Y201-L Mini LoRa DTU Specification



> User Manual and Wiring

> Reference: Y201-L Technical Manual

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1. Overview

Y201-L is a mini LoRa DTU for bidirectional transparent data transmission between a serial interface and a LoRa link. It operates in the `410 to 493 MHz` band and supports point-to-point LoRa communication with broadcast, fixed-point, and master-slave modes.

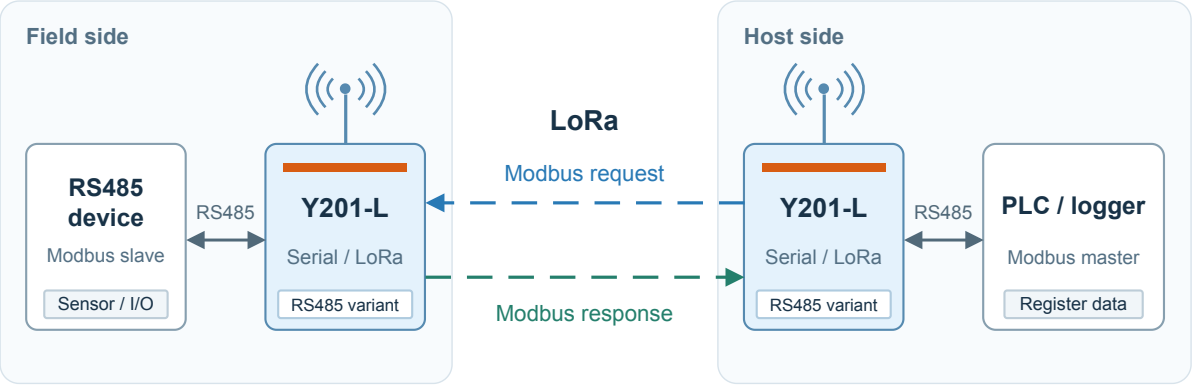
Item	Description
Product Type	Industrial mini LoRa DTU
Frequency Band	`410 to 493 MHz`
Communication Distance	Up to `5 km`
TX Power	`22 dBm`
Serial Interface	Single-port `RS232`, `RS485`, or `3.3 V TTL`, depending on the ordered variant

Highlights

- Compact form factor for small control boxes and end nodes
- `9 to 36 VDC` supply input
- Supports broadcast, fixed-point, and master-slave modes, plus relay networking
- Configure serial and LoRa parameters through AT commands. The encryption key is write-only.
- Supports serial firmware upgrade and backup-parameter recovery through Reload

Working Principle

Two RS485 Y201-L units can carry Modbus RTU requests and responses over a point-to-point LoRa link.



The PLC or data logger initiates a request. The host-side Y201-L forwards the serial frame over LoRa, and the field-side unit delivers it to the connected RS485 device. The response returns through the same link. Measurement registers remain in the field device; polling is controlled by the host.

Use the RS485 interface variant and transparent serial mode for this example. Match each DTU's serial settings to its connected device, and configure compatible LoRa parameters at both ends. Set the host's Modbus response timeout to allow for radio transfer and packetization delays. See the Technical Manual for packetization and communication modes, and the User Manual for power and terminal wiring.

2. Ordering Information

2.1 Model Configuration

`Y201-L` is a mini DTU for LoRa data transmission. The serial interface is an ordered variant: `RS232`, `RS485`, or `3.3 V TTL`. Check the interface version when ordering.

For family codes and examples, see Model Groups and Suffixes.

2.2 Configuration

Model	Serial Interface	Description
Y201-L	`RS232` / `RS485` / `3.3 V TTL`	Ordered interface variant with AT command and transparent transmission support

3. Key Features

1. **Long-Range LoRa Transmission**: Anti-interference low-band LoRa with a communication distance up to `5 km`.
2. **Serial Configuration**: Supports `1200 to 460800 bps`, `7/8` data bits, `1/2` stop bits, and `NONE/ODD/EVEN` parity.
3. **Dual Serial Modes**: Supports transparent mode by default and AT command mode for configuration and maintenance.
4. **Packetization**: Triggers forwarding by length or inter-character interval to improve link efficiency.
5. **Communication Modes**: Supports broadcast, fixed-point, and master-slave modes, plus relay networking.
6. **Data Security**: Supports the `AT+KEY` LoRa encryption key, with a length of `1 to 16` characters. The key is write-only.
7. **Maintenance Support**: Supports serial firmware upgrade and backup-parameter recovery with the Reload button.

4. Technical Specifications

4.1 Electrical and Environmental

Parameter	Specification
Supply Voltage	`9 to 36 VDC`
RX Current	`20 mA @ 12 V`
TX Current	`40 mA @ 12 V`
Operating Temperature	`–40 to 85 °C`
Operating Humidity	`5 to 95% RH`

4.2 RF Specifications

Parameter	Specification
Operating Band	`410 to 493 MHz`
TX Power	`22 dBm`
Frequency Setting	Base frequency + step x channel
Default Base Frequency	`410 MHz`
Default Step	`1 MHz`
Default Channel	`20`
Speed Level	`1 to 9`, default `5`

4.3 Serial Specifications

Parameter	Specification
Serial Type	Single-port `RS232`, `RS485`, or `3.3 V TTL`, depending on the ordered variant
Baud Rate	`1200 to 460800 bps`, default `9600`
Parity	`NONE` / `ODD` / `EVEN`, default `NONE`
Data Bits	`7` / `8`, default `8`
Stop Bits	`1` / `2`, default `1`
Hardware Flow Control	`NFC`

4.4 Packetization and AT Command Limits

Parameter	Specification
Packet Length Threshold	`5 to 252 bytes`, default `252`
Packet Interval Threshold	`0 to 300 ms`, default `5 ms`

Parameter	Specification
Single AT Command Length	Maximum `256 bytes`; `252 bytes` recommended

5. Interfaces and Indicators

5.1 Hardware Interfaces

No.	Interface	Description
1	Power Input	DC power input
2	Serial Interface	RS232 / RS485 / 3.3 V TTL, depending on the ordered variant
3	GND	Signal ground
4	Grounding Screw	Chassis grounding
5	LoRa Antenna Port	Antenna connection
6	Reload Button	Parameter recovery and upgrade assist

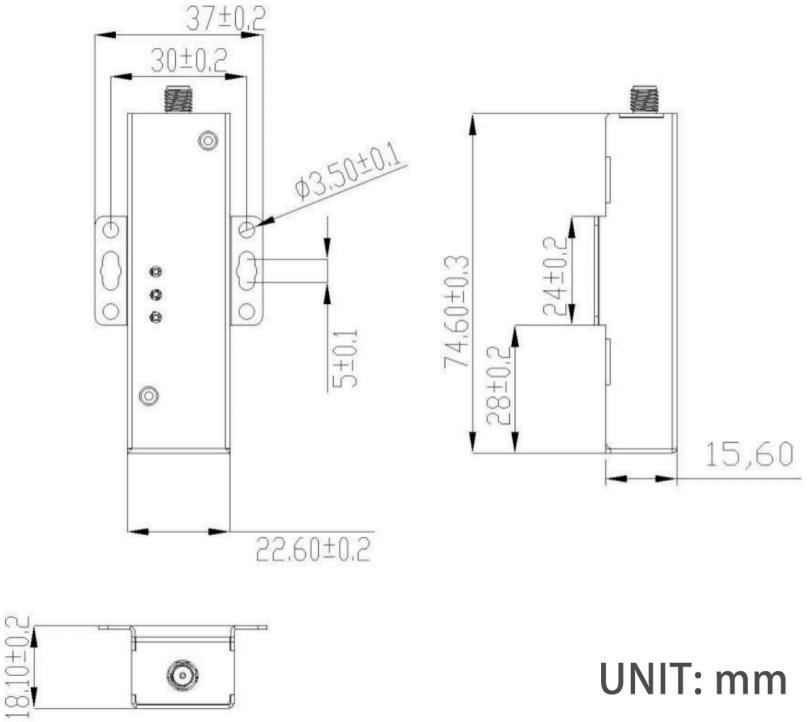
5.2 LEDs and Status

Indicator	Meaning
Power	Power indicator, steady on after power-up
WORK	Regular blinking after module initialization
TX	Flashes once when a LoRa packet is transmitted
RX	Flashes once when a LoRa packet is received

5.3 Restore Backup Parameters

- Pull the Reload input low for `3 to 10 s` to restore the backup parameter set. This is equivalent to `AT+RSTCFG`.

6. Mechanical



Parameter	Specification
Dimensions	74.6 × 22.6 × 16 mm, excluding tabs, antenna connector, and terminal

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