

MC-Edge Intelligent Gateway

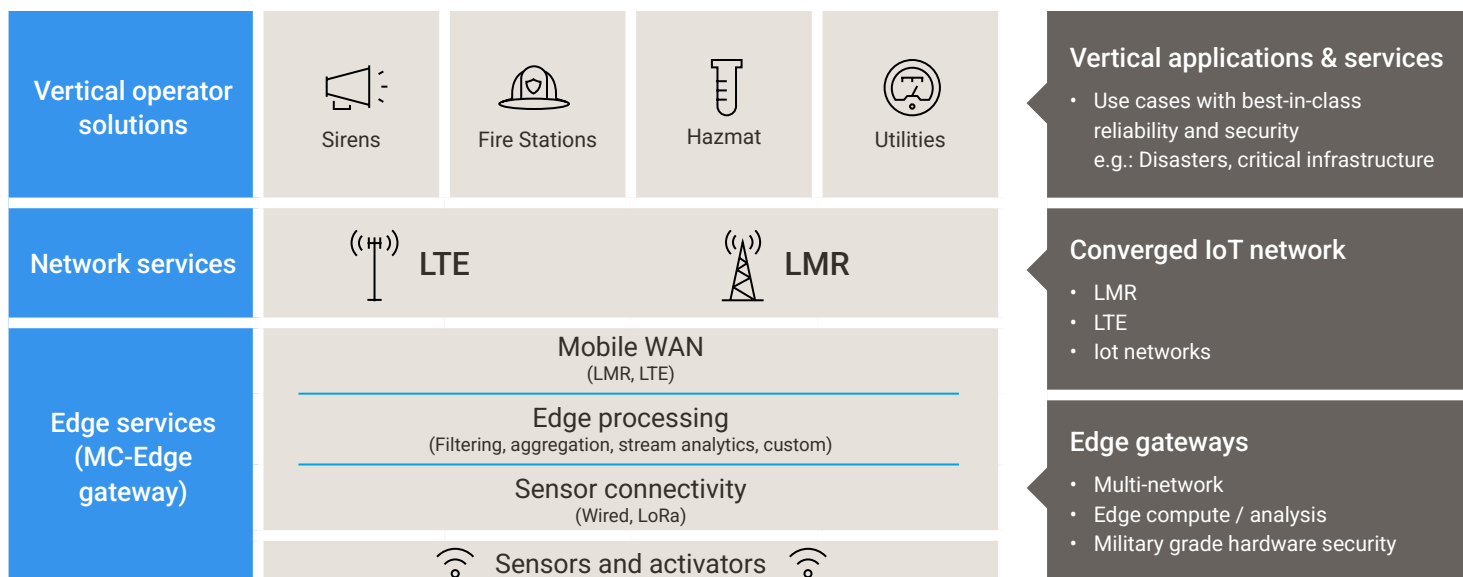
Your gateway to mission-critical IoT

Now more than ever, systems operating in mission-critical environments require a new level of connectivity and security. Whether it's a natural disaster or a man-made emergency, IoT devices are often on the first line of defense. MC-Edge® is an intelligent gateway designed for IoT applications.

MC-Edge's extensive security, ultra-reliable communication capabilities and reliability of transport across two-way radio, LTE, and analog radio modes make it easy for you to implement, support and grow your IoT systems to fully support all your mission-critical operations. Built for versatility, MC-Edge has you covered today, and prepared for tomorrow.

MC-Edge works with ThingPark, Actility's LoRaWAN Network and is fully configurable and manageable from the ThingPark Enterprise console. This addresses the need for the strictest requirements in security and operational continuity.





Utilize MC-Edge to expand and grow your sensor networks

The MC-Edge gateway enables exceptional remote monitoring and control capabilities.

Expand reach with wireless built-in

Expand your operations that currently have no power or communication coverage with MC-Edge, wireless LoRaWAN gateways and servers. MC-Edge is used as a data aggregator for LoRaWAN IoT devices that can span wide areas with minimal power consumption. Utilize MC-Edge to backhaul LoRa data over two-way radio or wireless broadband to your IoT applications.

Ensure mission-critical system security

MC-Edge maintains system integrity by automatically blocking malicious traffic and logging unauthorized attempts. The platform supports IEEE 802.1x for strict identity verification and IPsec to ensure data confidentiality and integrity. For high-security environments, AES-256 encryption protects data at rest and in transit. Enhanced physical protection is available via an optional HSM to isolate cryptographic keys and Data Safeguard technology, which prevents key theft by automatically deleting secrets if physical storage extraction is detected.

Embrace network agnostic connectivity and redundancy

MC-Edge utilizes MDLC communication protocol to link distant sites for easy scaling and provide alternative communication links in case of fallback. Use of this standard functionality eliminates the need for costly custom programming or additional communications infrastructure.

Automate C-Code development with MC-Edge AI code assistance

MC-Edge AI code assistance is an optional, dedicated assistant for C developers, deeply customized with proprietary knowledge of MC-Edge system architecture, protocols, and APIs, allowing you to stop writing code from scratch. Beyond code generation, the toolkit acts as a comprehensive assistant, automatically fixing errors, writing application tests, and adhering to system constraints for efficient solutions.



Enhance operations with edge computing

With edge computing, activities such as decision-making, filtering, logging and analytics are handled on the edge, thus increasing network capabilities, responsiveness and efficiency.

System specifications

GENERAL	
Operating temperature	-30°C to 60°C (-22°F to 140°F)
Dimensions (CPU)	2.95 in. x 6.3 in. x 4.4 in (WxHxD) 75 mm x 160 mm x 112 mm (WxHxD)
Dimensions (SPE I/O module)	1.4 in. x 6.5 in. x 4.4 in. (WxHxD) 36 mm x 165 mm x 112 mm (WxHxD)
Dimensions (CAN bus I/O module)	2.95 in. x 6.3 in. x 4.4 in. (WxHxD) 75 mm x 160 mm x 112 mm (WxHxD)
Backplane dimensions	6.2 in. x 1.2 in x 3.1 in. (WxHxD) 158 mm x 31 mm x 79 mm (WxHxD)
DIN rail option	Yes
Wall mount option	Yes (using DIN rail)
Construction	Modular
Input voltage	9-30V DC
Real-time clock (RTC) backup battery type	Rechargeable coin-cell battery, capable of maintaining the RTC for at least 30 days at +25°C when the main power is disconnected
RTC battery charging temperature	0°C to 45°C (32°F to 113°F)
SDIO card	Yes
Internal transceiver options	P25 (North America), LTE, Private LTE, LoRa
External connections	Analog MOTOTRBO TETRA P25 Null Modem
Network topologies	Point-to-point/multipoint Store and forward Star Tree hierarchy Multi-communication backhaul Supported (dual/redundant link)

CPU		
Real-time clock (RTC)	Hardware clock with year, month, day, hour, minute and second supported	
Communication Ports	RS232/RS485	1 port on the main board non-isolated and additional up to 2 ports on piggy Isolated (<115.2Kbps/<460.8Kbps)
	Ethernet	Up to 3 ports, 10/100Mbps (auto negotiation)
	USB	Host port

Enable control and P25 radio system remote management

Integrated into Motorola Solutions' P25 dispatch or radio sites, MC-Edge can be used to control physical access, monitor environmental sensors and manage alarms.

SOFTWARE		
Configuration and maintained tool	PC Tool (STS)	
MDLC Networking	Yes	
Direct Link	Yes	
RTU to RTU communication	Yes	
MDLC Store and Forward	Yes	
Broadcast	Yes	
Diagnostic (local, remote)	Yes	
Error Logger (local, remote)	Yes	
User programming	C IEC61131-3 MC-Edge AI code assistance	
Security	AES-256 end-to-end encryption User and machine authentication Central key management Central authentication server Access control Sensitive data in rest encryption IPsec SCEP PKI Secure hardware key storage (MAXIM) Complies with EU Radio Equipment Directive (RED) Article 3.3 Hardware security module (HSM)	
Protocols	DNP 3.0, MDLC, Modbus, MQTT, SSH, SFTP	
Time synchronization	MDLC, NTP	
Set date and time	Yes (with time zone and Daylight Savings Time support)	
Services	DNS	Yes
	DHCP	Yes





I/O PORTS		I/O PERFORMANCES
Main board	3 DI + 1 DO ML (isolated)	2 kHz for all inputs
SPE I/O modules		
Mixed I/O module	16 DI	DI 1-8 counter input frequency: 10 kHz DI 9-16 counter input frequency: 1 kHz
	4 DO EE	3 DOs form A (two contacts), 1 DO form C (3 contacts)
	4AI (+20mA, 4-20mA)	AI resolution 16 bit, 0.1% @ 25C
DI/DO module	32 DI/DO FET	1 kHz for all inputs
	16 DI/DO FET	
CAN bus I/O modules		
Mixed I/O module	7 DI / 6 DO 4EE 2ML (isolated)	2 kHz for all inputs
	4 AI (+20mA, 4-20mA)	16 bit, 0.1% @ 25C
	1 AO (isolated) (AO: 0 -20mA, 4 -20mA, 0-10V)	12 bit, 0.25% @ 25C
Mixed digital	8 DO EE 16DI 5-18 V /DRY	- 2 kHz for all inputs
	8 DO EE 16DI 18-60 V	- 2 kHz for all inputs

4G (LTE) / 3G SUPPORTING BANDS S

	North America	Europe, Middle East, Africa	Asia Pacific	Latin America
4G bands (LTE)	Verizon B4 & B13 B8 (900MHz US), B48 (CBRS US)	B3, B7, B20, CBRS EU: B42, B43	B3, B28	B4, B7, B28
3G bands (supporting bands)	B2, B5	B1 for fallback	B5 for fallback (3G Excluded in ANZ)	

INTERNAL P25 RADIO SPECIFICATIONS (NORTH AMERICA)

	VHF	700/800 MHZ
Frequency range / bandsplits ²	TX: 136-174MHz RX: 136-174MHz	TX: 763-776, 793-806/806-824, 851-870MHz RX: 763-776/ 851-870MHz
Channel spacing	30/25/12.5kHz	25/12.5KHz
TX output power	1-5W	1-3W
Receive sensitivity (12dB SINAD)	0.216µV	0 250uV

² Check with your local Motorola Solutions sales representative for frequencies available in your local area.

LORAWAN SPECIFICATIONS

LoRaWAN gateway hardware	
Radio chipset	SX1301 and SX1257
Radio frequency plan	AS923, AU915-928, EU863-870, US902-928
Frequency ranges	863-870 MHz, 902-928MHz
Receive sensitivity	Up to -140dBm
Max TX output	+28dBm
LoRaWAN software	
LoRaWAN server	Yes
LoRaWAN gateway	
Basic station for general LoRaWAN network	
Activity base station for Activity LoRaWAN Network (ThingPark)	





POWER MANAGEMENT

Voltage management	Preconfigured thresholds based scenarios	
Power voltage that can be reduced or disabled	5 power consumption options available	
Power consumption	CPU module all radios off	Max 300 mA / Typical 150 mA @ 12V (w/o SD card and USB)
	CPU module all radios on	Max 450 mA / Typical 250 mA @ 12V (w/o SD card and USB)
	CPU module all radios on P25 TX	1.6 A / Typical @ 12V
	CPU module all radios on LoRA RX 8 channels	0.36 A / Typical @ 12V
	CPU module all radios on LoRA TX	0.605 A / Typical @ 12V
	CPU module all radios on LTE TX	0.45 A / Typical @ 12V
	Mixed IO module	Max 194.4 mA / Typical 64 mA @12V
	Mixed digital IO modules	Max ~357 mA / Typical 21 mA @12V
	32 DIDO module	Max 178 mA / Typical 70 mA @12V
	16 DIDO module	Max 145 mA / Typical 50 mA @12V
	Mixed IO 16 DI 4AO 4AI module	Max 165 mA / Typical 80 mA @12V

REGULATIONS

Safety	US / Canada	IEC62368-1 (cUL Listed)
	EU, Australia / New Zealand	EN/ANZ 62368
Emission / EMC	US / Canada	CFR 47 FCC part 15, subpart B (class A) ICES003
	EU, Australia / New Zealand	EN301489-52, AS/CA S042.1, approved per RED
Cybersecurity	EU	RED Article 3.3

SERVICE AND SUPPORT

One year warranty	1. Technical support - remote technical Support from our Solutions Support Center
	2. Software updates - safeguard your system from vulnerabilities and improve network performance
	3. Software upgrades - download the latest integrated system software releases with the latest features, functionalities and enhancements

To learn more, visit:
www.motorolasolutions.com/mcedge



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