

GD72

LoRaWAN Gateway

Standardized Device Manual



VERSION
Current

DOCUMENT
Device Manual

Revision History

Version	Change Description
Current	Current published version

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1. Product Description

GD72 is an outdoor, multi-channel, high-performance gateway designed by ManThink for LoRaWAN systems. It uses a high-performance processor, a Semtech SX1302 LoRa concentrator and an industrial-grade Wi-Fi module. It supports Ethernet, cellular, Wi-Fi access-point/client and Bluetooth Low Energy (BLE) connections. GD72 is suitable for low-power wide-area network deployments in cities, factories, campuses and other outdoor or harsh environments, and can also support edge computing, protocol conversion, data buffering and local application extensions.

2. Main Features

- High-performance chipset, at least 512 MB DDR and at least 16 GB eMMC
- SX1302 LoRa concentrator with at least 8 LoRaWAN uplink channels, up to 16 frequency points and up to 32 demodulators
- -141 dBm LoRa receiver sensitivity at SF12/BW 125 kHz; maximum transmit power is 27 dBm for suffix -1 and 22 dBm for suffix -2, with a maximum-power tolerance of ± 2 dBm
- Standard LoRaWAN and the AS923 regional parameters, plus regional configurations for CN470, EU433, EU868, AU915 and US915
- Industrial-grade Wi-Fi module supporting access-point and client modes
- 2.4 GHz or 5 GHz Wi-Fi, IEEE 802.11a/b/g/n, at least 100 Mbps download and at least 50 Mbps upload
- Bluetooth Low Energy (BLE)
- WPA2, AES and TLS
- Ethernet, 4G/LTE and Wi-Fi backhaul options, plus dual-gateway redundancy architecture
- GPS/BeiDou positioning and NTP clock synchronization
- MQTT, MQTTS, HTTP, HTTPS, SNMP, DHCP, static IP, NAT and ICMP
- Secure remote management, configuration and upgrades; supports Python and Node-RED for secondary development
- Automatic fault detection and recovery; reporting of CPU, memory, storage, network and LoRa communication-quality indicators
- Built-in indicators for LoRa, network, power/operation and faults
- Built-in TKL, including LoRaWAN network server and IoT platform, historical data, Thing Model and Dashboard
- IP67 enclosure for pole or wall mounting
- Visual configuration and maintenance through gwTool7

3. Technical Specifications

Category	Parameter	GD72 Specification
COMPUTE AND STORAGE		
	SoC	High-performance multi-core processor
	Memory	DDR, ≥ 512 MB
	Storage	eMMC, ≥ 16 GB

Category	Parameter	GD72 Specification
SOFTWARE AND PLATFORM		
	Built-in platform	Built-in TKL LoRaWAN network server and IoT platform
	External platforms/ protocols	ThinkLink, ChirpStack, TTN, Basic Station and GWMP
	Data services	PostgreSQL, Redis, historical data storage, Thing Model, application data parsing and Dashboard
	Secondary development	Supports Python and Node-RED
	Remote operations	Remote management, configuration and upgrades over SSH
	Fault handling	Automatic fault detection and recovery
	Monitoring	Reporting of CPU, memory and storage usage, network status and LoRa communication quality

Category	Parameter	GD72 Specification
LORAWAN		
	Concentrator	Semtech SX1302
	Protocol	Standard LoRaWAN; compliant with LoRa Alliance™ LoRaWAN Specification v1.0.4 or a later version
	Operating bands	AS923: 920–928 MHz; regional configurations also include CN470, EU433, EU868, US915 (902–928 MHz) and AU915
	Channels/frequency points	At least 8 uplink channels; up to 16 frequency points at BW = 125 kHz
	Demodulators	Up to 32, processing up to 32 packets simultaneously
	Demodulator composition	16 × SF5–SF12 LoRa®demodulators; 16 × SF5–SF10 LoRa®demodulators
	Channel capacity	Up to 130 logical channels; each SF, bandwidth and frequency-point combination defines a channel
	Communication rate	292 bps to 15.625 kbps

Category	Parameter	GD72 Specification
	Spreading factors	SF5 to SF12
	Single-channel bandwidth	125 kHz or higher
	Operating mode	Half-duplex; dual-LoRa architecture can be provided by configuration
	Transmit power	Suffix -1: 27 dBm maximum; suffix -2: 22 dBm maximum; maximum-power tolerance: ± 2 dBm
	Receiver sensitivity	-141 dBm at SF12/BW 125 kHz
	Antenna	Omnidirectional LoRa antenna

Category	Parameter	GD72 Specification
WI-FI AND BLUETOOTH		
	Wi-Fi module	Industrial-grade Wi-Fi module
	Operating modes	Access-point mode and client mode
	Bands/standards	2.4 GHz or 5 GHz; IEEE 802.11a/b/g/n
	Download/upload	Download ≥ 100 Mbps; upload ≥ 50 Mbps
	Security	WPA2, AES and TLS
	Bluetooth	Bluetooth Low Energy (BLE)

Category	Parameter	GD72 Specification
NETWORK AND TRANSPORT		
	Ethernet	1000M/100M; DHCP and static IP configuration
	Cellular uplink	CAT1 4G/LTE module by default; LTE-FDD B1/3/5/8 and LTE-TDD B34/38/39/40/41
	Data forwarding	MQTT, MQTTS, HTTP and HTTPS
	Network services	NTP, prevailing-version SNMP, NAT and ICMP diagnostics
	Network redundancy	Dual-gateway architecture for network redundancy

Category	Parameter	GD72 Specification
SECURITY AND AUTHENTICATION		
	Device identity	IMEI or device-feature-string authentication
	Access protection	Firewall and access control list (ACL)
	Transport security	Prevailing-version TLS; administrators can disable unsafe SSH/TLS cipher suites

Category	Parameter	GD72 Specification
PORTS AND TIMING		
	Configuration ports	USB Type-C, Ethernet and Wi-Fi
	SIM slot	One external nano-SIM slot supporting LTE/5G SIM cards; cellular standards are determined by the configured module
	Positioning/timing	GPS and BeiDou (BDS) positioning; NTP synchronization

Category	Parameter	GD72 Specification
POWER		
	Power supply	One PoE or PoE+ Ethernet port; nominal 48 V PoE
	Power consumption	< 5 W in a typical configuration

3.1 Environment and Enclosure

Category	Parameter	GD72 Specification
	Operating temperature	-40°C to 70°C
	Operating humidity	0% to 95% RH, non-condensing
	Ingress protection	IP67
	Radio-equipment requirement	Compliant with HKCA 1078 requirements
	Weight	1.2 kg
	Dimensions	164 × 124 × 50 mm
	Installation	Pole or wall mounting

Cellular deployment note: if local operator bands are outside the default module range, contact ManThink for a suitable cellular module.

4. Accessories

The product package includes the GD72 gateway, PoE components, mounting hardware, waterproof components, LoRa antenna, LTE antenna, GPS antenna, Wi-Fi antenna, network cable and fasteners. Cellular-enabled versions include an LTE/5G SIM card.

5. Gateway Body

6. Product Dimensions

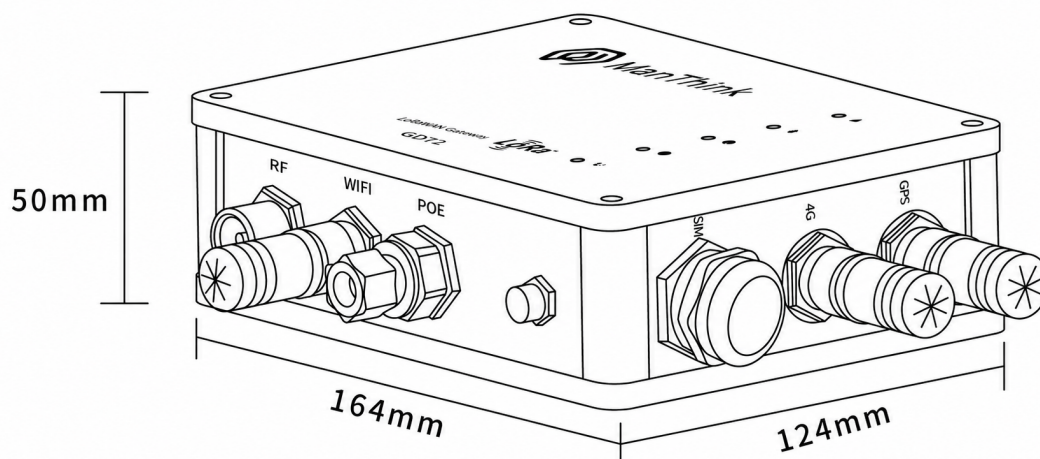


Figure GD72 product dimensions

7. Interface Description

Interface	Description
RF	LoRa antenna interface
WIFI	Wi-Fi antenna interface
POE	PoE/PoE+ power and Ethernet interface
SIM	External nano-SIM slot
4G	LTE antenna interface
GPS	GPS/BeiDou antenna interface
TYPE-C	Local configuration and debugging interface

8. Indicator Description

Indicator	Color/network	States and meanings
Run indicator 	—	Steady: System starting. Off: Base startup complete; applications are starting. 1 Hz flashing: Normal operation.
Network indicator 	Blue/wired Green/cellular	Blue, 1 Hz: Wired network normal. Blue, every 500 ms: Wired network abnormal. Blue, rapid: Network configuration in progress. Green, off: No cellular module. Green, steady: Module installed but no SIM. Green, irregular: Cellular data activity.
LoRa transceiver indicator 	Green Blue	Green flashing: Transmitting LoRa packets. Blue flashing: Receiving LoRa packets.
LAN status indicator 	Red Blue	Red: System-control state. Blue: Wi-Fi connection state.
Fault indicator 	—	Rapid flashing: Startup phase 2. Off: No fault. Flashing: Fault detected.

9. Product Model

9.1 Standard Model

The GD72 standard model is GD728–AG–AS923–N–2.

9.2 Model Components

- **GD728: series and RF band.** GD72 identifies the outdoor LoRaWAN gateway series; 8 identifies the 800 MHz-and-above RF version.
- **-AG: LoRa architecture and cellular configuration.** A identifies one LoRa antenna, 8 frequency points, 65 channels and half-duplex operation; G identifies an integrated cellular module.
- **-AS923: LoRaWAN regional standard.** Identifies support for the AS923 regional parameters.
- **-N: version code.** N identifies the default version; other values are used for customized versions.
- **-1: transmit-power version.** Maximum transmit power is 27 dBm, with a maximum-power tolerance of ± 2 dBm.

- **-2: transmit-power version.** Maximum transmit power is 22 dBm, with a maximum-power tolerance of ± 2 dBm.

10. Gateway Installation

Do not open the gateway enclosure during installation. Disconnect power first and verify that antennas, PoE, waterproof connectors and grounding measures meet site requirements.

11. Installation Direction

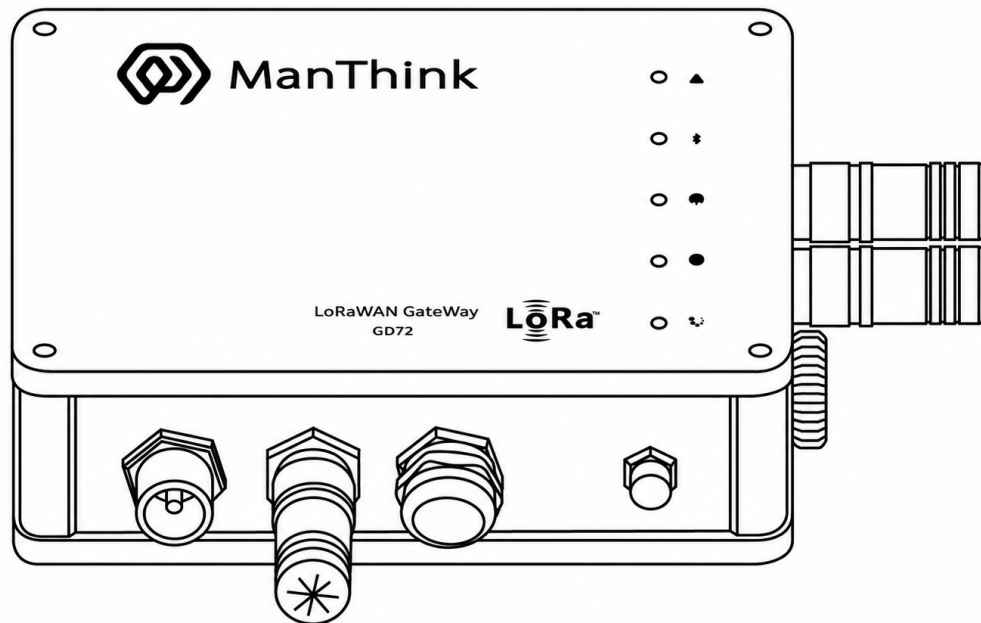


Figure Correct GD72 installation direction

The product front is shown above. The GPS and 4G/LTE antenna interfaces face right, and the Wi-Fi antenna interface faces down. Maintain this orientation to support drainage and ingress protection.

12. Backplate Installation

1. Turn the gateway to the illustrated orientation and verify that the backplate is securely attached.

2. Align the screws and tighten them evenly clockwise. Do not overtighten or damage the threads.

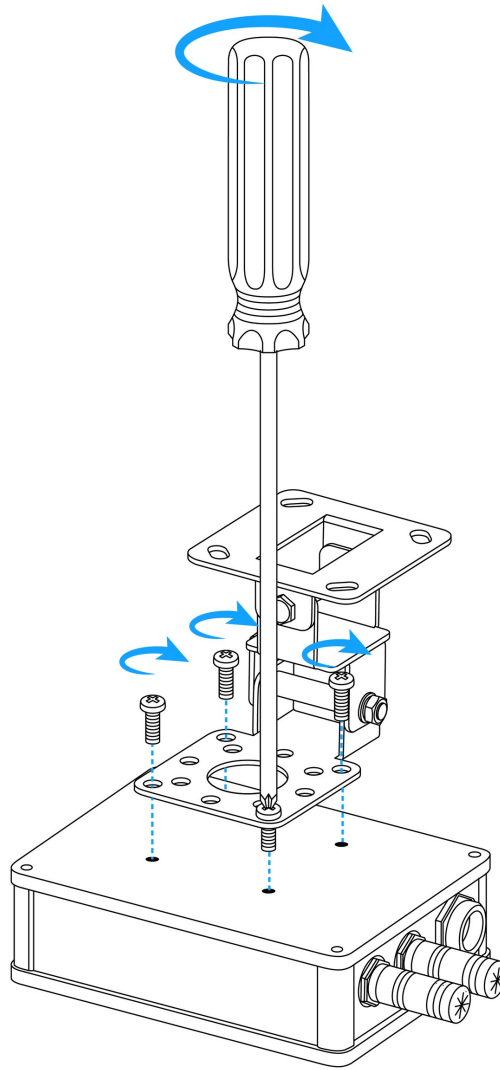


Figure GD72 backplate installation

13. Network Cable Installation

1. Pass the waterproof-connector components over the cable in the illustrated order and assemble them tightly.
2. Insert the RJ45 plug into the gateway POE port.
3. Move the waterproof connector to the POE port and tighten it to form a reliable seal.

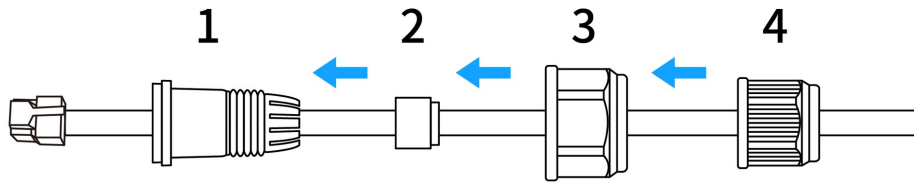


Figure GD72 network cable installation step one

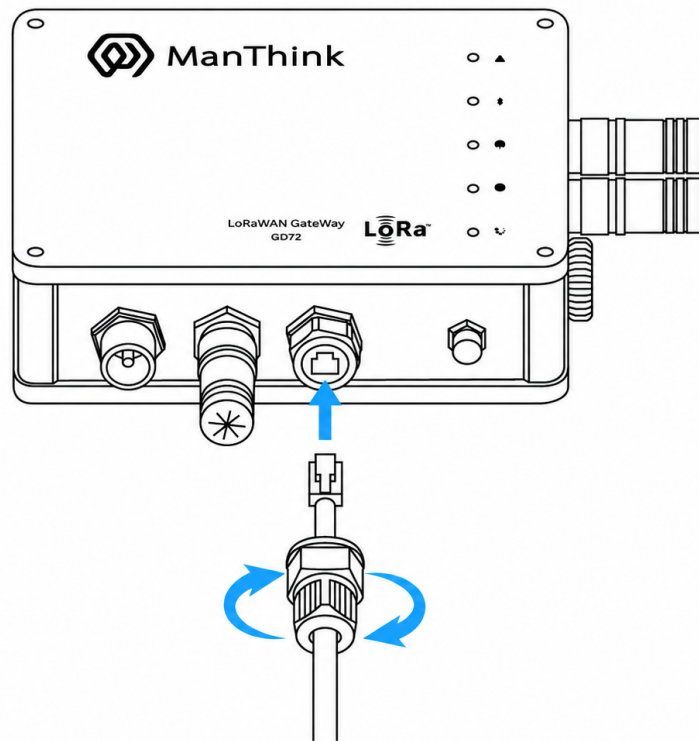


Figure GD72 network cable installation step two

14. SIM Card Installation

1. Unscrew the waterproof cover on the SIM interface.
2. Keep the SIM card contacts facing the TYPE-C interface.
3. Insert the SIM card and tighten the waterproof cover.

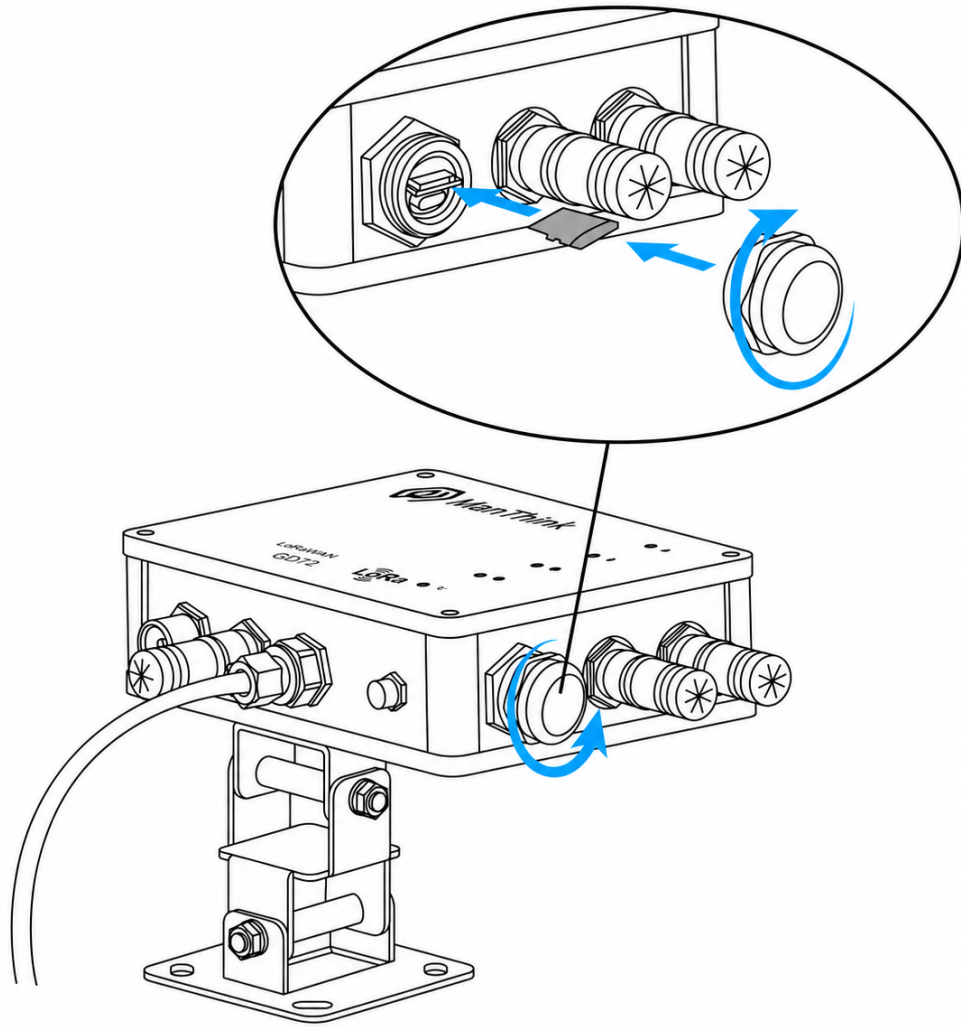


Figure GD72 SIM card installation

15. Power Connection

1. Connect the PoE adapter OUT port to the gateway POE interface for power.
2. Connect the PoE adapter IN port to a switch or router. With cellular backhaul, the site network design determines whether the IN port is required.

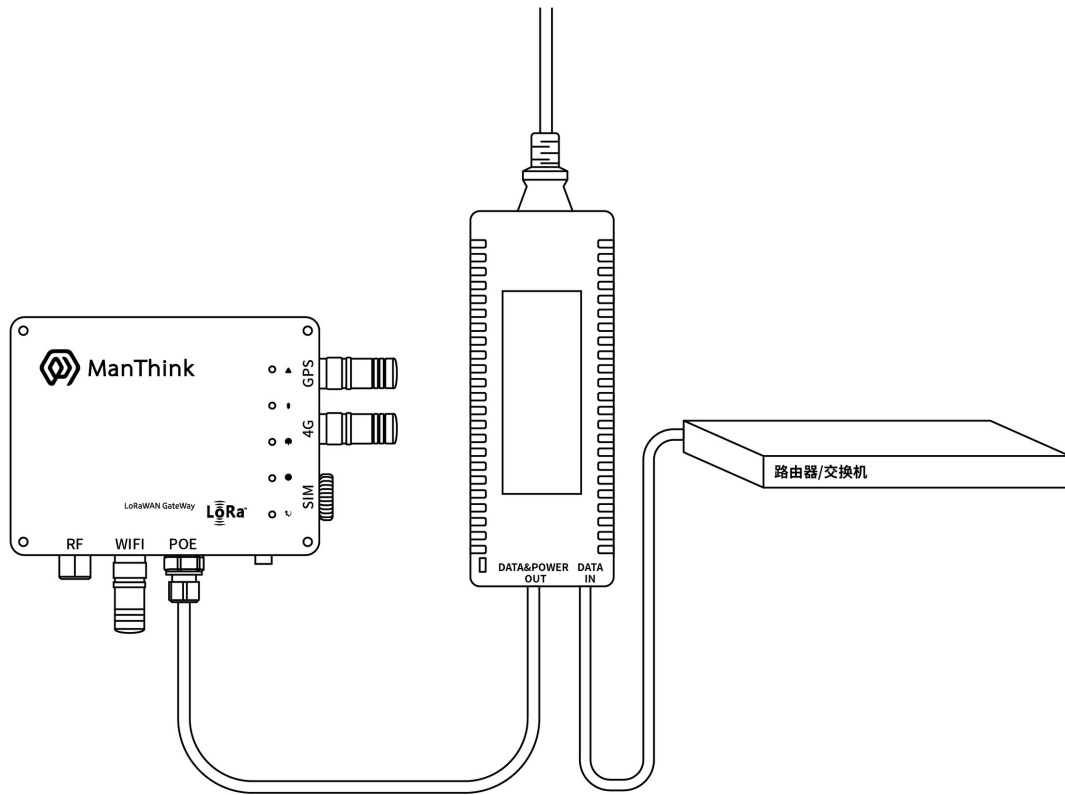


Figure GD72 PoE connection

16. Antenna Installation

1. Connect the LoRa antenna to the RF interface.
2. Connect the LTE, GPS/BDS and Wi-Fi antennas to their matching labeled interfaces.
3. Weatherproof all outdoor antenna connections according to site practice.

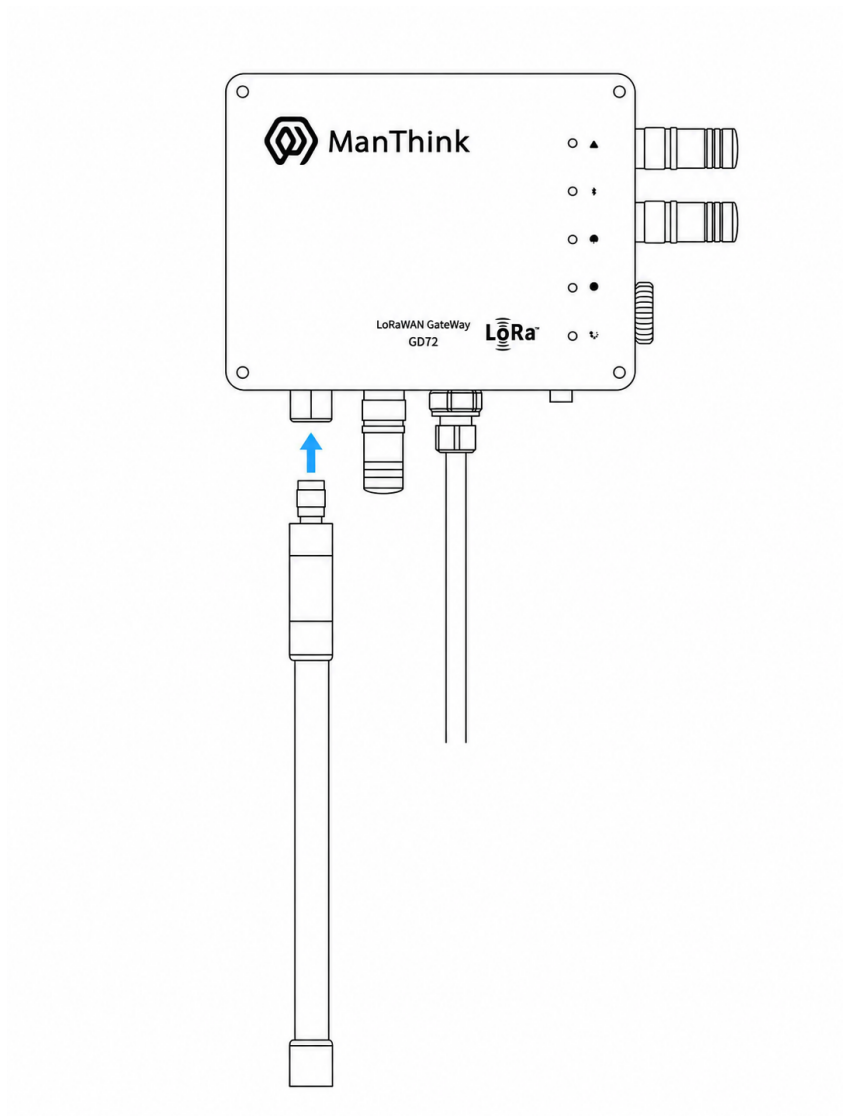


Figure GD72 LoRa antenna installation

17. Gateway Mounting

17.1 Wall Mounting

1. Keep the gateway front facing up.
2. Mark and drill the wall using the backplate holes, then install anchors suitable for the wall material.
3. Pass the fasteners through the backplate and tighten them evenly.

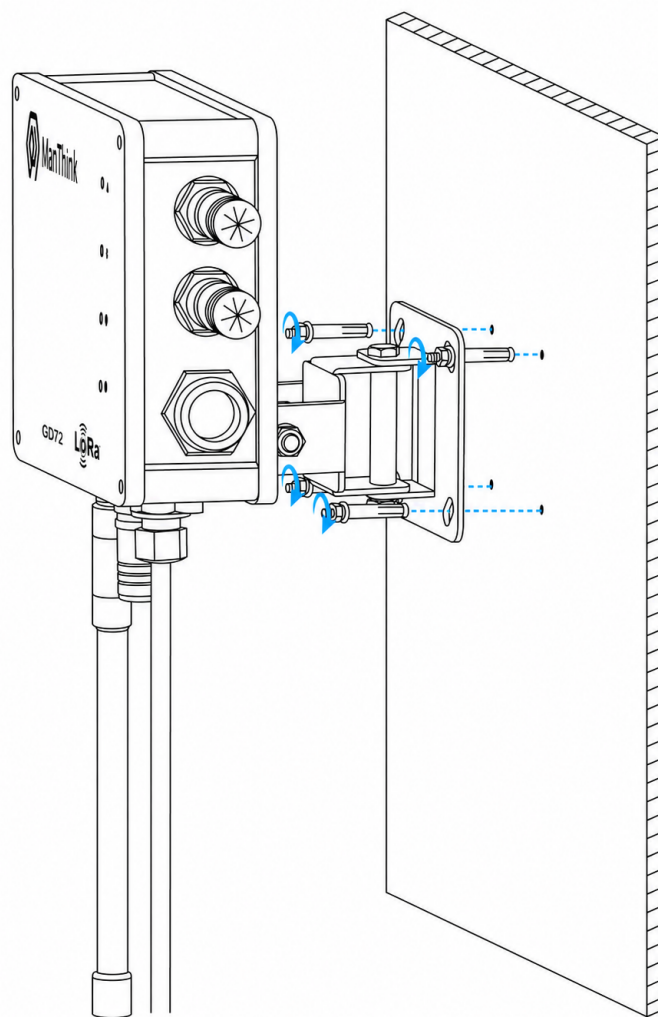


Figure GD72 wall mounting

17.2 Pole Mounting

1. Keep the gateway front facing up.
2. Confirm that the pole diameter is 30–52 mm.
3. Assemble the pole clamps as illustrated and tighten the screws evenly.

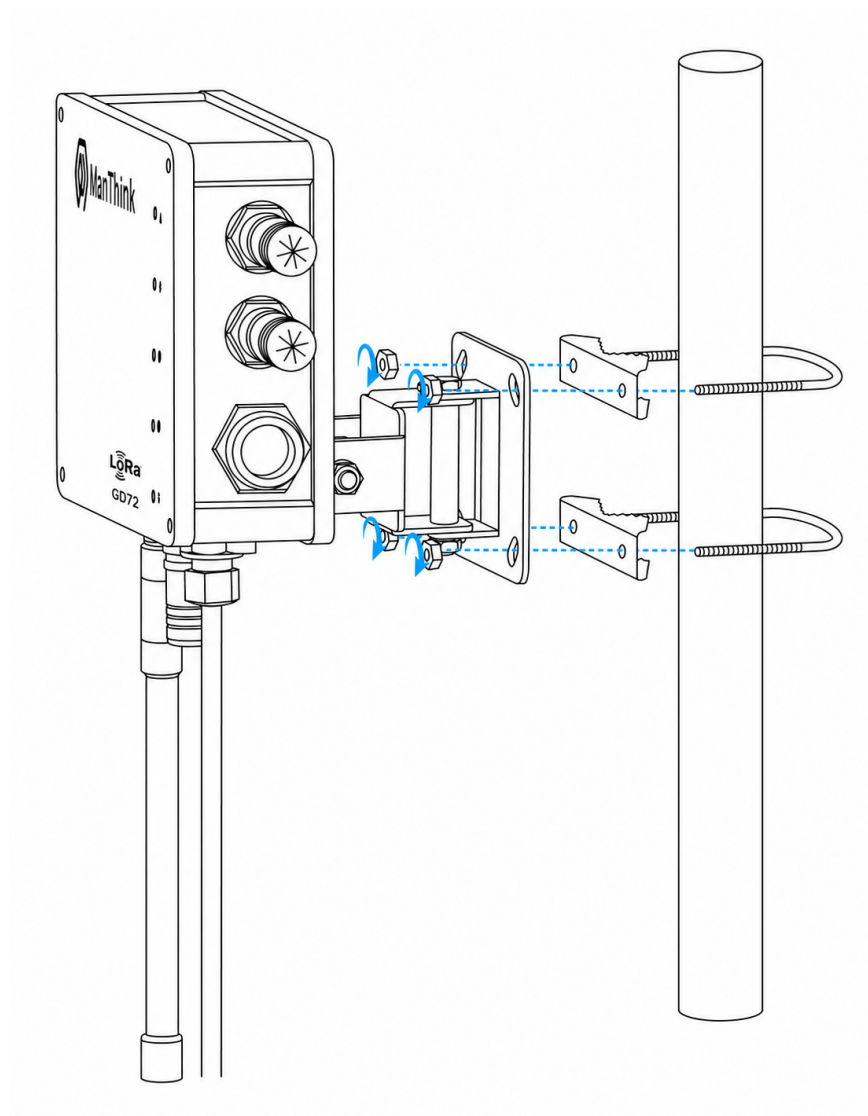


Figure GD72 pole mounting

18. Waterproofing Connections

- Wrap all connections with outdoor-rated insulating, self-amalgamating or waterproof material.
- Pay particular attention to cable entries, antenna interfaces, the SIM cover and the power/network interface.
- Completely cover each connection to form a continuous seal.
- Inspect seals periodically and replace any material that is aged, cracked or loose.

19. Gateway Ingress-Protection Check

- Verify that all cable entries and connectors are sealed according to the installation steps.
- Verify that unused ports have their supplied waterproof caps tightened.
- Provide drip loops so rainwater cannot follow cables into connectors.
- Complete the inspection before applying power.

20. PoE Adapter Waterproof Installation

- Install the PoE adapter in a weatherproof enclosure or another dry location; do not expose it directly to rain.
- Mount it vertically with the interfaces facing down to reduce water-entry risk.
- Seal cable entries and connections, and inspect the protection periodically.

Waterproofing must be designed for the site environment, local electrical rules and installation conditions. Use qualified personnel where required.

21. Gateway Configuration

GD72 is configured and maintained with gwTool7. See the [gwTool7 Gateway Administrator Manual](#).

22. Using ThinkLink

See the [ThinkLink User Guide](#).

23. Connecting to ChirpStack

See [Connect to ChirpStack with Basic Station \(gwTool7\)](#).

24. Connecting to TTN

See [Connect to TTN with Basic Station \(gwTool7\)](#).

25. Security Configuration Recommendations

- Change default administrative credentials during initial deployment and restrict management access to trusted networks.
- Enable the firewall or ACL and disable unnecessary services and ports.
- Use a prevailing TLS version and disable unsafe SSH/TLS cipher suites.

- Retain audit records for remote upgrades, configuration changes and administrator operations.
- Regularly review CPU, memory, storage, network and LoRa communication-quality alarms.

26. Contact Us

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