
LoRa DTU

AdoModel Tech Inc.

1. Product Overview

LoRa DTU is an industrial-grade data terminal supporting LoRa protocol. Equipped with comprehensive embedded software functions, it covers most conventional application scenarios. With simple configuration, users can realize bidirectional transparent data transmission between DTU and LoRa server platform.

The LoRa DTU adopts sheet-metal enclosure. It supports wide-range DC power input 9~25V and operating temperature range -30~75°C. It provides stable data transmission channels for unattended field sites with harsh environment. LoRa-based configuration and management simplify on-site deployment and subsequent maintenance, improve construction efficiency and reduce overall system operation cost, bringing convenient wireless communication experience for customers.

Typical applications for distributed unattended field data acquisition & monitoring:

- Power distribution network automation
- Power meter reading
- Street-lamp monitoring
- Smart services
- Heating & water supply monitoring
- Meteorological & environmental monitoring

2. Features and Advantages

- Field-proven for large-scale deployment
- LoRa protocol: low power consumption, long transmission distance, wide coverage
- Full industrial-grade design for harsh conditions
- Hardware & software watch dog plus multiple link detection mechanisms for stable operation without crash
- High availability and reliability
- Support industrial protocol conversion to solve multi-device inter connection challenges

2.1. Industrial-grade Design for Harsh Industrial Environments

Built with industrial chips; operating temperature: -30~75℃; wide DC input 9-25V; IP30 protection rating. Delivers stable network communication for harsh/unattended industrial sites.

2.2. High-reliability Design to Ensure Continuous Data Transmission

- Device self-recovery: embedded watch dog for fault self-healing to guarantee normal operation.
- Auto-reconnection: automatic reconnection upon network disconnection for continuous data transmission.

2.3. Convenient Management & High Usability

- Local serial-port configuration via configuration software
 - Remote batch management via LoRa server platform
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3. Product Specifications

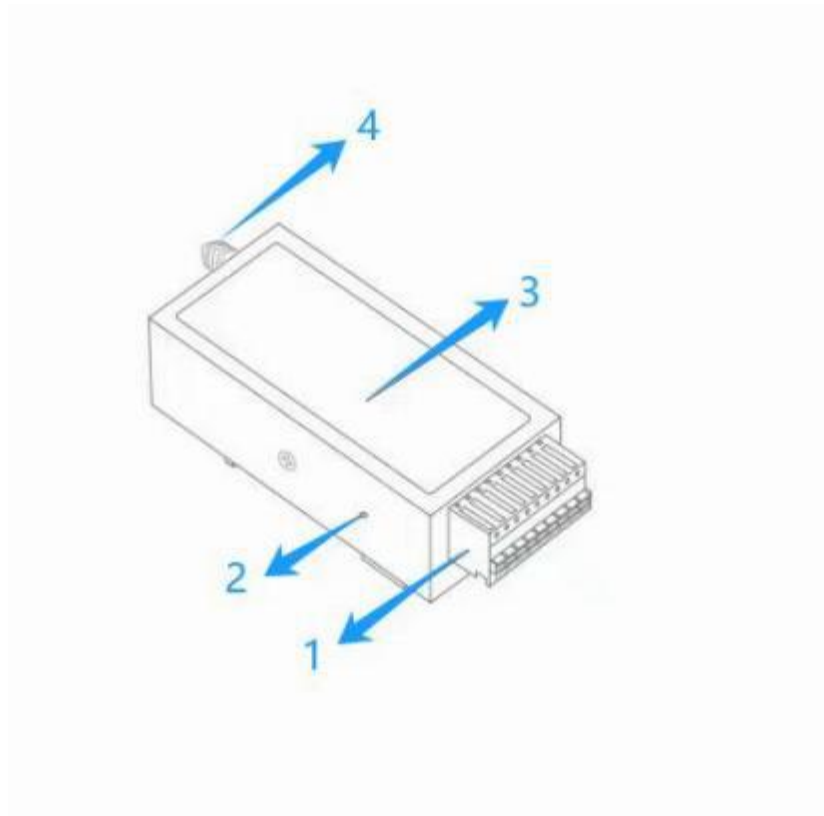
Table1: Main Hardware Specifications

Interface			
Industrial Serial Interfaces	Serial port	Total 3serial ports (1×RS232,1×RS485,1×TTL)	
	Serial Port1	RS232: TXD、RXD、GND	
		Positive level: 3 ~15V Negative level: -3 ~ -15V	
	SerialPort2	RS485: B-、A+、GND	
		A/B: 0~3.3V	
	SerialPort3	TTL: RX、TX、GND	
		TTL: 3~5V	
	Baud Rate	1200bps~115200bps	
	Data Bit	8bits	
	Stop Bit	1bit	
Parity	None, Even, Odd		
Reset Button	Pin-hole reset key		
Antenna	50Ω, SMA connector		
Supported Band	Data rate	2~8Mbps	
	Band Information	CN470: 0-96channels,default channels 80-87	
Material			
Installation	Orbit; Compatible with wall hanging		Protection level
Enclosure	Sheet-metal		Cooling
Power Supply			
Power Connector	Removable industrial terminal	Reverse polarity protection	support
Input Voltage	DC9~25V	Overload protection	support
Standard Power Adapter	DC12V/1A	Allow power loss	<3ms
Power Consumption(@12V)	Standby Operating Inrush 15mA 45mA 108mA		
Environmental Requirements			
Operating Temperature	-30~75℃	Operating Humidity	5%~95%
Storage Environment	-40~85℃; 5%~95% RH (non-condensing)		

Physical Characteristics	
Shock	IEC60068-2-27
Vibration	IEC60068-2-6
Drop	IEC60068-2-32
LED Indicators	
LED	VDD、WORK、NET、LINK
Watchdog	
Dual hardware & software watch dog	
EMC Performance	
ESD	EN61000-4-2,Level 4
Radiated RF Immunity	EN61000-4-3,Level 4
Pulsed electric field	EN61000-4-4,Level 4
Surge	EN61000-4-5,Level 4
Conducted Disturbance	EN61000-4-6,Level 4
Power frequency magnetic field	EN61000-4-8,Level 4
Damped Oscillatory Wave	EN61000-4-12,Level 2
Dimensions (including terminals & rail, unit: mm)	
91.2 *34.2*22mm	

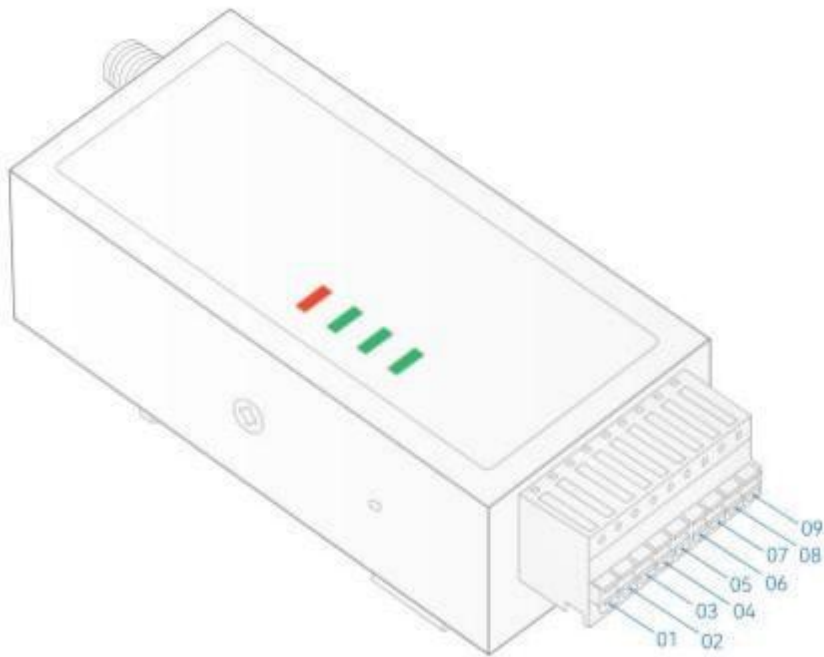
Software Specifications	
Reliability	
Reliable Upgrade	Remote Upgrade (Not supported temporarily)
	Local Upgrade
Link Online Monitoring	Heartbeat packet detection, auto-reconnect after disconnection.
Embedded Watchdog	Run time self-check & fault self-recovery.
Network Management	
Configuration	Local serial-port tool configuration.
	serial / remote AT-command configuration.
Config File	Import & export supported.
Upgrade Method	Supports local firmware upgrade using the JLINK tool.
LoRa Protocol	
Network Protocol	LORAWAN
Concurrent Device Capacity	Hundreds to thousands of connected end-devices
Network Buffer	4 KB per serial channel
Merits	Low power, long-range, wide coverage

4. Device Interfaces



No.	Interface	Description
1	Terminal Block	See pin-definition table for details
2	Reset Button	Hold for 10 stores to refractory default parameters
3	LED Indicators	See indicator-status table for details
4	Antenna	SMA interface

5. Pin Definition



model	Pin Definition								
	01	02	03	04	05	06	07	08	09
LoRa DTU	DRX	DTX	RS-TX	RS-RX	GND	B-	A+	GND	DC-IN

Terminology Explanation:

DRX: TTL RX, device input

DTX: TTL TX, device output

RS-TX: RS232 transmit, device output

RS-RX: RS232 receive, device input

GND: Ground

B-: RS485 signal

B-A+: RS485

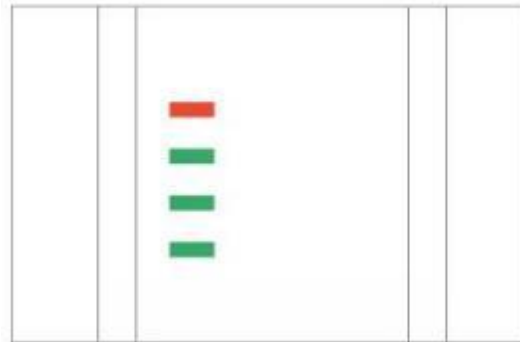
signal A+

GND: Power negative, Supported power supply voltage: DC 9-25 V

DC+: Power positive, Supported power supply voltage: DC 9-25 V

6. LED Indicator Status

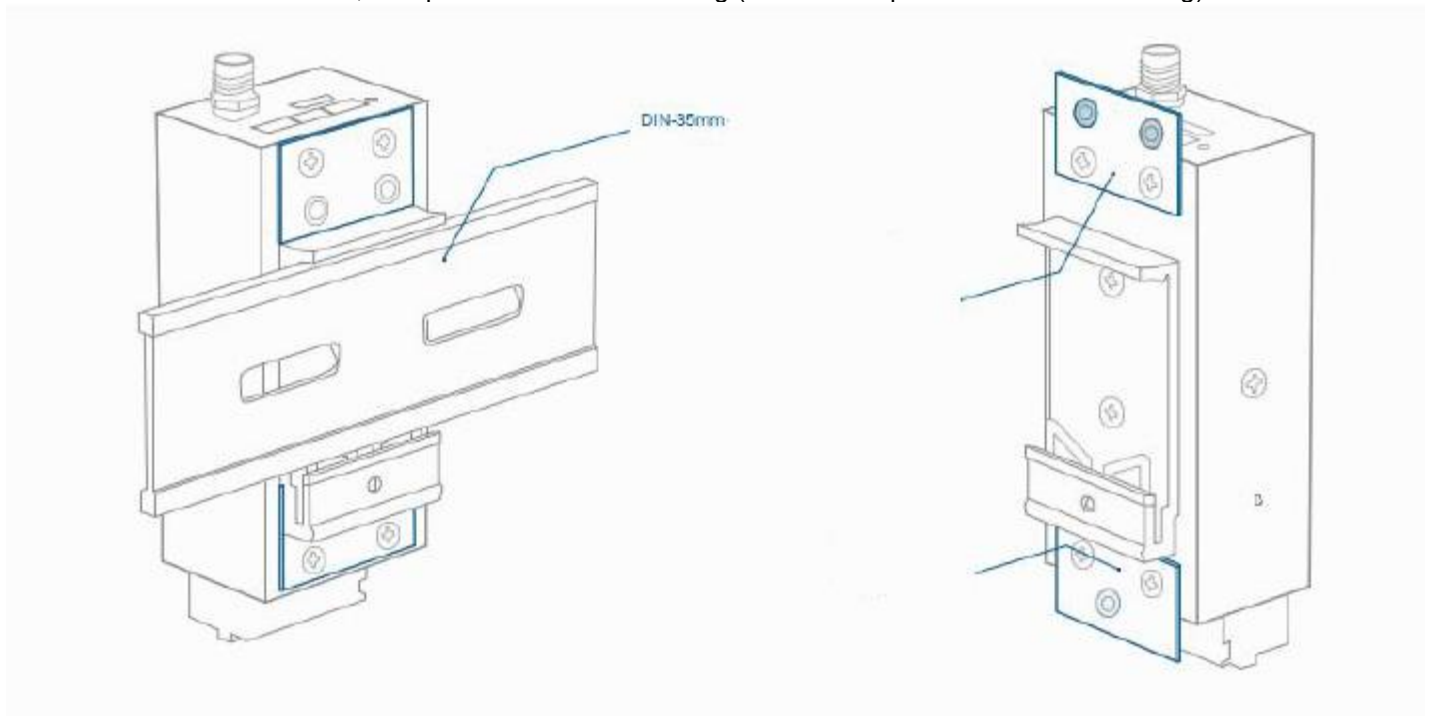
LED order from top to bottom: POWER, WORK, NET, LINK



Indicator	Function	LED Status	Device Status
POWER	Power indicator	Off	Power off
		On	Power on
WORK	Operating indicator	Off	Abnormal operation
		Steady On	Abnormal operation
		Blink upon data transmit/receive	Normal running
NET	Network attachment indicator	Off	Not connected to LoRa server
		On	Connected to LoRa server
LINK	RS485transparent -transmission indicator	Off	No RS485 transparent data flow
		On	RS485 transparent data in transmission

7. Installation

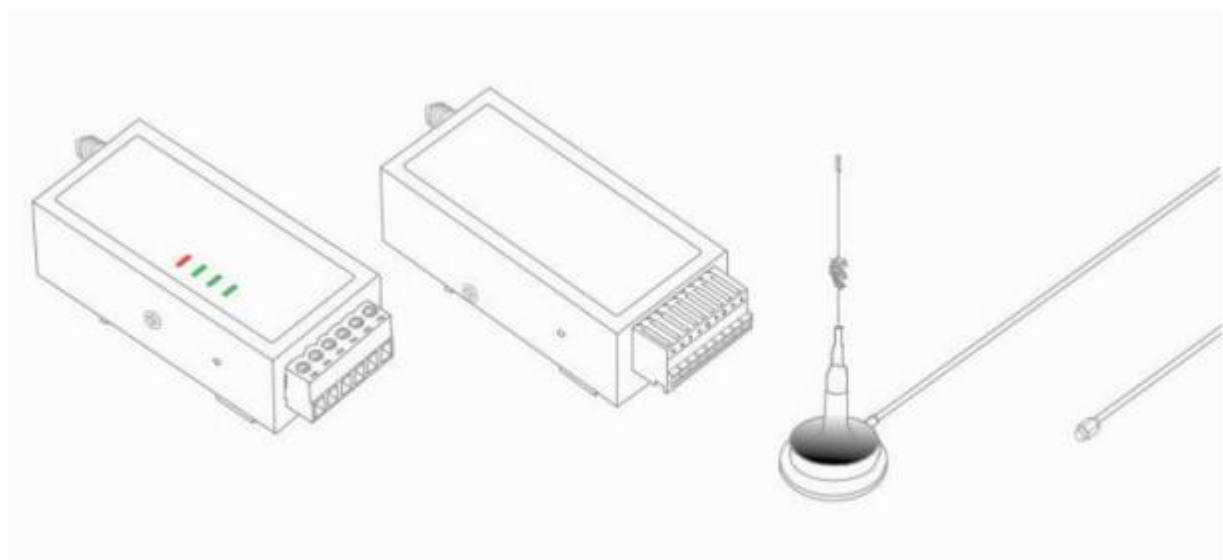
Guider ail installation; compatible with wall mounting (screw and spacer allow wall mounting).



8. Packing List

Main unit: LoRa DTU

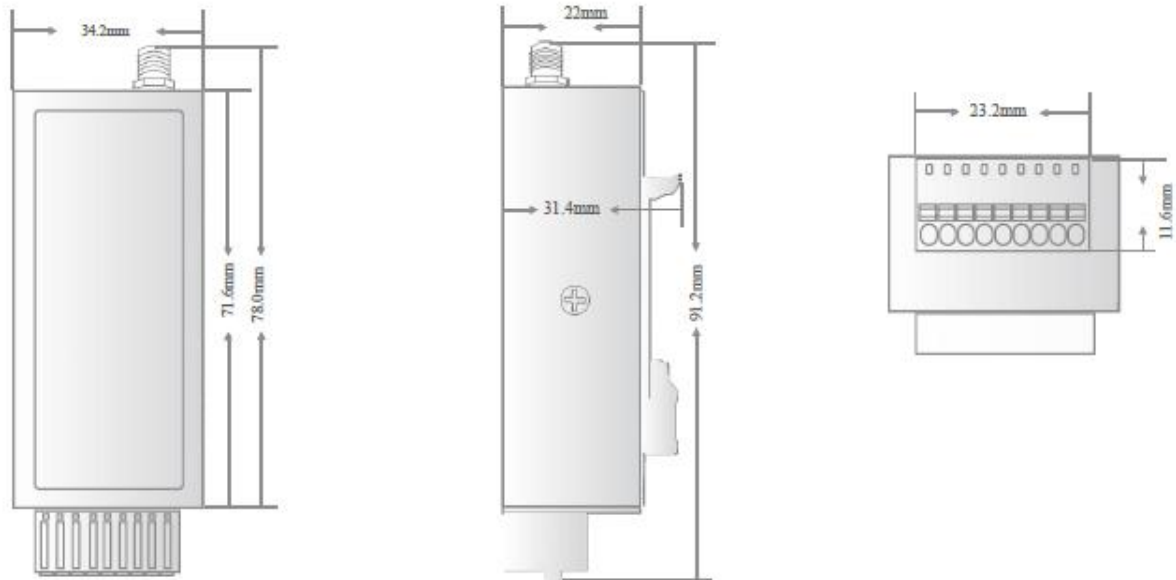
Accessory: LoRaCN470 antenna



9. Product Dimensions

Dimensions: 91.2× 34.2× 22 mm (L× W× H including terminals and antenna)

Applicable model: LoRa DTU



FCC Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Radiated Exposure Statement

This device complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body. The antenna used for this transmitter must not transmit simultaneously with any other antenna or transmitter, except in accordance with FCC multi-transmitter product procedures. Users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.
