

# F8L10D LoRa Module Technical Specification

## General

F8L10D LoRa module is a kind of embedded device that provides data transfer function by LoRa network. It provides ultra-long range spread spectrum communication.

The product uses high-performance industrial-grade LoRa solution, support transparent data transmission function; low power consumption design, the lowest working current can less than 2uA; supply multil I/O channels, compatible analog inputs and pulse input counters.

It has been widely used on M2M fields, such as electric power, intelligent traffic, wireless metering, industrial automation, telemetry, water supply, environment protection, weather, and so on.



## Product Feature

### Design for Industrial Application

- ◆ High-powered industrial LoRa chip and MCU
- ◆ Power input: DC 3.3 ~ 5.0V
- ◆ Support a variety of frequency bands around the world (433/470/780/868/915 MHz)
- ◆ Low power design, support sleep and wake-up mode
- ◆ High receiving sensitivity, communication distance farther

### Stability and Reliability

- ◆ Built-in watchdog, to ensure long-term stable operation of the system
- ◆ Built-in LDO, ensure stable power supply module
- ◆ Multi-data automatic packet transmission to ensure the integrity of the data packet is not Lost
- ◆ Efficient cyclic interleaving error correction coding, maximum error correction 64bit, dual 256-ring FIFO

### Standard and Convenience

- ◆ Adopt a miniature package, support 2.54mm\*7pin spacing stamp hole for SMT and 2\*2.0mm\*10pin spacing through-hole pins simultaneous

- ◆ Support a variety of antenna connection, U.FL interface /SMA interface Convenient configuration and maintenance interface
- ◆ Intelligent data module, power can enter the data transmission status
- ◆ Easy to use, flexible, a variety of operating mode selection
- ◆ Convenient system configuration and maintenance interface
- ◆ Output standard 3.3V TTL level
- ◆ Support serial software upgrade

### High-performance

- ◆ Support OTA
- ◆ Support for wake-up function in the air
- ◆ Support a variety of baud rate, a variety of RF rates
- ◆ Flexible power level setting (5~20dBm; 30dBm with PA)

### Application

- ◆ Power line on-line monitoring
- ◆ Smart parking
- ◆ Soil temperature and humidity monitoring
- ◆ Intelligent irrigation
- ◆ Wireless remote meter reading
- ◆ PV array monitoring

## Product Pecification

LoRa Specification	<ul style="list-style-type: none"> <li>• Communication Protocol and Band: 433/470/780/868/915 MHz</li> <li>• Indoor/Urban Range: F8L10D-N:1km F8L10D-E:2km</li> <li>• Outdoor/RF Line-of-Sight Range: F8L10D-N:3.5km F8L10D-E:11.5km</li> <li>• Transmit Power: F8L10D-N:20dBm(100mW) F8L10D-E:30dBm(1W)</li> <li>• Receiver Sensitivity: -140dBm</li> <li>• RF Data Rate: 6 level, (0.3、0.6、1.0、1.8、3.1、5.5Kbps)</li> <li>• Channels: 32</li> <li>• Max Serial Buffer Size: 4K Bytes</li> </ul>
Interface type	<ul style="list-style-type: none"> <li>• Data bits: 8</li> <li>• Stop bits: 1, 2</li> <li>• Checksum: none, odd, even</li> <li>• Baud rate: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps</li> </ul>
UART	
Antenna connector	<ul style="list-style-type: none"> <li>• SMA female / Antenna Pad/U.FL, the characteristic impedance of 50 ohms</li> </ul>
Package	<ul style="list-style-type: none"> <li>• Support 2.54mm*7pin spacing stamp hole for SMT and 2*2.0mm*10pin spacing through-hole pins simultaneous</li> </ul>
<p><b>Note: There may be different components and interfaces in different model, please in kind prevail.</b></p>	
Power supply	<ul style="list-style-type: none"> <li>• Recommended Power: F8L10D-N:DC 3.3V/0.5A F8L10D-E:DC 5V/1A</li> <li>• Power Range: DC 3.3~5V</li> </ul>
<p><b>Note: F8L10D-E power supply voltage is less than 4V output power will be reduced, but little impact on the reception performance.</b></p>	
Power Consumption	<ul style="list-style-type: none"> <li>• RX Mode: &lt;22mA@3.3VDC</li> <li>• TX Mode: 117~129mA@3.3VDC (Maximum pulse current ≤150mA)</li> <li>• Timing wake up: &lt;3.0uA@3.3VDC</li> <li>• Deep Sleep: &lt;2.0uA@3.3VDC</li> </ul>
F8L10D-N	
F8L10D-E	<ul style="list-style-type: none"> <li>• RX Mode: &lt;22mA@5VDC</li> <li>• TX Mode: 180~200mA@5VDC (Maximum pulse current ≤400mA)</li> <li>• Timing wake up: &lt;3.0uA@5VDC</li> <li>• Deep Sleep: &lt;2.0uA@5VDC</li> </ul>
Physical Characteristics	<ul style="list-style-type: none"> <li>• Dimensions: 24.4x37.5x4.2 mm (Without antenna and connector)</li> </ul>
F8L10D-N	<ul style="list-style-type: none"> <li>• Weight: 5.0g</li> </ul>
F8L10D-E	<ul style="list-style-type: none"> <li>• Dimensions: 24.4x45.0x4.2 mm (Without antenna and connector)</li> <li>• Weight: 8.0g</li> </ul>
Environmental Limits	<ul style="list-style-type: none"> <li>• Operating Temperature: -40~+85°C (-40~+185°F)</li> <li>• Storage Temperature: -40~+125°C (-40~+257°F)</li> <li>• Operating Humidity: 95% (unfreezing)</li> </ul>

## Ordering Information

Product number	PA	Working frequency band	Package	Antenna interface
F8L10D-N-433-MS-N	Without PA	410-441 MHz	SMT	No interface
F8L10D-N-433-MS-U	Without PA	410-441 MHz	SMT	U. FL interface
F8L10D-N-433-NS-S	Without PA	410-441 MHz	DIP	SMA interface
F8L10D-N-433-NS-U	Without PA	410-441 MHz	DIP	U. FL interface
F8L10D-N-470-MS-N	Without PA	470-510 MHz	SMT	No interface
F8L10D-N-470-MS-U	Without PA	470-510 MHz	SMT	U. FL interface
F8L10D-N-470-NS-S	Without PA	470-510 MHz	DIP	SMA interface
F8L10D-N-470-NS-U	Without PA	470-510 MHz	DIP	U. FL interface
F8L10D-N-868-MS-N	Without PA	850-890 MHz	SMT	No interface
F8L10D-N-868-MS-U	Without PA	850-890 MHz	SMT	U. FL interface
F8L10D-N-868-NS-S	Without PA	850-890 MHz	DIP	SMA interface
F8L10D-N-868-NS-U	Without PA	850-890 MHz	DIP	U. FL interface
F8L10D-N-915-MS-N	Without PA	895-935 MHz	SMT	No interface
F8L10D-N-915-MS-U	Without PA	895-935 MHz	SMT	U. FL interface
F8L10D-N-915-NS-S	Without PA	895-935 MHz	DIP	SMA interface
F8L10D-N-915-NS-U	Without PA	895-935 MHz	DIP	U. FL interface
F8L10D-E-433-MS-N	With PA	410-441 MHz	SMT	No interface
F8L10D-E-433-MS-U	With PA	410-441 MHz	SMT	U. FL interface
F8L10D-E-433-NS-S	With PA	410-441 MHz	DIP	SMA interface
F8L10D-E-433-NS-U	With PA	410-441 MHz	DIP	U. FL interface
F8L10D-E-470-MS-N	With PA	470-510 MHz	SMT	No interface
F8L10D-E-470-MS-U	With PA	470-510 MHz	SMT	U. FL interface
F8L10D-E-470-NS-S	With PA	470-510 MHz	DIP	SMA interface
F8L10D-E-470-NS-U	With PA	470-510 MHz	DIP	U. FL interface