YZW300X

Industrial LoRaWAN Router



Industrial automation

Video surveillance

Building automation

Energy & metering

Edge networking

8-channel LoRaWAN

4G • Wi-Fi

32 MB Flash

DIN-rail • IP30

DATASHEET

Features

Modem

Modem module	4G LTE Cat 4; LTE-FDD up to 150 Mbps downlink / 50 Mbps uplink, LTE-TDD up to 130 Mbps downlink / 30 Mbps uplink; module and bands depend on the ordered version
Status	Signal strength (RSSI), SINR, RSRP, RSRQ, BAND, IMSI, ICCID
APN	APN and account authentication settings, including NONE, PAP, CHAP and PAP+CHAP
PDP	PDP profile settings with IPv4, IPv6 or IPv4v6 selection

LoRaWAN Gateway

Gateway role	Multi-channel LoRaWAN gateway with an SX1302-compatible concentrator; forwards radio packets to an external LoRaWAN network server and runs concurrently with the independent LoRaNode function
Gateway module	1 concentrator module
LoRa channels	8 multi-spreading-factor LoRa receive channels (CH0–CH7), with separate standard LoRa and FSK channel settings
Regional channel plan	EU868; the RF module, antenna and channel plan must match the ordered frequency version and local radio regulations
RF configuration	Automatic or manual configuration of RF center frequencies, channel enable states, RF-chain assignments and intermediate-frequency offsets
Standard LoRa channel	Configurable spreading factor and 125/250/500 kHz bandwidth
Packet forwarding	Semtech UDP packet-forwarder protocol; configurable server address and uplink/downlink UDP ports
Gateway identity and location	Configurable gateway EUI, latitude, longitude and altitude
Antenna settings	Configurable installed-antenna gain and transmit enable state; actual RF power depends on the fitted module and regional limits
Network-server connection	Requires an external LoRaWAN network server for terminal activation, network management and application-data handling; no built-in network server

Wireless

Wireless mode	2.4 GHz band IEEE 802.11b/g/n; Access Point (AP), Station (STA)
WiFi security	WPA2-PSK, WPA-PSK; AES
SSID	SSID stealth mode
WiFi clients	Multiple wireless clients in AP mode

Ethernet

WAN	1 × WAN port, 10/100 Mbps, compliance with IEEE 802.3, IEEE 802.3u standards, supports auto MDI/MDIX
LAN	1 × LAN port, 10/100 Mbps, compliance with IEEE 802.3, IEEE 802.3u standards, supports auto MDI/MDIX

Network

Routing	Static routes with destination network, gateway, outgoing interface and metric settings
WAN access	IPv4/IPv6 static addressing, DHCP and PPPoE, with gateway/DNS settings and configurable PPP authentication, LCP keepalive and MTU/MRU
Network protocols	TCP, UDP, IPv4/IPv6, ICMP, ARP, DHCP, DNS, NTP, HTTP/HTTPS, SSH2 and MQTT; FTP and Telnet clients
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
Link supervision	Cellular-link keepalive with configurable IPv4/IPv6 probe targets and connection status monitoring
NAT	IPv4 DNAT, SNAT, MASQ and DMZ rules for port forwarding and address translation
QoS	Upload/download traffic rules by interface, network and optional port, with rate, ceiling rate and priority settings
DDNS	Configurable DDNS provider, account/token, domain and update interval, with an IPv6 update option
Uplink failover	WAN, cellular and Wi-Fi STA uplinks with configurable dual/triple-link priorities, ICMP keepalive, automatic failover and recovery

Security

Firewall	Stateful packet filtering and management-service access permissions for available access zones such as LAN and VPN
Attack prevention	Configurable DDoS limiting, IP-spoofing, port-scan and SYN-flood rules, plus multicast and IDENT access restrictions
Address Filter	LAN Internet restriction switch with VPN/m2mCloud-only access; disable, blacklist and whitelist modes; IP-only, MAC-only and combined IP+MAC matching. Rules support input/forward direction, TCP/UDP/ICMP, source/destination IP or CIDR, ports and destination interface
Domain Filtering	Configurable disabled, blacklist or whitelist domain-filtering modes

VPN

OpenVPN	Supports dual client instances and a server instance operating independently
WireGuard	IPv4-only tunnels with public/private-key authentication and optional pre-shared keys; up to 4 peer configurations, remote-subnet routes, keepalive, full-tunnel routing and masquerading
ZeroTier	Joins multiple virtual networks by network ID, with independent controls for managed IP/routes and global routes; provides node and virtual-network connection status monitoring
IPsec	IKEv1/IKEv2 and PSK authentication; tunnel and transport modes; configurable local/remote subnets, encryption/authentication parameters and PFS for site-to-site connectivity
L2TP	Client and server operation with account authentication, client address pools, remote-subnet routes, LCP keepalive and MTU/MRU settings for remote access and site interconnection
m2mCloud	m2mCloud remote networking and access to on-site devices; supports PLC program upload/download with the corresponding programming software, without a fixed public IP or inbound port forwarding at the site
GRE	GRE tunnels with local/peer endpoints, virtual addresses and tunnel-key identifiers; GRE itself does not provide encryption
PPTP	PPTP client and server configuration with account authentication and PPP parameters for legacy-network compatibility

Modbus Acquisition & Reporting

Acquisition mode	Modbus TCP/RTU master acquisition with device and command configuration; RTU acquisition uses the RS485 port
Read function codes	01 Read Coils; 02 Read Discrete Inputs; 03 Read Holding Registers; 04 Read Input Registers
Data formats	16-bit signed/unsigned integers; 32-bit signed/unsigned integers (ABCD); 32-bit floating point (ABCD/CDAB)
Device and command management	Up to 16 devices, with up to 32 acquisition commands per device; supports RTU serial or TCP connections
Command configuration	Configurable command name, slave address, register start/count, mapping address, writable attribute and independent acquisition period
Acquisition and reporting timing	Per-command acquisition period: 1-86400 s; response timeout: 30-120000 ms; MQTT/TCP/UDP support optional periodic reporting at intervals of 1-86400 s
Data reporting	MQTT, TCP and UDP data reporting; IEC 60870-5-104 protocol integration
MQTT settings	Server address/port, account authentication and CA certificates; per-device publish/subscribe topics; writable commands accept downlink control through subscribed messages
IEC 60870-5-104 settings	Configurable communication port, common address and acquisition-command mapping addresses
Serial-port sharing	RTU acquisition and DTU services cannot own the same serial port simultaneously; Modbus TCP acquisition does not occupy the serial port

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	MQTT serial-data access with account authentication, client ID, publish/subscribe topics, QoS 0/1/2 and keepalive settings
Serial protocol gateway	Modbus RTU/ASCII master or slave modes and DNP3 master/outstation modes, using the device serial interface
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

LoRaNode

Node function	Independent LoRaWAN end-device function with separate configuration and enable control; can run concurrently with the LoRaWAN gateway
Activation and device class	OTAA/ABP activation; Class A/Class C operation; EU868 regional configuration
Data exchange	Web-configurable fPort and hexadecimal uplink payload; downlink receive monitoring and node-status display
Automatic rejoin	Configurable link-check interval and consecutive-failure threshold; automatic rejoin in OTAA mode when enabled and the threshold is reached; ABP does not initiate OTAA rejoin

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

Cloud remote access	Remote access from an authorized m2mCloud client to the router and LAN-connected PLCs, HMIs and other devices for configuration, diagnostics and maintenance
PLC program upload/download	PLC program upload (PLC to engineering PC), download (engineering PC to PLC) and remote commissioning through m2mCloud using the corresponding programming software, reducing on-site service visits and travel costs
Remote networking	Cloud-controlled L3 routing or L2 bridging for remote-subnet or same-subnet access; L3 mode supports up to 10 remote IPv4 subnet routes
NAT traversal and relay	L3 mode supports P2P direct communication or server relay; L2 bridging uses relay. No fixed public IP or inbound port forwarding is required at the site, simplifying cellular and NAT network access
Remote serial access	Authorized remote access to the RS485 port through the platform serial-proxy client; the same port cannot be used concurrently by DTU or Modbus RTU acquisition
Cloud monitoring and maintenance	Reports device model, firmware version, uptime, cellular signal, dial-up state and tunnel status; supports cloud-issued device reboot commands for centralized monitoring and troubleshooting
Connection recovery	Automatically reconnects the cloud management session and restores the tunnel after a recoverable interruption, reducing the need for on-site manual reconnection
Communication security	TLS protects the cloud management connection; tunnel traffic is encrypted with a group key distributed by the platform
Requirements	Requires the corresponding m2mCloud platform, authorization, client and reachable IPv4/UDP service. PLC operations require compatible programming software, device permissions and correct site network settings

Hardware Features

Hard version	V1.2
CPU	MediaTek MT7628AN
RAM	128 MB, DDR2
FLASH storage	32 MB, SPI NOR Flash
GPS	Optional; 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 OS
Script runtime	Shell, Python 3.9.17

Power

Connector	Two-pin pluggable DC power terminal (V+ / V−), 9–36 V DC
Input voltage range	9 – 36 V DC, reverse polarity protection
Power consumption	Base power consumption < 3.5 W; total power consumption depends on the fitted RF modules and operating state

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

Ethernet	2 × RJ45 ports, 10/100 Mbps, compliance with IEEE 802.3, IEEE 802.3u standards, supports auto MDI/MDIX
Serial	1 × RS485, 1 × DI & 1 × DO (5-pin pluggable terminal, pin order A • B • GND • GPI • GPO)
Status LEDs	Power, WAN, LAN, Wi-Fi, SIM1 NET/SIG, SIM2 NET/SIG and one shared LoRa application-running LED
SIM network LEDs	NET1/NET2 correspond to SIM1/SIM2: steady on when connected, fast flashing while connecting, off when disabled or idle; the inactive SIM pair is off
SIM signal LEDs	SIG1/SIG2 indicate the active SIM's CSQ: 1–10 slow flashing, 11–20 fast flashing, 21–31 steady on; zero or invalid CSQ turns the LED off
Wi-Fi LED	Off when disabled; steady on when the AP is enabled or the STA connection is ready; slow flashing during configuration or connection setup
LoRa running LED	Shared by the node and gateway applications: steady on while either radio application is running, off when both are stopped; not an indication of successful activation or packet traffic
SIM	2 × SIM slot, external SIM holder
Power	Two-pin pluggable DC power terminal (V+ / V−), 9–36 V DC
Antennas	SMA connectors for 4G, Wi-Fi, optional GPS and LoRaWAN; antenna configuration depends on the ordered RF modules
Reset	Short press to reboot; press and hold for 15 s to restore factory settings

Physical Specification

Casing material	Metal casing, supporting DIN rail installation
Dimensions (W × H × D)	120.00 × 99.00 × 33.00 mm
Weight	350 g
Mounting options	Sideways DIN rail mounting slots

Operating Environment

Operating temperature	−30 °C ~ 75 °C
Operating humidity	< 95 % non-condensing
Ingress Protection Rating	IP30

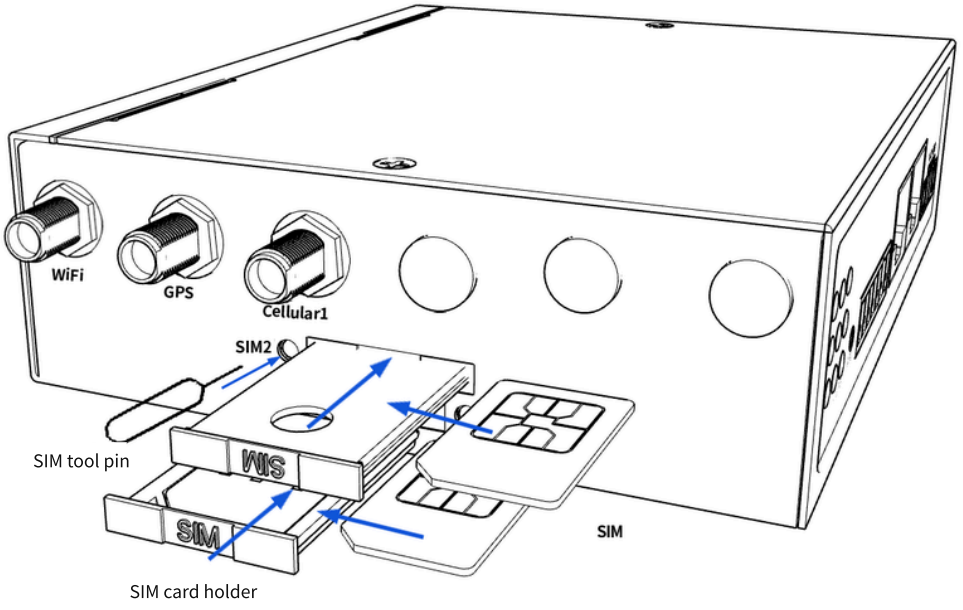
EMI Immunity

Standards	Draft EN 301 489-1 V2.2.0, Draft EN 301 489-17 V3.2.0, Draft EN 301 489-52 V1.1.0, FCC 47 CFR Part 15B (2017), ANSI C63.4 (2014)
ESD	EN61000-4-2: 2009
RS	EN 61000-4-3: 2006 + A1: 2008 + A2: 2010
EFT	EN 61000-4-4: 2012
Surge immunity (AC Power Line)	EN 61000-4-5: 2006
Surge immunity (Ethernet ports)	EN 61000-4-5: 2014, clause 7.1 of ITU-T K21
CS	EN 61000-4-6: 2009
DIP	EN 61000-4-11: 2004

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Hardware Installation

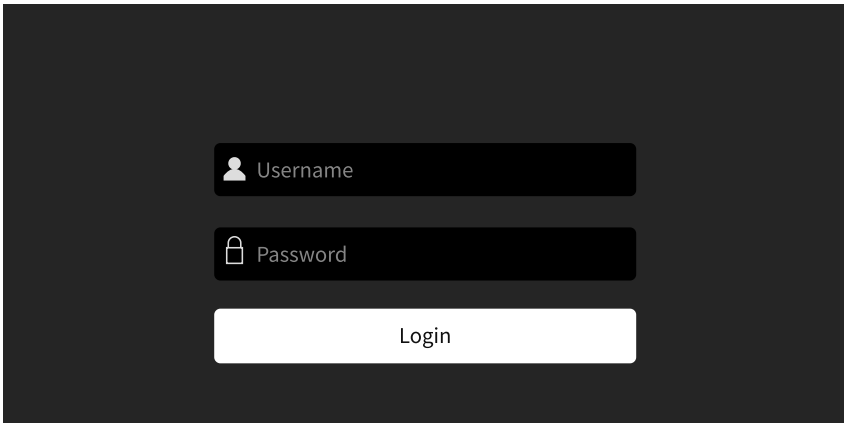
1. Push the SIM button with the SIM needle, pull out the SIM holder, insert your SIM card, and slide the holder back into the router (dual-SIM).
2. Connect the LoRaWAN, 4G and Wi-Fi antennas to the marked connectors. Connect the GPS antenna if the GPS option is fitted. The LoRaWAN antenna band must match the gateway RF module.
3. Connect the power adapter (9 – 36 V DC) to the 2-pin power terminal on the front of the device, then plug the other end into a power outlet.
4. Connect to the device wirelessly using the SSID and password on the device information label, or use an Ethernet cable connected to the LAN port.



SIM card installation

Login to Device

1. To enter the router's Web interface (WebUI), type http://192.168.8.1 into the URL field of your Internet browser.
2. Use the login information shown on the device information label when prompted for authentication.
3. Go to the Overview page and pay attention to the Signal Strength indication after login. To maximize the cellular performance try adjusting the antennas or changing the location of your device to achieve the best signal conditions.



A. WebUI login example

Status	Connected (1 day 5 hour 1 min)
Signal	29[-55dbm]
Network Type	lte
Operator	CHINA MOBILE
SIM Status	SIM1 Ready
SIM ICCID	89860875102592713901
SIM IMSI	460130355343901
Module IMEI	867997075354786
Module Version	China-Mobile-ML307R (ML307R-DL-MBRH0S00)
IP	10.51.125.123/24

B. Overview example (UI and status values vary by delivered device)

Technical Information

Radio Specifications

RF technologies	LoRaWAN, 4G, Wi-Fi; optional GPS reception, specify when ordering
LoRaWAN RF power	Determined by the fitted concentrator RF module and regional regulations; configurable transmit enable state

Bundled Accessories Specifications*

Modem antenna	698~960 / 1710~2690 MHz, 50 Ω, gain** 5 dBi, SMA male connector
WiFi antenna	2400~2500 MHz, 50 Ω, gain** 3 dBi, SMA male connector
GPS antenna (optional)	Supplied with the optional GPS version; 1575.42 ± 1.023 MHz, 50 Ω, gain** 25 dB (active), SMA male connector
LoRaWAN antenna	Supplied as standard; 50 Ω, SMA male connector; antenna frequency must match the ordered gateway RF module

*Order code dependent. **Higher gain antenna can be connected to compensate for cable attenuation when a cable is used. The user is responsible for the compliance with the legal regulations.*

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What's in the Box

Package contents • YZW300X • device illustration includes optional GPS

- 1 × YZW300X device (Standard)
- 1 × Packaging box (Standard)
- 1 × 2-pin power terminal, 3.5 mm (Standard)
- 1 × 4G cellular antenna (Standard)
- 1 × Wi-Fi antenna (Standard)
- 1 × LoRaWAN antenna (Standard)
- 1 × Ethernet cable, 1 m (Standard)
- 1 × 5-pin screw terminal (Standard)
- 1 × DIN-rail mounting hardware (Standard)
- 1 × GPS antenna (Optional)
- 1 × DC power adapter and matching lead (Optional)





YZW300X
Standard • 1



4G cellular antenna
Standard • 1



Wi-Fi antenna
Standard • 1



GPS antenna
Optional • 1



Ethernet cable, 1 m
Standard • 1



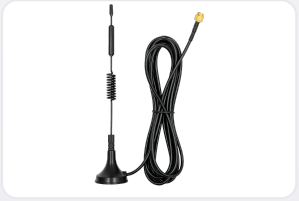
5-pin screw terminal
Standard • 1



DIN-rail mounting hardware
Standard • 1



2-pin power terminal, 3.5 mm
Standard • 1



LoRaWAN antenna
Standard • 1

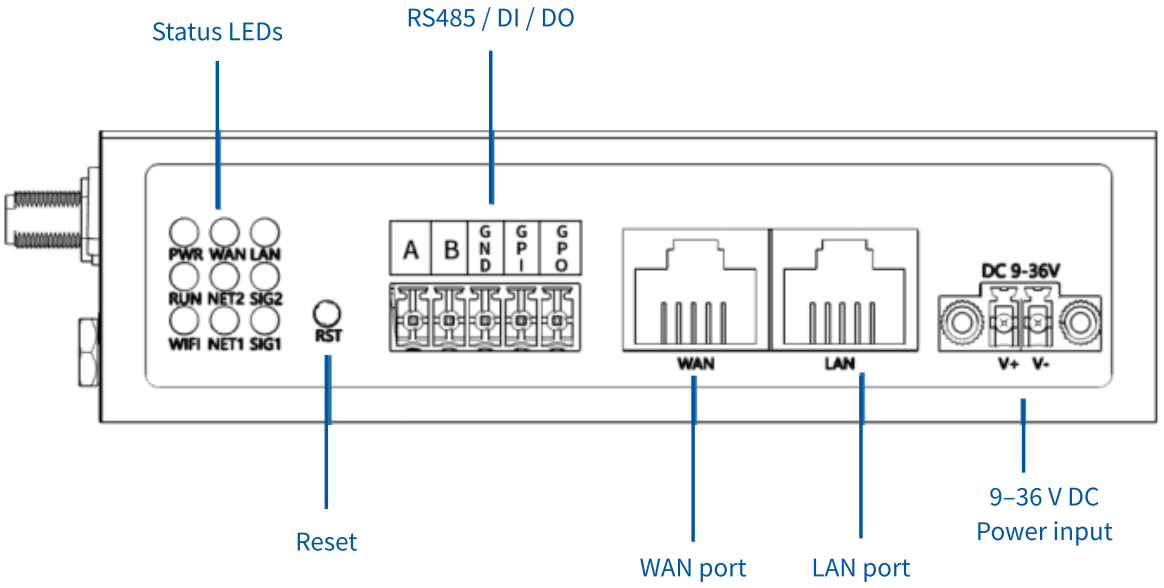
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Available Versions

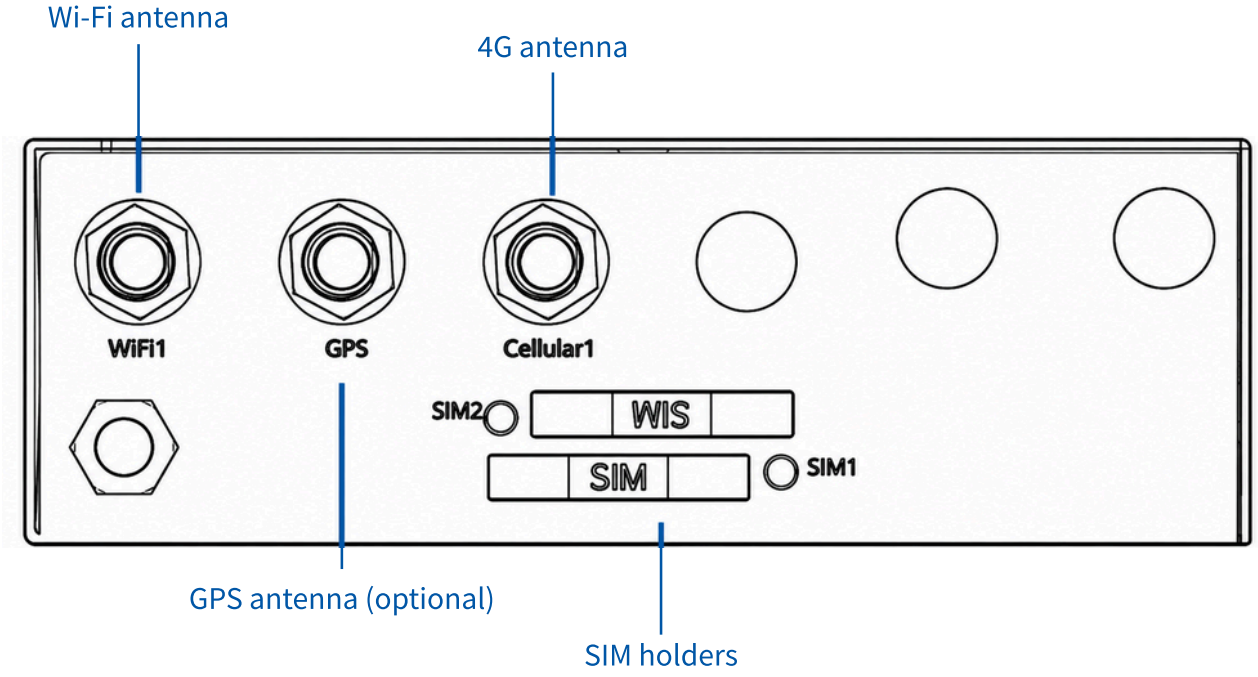
Product	Region (Operator)	Frequency
YZW300X (CN)	China / SE Asia	4G (LTE-FDD): B1, B3, B5, B8 4G (LTE-TDD): B34, B38, B39, B40, B41 WCDMA: B1, B5, B8 GSM / EDGE: B3, B8
YZW300X (EU)	Europe	4G (LTE-FDD): B1, B3, B5, B7, B8, B20, B28 4G (LTE-TDD): B38, B40, B41 WCDMA: B1, B5, B8 GSM / EDGE: B3, B8
YZW300X (AU)	Latin America, Australia, New Zealand	4G (LTE-FDD): B1, B2, B3, B4, B5, B7, B8, B28, B66 4G (LTE-TDD): B40 WCDMA: B1, B2, B4, B5, B8 GSM / EDGE: B2, B3, B5, B8
YZW300X (Global)	Global	4G (LTE-FDD): B1, B2, B3, B4, B5, B7, B8, B12, B13, B17, B18, B19, B20, B25, B26, B28, B66 4G (LTE-TDD): B38, B39, B40, B41 WCDMA: B1, B2, B4, B5, B8

The price and lead-times for region (operator) specific versions may vary. For more information please contact us.

Hardware



Front Panel



Side Panel

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YZW300X Spatial Measurements & Weight

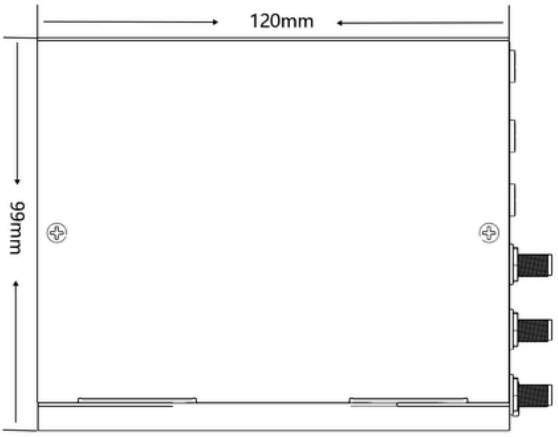
Main Measurements

Dimensions (W × H × D)*	120.00 × 99.00 × 33.00 mm
Box	262.00 × 125.00 × 85.00 mm

**Housing measurements are presented without antenna connectors and screws; for measurements of other device elements look to the sections below.*

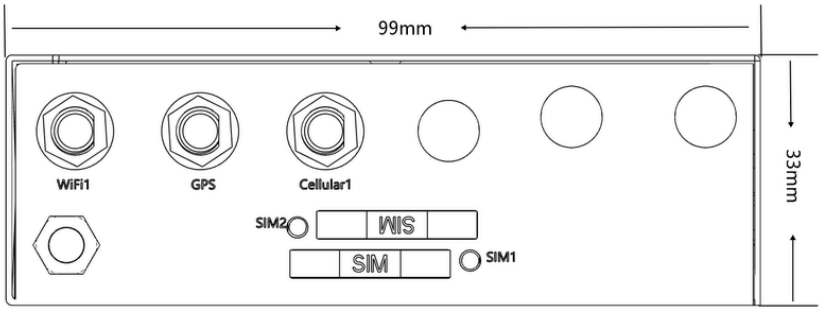
Top View

The measurements of YZW300X and its components are seen on the top:



Side View

Measurements of the YZW300X and its components are seen on the side:



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Mounting Space Requirements

The figure below depicts an approximation of the device's dimensions when cables and antennas are attached:

