![Digi logo]

Digi ConnectCore MP2

Versatile, secure, wireless system-on-module with NPU and ISP for edge AI and computer-vision applications and complete Linux support in Digi SMTplus form factor

Digi ConnectCore® MP2 is a versatile, secure and cost-effective wireless system-on-module (SOM) designed for industrial applications and smart connected devices. STMicroelectronics' STM32MP25 adds a neural processing unit (NPU) and image signal processor (ISP) for edge AI and computer vision applications. The fully integrated wireless connectivity, time-sensitive networking (TSN) and the compact SMTplus® form factor (30 x 30 mm) make it ideal for small portable devices and **Industry 4.0**. The SOM is designed for maximum power efficiency to support battery powered applications.

Digi ConnectCore MP25 offers industrial-rated design for longevity in demanding 24/7/365 operation and 10+ year product lifecycles, backed by Digi's industry-leading 3-year warranty. **Digi Embedded Yocto®**, combined with powerful **Digi ConnectCore Cloud Services** and **Digi ConnectCore Security Services**, makes Digi ConnectCore MP2 a complete solution for creating and maintaining secure connected devices throughout their lifecycle.

The scalable Digi ConnectCore MP2 module family provides a wide range of wireless connectivity options with pre-certified 802.11ac Wi-Fi 5 and Bluetooth 5.2, along with PCIe Gen2, USB 3.0, CAN-FD and Gigabit Ethernet with TSN support. In addition, it includes high end graphics capabilities such as a 3D GPU, video encoder and decoder (VPU), high resolution MIPI, LVDS or parallel display interfaces as well as a MIPI camera port with a image signal processor (ISP).
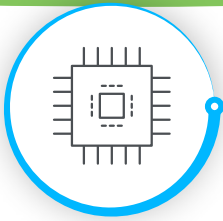
Embedded device security is a critical design aspect for connected IoT applications. **Digi ConnectCore SOM solutions** provide built-in security with **Digi TrustFence®**, a fully integrated IoT security framework simplifying the process of securing connected devices. **Digi ConnectCore Cloud Services**, **Digi ConnectCore Security Services** and **Expert Support** provide additional capabilities for development, deployment and maintenance throughout the entire product lifecycle.

Our decades of embedded experience and millions of deployed devices tell our story; Digi is a trusted solutions provider dedicated to simplifying the way OEMs design, build, deploy and maintain secure connected products. **Digi Wireless Design Services** (WDS) provides additional integration support, certification assistance, custom design and build services to get your products to market smarter and faster.
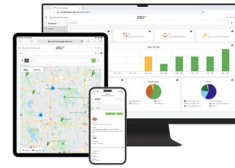

PMIC	Up to 128 GB eMMC	Up to 2 GB DDR4	Wi-Fi 5 802.11a/b/g/n/ac	Bluetooth® 5.2

Arm® dual Cortex®-A35 1.5 GHz
Arm® NEON™ and Arm® TrustZone®
L1 32 kB I / D · 512 kB L2 cache

Arm® Cortex®-M33 400 MHz
FPU · MPU

Arm® Cortex®-M0+ 200 MHz

EDGE AI AND COMPUTER VISION

NPU 1.35TOPS / up to 900 MHz	ISP (color conversion, contrast, exposure control, RawBayer to RGB demosaicing)

CONNECTIVITY
- 2x or 3x Gigabit Ethernet/TSN GMAC, 2+1 switch; IEEE 1588v2
- 1x USB 2.0 HS host w/ PHY 1x USB 2.0/3.0 HS/SuperSpeed dual role (OTG) w/ PHY
- 2x Camera (1x MIPI CSI-2, 1x parallel)
- 1x PCI Express w/ PHY
- 3x CAN FD including 1x TTCAN
- Multifunction digital filter Up to 8 channels / 8 filters
- Up to 8x SPI (50 Mbit/s) including 3x I2S
- 8x I2C FM+ (1 Mbit/s)
- 5x UART + 4x USART (12.5 Mbit/s)
- 4x I3C (12.5 Mbit/s)
- Audio digital filter
- Up to 4x SAI
- SPDIF Rx with 4 inputs

GRAPHICS / VIDEO
- 3D GPU — VeriSilicon at 900 MHz OpenGL® ES 3.2.8 — Vulkan 1.2
- OpenCL™ 3.0 / OpenVX™ 1.3
- VPU (encoder / decoder)
- MIPI DSI® controller
- LCD-TFT controller
- FPD-1 and OpenLDI (LVDS)

SYSTEM / CONTROL
- Power supply regulators
- Crystal and internal oscillators
- Cyclic Redundancy Check
- 96-bit unique ID
- Up to 7x watchdogs (I and W)
- Up to 172 GPIOs
- 3x 16-bit motor control timers
- 10x 16-bit timers
- 4x 32-bit timers
- 5x 16-bit low-power timers

SECURITY
- Digi TrustFence®
- TrustZone®
- AES-256 with SCA, DES/TDES
- Trusted Platform Module (opt)
- HASH (SHA-1, SHA-224, SHA-256, SHA3), HMAC
- 8x tamper input pins 8x active tamper output pins
- PKA for RSA with SCA
- Secure boot / Secure RTC
- Analog true RNG
- RIF: isolation, safe sharing
- SPI OTFDEC decryption
- DDR encryption/decryption

ANALOG
- 3x 12-bit ADCs (5 Msps each)
- Temperature sensor

Key features, benefits and applications

- Industrial-grade, scalable, embedded SOM platform
- NPU and ISP providing edge AI and computer-vision capabilities
- Pre-certified dual-band Wi-Fi 5 (802.11ac) and Bluetooth 5.2
- Power management with hardware and software support
- Digi SMTplus form factor (30 x 30 mm) for ultimate reliability
- Seamless cellular modem and **Digi XBee®** integration
- **Digi ConnectCore Cloud Services** for remote access, device management, OTA firmware updates and IoT application enablement
- **Digi Embedded Yocto** Linux and **Digi TrustFence** security support
- Turnkey development services available from **Digi WDS**

Connect this device with Digi ConnectCore Cloud Services.
Create. Configure. Deploy. Manage.

SPECIFICATIONS	DIGI CONNECTCORE MP255 SOM
FEATURES	
APPLICATION PROCESSOR	STMicroelectronics® STM32MP255F, Arm® 64-bit dual Cortex®-A35 at 1.5 GHz; Cortex-M33 at 400 MHz with FPU/MPU; Cortex M0+ at 200 MHz in SmartRun domain
MEMORY	Up to 128 GB Flash (eMMC™), up to 2 GB DDR4 (16-bit)
PMIC	STMicroelectronics Power Management IC — STPMIC25A
ARTIFICIAL INTELLIGENCE	Neural Processing Unit (NPU) — VeriSilicon® at 900 MHz, 1.35 TOPS
VIDEO / GRAPHICS	3D GPU — VeriSilicon at 900 MHz; OpenGL® ES 3.2.8 — Vulkan 1.2; Open CL™ 3.0, OpenVX™ 1.3; up to 138 Mtriangle/s, 900 Mpixel/s; LCD-TFT controller, up to 24-bit digital RGB888; up to FHD (1920 x 1080) at 60 fps, 3 layers including a secure layer; YUV support, 90° output rotation; MIPI DSI®, 4x data lanes, up to 2.5 Gbit/s each; up to QXGA (2048 x 1536) at 60 fps; FPD-1 and OpenLDI JEIDA/VESA (LVDS), 1x link of 4x data lanes, up to 1.1 Gbit/s each, up to 1080p at 60 fps
CAMERA	Camera interface #1 (5 Mpixels at 30 fps); MIPI CSI-2®, 2x data lanes up to 2.5 Gbit/s each; 8- to 16-bit parallel, up to 120 MHz; RGB, YUV, JPG, RawBayer with basic ISP, downscaling, cropping, 3-pixel pipelines; Camera interface #2 (1 Mpixels at 15 fps); 8- to 14-bit parallel, up to 80 MHz; RGB, YUV, JPG, cropping; Digital parallel interface up to 16-bit input or output
SECURITY	Secure boot, TrustZone® peripherals, up to 8 tamper input pins + 8 active tamper output pins, 1x CRC calculation unit, 2x cryptographic processors, hardware acceleration with DMA support; environmental monitors, display secure layers; Encryption/decryption: AES-128/192/256, DES/TDES; secure AES-256 with SCA; RSA, ECC, ECDSA with SCA; HASH (SHA-1, SHA-224, SHA-256, SHA3), HMAC; true random number generator; "on-the-fly" DDR encryption/decryption (AES-128); "on-the-fly" OTFDEC Octo-SPI flash memory decryption (AES-128); Complete resource isolation framework; **Digi TrustFence** embedded security framework
PERIPHERALS / INTERFACES	8x I2C FM+ (1 Mbit/s, SMBus/PMBus®); 4x I3C (12.5 Mbit/s); 5x UART + 4x USART (12.5 Mbit/s, ISO7816 interface, LIN, IrDA, SPI slave); 8x SPI (50 Mbit/s, including 3 with full duplex I2S audio class accuracy via internal audio PLL or external clock); 4x SAI (stereo audio: I2S, PDM, SPDIF Tx); SPDIF Rx with 4 inputs; 3x SDMMC up to 8-bit, out of which one is used for eMMC and one for Wi-Fi; up to 3x CAN controllers supporting CAN FD protocol, out of which one supports time-triggered CAN (TTCAN); 1x USB 2.0 high-speed Host with embedded 480 Mbits/s PHY; 1x USB 2.0/3.0 high-speed/SuperSpeed dual role data with embedded 480 Mbits/s and 5 Gbits/s PHY (5 Gbits/s PHY shared with PCI Express); 1x USB Type-C® Power Delivery control with two CC lines PHY; 1x PCI Express with embedded 5 Gbits/s PHY (PHY shared with USB 3.0 SuperSpeed); up to 172 secure I/O ports with interrupt capability; up to 6 wake-up inputs; up to 8 tamper input pins + 8 active tamper output pins; 3x ADCs with 12-bit max. resolution (up to 5 Msps each, up to 24 channels); Internal temperature sensor; 1x multifunction digital filter (MDF) with up to 8 channels/8 filters; 1x audio digital filter with 1 filter and sound activity detection; Internal or external ADC reference VREF+; 4x 32-bit timers with up to 4 IC/OC/PWM or pulse counter and quadrature (incremental) encoder input; 3x 16-bit advanced motor control timers; 10x 16-bit general-purpose timers (including 2 basic timers without PWM); 5x 16-bit low-power timers; Secure RTC with subsecond accuracy and hardware calendar; up to 2x 4 Cortex-A35 system timers (secure, non-secure, virtual, hypervisor); 2x SysTick M33 timer (secure, non-secure); 1x SysTick M0+ timer; 7x watchdogs (5x independent and 2x window)
ETHERNET	2x Gigabit Ethernet with external PHY interfaces, optional 3x Gigabit Ethernet GMAC interfaces and 2+1 switch with STM32MP257F MPU; TSN, IEEE 1588v2 hardware, MII/RMII/RGMII
WIRELESS	Wi-Fi 5 dual-band 802.11a/b/g/n/ac 1x1 radio (up to 433.3 Mbps) with strong WPA3-Enterprise authentication/encryption; −40 °C to 85 °C (−40 °F to 185 °F) full temperature range; Bluetooth 5.2 (Basic Rate, Enhanced Data Rate and Bluetooth Low Energy)

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

DIGI CONNECTCORE MP2

Specifications and Part Numbers

SPECIFICATIONS	DIGI CONNECTCORE MP255 SOM
FEATURES	
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, Brazil, Mexico
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, Safety (IEC 62368-1); visit digi.com/resources/certifications for latest updates
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
MOUNTING / PIN COUNT	Digi SMTplus (30 mm x 30 mm) surface mount footprint using 333-pad LGA (1.27 mm pitch) with option for simple carrier board designs supporting subset of interfaces
MECHANICAL DIMENSIONS	30 mm x 30 mm x 3 mm (1.18 in x 1.18 in x 0.12 in)
PRODUCT WARRANTY	3-year

*Visit digi.com/resources/certifications for latest updates.

PART NUMBERS	DIGI CONNECTCORE MP2 DEVELOPMENT KITS
DIGI CONNECTCORE MP255 DEVELOPMENT KIT	
CC-WMP255-KIT	Digi ConnectCore MP255 Development Kit with development board and Digi ConnectCore MP255 dual 1 GB DDR4, 8 GB eMMC, wireless SOM including Digi ConnectCore Cloud Services Premium 1-year license

PART NUMBERS	DIGI CONNECTCORE MP2 SYSTEM-ON-MODULES
DIGI CONNECTCORE MP255 — SECURE WIRELESS MODULE	
CC-WST-J17D-NK	Digi ConnectCore MP255 dual A35 1.5 GHz, M33, GPU, ISP, NPU, 1 GB DDR4, 8 GB eMMC, secure boot, −40 to 85 °C (−40 to 185 °F), 802.11a/b/g/n/ac Wi-Fi 5 1x1, Bluetooth 5.2
DIGI CONNECTCORE MP255 — SECURE ETHERNET MODULE	
CC-ST-J17D-ZK	Digi ConnectCore MP255 dual A35 1.5 GHz, M33, GPU, ISP, NPU, 1 GB DDR4, 8 GB eMMC, secure boot, −40 to 85 °C (−40 to 185 °F)

PART NUMBERS	DIGI CONNECTCORE MP2 ACCESSORIES
ACCESSORIES	
CC-ACC-LCDH-10	LCD application kit, including 10 in WXGA (high resolution) LCD panel

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DIGI CONNECTCORE MP2

Part Numbers

PART NUMBERS	DIGI CONNECTCORE CLOUD SERVICES
CC-CS-ESS-1-1YR	Digi ConnectCore Cloud Services — Essential 1-year (1 device)
CC-CS-ESS-100-1YR	Digi ConnectCore Cloud Services — Essential 1-year (100 devices)
CC-CS-ESS-100-3YR	Digi ConnectCore Cloud Services — Essential 3-year (100 devices)
CC-CS-ESS-100-5YR	Digi ConnectCore Cloud Services — Essential 5-year (100 devices)
CC-CS-PRM-1-1YR	Digi ConnectCore Cloud Services — Premium 1-year (1 device)
CC-CS-PRM-100-1YR	Digi ConnectCore Cloud Services — Premium 1-year (100 devices)
CC-CS-PRM-100-3YR	Digi ConnectCore Cloud Services — Premium 3-year (100 devices)
CC-CS-PRM-100-5YR	Digi ConnectCore Cloud Services — Premium 5-year (100 devices)

PART NUMBERS	DIGI CONNECTCORE SECURITY SERVICES
CC-SEC-ESS	Digi ConnectCore Security Services — Essential 1-year
CC-SEC-PRM	Digi ConnectCore Security Services — Premium 1-year
CC-SEC-ENT	Digi ConnectCore Security Services — Enterprise 1-year
CC-SEC-ENT-ADD	Digi ConnectCore Security Services — Enterprise for additional product (same duration as main contract)

PART NUMBERS	EXPERT SUPPORT
DG-EXPE-12	Expert 12x5 support for end users
DG-EXPE-24	Expert 24x7 support for end users

For more information, please visit digi.com.

For more information about Digi ConnectCore MP2,
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