



Chengdu Alinkwise Future Technology Co., Ltd.

D9L/P Series LoRaWAN DTU Specification

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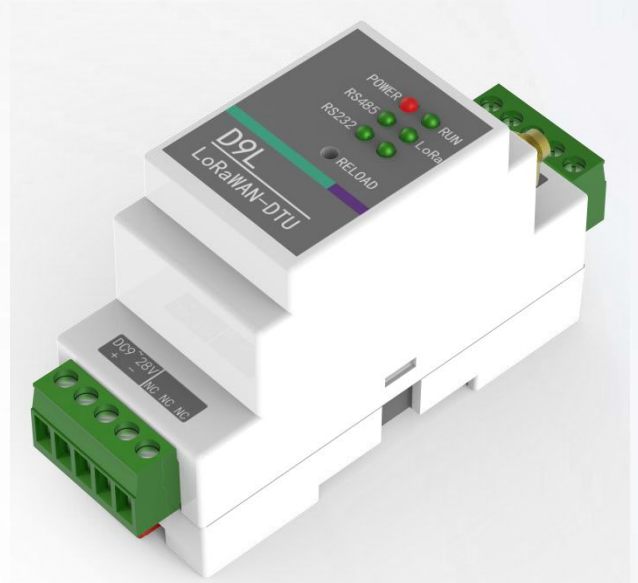
Product Description

The D9L/P series is an industrial LoRaWAN DTU with RS485 and RS232. It connects PLCs, meters, data loggers, and serial sensors to LoRaWAN for wireless data collection, remote reporting, and downlink control.

It supports 35 mm DIN-rail mounting, active polling, data-change reporting, and serial transparent transmission. Read commands can be scheduled or sent by the platform. Modbus RTU, ASCII, and HEX are supported.

It integrates LoRaWAN 1.0.3, supports Class A/Class C, OTAA/ABP, fixed SF, and ADR, and allows configuration of transmit power, channels, and other LoRaWAN parameters.

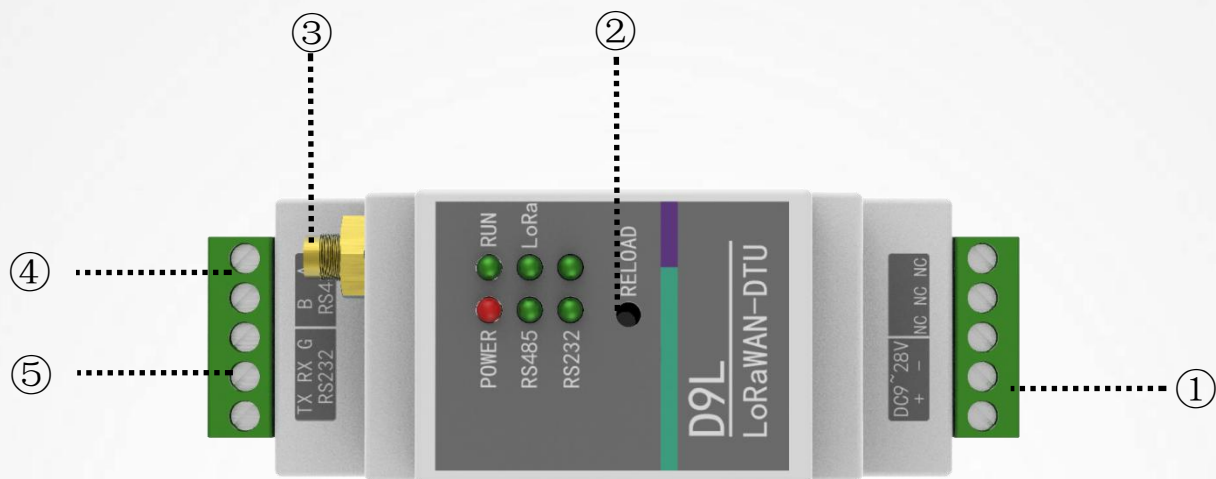
Local PC and remote platform configuration are supported. Custom polling tasks, heartbeat packets, uplink ports, and serial parameters can be configured for unattended operation.



Product Features

- Supports active polling via RS232/RS485. Users can configure read commands and acquisition intervals; the DTU automatically reads slave devices on schedule and reports data via LoRaWAN.
- Supports RS232/RS485 data-change reporting by comparing two adjacent acquisition results and reporting changes automatically.
- Supports RS232/RS485 over LoRaWAN transparent transmission.
- Supports remote parameter settings, read commands, and control commands from the platform.
- D9L maximum transmit power: 22 dBm; D9P maximum transmit power: 27 dBm.
- 1 x RS232 DB9 interface (TXD, RXD, GND) and 1 x RS485 interface (A+, B-).
- Integrated LoRaWAN 1.0.3 protocol stack; supports Class A/Class C and is compatible with LoRaWAN 1.0.x networks.
- Supports transparent transmission of custom user protocols.
- Supports custom LoRaWAN heartbeat tasks and uplink ports.

Interface Description



No.	Name	Description
1	Power Input	DC 9-28 V input
2	Factory Reset Button	Short press to reset; double-click to enter configuration mode; press and hold for 5 s to restore factory settings.
3	LoRa Antenna Port	SMA female connector (external thread, inner hole)
4	RS485 Interface	RS485 communication interface (A+, B-)
5	RS232 Interface	RS232 3-wire interface (TXD, RXD, GND)

LED Indicator Functions



No.	Name	Description
1	POWER Indicator	On when power is normal; off when there is no power or the voltage is abnormal.
2	RUN Indicator	Blinks during normal operation; stays off or on when the system is abnormal.
3	LoRa TX Indicator	Briefly lights or blinks during LoRa transmission; off when no LoRa data is being sent.
4	RS232 RX Indicator	Blinks when RS232 data is received; off when no RS232 data is received.
5	RS485 RX Indicator	Blinks when RS485 data is received; off when no RS485 data is received.

Electrical Specifications

Param.	Description
Power Supply	DC 9-28 V input; DC 12 V/1 A recommended
Current	Maximum current: 0.5 A @ D9L, 1 A @ D9P (DC 12 V supply)
Power Consumption	Typical average power consumption ≤ 0.5 W (low-duty-cycle operation)

LoRa Parameters

Param.	Description
Transmit Power	D9L: -1 to 22 dBm; D9P: -1 to 27 dBm, configurable
Input Power	Maximum RF input power <10 dBm
Bandwidth	125 kHz (fixed)
Spreading Factor	SF7-SF12 configurable; data rates approx. 5.5/3.1/1.8/1.0/0.6/0.3 kbps
Receiver Sensitivity	-135 dBm (SF12, BW 125 kHz)
Harmonics	<-40 dBm @ 1 GHz
Frequency Bands	EU433, CN470, CN779, EU868, AS923, AU915, KR920 Supports LoRaWAN global frequency plans; configure according to regional regulations.
RS232	Fully isolated circuit with built-in 15 kV ESD protection. Configurable serial parameters: Data bits: 8; stop bits: 1 or 2; parity: none, odd, or even Baud rates: 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps Default serial parameters: 115200 bps, 8 data bits, 1 stop bit, no parity
RS485	Fully isolated circuit with built-in 15 kV ESD protection. Configurable serial parameters: Data bits: 8; stop bits: 1 or 2; parity: none, odd, or even Baud rates: 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps Default serial parameters: 9600 bps, 8 data bits, 1 stop bit, no parity

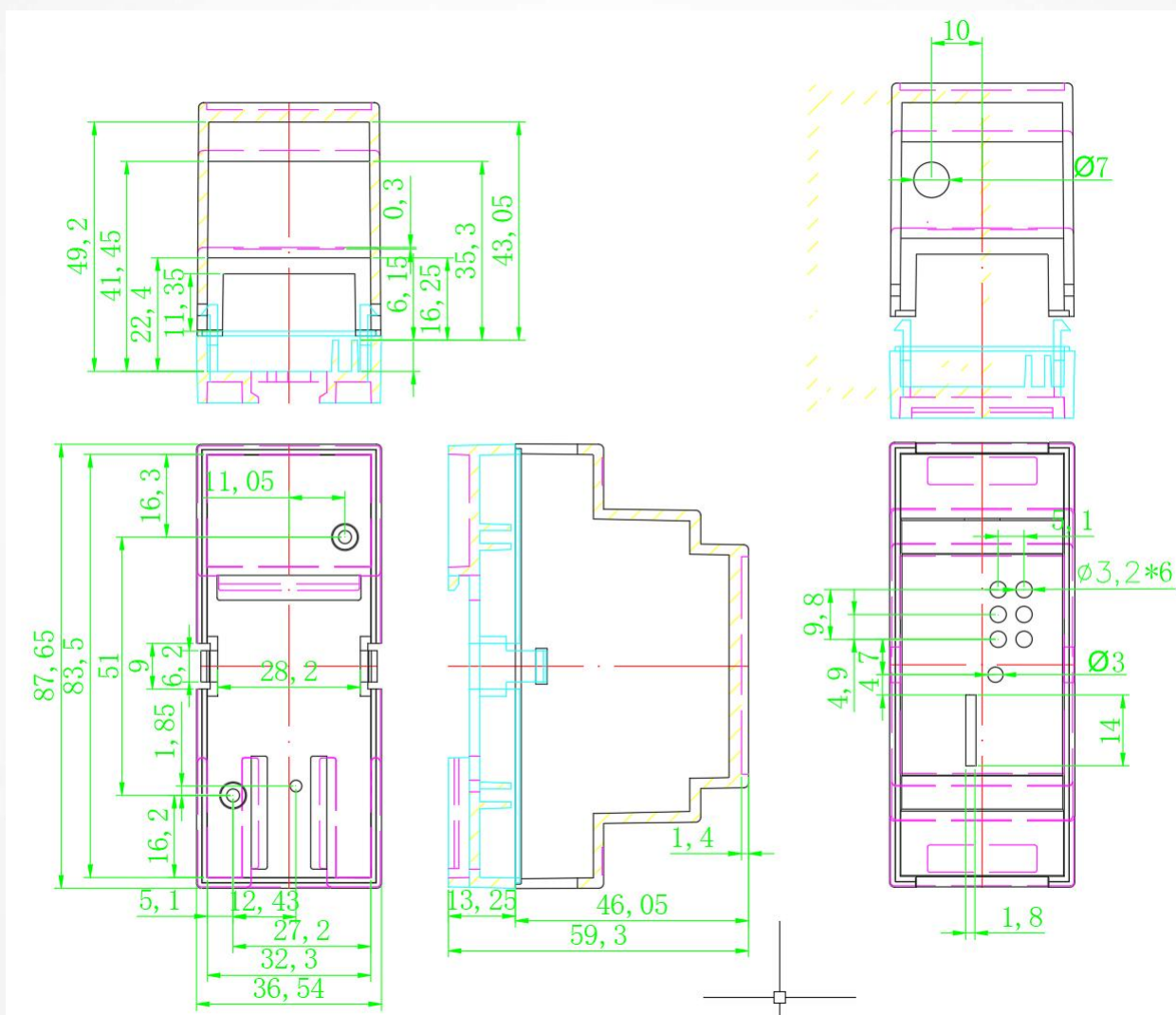
Physical Characteristics

Item	Description
Dimensions	87.65mm × 36.54mm × 59.3mm
Weight	Approx. 0.5 kg
Temperature	-40 to 85 °C (operating), -50 to 95 °C (storage)
Humidity	0-95% RH (non-condensing)

Packing List

No.	Name	Qty.	Description
1	Main Unit	1	DTU main unit
2	DC 12 V/1 A Power Adapter	1	3C-certified power adapter, input AC 100-240 V/50-60 Hz, output DC 12 V/1 A
3	LoRa Antenna	1	Blade antenna or magnetic-mount antenna

Mechanical Dimensions



unit:mm

Revision History

Ver.	Date	Description
V1.0.0	20220916	Initial release
V1.0.1	20250311	Added support for LoRaWAN 1.0.3 protocol.
V1.0.2	20250410	Added RS485/RS232 data-comparison triggered reporting; revised some descriptions.
V1.0.3	20250418	Corrected some description errors.
V1.0.4	20260112	Revised descriptions.
V2.0.0	20260630	Document upgraded; product description and parameter descriptions improved.