EG5120

Industrial Edge Computing Gateway

2 x Ethernet + 2 x RS-232/485 + 2 x DI + 2 x DO

Wi-Fi, Bluetooth and GNSS (optional)



INTRODUCTION

The Robustel EG5120 is a 5G industrial edge computing gateway designed for mission-critical deployments, delivering global 5G/4G/3G/2G cellular backhaul and ARMv8-based edge processing. Its Debian-based Linux operating system provides an open software environment, while Docker enables containerized deployment for industrial edge applications. The gateway runs **RobustOS Pro**, Robustel's self-developed operating system, delivering enterprise-grade security, VPN, Smart Roaming, and SMS-based remote management.

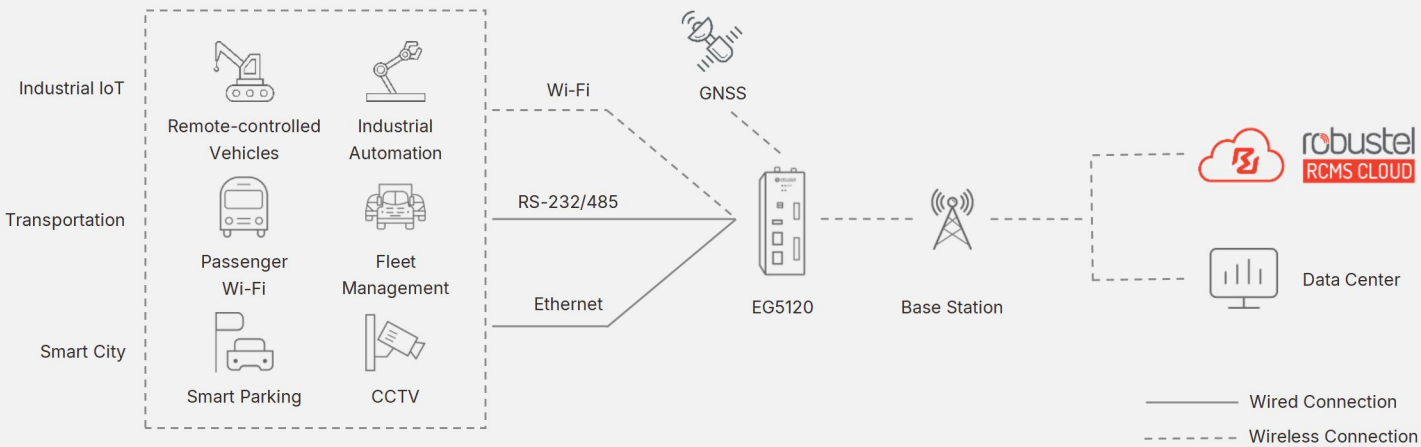
Powered by a quad-core 1.6 GHz Cortex-A53 CPU and a dedicated NPU (2.3 TOPS), the EG5120 accelerates machine learning inference for edge AI workloads. Combining cellular routing with embedded computing capabilities, this ruggedized platform serves as an all-in-one solution for industrial automation, smart cities, and real-time AI-driven decision-making at the network edge.

The **Robustel Cloud Manager Service (RCMS)** is a unified cloud-based platform designed for real-time monitoring and centralized management of industrial IoT devices. Fully compatible with Robustel routers and gateways, RCMS delivers an interactive geospatial dashboard that enables users to visualize device locations and track critical metrics such as data usage, signal strength, and network status. To ensure seamless operations, the platform facilitates over-the-air (OTA) updates for firmware, configurations, and applications, minimizing downtime while optimizing system performance. For more information or to get started with RCMS, visit: https://rcms-cloud.robustel.net

KEY FEATURES

- Industrial-grade 5G/4G/3G/2G cellular with global band support
- Quad-core 1.6 GHz Cortex-A53 CPU, up to 4 GB RAM, and 64 GB eMMC for compute-intensive edge applications
- Docker containerization with access to 50,000+ Debian-compatible packages
- 5G SA/NSA cellular interface with global band support
- Optional 802.11ac Wi-Fi (dual-mode AP/client) and Bluetooth 5.2
- 2 x software-configurable RS-232/485 for PLC/legacy device integration
- 2 x DI + 2 x DO for industrial I/O monitoring and control
- Dual-SIM support for redundant communications and a wide operating temperature range
- Native Modbus TCP/RTU with MQTT-to-cloud bridging
- Multi-language SDK support (C, C++, Java, Python, and Node.js) with an open development toolchain
- Multi-protocol VPN (IPsec, OpenVPN, GRE, L2TP, PPTP, DMVPN, and WireGuard) and firewall
- Robustel Cloud Manager Service (RCMS) for centralized device management

APPLICATION EXAMPLE



SPECIFICATIONS

Hardware

Hardware System

CPU	Quad-core Cortex-A53, 1.6 GHz
NPU	2.3 TOPS
RAM & Flash options	2 GB LPDDR4 + 64 GB eMMC 4 GB LPDDR4 + 64 GB eMMC

Cellular Interface

Version	4G	5G
Number of antennas	2	4
Connector	SMA-K	
SIM	2 x Mini SIM (2FF)	

Ethernet Port

Number of ports	2 x RJ45, 10/100/1000 Mbps; compliance with 1000BASE-T, configurable as LAN or WAN
Magnet isolation protection	1.5 kV

Serial Port

Number of ports	2 x RS-232/485 (software configurable)
Connector	6-pin 3.5 mm terminal block with lock
Baud rate	300–115200 bps
Signal definition	RS-232: TXD, RXD, GND RS-485: Data+(A), Data-(B), GND

Digital Input / Digital Output

Number of ports	2 x DI + 2 x DO, wet contact
Connector	8-pin 3.5 mm terminal block with lock (DI/DO)
Isolation	Bi-directional optocoupler (DI) Single directional optocoupler (DO)
Absolute max voltage	+30 VDC
Absolute max current	100 mA
Signal definition	DI1+, DI1-, DI2+, DI2-, DO1+, DO1-, DO2+, DO2-

Wi-Fi Interface (optional)

Number of antennas	2
Connector	RP-SMA-K
Standards	802.11a/b/g/n/ac; 2 x 2 MIMO; supports AP and client modes
Frequency bands	2.412–2.472 GHz (2.4 GHz ISM band) 5.15–5.825 GHz (5 GHz ISM band)
Security	WEP 64-bit and 128-bit encryption with H/W TKIP processing; WPA/WPA3 (Wi-Fi Protected Access); AES-CCMP hardware implementation as part of 802.11i security standard
Data rate	802.11n: up to 300 Mbps—2 x 2 MIMO 802.11ac: up to 866.7 Mbps (80 MHz channel)

Bluetooth Interface (optional)

Number of antennas	1 (shared with Wi-Fi antenna)
Connector	RP-SMA-K
Standards	Bluetooth 2.1 and 3.0 + Enhanced Data Rate (EDR) + Bluetooth 5.2

GNSS Interface (optional)

Version	4G	5G
Number of antennas	1	Optional, requires a 4-in-1 combo antenna
Connector	SMA-K	
Technology	GPS, GLONASS, BDS, Galileo, QZSS	

Others

SD	1 x microSD
Reset button	1 x RST
USB port	1 x USB 3.0 (host), Type A, 5 V, 900 mA
LED indicators	1 x RUN, 1 x Signal, 1 x USR, and 1 x MDM
Watchdog	External

Power Supply and Consumption

Connector	2-pin 3.5 mm terminal block with lock
Input voltage	12/24/48 VDC, 9–60 VDC Reverse polarity protection, surge protection
Power consumption	Idle: 5 W@12 V Max: 15 W@12 V
Rec. power supply	12 VDC/1.5 A power adapter

Physical Characteristics

Ingress protection	IP30
Housing & Weight	Metal, 567 g
Dimensions	49 x 105 x 128 mm
Installation	Desktop, wall mounting & 35 mm DIN-rail mounting
Operating temperature	-40 to +70 °C
Storage temperature	-40 to +85 °C
Relative humidity	5–95% RH (non-condensing)

Regulatory and Type Approvals

Environmental	RoHS 2.0
EMI	EN 55032 Conducted Emission Class B EN 55032 Radiated Emission Class B
EMS	EN 61000-4-2 (ESD) Level 4 EN 61000-4-3 (RS) Level 3 EN 61000-4-4 (EFT) Level 4 EN 61000-4-5 (Surge) Level 3, AC Mains Power Port Level 3, Signal Ports EN 61000-4-6 (CS) Level 2 EN 61000-4-8 (PFM) Level 4 EN 61000-4-11 (Dips)

Software

Operating System (Basic Features of RobustOS Pro)

Network protocols	PPP, PPPoE, ARP, VLAN, ICMP, NAT, TCP, UDP, DHCP, DNS, DDNS, NTP, HTTP, HTTPS, Telnet, SSH2, SMTP, Static Routing, etc.
VPN tunnels	IPsec, OpenVPN, GRE, L2TP, PPTP, DMVPN, WireGuard
Firewalls	DMZ, anti-DoS, Filtering (IP/Domain name/MAC address), Port Mapping, Access Control
Remote management	Web, CLI, SMS, RCMS
Serial port protocols	Transparent, TCP Client/Server, UDP, Modbus RTU Gateway
Others	Smart Roaming V3, Language, etc.

SDK

Operating system	RobustOS Pro (based on Debian Linux)
Programming languages	C, C++, Python, Java, Node.js, etc. (for users to develop their own applications)
Debian repository available	
Available RAM for SDK	2 GB LPDDR4 version: 1.6 GB 4 GB LPDDR4 version: 3.0 GB
Available Flash for SDK	62 GB

App Center* (Available Apps for RobustOS Pro)

*Available upon request. For more apps, please visit www.robustel.com.

Cloud Platform

Robustel Cloud Manager Service (RCMS)	RobustLink, RobustVPN, Operation Console

ORDERING INFORMATION

Model	Order Code	RAM	Flash	GNSS	Frequency Bands	Region	Certifications	Package Contents
EG5120-A2EAZ-NU	A009000743	2 GB	64 GB	-	-	Global	CE, UKCA, CB, RCM, FCC, IC	1 x Gateway (B Code: B009000739) 1 x DIN Rail Mounting Kit
	A009000744	2 GB	64 GB	-		Global		1 x Gateway (B Code: B009000739) 2 x Wi-Fi Antenna 1 x Power Adapter 1 x DIN Rail Mounting Kit
EG5120-A2CAZ-4L-A06GL	A009000729	2 GB	64 GB	√	4G: LTE FDD: B1/2/3/4/5/7/8/12/13/18/19/20/25/26/28 LTE TDD: B38/39/40/41 3G: WCDMA: B1/2/4/5/6/8/19 2G: GSM: B2/3/5/8	Global	CE, UKCA, CB, RCM, FCC, IC, PTCRB, AT&T, Verizon, UL, NTC	1 x Gateway (B Code: B009000732) 1 x DIN Rail Mounting Kit
	A009000730	2 GB	64 GB	√		Global		1 x Gateway (B Code: B009000732) 2 x Cellular Antenna 2 x Wi-Fi Antenna 1 x GNSS Antenna 1 x Power Adapter 1 x DIN Rail Mounting Kit
	A009000737	4 GB	64 GB	√		Global	CE, UKCA, CB, RCM, FCC, IC, PTCRB, AT&T, Verizon, UL, NTC	1 x Gateway (B Code: B009000736) 1 x DIN Rail Mounting Kit
	A009000738	4 GB	64 GB	√		Global		1 x Gateway (B Code: B009000736) 2 x Cellular Antenna 2 x Wi-Fi Antenna 1 x GNSS Antenna 1 x Power Adapter 1 x DIN Rail Mounting Kit
EG5120-A2CAZ-5G-A25GL	A009000727	2 GB	64 GB	Optional	5G: NR SA/NSA: n1/2/3/5/7/8/12/13/14/18/20/25/26/28/29/30/38/40/41/48/66/70/71/75/76/77/78/79 4G: LTE FDD: B1/2/3/4/5/7/8/12/13/14/17/18/19/20/25/26/28/29/30/32/66/71 LTE TDD: B34/38/39/40/41/42/43/48 LAA: B46 (2 x 2 MIMO only) 3G: WCDMA: B1/2/4/5/8/19	Global	CE, UKCA, CB, RCM, TDRA	1 x Gateway (B Code: B009000731) 1 x DIN Rail Mounting Kit
	A009000728	2 GB	64 GB	-		Global		1 x Gateway (B Code: B009000731) 4 x Cellular Antenna 2 x Wi-Fi Antenna 1 x Power Adapter 1 x DIN Rail Mounting Kit
	A009000735	4 GB	64 GB	Optional		Global	CE, UKCA, CB, RCM, TDRA	1 x Gateway (B Code: B009000735) 1 x DIN Rail Mounting Kit
	A009000736	4 GB	64 GB	-		Global		1 x Gateway (B Code: B009000735) 4 x Cellular Antenna 2 x Wi-Fi Antenna 1 x Power Adapter 1 x DIN Rail Mounting Kit
EG5120-A2CAZ-4L-A04JP	A009000731	2 GB	64 GB	√	4G: LTE FDD: B1/3/8/18/19/26 LTE TDD: B41 3G: WCDMA: B1/6/8/19	Japan	TELEC, JATE	1 x Gateway (B Code: B009000733) 1 x DIN Rail Mounting Kit
	A009000732	2 GB	64 GB	√		Japan		1 x Gateway (B Code: B009000733) 2 x Cellular Antenna 2 x Wi-Fi Antenna 1 x GNSS Antenna 1 x Power Adapter 1 x DIN Rail Mounting Kit

NOTE:

1. GNSS is optional for 5G models marked "Optional" and requires a 4-in-1 combo antenna to enable GNSS functionality.
2. For more information about regional and carrier-specific variants, please contact us.
3. * Denotes certification in progress.

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