



robustOS OS

LG5120

Industrial LoRaWAN Gateway

2 x Ethernet + 1 x KNX + 1 x M-Bus + 1 x P1 + 2 x RS-485 + 1 x RS-232 + 2 x DI + 2 x DO + 2 x AI, Wi-Fi, and LoRaWAN



INTRODUCTION

The Robustel LG5120 is an industrial-grade edge computing gateway optimized for E2C Facility (Edge-to-Cloud Facility) applications. Acting as an intelligent building control gateway, this version is designed to bridge the gap between traditional building automation and modern cloud management. It integrates a specialized expansion board to support common building automation protocols, natively supporting KNX, BACnet, and M-Bus alongside long-range wireless LoRaWAN.

Powered by a quad-core 1.6 GHz processor and the **RobustOS Pro** based on Debian 11, the LG5120 provides the local intelligence required to balance occupant comfort with energy-efficiency goals. By processing complex logic at the edge—such as HVAC optimization and lighting automation—it delivers true "Cloud-Edge Synergy," reducing latency and ensuring operational continuity for commercial buildings, hospitals, and smart schools.

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

E2C Facility: Building Automation at the Edge

- **The 6C Runtime Capabilities:** A unified runtime that seamlessly **Collects** data, **Computes** logic, **Caches** logs, provides a **Canvas** for visualization, **Connects** IT/OT, and enables bidirectional **Control**.
- **Niagara Framework Inside:** Features a built-in Niagara framework that acts as a "Lite BMS," supporting complex logic, smart alerts, and visual dashboards at the edge.
- **One-Click ETS Integration:** Supports the direct import of ETS files to auto-generate KNX mappings, reducing deployment time from days to minutes.
- **Instant Semantic Mapping (LTE-Mode):** Includes an integrated library of mainstream KNX devices to auto-map data points, eliminating manual configuration.
- **Multi-Protocol Facility Aggregator:** Natively integrates and bridges KNX, BACnet, M-Bus, P1, and LoRaWAN into a single unified stream (BACnet/IP or MQTT) for comprehensive building digitalization.

Versatile Fieldbus & Wireless Connectivity

- **LoRaWAN Gateway:** Features an onboard Semtech SX1302 chipset to connect large numbers of low power wireless sensors across building and facility environments.
- **Dual Isolated RS-485 Port:** Provides two isolated ports for reliable communication with Modbus RTU and BACnet MSTP hardware.
- **Smart Metering Integration:** Includes a dedicated P1/DSMR port, up to 115200 bps, for retrieving data from smart meters.

Advanced Edge Processing

- **Logic Orchestration (Node-RED):** Includes a pre-integrated visual programming tool with custom nodes for device data subscription and automated DO control.
- **Dashboard Visualization:** Built-in design and runtime tools for creating professional, drag-and-drop monitoring dashboards.

APPLICATION EXAMPLE

Northbound Interface

2 x Gigabit Ethernet or 4G

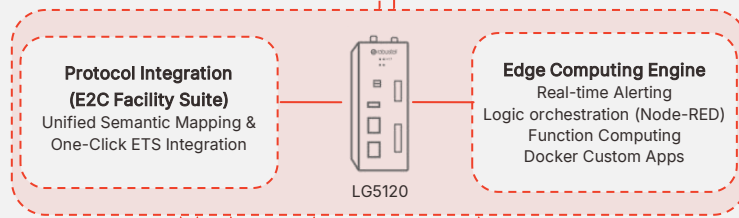
MQTT/HTTPS

BACnet/IP/OPC UA

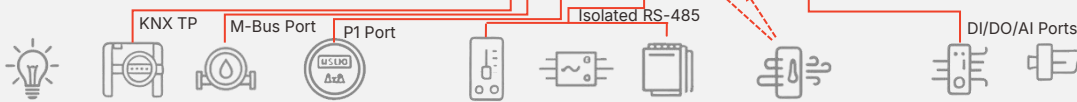


BMS/SCADA

Edge Intelligence—LG5120



Sensing and Access Layer (Southbound Interface)



Building Automation (Wired)

Industrial Fieldbus (Serial)

Legacy & Analog (I/O)

— Wired Connection
- - - Wireless Connection

SPECIFICATIONS

Hardware

Hardware System

CPU	Quad-core Cortex-A53, 1.6 GHz
NPU	2.3 TOPS
RAM	8 GB DDR4
Flash	64 GB eMMC

Cellular Interface

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

Ethernet Port

Number of ports	2 x RJ45, 10/100/1000 Mbps, compliant with 1000BASE-T; configurable as 1 x WAN + 1 x LAN or 2 x LAN
Magnet isolation	1.5 kV

Serial Port

Number of ports	1 x M-Bus, 1 x KNX, 1 x P1, 2 x isolated RS-485, 1 x RS-232
Connector	3.5 mm terminal block
Signal definition	M-bus: M+, M- KNX: K+, K- P1: P1-R, P1-D, GND 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	3.5 mm terminal block
Isolation	Bidirectional optocoupler for DI; unidirectional optocoupler for DO
Absolute max voltage	+30 VDC
Absolute max current	100 mA
Signal definition	DI1+, DI2+, DIcom, DO1+, DO2+, DOcom

Analog Input Port

Number of interfaces	2 x AI
Data reading type	Voltage / Current type, software configurable
Voltage input range	0–24 V
Current input range	4–20 mA
Signal definition	AI1+, GND, AI2+, GND

Wi-Fi Interface

Number of antennas	1 x RP-SMA-K, supporting only 1T1R
Standards	802.11 a/b/g/n/ac/ax, 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)

LoRa Interface

Number of antennas	1 x RP-SMA-K
Frequency	US915, EU868, AU915, AS923
Channel capacity	Supports up to 8 channels receiving data simultaneously

Others

GNSS	Integrated GNSS with Cellular module
SD	1 x microSD
Reset button	1 x RST
USB port	1 x USB 3.0 (host), Type A, 5 V, 500 mA
LED indicators	1 x RUN, 1 x Signal, 1 x USR, and 1 x MDM
Watchdog	External
RTC	Remains functional up to 7 days after power loss

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: 20 W@12 V
Rec. power supply	12 VDC/1.5 A power adapter

Physical Characteristics

Ingress protection	IP30
Housing & Weight	Metal, 560 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	RoHS2.0
EMI	EN 55032 Conducted Emission Class B EN 55032 Radiated Emission Class B
EMS	EN 61000-4-2 (ESD) Level 3 EN 61000-4-3 (RS) Level 3 EN 61000-4-4 (EFT) Level 3 EN 61000-4-5 (Surge) Level 3, AC Mains Power Port Level 3, Signal Ports EN 61000-4-6 (CS) Level 3 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.

E2C Facility Suite

LNS configuration	Built-in LoRaWAN Network Server with zero-code sensor integration
Data collection	Unified polling for KNX, BACnet, Modbus, and OPC-UA protocols
Logic Orchestration & Scenario Management	Node-RED orchestration and automated scene management for trigger-based control
Data forwarding	Converts edge data into BACnet/IP and OPC UA data streams for external systems
Alarms & Visualization	Real-time multi-channel alerts and a drag-and-drop HMI/SCADA dashboard builder

SDK

Operating system	RobustOS Pro (Based on Debian 11 Bullseye)
Programming languages	C, C++, Python, Java, Node.js, etc. (for users to develop own applications)
Available Flash for SDK	60 GB
Available RAM for SDK	7 GB

App Center* (Available Apps for RobustOS Pro)

*Request on demand. For more Apps please visit www.robustel.com.

Cloud Platform

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

Model	Order Code	LoRa Frequency	Frequency Bands	Region	Certifications	Package Contents
LG5120-GBKGC-4L-A35GL	A016000001	EU868	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	EU	-	1 x LG5120 (B Code: B016000001) 2 x Cellular Antenna 1 x Wi-Fi Antenna 1 x LoRa Antenna 1 x Power Adapter 1 x DIN Rail Mounting Kit
LG5120-GCKGC-4L-A35GL	A016000002	AU915		ANZ	-	1 x LG5120 (B Code: B016000002) 2 x Cellular Antenna 1 x Wi-Fi Antenna 1 x LoRa Antenna 1 x Power Adapter 1 x DIN Rail Mounting Kit
LG5120-GEKGC-4L-A35GL	A016000003	AS923		Asia	-	1 x LG5120 (B Code: B016000003) 2 x Cellular Antenna 1 x Wi-Fi Antenna 1 x LoRa Antenna 1 x Power Adapter 1 x DIN Rail Mounting Kit

NOTE:

1. For more information about regional and carrier-specific variants, please contact us.
2. * Denotes certification in progress.