

GD73

LoRaWAN Gateway

Standardized Device Manual



VERSION
Current

DOCUMENT
Device Manual

Revision History

Version	Change Description
Current	Current published version

DOCUMENT NAVIGATION

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1. Product Description

GD73 is an indoor, 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, Bluetooth Low Energy (BLE) and RS485 connections. The aluminum-alloy enclosure supports DIN-rail mounting and PoE, USB Type-C or DC 5–24 V power. GD73 is suitable for campuses, buildings, industrial sites, smart-property deployments and other indoor IoT environments.

2. Main Features

- High-performance chipset, at least 512 MB DDR and at least 16 GB eMMC
- Semtech SX1302 LoRa concentrator with at least 8 LoRaWAN uplink channels, 8 frequency points and 16 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 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)
- RS485 interface for industrial meters, controllers and other field equipment
- Ethernet, 4G/LTE and Wi-Fi backhaul, plus dual-gateway redundancy architecture
- GPS and BeiDou (BDS) positioning, plus NTP clock synchronization
- MQTT, MQTTS, HTTP, HTTPS, SNMP, DHCP, static IP, NAT and ICMP
- WPA2, AES, TLS, firewall and access control list (ACL)
- Secure remote management, configuration and upgrades; supports Python and Node-RED for secondary development
- Automatic fault detection and recovery; monitoring of CPU, memory, storage, network and LoRa communication quality
- PoE, USB Type-C and DC 5–24 V power, with visual configuration and maintenance through gwTool7

3. Technical Specifications

Category	Parameter	GD73 Specification
COMPUTE AND STORAGE		
	SoC	High-performance multi-core processor
	Memory	DDR, ≥ 512 MB
	Storage	eMMC, ≥ 16 GB

Category	Parameter	GD73 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	GD73 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; 8 frequency points at BW = 125 kHz
	Demodulators	16, processing up to 16 packets simultaneously
	Demodulator composition	8 × SF5–SF12 LoRa@demodulators; 8 × SF5–SF10 LoRa@demodulators
	Channel capacity	65 logical channels; each SF, bandwidth and frequency-point combination defines a channel
	Communication rate	292 bps to 15.625 kbps

Category	Parameter	GD73 Specification
	Spreading factors	SF5 to SF12
	Single-channel bandwidth	125 kHz or higher
	Operating mode	Half-duplex
	Transmit power	Suffix -1: 27 dBm maximum; suffix -2: 22 dBm maximum; maximum-power tolerance: ± 2 dBm; projects requiring at least 25 dBm capability shall select suffix -1
	Receiver sensitivity	-141 dBm at SF12/BW 125 kHz
	Antenna	Omnidirectional LoRa antenna

Category	Parameter	GD73 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	GD73 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	GD73 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	GD73 Specification
PORTS AND TIMING		
	Configuration ports	USB Type-C, Ethernet and Wi-Fi
	SIM slot	One external 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	GD73 Specification
RS485		
	Physical interface	One RS485 interface on green A/B terminals
	Connection	Half-duplex differential bus for industrial meters, controllers and other field equipment
	Communication parameters	Baud rate, parity and application protocol are set in the device configuration or application

Category	Parameter	GD73 Specification
POWER		
	PoE power	One PoE Ethernet port; nominal 48 V PoE
	USB power	USB Type-C, 5 V
	DC power	DC 5–24 V on green V–/V+ terminals
	Power consumption	≤ 5 W in a typical configuration

Category	Parameter	GD73 Specification
ENVIRONMENT AND ENCLOSURE		
	Operating temperature	-20°C to 65°C
	Operating humidity	0% to 95% RH, non-condensing
	Ingress protection	IP53, meeting the IP30-or-better indoor-gateway requirement
	Radio-equipment requirement	Compliant with HKCA 1078 requirements
	Weight	0.33 kg
	Dimensions	139 × 122 × 28 mm
	Installation	DIN-rail mounting

Cellular deployment note: if local operator bands are outside the default module range, contact ManThink for a suitable cellular module. Configure actual LoRa transmit power to comply with local regulations.

4. Accessories

The product package includes the GD73 gateway, PoE power components, power adapter, Type-C cable, DIN-rail backplate, LoRa antenna, LTE antenna, positioning antenna, Wi-Fi antenna, network cable, green terminal block and mounting fasteners. Cellular-enabled versions include an LTE/5G SIM card with a data plan suitable for the project transmission requirements.

5. Product Dimensions

The product outline and installation dimensions are shown below.



Figure GD73 product dimensions

6. Interface Description

Interface	Description
WiFi	Wi-Fi antenna interface
TF	Memory-card slot
LoRa	LoRa antenna interface
B / A	RS485 differential-signal terminals
V- / V+	DC 5–24 V power-input terminals
RST	Reset button
SIM	SIM-card slot
RJ45	Ethernet and PoE power interface
PWR	USB Type-C power interface
4G	LTE antenna interface

7. Indicator Description

Indicator	State	Description
Run indicator	Steady / off / 1 Hz flashing	System starting / base startup complete and applications starting / normal operation
Network indicator	1 Hz / 500 ms / rapid flashing	Network normal / network abnormal / network configuration in progress
Cellular indicator	Off / steady / irregular flashing	No module / module installed without SIM / cellular data activity
LoRa transceiver indicator	TX-color / RX-color flashing	Transmitting / receiving LoRa packets
LAN status indicator	Red / blue	System-control state / Wi-Fi connection state
Fault indicator	Rapid flashing / off / flashing	Startup phase 2 / no fault / fault detected

8. Product Model

8.1 Standard Model

The GD73 standard model is GD738–AG–AS923–N–2.

8.2 Model Components

- **GD738: series and RF band.** GD73 identifies the indoor 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 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.

9. Gateway Installation

Do not open the gateway enclosure during installation. Disconnect power first and verify that antennas, PoE, DC power and site cabling meet deployment requirements.

10. Accessory Connections

10.1 Antenna Connection

1. Connect the LoRa, LTE, positioning and Wi-Fi antennas to their matching interfaces.
2. Tighten antenna connectors evenly without overtightening.

10.2 Type-C Power Connection

1. The Type-C power cable is not required when PoE or DC power is used.
2. For USB power, connect the Type-C cable to the gateway PWR interface.

10.3 Network Cable Connection

1. Connect the network cable to the gateway RJ45 interface.
2. When using PoE, connect the other end to compliant PoE equipment.

10.4 SIM Card Installation

1. Before using cellular networking, insert a SIM card into the gateway SIM slot.
2. Follow the slot marking for contact and notch orientation; do not force the card.

10.5 RS485 Connection

1. With power disconnected, connect the field-device RS485 A and B wires to the matching green A and B terminals.
2. Verify bus polarity, termination and common-reference requirements against the field-device manual.
3. After power-up, configure matching baud rate, data bits, stop bits, parity and application protocol in the application or device configuration.

10.6 DC 5–24 V Power Connection

1. With power disconnected, connect the supply negative and positive wires to the green V– and V+ terminals.
2. Verify the voltage range and polarity before applying power.

11. Gateway Mounting

11.1 DIN-Rail Mounting

1. Fasten the DIN-rail backplate to the rear of the gateway.
2. Engage the backplate with the matching DIN rail and verify that the gateway is secure.

12. Gateway Configuration

GD73 is configured and maintained with gwTool7. See the [gwTool7 Gateway Administrator Manual](#).

13. RS485 Use

The RS485 interface connects field meters, sensors or controllers. After wiring and power-up, configure serial parameters and the application protocol in the GD73 application or protocol-conversion program to match the slave device. For long buses, follow the site topology when configuring termination, biasing, shielding and grounding, and avoid star branches that can cause signal reflections.

14. Platform Connections

- ThinkLink: [ThinkLink User Guide](#)
- ChirpStack: [Connect with Basic Station \(gwTool7\)](#)
- TTN: [Connect with Basic Station \(gwTool7\)](#)

15. Security Configuration Recommendations

- Change default administrative credentials during initial deployment, 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, and regularly review CPU, memory, storage, network and LoRa communication-quality alarms.

16. Contact Us

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