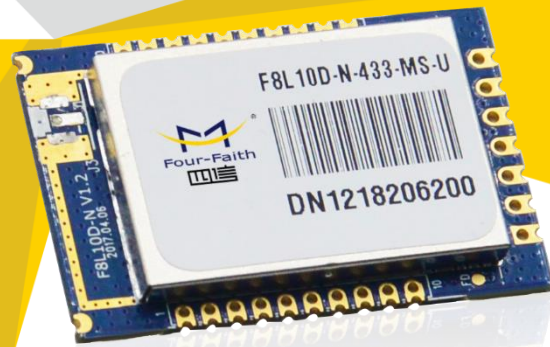


# F8L10D

## LoRa Module



**F8L10D** is a wireless data transmission LoRa module that provides ultra-long-range spread spectrum communication.

The product uses the high-performance industrial-grade LoRa solution, and it supports data transparent transmission function. Low power consumption, the minimum power consumption is less than 2uA. And it supplies multiple I/O channels, compatible analog inputs and pulse input counters.

The product has been widely used in the M2M industry of the IoT industrial chain, such as smart grid, intelligent transportation, smart home, finance, mobile POS gateways, supply chain automation, industrial automation, intelligent building, fire protection, public safety, environmental protection, meteorology, digital medical, telemetry, agriculture, forestry, water, coal, petrochemical and other related fields.

### HIGHLIGHT

#### INDUSTRIAL-GRADE DESIGN

- ◆ High-performance industrial-grade CPU and wireless module
- ◆ DC: 3.3 ~ 5V
- ◆ Band: 433/470/780/868/915 MHz
- ◆ Low power consumption
- ◆ High receive sensitivity
- ◆ CE & FCC

#### POWERFUL FUNCTIONS

- ◆ Support OTA upgrade technology
- ◆ Support wake-up over the air
- ◆ Support serial port configuration
- ◆ Support 6 level speed rates
- ◆ Flexible transmit power setting (5 ~ 20dBm; 30dBm with PA)

## STABLE & RELIABLE

- ◆ WDT watchdog timer to ensure system stability
- ◆ Mature anti-drop mechanism to ensure device always online
- ◆ Power interface with built-in phase-reversal, over-voltage and lightning protection
- ◆ Efficient cyclic interleaving error correction coding, maximum error correction 64bit, dual 256-ring FIFO

## STANDARD INTERFACE & EASY-TO-USE

- ◆ Support many package types: single row 2.54mm\*7 pin compatible with half hole and double row 2.0mm\*10 pin compatible with half hole
- ◆ Provide a variety of antenna connection: U.FL and SMA interface
- ◆ Provide a variety of operating mode selection
- ◆ Convenient system configuration and maintenance interface
- ◆ Standard 3.3V TTL level output
- ◆ Support software upgrade through serial port

## TYPICAL APPLICATION

- ◆ Smart grid power line online monitoring
- ◆ Smart parking solution
- ◆ Soil temperature and humidity monitoring
- ◆ Intelligent Agriculture
- ◆ Wireless remote meter reading
- ◆ Photovoltaic array monitoring

## SPECIFICATIONS

### CHARACTERISTICS

<b>Band</b>	EU433, CN470-510, CN779-787, EU863-870, US902-928, AU915-928, AS923, KR920-923	
<b>Indoor/Urban</b>	F8L10D-N: 1km	F8L10D-E: 2km
<b>Outdoor/Line-of-Sight</b>	F8L10D-N: 3.5km	F8L10D-E: 11.5km
<b>Out Power</b>	F8L10D-N: 20dBm(100mW)	F8L10D-E: 30dBm(1W)
<b>Sensitivity</b>	-140dbm @LoRa	
<b>RF Speed Rate</b>	6 level (0.3、0.6、1.0、1.8、3.1、5.5Kbps)	
<b>Channels</b>	32	
<b>Serial Buffer Size</b>	4K Bytes	

INTERFACE	
<b>UART</b>	<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>
<b>Antenna Connector</b>	SMA female / Antenna Pad/U.FL, the characteristic impedance of 50 ohms
<b>Package</b>	Support 2.54mm*7pin spacing stamp hole for SMT and 2*2.0mm*10pin spacing through-hole pins simultaneous
POWER SUPPLY	
<b>Standard</b>	F8L10D-N: 3.3V/0.5A F8L10D-E: 5V/1A
<b>Range</b>	DC 3.3~5 V
POWER CONSUMPTION	
<b>F8L10D-N</b>	RXD < 22mA@3.3V TXD < 117~129mA@3.3V Wake-up < 3.0uA@3.3V Deep Sleep < 2.0uA@3.3V
<b>F8L10D-E</b>	RXD < 22mA@5V TXD < 180~200mA@5V Wake-up < 3.0uA@5V Deep Sleep < 2.0uA@5V
PHYSICAL PROPERTIES	
<b>Dimensions</b>	F8L10D-N: 24.4x37.5x4.2mm (excluding antennas and mountings) F8L10D-E: 24.4x45.0x4.2mm (excluding antennas and mountings)
<b>Weight</b>	F8L10D-N: 5.0g (excluding antennas and mountings) F8L10D-E: 8.0g (excluding antennas and mountings)
OTHERS	
<b>Operating Temperature</b>	-40~+85°C (-40~+185°F)
<b>Storage Temperature</b>	-40~+125°C (-40~+257°F)
<b>Relative Humidity</b>	95% (non-condensing)
<b>Certifications</b>	CE & FCC



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Model	PA	Band	Package	Antenna Interface
<b>F8L10D-N-433-MS-N</b>	Without	410-441 MHz	SMT	No
<b>F8L10D-N-433-MS-U</b>	Without	410-441 MHz	SMT	U.FL
<b>F8L10D-N-433-NS-S</b>	Without	410-441 MHz	DIP	SMA
<b>F8L10D-N-433-NS-U</b>	Without	410-441 MHz	DIP	U.FL
<b>F8L10D-N-470-MS-N</b>	Without	470-510 MHz	SMT	No
<b>F8L10D-N-470-MS-U</b>	Without	470-510 MHz	SMT	U.FL
<b>F8L10D-N-470-NS-S</b>	Without	470-510 MHz	DIP	SMA
<b>F8L10D-N-470-NS-U</b>	Without	470-510 MHz	DIP	U.FL
<b>F8L10D-N-868-MS-N</b>	Without	850-890 MHz	SMT	No
<b>F8L10D-N-868-MS-U</b>	Without	850-890 MHz	SMT	U.FL
<b>F8L10D-N-868-NS-S</b>	Without	850-890 MHz	DIP	SMA
<b>F8L10D-N-868-NS-U</b>	Without	850-890 MHz	DIP	U.FL
<b>F8L10D-N-915-MS-N</b>	Without	895-935 MHz	SMT	No
<b>F8L10D-N-915-MS-U</b>	Without	895-935 MHz	SMT	U.FL
<b>F8L10D-N-915-NS-S</b>	Without	895-935 MHz	DIP	SMA
<b>F8L10D-N-915-NS-U</b>	Without	895-935 MHz	DIP	U.FL
<b>F8L10D-E-433-MS-N</b>	With	410-441 MHz	SMT	No
<b>F8L10D-E-433-MS-U</b>	With	410-441 MHz	SMT	U.FL
<b>F8L10D-E-433-NS-S</b>	With	410-441 MHz	DIP	SMA
<b>F8L10D-E-433-NS-U</b>	With	410-441 MHz	DIP	U.FL
<b>F8L10D-E-470-MS-N</b>	With	470-510 MHz	SMT	No
<b>F8L10D-E-470-MS-U</b>	With	470-510 MHz	SMT	U.FL
<b>F8L10D-E-470-NS-S</b>	With	470-510 MHz	DIP	SMA
<b>F8L10D-E-470-NS-U</b>	With	470-510 MHz	DIP	U.FL