



Chengdu Alinkwise Future Technology Co., Ltd.

D8L/P Series LoRaWAN DTU Specification

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Product Overview

The D8L/P Series is an industrial LoRaWAN DTU with RS485 and RS232 interfaces. It wirelessly connects serial devices such as water meters, electricity meters, PLCs, sensors, and instruments, enabling remote data upload and downlink control without major changes to existing equipment.

The DTU supports active polling and serial passthrough. It can send read commands over RS485/RS232 on a schedule or execute remote acquisition/control commands from the platform. Data from Modbus RTU or user-defined protocols is uploaded to the gateway and platform over LoRaWAN.

The DTU integrates LoRaWAN 1.0.3 and supports Class A/Class C, OTAA/ABP activation, fixed SF, and ADR. Transmit power, channels, and frequency plans can be configured for different regions and site coverage.

PC software and script editing allow users to customize acquisition tasks, intervals, heartbeat packets, reporting content, and serial parameters. A watchdog is built in for unattended industrial sites.

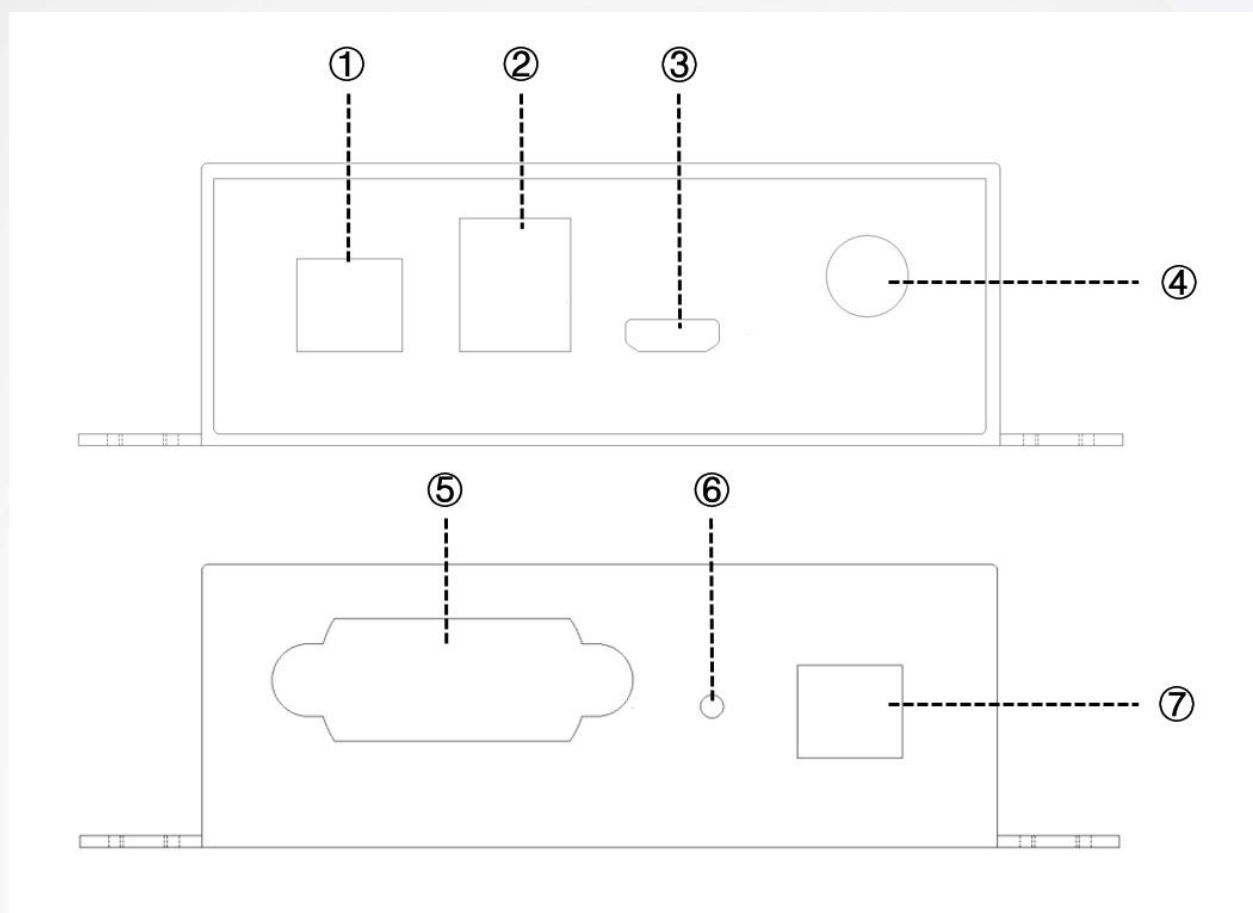
Typical applications: remote meter reading, status monitoring, and device control.



Product Features

- D8L maximum TX power: 22 dBm; D8P maximum TX power: 27 dBm
- 1 x RS232 DB9 interface (TXD, RXD, GND) and 1 x RS485 interface (A+, B-)
- Integrated LoRaWAN 1.0.3 protocol, supporting Class A/Class C modes
- Supports custom RS232/RS485 acquisition tasks, scheduled acquisition, and remote-triggered acquisition
- Supports RS232/RS485 over LoRaWAN data passthrough
- Supports parsing and data reporting for user-defined communication protocols
- Supports custom LoRaWAN heartbeat tasks for device online-status monitoring

Interface Description



No.	Name	Description
1	Power Port 1	9-28 VDC input; internally connected to Power Port 2
2	Power Port 2	DC 5.5 x 2.1 mm jack; 9-28 VDC input; internally connected to Power Port 1
3	USB-TTL Port	USB-TTL interface for parameter configuration, debugging, and log output
4	RF Antenna Port	SMA female (external thread, inner socket)
5	RS232 Port	DB9 male connector, 3-wire RS232 interface (TXD, RXD, GND)
6	Factory Reset Button	Short press: reset; double-click: configuration mode; hold for 5 s: factory reset
7	RS485 Port	3.81 mm 2-pin terminal, RS485 interface (A+, B-)

LED Indicator Functions



No.	Name	Description
1	POWER Indicator	On when power is normal; off when power is absent, voltage is insufficient, or power input is abnormal
2	RUN Indicator	Blinks during normal operation; off or solid on when a system fault occurs
3	LoRa TX Indicator	Blinks during LoRa transmission; off when no LoRa data is being transmitted
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 Parameters

Item	Description
Power Supply	9-28 VDC input; recommended 12 VDC / 1 A or higher
Current	Max. 0.5 A @ D8L; Max. 1 A @ D8P (12 VDC input)
Power Consumption	Average power ≤ 0.5 W (depending on reporting interval and TX power)

LoRa Parameters

Item	Description
Output Power	-1 to 22 dBm @ D8L; -1 to 27 dBm @ D8P, configurable
Input Power	<=10 dBm
Bandwidth	Fixed 125 kHz
Spreading Factor	SF7-SF12, 6 configurable levels (5.5, 3.1, 1.8, 1.0, 0.6, 0.3 kbps)
Rx Sensitivity	-135 dBm @ SF12, BW 125 kHz
Harmonics	<= -40 dBm @ 1 GHz
Frequency Range	EU433, CN470, CN779, EU868, AS923, AU915, KR920 Supports global LoRaWAN frequency plans
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 rate: 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps Default serial parameters: Baud rate: 115200 bps; data bits: 8; stop bits: 1; parity: none
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 rate: 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps Default serial parameters: Baud rate: 9600 bps; data bits: 8; stop bits: 1; parity: none

Physical Characteristics

Feature	Description
Dimensions	96.5mm x 89.3mm x 24.3mm
Weight	Approx. 0.7 kg (subject to actual product)
Temperature	-40 to 85 °C (operating), -50 to 95 °C (storage)
Humidity	0-95% RH (non-condensing)

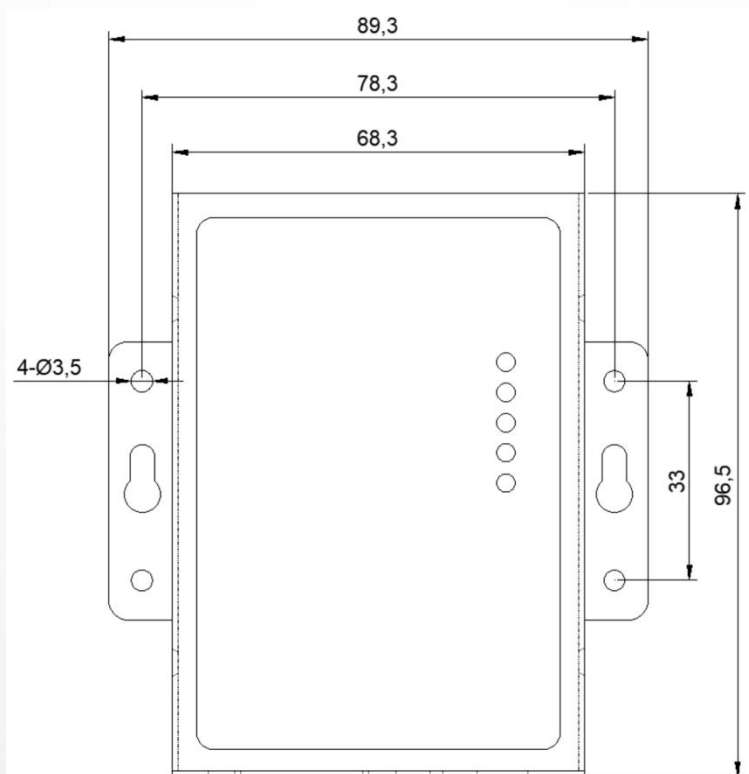
Interfaces

Feature	Description
Power Port 1	3.81 mm pitch, 2-pin terminal
Power Port 2	DC 5.5 x 2.1 mm
LoRa Antenna Port	SMA
RS232	DB9
RS485	3.81 mm pitch, 2-pin terminal

Packing List

No.	Name	Qty	Description
1	Main Unit	1	DTU main unit
2	12 VDC / 1 A Power Adapter	1	3C-certified power adapter; input: 100-240 VAC, 50/60 Hz; output: 12 VDC / 1 A
3	LoRa Antenna	1	Blade antenna or magnetic-mount antenna
4	Expansion Screws	5	For wall-mount installation

Mechanical Dimensions



unit:mm

Revision History

Ver.	Date	Description
V1.0.0	20220916	Initial release
V1.0.1	20230607	Corrected typos
V1.0.2	20230801	Updated naming rules
V1.0.4	20240823	Updated template
V1.0.5	20250311	Added support for LoRaWAN 1.0.3 protocol
V1.0.6	20250418	Corrected description errors
V1.0.7	20260112	Updated descriptions
V2.0.0	20260630	Document upgraded; content proofread and descriptions improved