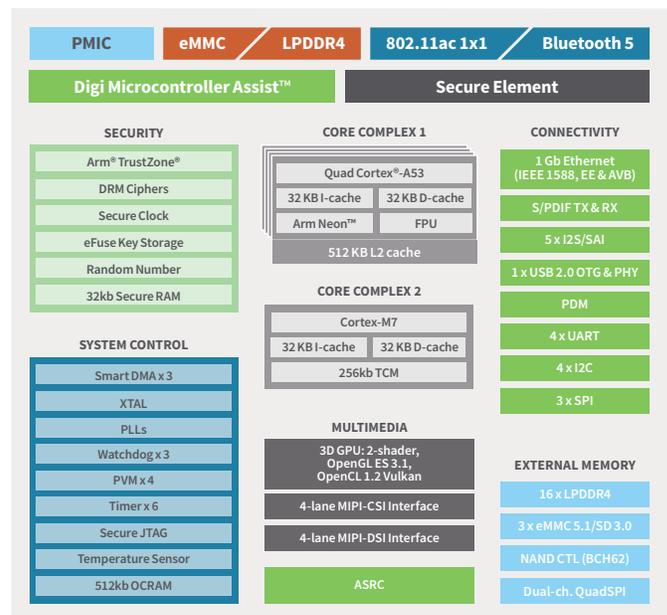
DIGI CONNECTCORE 8M NANO

Embedded system-on-module based on the NXP i.MX 8M Nano processor; designed for longevity and scalability in industrial IoT applications

Digi ConnectCore® 8M Nano, based on the NXP® i.MX 8M Nano application processor, is an integrated system-on-module (SOM) platform. The Nano is designed for a wide range of industrial, medical, agricultural and transportation applications, including Internet of Things (IoT), human-machine interface (HMI), equipment monitoring, audio/voice, edge computing and machine learning (e.g. anomaly detection).

Digi ConnectCore 8M Nano features up to 4x power-efficient Arm® Cortex®-A53 cores and 1x Cortex-M7 core, which allow it to minimize power consumption while maintaining a high standard of performance. This SOM is designed for industrial reliability and the 10+ year product lifecycles of embedded devices. It helps OEMs lower their R&D and development costs and realize a lower total cost of ownership by leveraging pre-certified wireless connectivity, remote management, cloud integration and a complete Linux software platform based on Yocto Project®. In addition, built in Digi TrustFence® enables OEM developers to integrate critical security and data privacy capabilities into their products.

BLOCK DIAGRAM

PMIC	eMMC	LPDDR4	802.11ac 1x1	Bluetooth 5
Digi Microcontroller Assist™			Secure Element	

SECURITY
- Arm® TrustZone®
- DRM Ciphers
- Secure Clock
- eFuse Key Storage
- Random Number
- 32kb Secure RAM

CORE COMPLEX 1
- Quad Cortex®-A53
- 32 KB I-cache
- 32 KB D-cache
- Arm Neon™
- FPU
- 512 KB L2 cache

CONNECTIVITY
- 1 Gb Ethernet (IEEE 1588, EE & AVB)
- S/PDIF TX & RX
- 5 x I2S/SAI
- 1 x USB 2.0 OTG & PHY
- PDM
- 4 x UART
- 4 x I2C
- 3 x SPI

SYSTEM CONTROL
- Smart DMA x 3
- XTAL
- PLLs
- Watchdog x 3
- PVM x 4
- Timer x 6
- Secure JTAG
- Temperature Sensor
- 512kb OCRAM

CORE COMPLEX 2
- Cortex-M7
- 32 KB I-cache
- 32 KB D-cache
- 256kb TCM

MULTIMEDIA
- 3D GPU: 2-shader, OpenGL ES 3.1, OpenCL 1.2 Vulkan
- 4-lane MIPI-CSI Interface
- 4-lane MIPI-DSI Interface
- ASRC

EXTERNAL MEMORY
- 16 x LPDDR4
- 3 x eMMC 5.1/SD 3.0
- NAND CTL (BCH62)
- Dual-ch. QuadSPI

BENEFITS

- Industrial i.MX 8M Nano quad/dual-core System-on-Module
- 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 1x1 and Bluetooth® 5 connectivity
- Seamless cellular modem and Digi XBee® integration
- Cloud and edge-compute services integration
- Built-in device security, identity and privacy with Digi TrustFence®
- Remote monitoring and management with Digi Remote Manager®
- Yocto Project Linux support
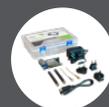
RELATED PRODUCTS

ConnectCore 8M Nano Dev Kit

ConnectCore 8X

ConnectCore 6UL

Digi XBee® Modules

ConnectCore 8X SBC Pro Dev Kit

SPECIFICATIONS	Digi ConnectCore® 8M Nano
APPLICATION PROCESSOR	NXP i.MX8 Nano • 4x Cortex-A53 cores @ 1.4 GHz • 1x Cortex-M7 core @ 750 MHz core for real-time processing
MEMORY	Up to 8 GB eMMC, up to 1 GB of LPDDR4 (16-bit)
PMIC	Rohm BD71850MWV
GRAPHICS	Graphic Processing Unit: • GC7000UL with OpenCL and Vulkan support • 2 shader • 123 million triangles / sec • 0.8 giga pixel / sec • 12.8 GFLOPs 32-bit / 12.8 GFLOPs 16-bit • Supports OpenGL ES 1.1, 2.0, 3.0, OpenCL • Shader clock frequency of 500 MHz LCDIF display controller, supporting up to 1080p 60fps display through MIPI DSI 4-lane MIPI DSI interface
SECURITY	Digi TrustFence®, TRNG, TrustZone, Secure RTC, Secure JTAG, Secure Element
PERIPHERALS/ INTERFACES	1x USB 2.0 OTG controllers with integrated PHY interfaces 3x Ultra Secure Digital Host Controller (uSDHC) interfaces 1x Gigabit Ethernet controller 4x Universal Asynchronous Receiver / Transmitter (UART) modules 4x I2C modules 3x SPI modules
ETHERNET	1x 10/100/1000M Ethernet + AVB
WI-FI	1x1 802.11a/b/g/n/ac dual-band wireless
BLUETOOTH	Bluetooth® 5
ON-MODULE MICROCONTROLLER ASSIST	Digi Microcontroller Assist™ • Independent Cortex-M0+ microcontroller subsystem • Supporting ultra-low power modes @ <3µA
OPERATING TEMPERATURE	Industrial: -40° C to 85° C (-40° F to 185° F), depending on use case and enclosure/system design
STORAGE TEMPERATURE	-50° C to 125° C (-58° F to 257° F)
RELATIVE HUMIDITY	5% to 90% (non-condensing)
RADIO APPROVALS	US, Canada, EU, Japan, Australia/New Zealand
EMISSIONS/ IMMUNITY/ SAFETY	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
DESIGN VERIFICATION	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
MECHANICAL DIMENSIONS	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)
PRODUCT WARRANTY	3-year

PART NUMBERS	DESCRIPTION
DIGI CONNECTCORE 8M NANO DEVELOPMENT KITS	
CC-WMX8MN-KIT	Digi ConnectCore 8M Nano development kit with development board, Quad Core, 8 GB eMMC, 1 GB LPDDR4 Wireless
DIGI CONNECTCORE 8M NANO SOMS	
CC-WMX-FS7D-NN	Digi ConnectCore 8M Nano, Quad Core, 8 GB eMMC, 1 GB LPDDR4 Wireless
CC-WMX-FR6D-NN	Digi ConnectCore 8M Nano, SoloLite Core, 8 GB eMMC, 512 MB LPDDR4 Wireless
CC-MX-FS7D-ZN	Digi ConnectCore 8M Nano, Quad Core, 8 GB eMMC, 1 GB LPDDR4 Ethernet
CC-MX-FR6D-ZN	Digi ConnectCore 8M Nano, SoloLite Core, 8 GB eMMC, 512 MB LPDDR4 Ethernet

ACCESSORIES	DESCRIPTION
CC-ACC-LCDW-10	LCD application kit, including 10 in WXGA (1280x800) LCD panel with PCAP touch

FOR MORE INFORMATION
PLEASE VISIT DIGI.COM

TRUSTFENCE yocto PROJECT Bluetooth® WiFi WiFi ALLIANCE MEMBER NXP

The information provided in this document is preliminary and may be subject to change without notice.

91004417
A4/320

DIGI INTERNATIONAL WORLDWIDE HQ
877-912-3444 / 952-912-3444 / www.digi.com

DIGI INTERNATIONAL JAPAN
+81-3-5428-0261 / www.digi-intl.co.jp

DIGI INTERNATIONAL GERMANY
+49-89-540-428-0

DIGI INTERNATIONAL SINGAPORE
+65-6213-5380

DIGI INTERNATIONAL CHINA
+86-21-50492199 / www.digi.com.cn

DIGI