



robustOS

R2120

Industrial Cellular PoE Router

5 x Ethernet (4 with PoE-PSE) + 2 x DI + 2 x DO + 1 x RS-485



INTRODUCTION

The R2120 is a specialized industrial cellular PoE router designed for smart security applications. Equipped with 5 Ethernet ports, including 4 PoE-PSE ports, along with 2 Digital Inputs, 2 Digital Outputs, and an RS485 serial port, this router excels in meeting the unique demands of modern security systems.

Enhanced PoE-PSE Functionality: The R2120 features 4 PoE-PSE ports compliant with the 802.3af and 802.3at standards, enabling effortless power and data transmission through a single Ethernet cable to simplify field installation.

Remote PoE Device Management: The R2120 goes beyond standard PoE-PSE functions with its support for remote management capabilities. Users can conveniently schedule restarts or power cycles for PoE devices as required, enhancing operational control and efficiency.

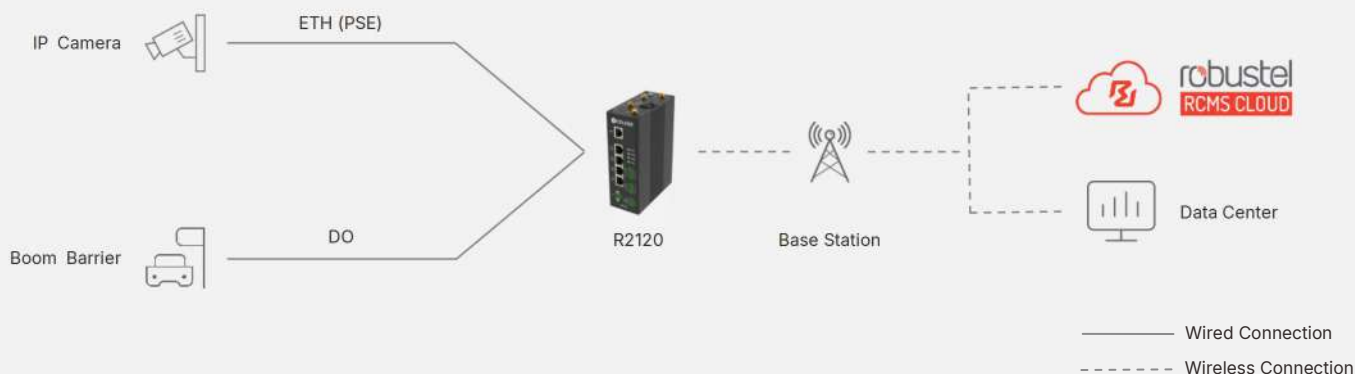
The **Robustel Cloud Manager Service (RCMS)** is a unified cloud-based platform designed for real-time monitoring and centralized management of industrial IoT devices. Fully compatible with Robustel routers and gateways, RCMS delivers an interactive geospatial dashboard that enables users to visualize 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

- Highly stable 5G/4G/3G/2G cellular connectivity
- Dual SIM card slots for redundant communications
- Supports Ethernet, Wi-Fi and Cellular internet with auto-failover
- 5 x 1000Mbps Ethernet ports, including 4 PoE-PSE ports compliant with the 802.3af and 802.3at standards
- 2 x DI & 2 x DO for simple monitoring and control
- 1 x RS-485 port for connection to industrial/legacy device
- Fully programmable Operating System with well documented SDK
- Multiple VPN options available including DMVPN & IPSec
- Free cloud management platform-RCMS, with Remote PoE device management supported

APPLICATION EXAMPLE



SPECIFICATIONS

Hardware

Hardware System

| | |
|-------|-----------------|
| CPU | MT7621, 880 MHz |
| RAM | 512 MB |
| Flash | 32 MB |

Cellular Interface

| | |
|--------------------|--------------------|
| Number of antennas | 4 |
| Connector | SMA-K |
| SIM | 2 x Mini SIM (2FF) |

Ethernet Port

| | |
|-----------------------------|--|
| Number of ports | 5 x 10/100/1000 Mbps, 5 x LAN by default, can be configured as 1 x WAN + 4 x LAN |
| Magnet isolation protection | 1 kV |

PoE Out Port

| | |
|---------------------------------|------------------------------------|
| PoE ports | ETH1-ETH4 |
| PoE standards | 802.3at, 802.3af |
| PoE max power per port (at PSE) | Up to 30 W |
| Total PoE power budget (at PSE) | Dependent on power supply capacity |

Serial Port

| | |
|-------------------|--------------------------------|
| Number of ports | 1 x RS-485 |
| Connector | 1 x 3-pin 3.5 mm female socket |
| Baud rate | 300-115200 bps |
| Signal definition | RS-485: A, B, GND |

Digital Input / Digital Output

| | |
|----------------------|--|
| Number of ports | 2 x DI + 2 x DO, wet contact |
| Connector | 2, each with 4-pin 3.5 mm female sockets |
| Isolation | 3.75 kVDC (opto-isolator) |
| Absolute max voltage | +30 VDC (DI), +30 VDC (DO) |
| Absolute max current | 100 mA (DO) |
| Signal definition | DI1+, DI1-, DI2+, DI2-, DO1+, DO1-, DO2+, DO2- |

Wi-Fi Interface

| | |
|--------------------|---|
| Number of antennas | 2 (Wi-Fi0 + Wi-Fi1) |
| Connector | RP-SMA-K |
| Standards | 802.11 a/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 | WPA, WPA2, WEP, WPA3 |
| Encryption | AES, TKIP, WEP64 |

Others

| | |
|----------------|---|
| Reset button | 1 x RST |
| LED indicators | 1 x RUN, 1 x RSSI, 1 x MDM, and 1 x USR |
| Watchdog | External |

Power Supply and Consumption

| | |
|-------------------|--|
| Connector | 2-pin 3.5 mm terminal block with lock |
| Input voltage | 44-57 VDC (with PoE-PSE) 12-36 VDC (without PoE-PSE) Reverse polarity protection, surge protection |
| Power consumption | Idle: 4.5 W@48 V (excluding the PoE consumption) Max: 12 W@48 V (excluding the PoE consumption) |

Recommended power supply 48 VDC/1.25 A (60 W) power adapter
Covers system power (12 W) + typical PoE loads

Note:

1. Total power = System 12 W + Σ PoE loads
2. For 100 m cable runs with 30 W loads per port, consider 54 VDC PSU

Physical Characteristics

| | |
|-----------------------|--|
| Ingress protection | IP30 |
| Housing & Weight | Aluminum, 539 g |
| Dimensions | 49 x 105 x 143 mm |
| Installation | Desktop, wall mounting & 35 mm DIN rail mounting |
| Operating temperature | -20 to +70 °C |
| Storage temperature | -40 to +85 °C |
| Relative humidity | 5-95% RH (non-condensing) |

Regulatory and Type Approvals

| | |
|---------------|---|
| Environmental | RoHS2.0, WEEE |
| EMI | EN 55032 Conducted Emission Class B EN 55032 Radiated Emission Class B |
| EMS | EN 61000-3-2 (Harmonic Current) EN 61000-3-3 (Voltage Flicker) EN 61000-4-2 (ESD) Contact Level 2, Air Level 3 EN 61000-4-3 (RS) Level 2 EN 61000-4-4 (EFT) Level 2 EN 61000-4-5 (Surge) Level 3, AC Mains Power Port Level 3, Signal Ports EN 61000-4-6 (CS) Level 2 |

Software

Operating System (Basic Features of RobustOS)

| | |
|-----------------------|---|
| Network protocols | PPP, PPPoE, ARP, VLAN, ICMP, NAT, TCP, UDP, DHCP, DNS, DDNS, NTP, HTTP, HTTPS, Telnet, SSH2, SMTP, etc. |
| VPN tunnels | IPsec, OpenVPN, GRE, 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 to TCP |
| Others | Smart Roaming V3, etc. |

SDK

| | |
|-----------------------------|--|
| Operating system | RobustOS (Based on Debian 11 Bullseye) |
| Programming languages | C, C++, Python, Java, Node.js, etc. (for users to develop own applications) |
| Debian repository available | |
| Available Flash for SDK | 5 MB |
| Available RAM for SDK | 256 MB |

App Center (Available Apps for RobustOS)

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|-------|--|
| Apps* | L2TP, PPTP, DMVPN, VRRP, QoS, SNMP, Language, RCMS, Dynamic Routing, Captive Portal, Modbus Master, TR069*, Edge2Cloud |
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*Request on demand. For more Apps please visit www.robustel.com.

Cloud Platform

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

ORDERING INFORMATION

| Model | Order Code | Category | Frequency Bands | Region | Certifications | Package Contents |
|----------------------|------------|----------|--|--------|----------------|--|
| R2120-A5AAA-5G-A25GL | A015000003 | 5G | 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 | Global | CE, UKCA | 1 x Router (B Code: B015000003) 1 x DIN Rail Mounting Kit |
| | A015000006 | 5G | 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 (only supports 2 x 2 MIMO) 3G: WCDMA: B1/2/4/5/8/19 | Global | CE, UKCA | 1 x Router (B Code: B015000003) 4 x Cellular Antenna 2 x Wi-Fi 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.