YZW1000

Industrial Fiber Routing Gateway



Industrial automation

Remote maintenance

Energy & metering

Serial networking

Remote networking

2 × SFP + 8 × RJ45

Dual DC primary/backup

PoE IEEE 802.3af/at/bt

RS485: 2 external + 1 internal

DATASHEET

Features

Cellular

Ordering options	4G as standard; optional 5G version. The 5G version does not provide Wi-Fi
Cellular status	RSSI, SINR, RSRP, RSRQ, serving band, IMSI and ICCID
APN and authentication	Configurable APN and account settings with NONE, PAP, CHAP or PAP+CHAP authentication
PDP IP type	IPv4, IPv6 or dual-stack IPv4v6 cellular data connections
SIM switching	Single cellular modem with per-SIM profiles and switching policies; dual SIM does not mean two concurrent cellular links

Wireless

Version availability	Dual-band Wi-Fi 6 on the standard 4G version; Wi-Fi and the 5G cellular option are mutually exclusive
Wireless operating mode	2.4 GHz IEEE 802.11b/g/n/ax and 5 GHz IEEE 802.11a/n/ac/ax; AP or STA mode
Channel widths	2.4 GHz: 20/40 MHz; 5 GHz: 20/40/80/160 MHz; available channels depend on the configured regulatory region
Wi-Fi security	WPA/WPA2/WPA3 and WPA2/WPA3 mixed modes with AES encryption
SSID and clients	Configurable SSID broadcast and AP isolation; multiple wireless clients in AP mode

Ethernet

Optical ports	2 × Gigabit SFP slots; WAN by default; SFP transceivers are not included
Copper ports	8 × Gigabit RJ45 ports; LAN by default, with PoE PSE power output and per-port management
WAN/LAN roles	Default 2WAN+8LAN; configurable from 1WAN+9LAN to 4WAN+6LAN
Optical module information	View the type, connector, wavelength, vendor and part number of recognized SFP transceivers

PoE Power Output & Management

Power output	8 RJ45 PSE ports; IEEE 802.3af/at/bt; maximum output 90 W per port
Per-port control	Per-port power enable/disable; IEEE 802.3af/at/bt with automatic PD negotiation
Status monitoring	Display actual powering state, detected class, current and output power per port
Power summary	Display input voltage and live PoE total output; maximum total PoE output 720 W
Remote power restart	Power-cycle a selected PoE port to restart its connected powered device

Network

Routing	Static routes with destination network, gateway, outgoing interface and route metric settings
Network protocols	TCP, UDP, IPv4/IPv6, ICMP, ARP, DHCP, DNS, NTP, HTTP/HTTPS, SSH2 and MQTT
WAN access	Static IP, DHCP and PPPoE uplinks with IPv4/IPv6 configuration
Connection monitoring	ICMP reachability checks with configurable primary/backup targets, source interface, interval, retry count and recovery action
DHCP	IPv4 DHCP server with address pool, lease time, gateway/DNS settings and static IP-to-MAC assignments; configurable stateful/stateless IPv6 address allocation
Cellular link monitoring	Cellular connectivity monitoring with configurable IPv4/IPv6 probe targets
NAT	IPv4 DNAT, SNAT, MASQ and DMZ rules for port forwarding and address translation
QoS	Upload/download traffic rules by interface, subnet and optional port, with base rate, ceiling rate and priority settings
DDNS	Configurable DDNS provider, account/token, domain and update interval, with an IPv6 update option
Uplink failover	Link priority, ICMP health checks and primary/backup uplink failover
Load balancing	Uplink traffic distribution by source IP or session, with ICMP link health checks
Uplink policy constraints	Load balancing cannot operate together with multi-link primary/backup policies or WireGuard IPv4 full-tunnel routing; it does not aggregate bandwidth for a single connection
VLAN	Up to 10 entries, VID 4–4094; Tagged/Untagged VLAN traffic on available LAN ports, with per-VLAN IPv4 subnet and DHCP server settings

Security

Firewall	Stateful packet filtering with management-service access controls by network zone
Attack prevention	Configurable DDoS limiting, IP-spoofing, port-scan and SYN-flood rules, with multicast and IDENT restrictions
Address filtering	Blacklist/whitelist modes with IP-only, MAC-only or combined IP/MAC filtering, and protocol, port and interface-based access rules
LAN Internet access restriction	When enabled, blocks direct Internet forwarding from LAN clients through ordinary uplinks; retains local LAN communication and VPN/m2mCloud forwarding, subject to the other firewall rules
Domain filtering	Disabled, blacklist or whitelist modes with configurable domain rules

VPN

OpenVPN	Two client instances and an independently running server
WireGuard	IPv4 encrypted tunnels with up to 10 peers, optional pre-shared keys, persistent keepalive and remote-subnet routes
ZeroTier	Join up to 10 ZeroTier virtual networks, with configurable acceptance of controller-managed addresses and routes; controller authorization is required
IPsec	IKEv1/IKEv2, pre-shared-key authentication, tunnel/transport modes and local/remote subnet configuration

L2TP	L2TP client/server with PPP authentication, client address pools and subnet routes; L2TP itself does not encrypt traffic
DMVPN	Hub/Spoke dynamic multipoint VPN using mGRE, NHRP and IPsec
VXLAN	VXLAN Layer 2 tunnels with VNI, remote endpoint and UDP port settings; VXLAN itself does not encrypt traffic
GRE	GRE tunnels for existing-network interconnection; GRE itself does not encrypt traffic
PPTP	PPTP client/server with account authentication and PPP settings for legacy-network compatibility

PLC & Instrument Acquisition

Protocol options	64 protocol variants: 39 network and 25 serial options; selected according to the connected PLC or instrument
PLC families	Siemens S7/PPI, Mitsubishi MC/FX, Omron FINS/HostLink/CIP, Inovance, Keyence, Delta, Panasonic, Xinje, Beckhoff ADS, Allen-Bradley and others
Instrument protocols	Modbus TCP/RTU/ASCII and over-TCP variants, CJ/T 188, DL/T 645, DL/T 698 and IEC 60870-5-104 options
Point configuration	Point name, identifier, address, type and read/write mode; per-connection polling interval and per-point periodic-write settings
Point-table management	CSV import/export, point editing and monitoring; available operations depend on the selected protocol
Serial-port ownership	Each physical serial port is exclusive to one PLC, Modbus RTU, DTU, cloud remote-serial or Node-RED instance; different ports can operate independently

PLC Data Reporting

Reporting protocol	MQTT; up to 10 reporting rules, each selecting 1 or more configured PLC data sources
Message format	Format 1 JSON: deviceId, deviceName, params, status, reason, because; params point objects contain identifier, name, source, type and string value; report status is numeric 0/1, not a write reply
Connection and topics	Server, port, credentials, 1–86400 s reporting period, publish/subscribe/reply topics and CA certificate; optional SN suffix is configured independently for each topic

Node-RED

Flow development	Node-RED 3.0.2 as standard, with browser-based flow editing and persistent flow storage in NAND Flash
Installed nodes	Modbus TCP/serial nodes, MQTT and serial runtime components; additional packages require compatibility with the installed runtime
Maintenance	Runtime status, editor access, download-source settings, admin password change, runtime-package upgrade and flow reset
Serial-port ownership	Each physical serial port is exclusive to one PLC, Modbus RTU, DTU, cloud remote-serial or Node-RED instance; different ports can operate independently

PLC Cloud Writes over MQTT

Downlink topic	Publish to the enabled rule's effective subscription topic, not its publish/reply topic; when SN suffix is enabled, append /SN using the device's actual SN

JSON fields	A single JSON object, 1–4096 UTF-8 bytes; identifier/name/addr selectors and value are strings; source or data_source is a data-source name selected in this rule
Example request	{"source":"PLC_A","identifier":"1","value":"25.5"}
Matching and permissions	Use source + identifier for unambiguous selection; without source, the first matching point in rule source order is used; the point must be writable and its value/type valid
Execution result	With a reply topic configured, replies contain status=success/failure, reason and the request in data; write_applied means protocol-write success, not physical-state readback; reply QoS is 0
Reply example	{"status":"success","reason":"write_applied","data": {"source":"PLC_A","identifier":"1","value":"25.5"}}
Failure handling	Missing/read-only points, invalid values or unavailable connections can fail writes; a timeout or absent reply does not prove no write occurred; read back before retrying
Safety and format boundary	Use retain=false and compatible PLC programming/access policies; this string-value format and execution reply do not apply to the independent Modbus collector

Modbus Acquisition & Reporting

Acquisition mode	Modbus TCP/RTU master polling with device and command configuration; RTU uses an available Serial1–Serial3 port
Read function codes	01 Read Coils; 02 Read Discrete Inputs; 03 Read Holding Registers; 04 Read Input Registers
Data types and byte order	Web-selectable types: signed/unsigned 16-bit integers; signed/unsigned 32-bit integers (ABCD); 32-bit floating point (ABCD/CDAB byte order)
Device and command management	Up to 16 device connection profiles and 32 commands per profile; each RTU profile exclusively owns its selected serial port, with slave addresses configured per command
Command configuration	Command name, slave address, Modbus register start/count, IEC104 mapping address, Writable flag and per-command polling period
Acquisition and reporting timing	Per-command polling period: 1–86400 s; response timeout: 30–120000 ms; MQTT/TCP/UDP periodic reporting interval: 1–86400 s
Data reporting	MQTT/TCP/UDP: immediate or periodic reporting; in periodic mode, each point's first sample is sent immediately and later reports use fresh samples only; IEC104 updates immediately
MQTT settings	Broker address/port, account authentication and CA certificate configuration; per-device publish/subscribe topics, with MQTT downlink writes for writable commands
IEC 60870-5-104 settings	Communication port, common address and information object address (IOA) mapped from each command's mapping address; the IOA is not the slave's Modbus register address
Serial-port ownership	Each physical serial port is exclusive to one PLC, Modbus RTU, DTU, cloud remote-serial or Node-RED instance; different ports can operate independently

Modbus Cloud Writes over MQTT

Connection prerequisites	Enable Modbus collection and select MQTT reporting. Connect the cloud client and collector to the same MQTT broker, with the required authentication and topic permissions; TCP/UDP reporting does not accept MQTT downlink writes
Device-side configuration	Configure the target device connection and commands, including slave address, read function, start address, quantity and data type. Enable Writable for each controlled command; its name becomes the JSON key

Downlink topic	Set a non-empty, device-specific Subscribe topic. The cloud publishes to this exact topic, not the device's Publish topic. Avoid shared control topics and +/# wildcards
JSON payload	Use a flat JSON object, e.g. {"command_name":123}. Each key matches a configured command name and each value is a JSON number; no device-ID, address, function-code or nested data envelope is required
Integer and coil example	Topic: plant/site1/plc1/set; payload: {"run":1,"setpoint":1200}. Configure run as a writable coil and setpoint as a writable uint16 holding-register command before sending
Floating-point example	{"temperature_set":25.5}; temperature_set must be a writable floating-point holding-register command with the correct byte order and at least 2 consecutive registers configured
Coil write	A writable command configured for read function 01 uses write function 05. Send numeric 0 or 1 for OFF or ON; JSON false/true are not accepted as numeric values
Holding-register write	A writable command configured for read function 03 uses write function 06 for a 16-bit value, or function 16 (0x10) for a 32-bit value occupying 2 consecutive registers
Read-only areas	Read functions 02 (discrete inputs) and 04 (input registers) are not writable, even if Writable is enabled. Unconfigured or non-writable commands are skipped
Value validation	Use values within the configured type's range. Integer types reject fractional values; floating-point commands accept finite numbers. Strings, Boolean values, arrays, objects and null are not write values
Address and byte order	The collector reuses the configured slave and 0-based Modbus PDU start address, then encodes the value using the configured type/byte order. Mapping addresses are not MQTT downlink selectors; apply any slave-specific scaling in the cloud
Multiple commands and arrays	An object may contain multiple command keys, processed independently rather than as an atomic transaction. Each key writes a scalar at its configured start address; arbitrary register-array block writes are not supported
Payload size	Payload length: 1–511 bytes after UTF-8 encoding. Empty payloads and messages of 512 bytes or more are discarded; send valid JSON with numeric values
Execution confirmation	MQTT delivery is not Modbus execution confirmation. There is no dedicated MQTT write-response payload; check subsequent collected readback and device logs. Disconnections, a full queue or slave errors may prevent a write
Control-message safety	Publish control messages with retain=false to avoid replaying old commands when subscriptions reconnect. Restrict write access using broker topic permissions and prevent unconfirmed or repeated control actions
Example and firmware scope	The topics, command names and values above are examples, not defaults; configure them against the slave register map. Requires collector firmware with MQTT downlink writes; available types and byte orders follow the delivered firmware

Application Services

DTU transparent transmission	Serial-to-TCP/UDP client or server operation, with primary/backup servers, login data, heartbeat and timeout settings
DTU MQTT	Serial data over MQTT using plain TCP or TLS; configurable CA certificate, credentials, client ID, publish/subscribe topics, QoS 0/1/2 and keepalive
Modbus protocol gateway	Bidirectional protocol conversion between Modbus TCP and serial Modbus RTU/ASCII, for connection to a serial master or slave device
DNP3 forwarding	Bidirectional DNP3 frame forwarding between serial and TCP; active TCP connection (master) or incoming TCP connection (outstation)

MQTT Broker	Local MQTT broker with plain/TLS transport, listen address/port, anonymous or username/password authentication and server certificate/key settings
SNMP	SNMPv2c/SNMPv3 management and SNMPv2c Trap reporting; configurable community, Trap destination and SNMPv3 authentication/privacy parameters
Scheduled tasks	Scheduled device or cellular-modem restart by day of week and time
SMS	SMS sending with character-set selection and a trusted-number list
SMTP and event alarms	SMTP email with optional STARTTLS/TLS; email/SMS notifications for configured events such as weak signal, modem-status changes, failed logins and firewall attacks
Network diagnostics	Ping and traceroute diagnostics with configurable target and source IP
Optional GPS	With the optional GPS hardware, view positioning information in the Web interface and configure TCP/UDP positioning-data reporting

Management & Maintenance

WEB UI	HTTP/HTTPS management for status, configuration and maintenance; HTTPS is enabled through the management-access settings
CLI	SSH2/Telnet command-line access with configurable management-service permissions
Administrator password	Only supports changing the password of the existing admin account
Configuration management	Configuration export/import and factory reset
Logs	Event/system logs, service runtime status and remote-log server/port settings
Time synchronization	NTP server and backup server, synchronization interval and time-zone settings, plus manual time entry

m2mCloud Remote Access

Remote networking	Cloud-authorized L3 routed or L2 bridged access to on-site networks; the tunnel mode is assigned by the cloud platform
Connectivity	Peer-to-peer connectivity or server relay, subject to network conditions and platform authorization; a public IP is not required at the site
Remote subnets	Up to 10 remote IPv4 subnet routes in L3 mode; rules remain saved but inactive in L2 mode; default routes are not accepted
Program upload/download	Use compatible vendor PLC/HMI programming tools for remote program upload/download, debugging and maintenance over the authorized channel
Remote serial access	Authorized access with the platform serial-proxy client; the selected physical port must be available
Connection recovery	Automatic reconnection of the cloud management session and tunnel after connectivity recovers, with valid platform authorization
Operational benefits	Centralized remote access for distributed sites, reducing on-site visits and repeated local network setup; compatibility depends on the end device and vendor tool

Hardware

Platform	MediaTek MT7981
RAM	512 MB DDR3
Flash	512 MB SPI NAND Flash
GPS option	Optional GPS; specify when ordering

Firmware

Update	Web firmware upload with a choice to retain the configuration or restore factory settings after upgrade

System Characteristics

Operating system	OpenWrt-based Linux
Kernel version	Linux 5.4
Script runtimes	Shell, Python 3.9.17 and Node.js 18.16.1

Power

DC inputs	Two DC inputs for primary and backup supplies; 12–55 V DC input; 4-pin terminal
Input pinout	V1+, V1−, V2+, V2−
Input voltage range	12–55 V DC
Supply conditions for PoE	52–55 V DC

Physical Interfaces (Ports, LEDs, Antennas, Buttons, SIM)

Ethernet	2 × Gigabit SFP (default WAN) + 8 × Gigabit RJ45 (default LAN)
RS485	3 × RS485 ports: 2 exposed through the enclosure; 1 on the internal PCB without an enclosure connector
External serial pinout	Viewed from the front: left A/B = Serial1; right A/B = Serial2; internal RS485 = Serial3
Serial parameters	Configurable 300–230400 bit/s; 5/6/7/8 data bits; 1/2 stop bits; none/even/odd parity
SIM	2 × pull-out SIM trays; one cellular modem with SIM switching
Indicators	SYS, NET, SIG, WIFI, SIM1, SIM2 and two SFP indicators; Ethernet LEDs integrated into RJ45 ports
4G antenna connections	Cellular1/2: 4G; ANT-RES1/2: Wi-Fi; GPS: optional GPS
5G antenna connections	Cellular1/2 and ANT-RES1/2: 5G; GPS: optional GPS; no Wi-Fi
Reset	Release before 5 s to reboot; hold for at least 5 s and release to restore factory settings

Mechanical

Enclosure material	Metal
Dimensions	202 × 121 × 45 mm
Weight	450 g
Mounting	Mounting ears as standard; DIN-rail mounting supported

Operating Environment

Operating temperature	−30 °C ~ 75 °C
Ingress protection	IP30

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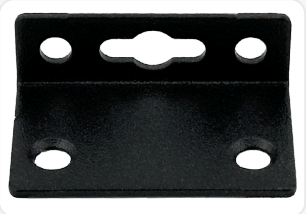
Ordering Options & Package

Wireless Options

Standard 4G version	4G + 2.4/5 GHz Wi-Fi 6; GPS optional
Optional 5G version	5G; Wi-Fi unavailable; GPS optional
GPS	Optional on both 4G and 5G versions, using the GPS-labelled antenna connector

Package Contents

Device	1 × YZW1000 — Standard
Packaging box	1 × Packaging box — Standard
12 V DC power adapter	1 × 12 V DC power adapter — Standard
Mounting ears	1 set × Mounting ears — Standard
4-pin dual-RS485 terminal	1 × 4-pin dual-RS485 terminal — Standard
4-pin dual-input power terminal	1 × 4-pin dual-input power terminal — Standard
4G magnetic-mount antenna	2 × 4G magnetic-mount antenna — Standard
Wi-Fi antenna	2 × Wi-Fi antenna — Standard；4G standard only; not provided with the 5G option.
5G cellular antenna	4 × 5G cellular antenna — With selected option；With the 5G option, replacing both 4G and Wi-Fi antennas.
GPS antenna	1 × GPS antenna — Optional
SFP transceiver and matching fibre	Per link × SFP transceiver and matching fibre — Optional；Match speed, wavelength, fibre and connectors for the link; not included as standard.
52–55 V DC supply for PSE operation	Per load × 52–55 V DC supply for PSE operation — Optional；Select a 52–55 V supply from the PSE load budget; not the role of the included 12 V supply.



Mounting ears
Standard • 1 set



4-pin dual-input power terminal
Standard • 1



4G magnetic-mount antenna
Standard • 2



Wi-Fi antenna
Standard • 2

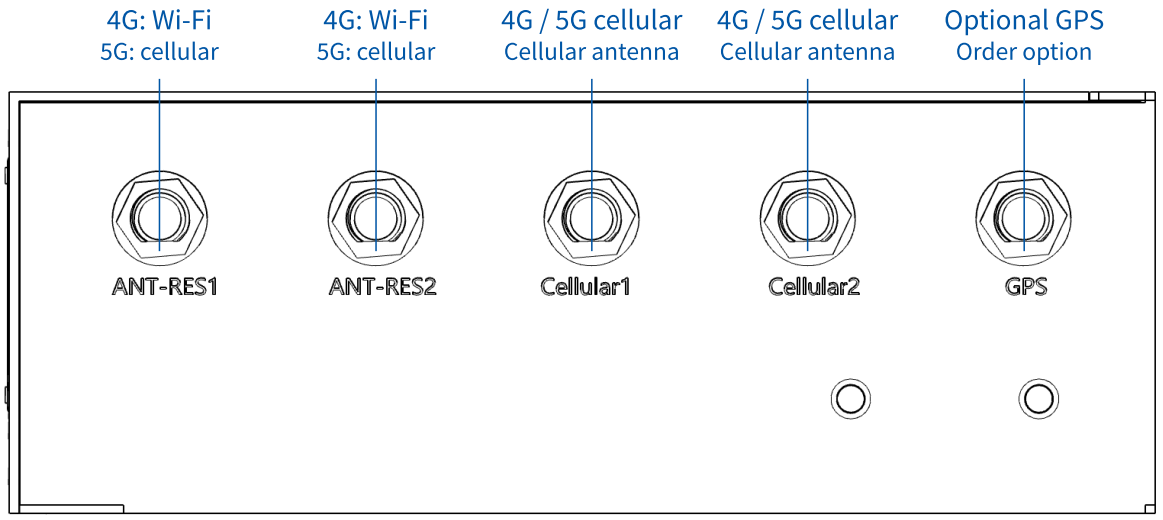


5G cellular antenna
With selected option • 4



GPS antenna
Optional • 1

Antenna Connections



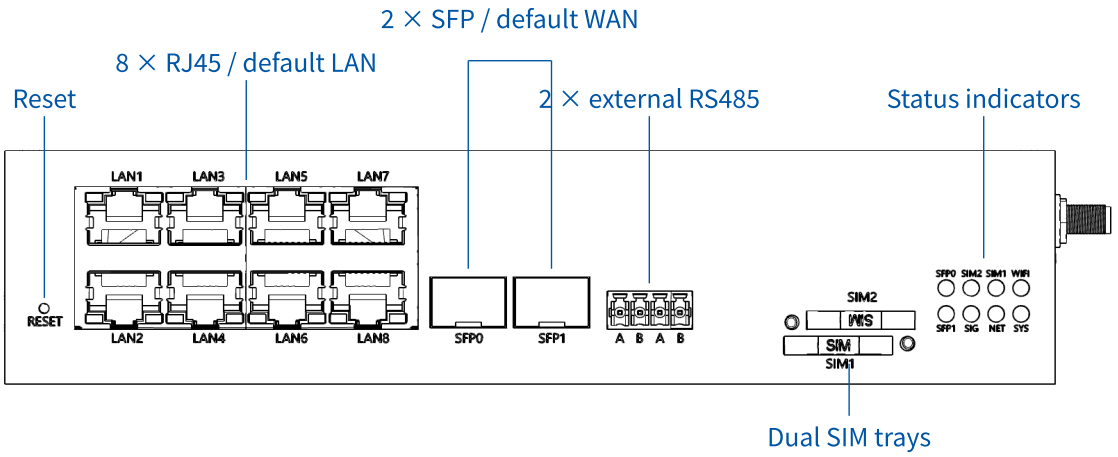
Side antenna connectors and variant-dependent functions

Antenna Port Assignments

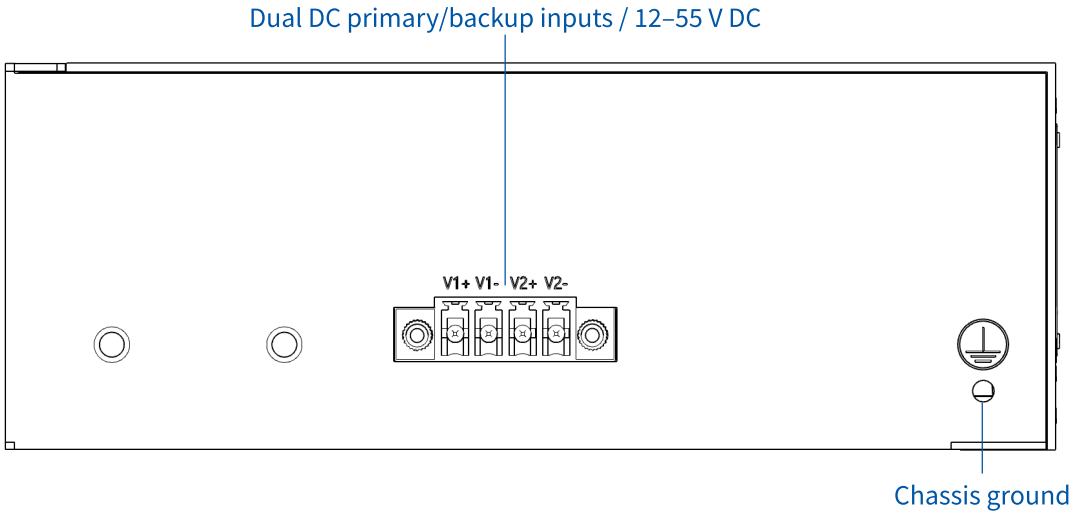
ANT-RES1 / ANT-RES2	4G version: Wi-Fi; 5G version: 5G cellular
Cellular1 / Cellular2	4G version: 4G cellular; 5G version: 5G cellular
GPS	Used when the optional GPS hardware is fitted

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Hardware Interfaces



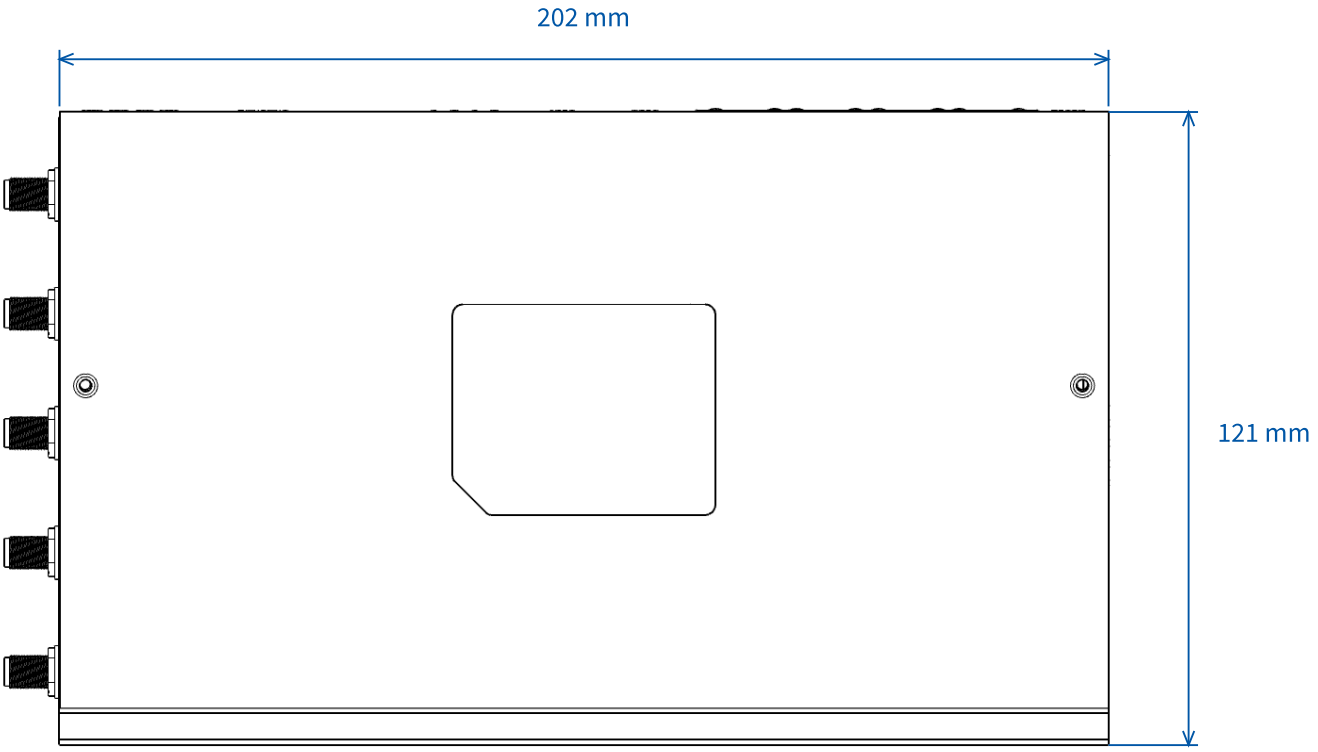
Front: eight copper ports, two SFP slots, two external RS485 ports and dual SIM trays



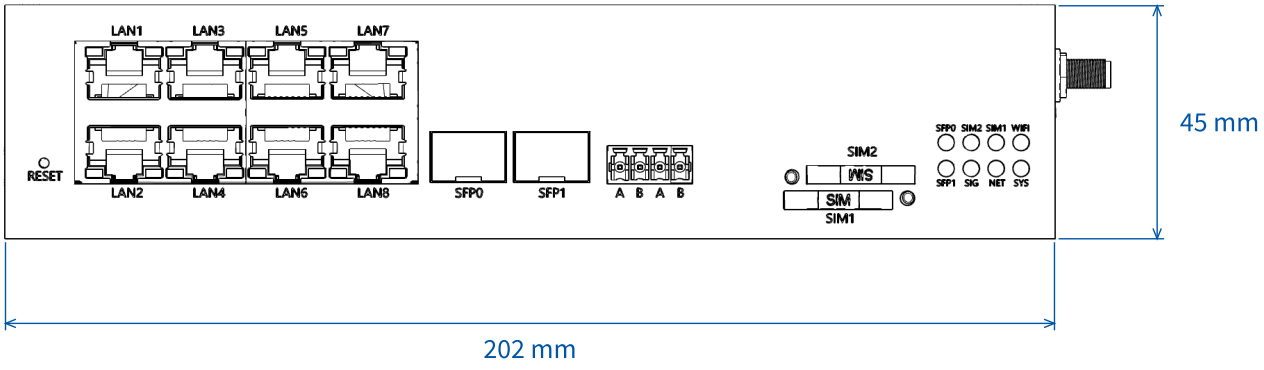
Power side: primary/backup DC input and enclosure grounding point

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Dimensions



Top view: 202 × 121 mm enclosure

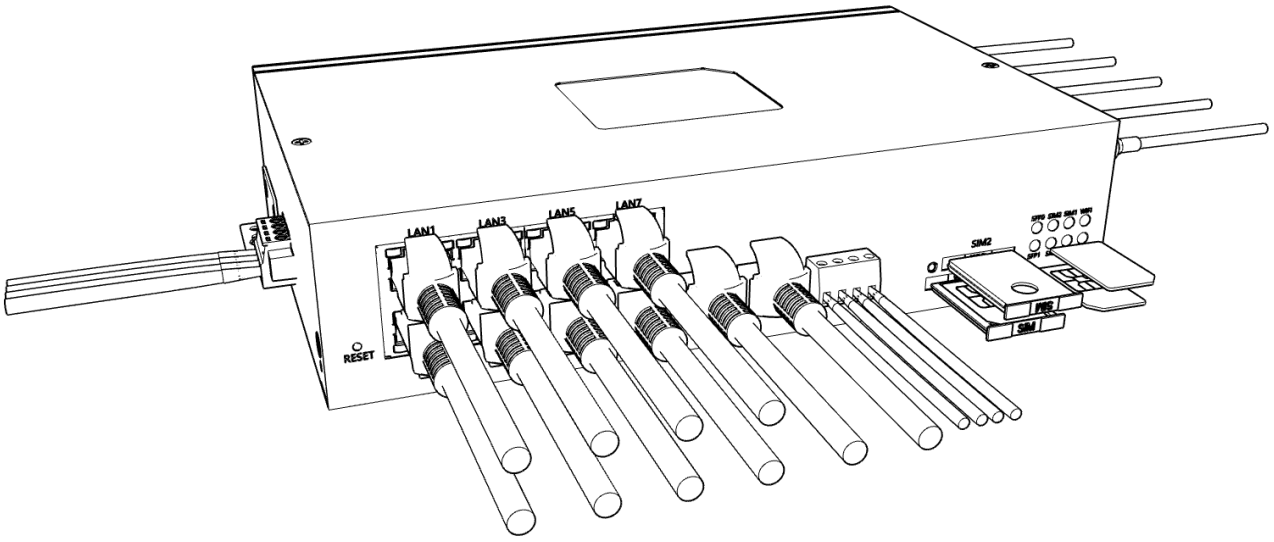


Front view: 202 × 45 mm enclosure

Enclosure dimensions exclude antenna connectors and other protruding components.

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Hardware Installation



SIM trays and cable connections; connect antennas according to the ordered 4G/5G and GPS configuration