

LoRa Remote Control and Data Modem

A Peer-to-Peer (P2P) Private LoRa communication allows Direct Bidirectional Communication between any two devices without any Gateway infrastructure or uplink/downlink restrictions imposed by LoRaWAN protocol on end devices. Higher LoRa receive sensitivity extends operating range in applications where FSK transmit power cannot be increased above unlicensed band ERP limit.

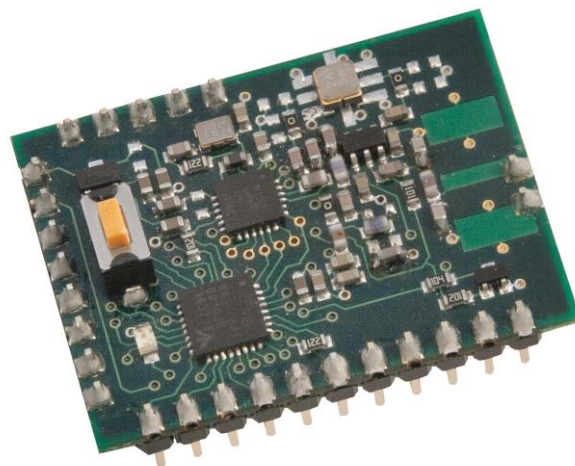


Figure 1: LRM3-869-11

Features

- Point-to-Point, Point-to-Multipoint with Addressing
- Customisable 150-960MHz
- RF Power: +20dBm (100mW)
- 8 Digital Inputs for Remote Controller
- 8 Digital Outputs for Actuator
- 4 Digital Inputs, 4 Digital Outputs for Bidirectional Remote Control
- Wakes up from sleep mode to transmit input status change
- 250-byte buffer 3.3V TTL UART Serial Data Modem
- Channel Activity Detection (CAD)
- Packet Acknowledgement
- Learn Pairing Addresses for Remote Control

Applications

- Industrial/Commercial Telemetry and Telecommand or Non-specific SRD usage
- In-building environmental monitoring and control
- Security & Alarm
- Automated Irrigation System

Technical Summary

- Size: 33 x 25 x 8mm
- 779-787MHz (China), 865-867MHz (India), 863-870MHz (EU), 902-928MHz (US)
- 32MHz TCXO Reference with ± 2.0 ppm frequency stability over -30°C $+85^{\circ}\text{C}$
- SAW front end filter
- Supply Voltage range: 4V-16V DC
- User baud rate: 9600bps (default), 19200, 38400, 57600, 115200
- Modulation Bandwidth (BW): 7, 15, 31, 62, 125, 250, 500kHz
- Spreading Factor (SF): 7, 8, 9, 10, 11, 12
- Coding Rate: 4/5, 4/6, 4/7
- 32MHz TCXO Reference with ± 2.0 ppm frequency stability over -30°C $+85^{\circ}\text{C}$
- SAW front end filter

PCB Layout and connections

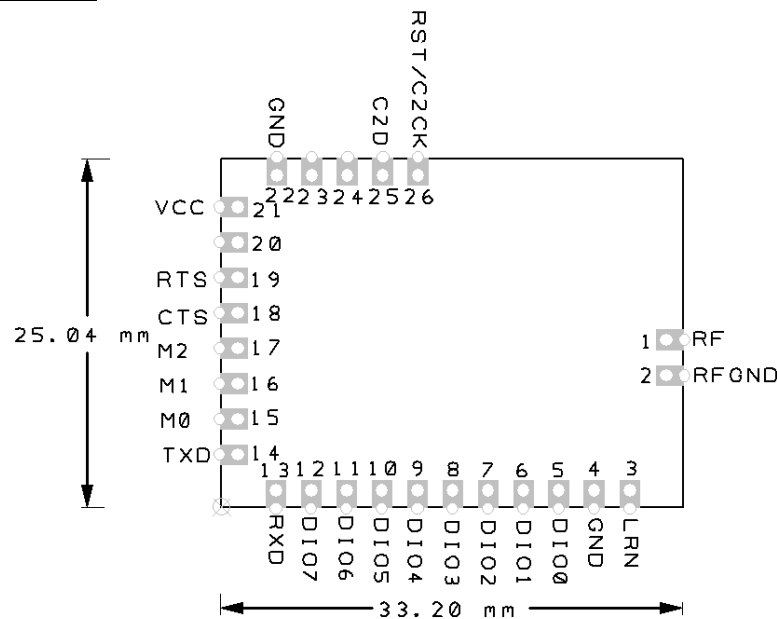


Figure 2: LRM3 Pinout and Dimensions

Pin	Name	Function
1	RF	RF input/output for Antenna
2	RFGND	RF Ground pin
3	LRN	LEARN input active low
4	GND	Ground
5	DIO0	Digital Input / Output 0 for Remote Control
6	DIO1	Digital Input / Output 1 for Remote Control
7	DIO2	Digital Input / Output 2 for Remote Control
8	DIO3	Digital Input / Output 3 for Remote Control
9	DIO4	Digital Input / Output 4 for Remote Control
10	DIO5	Digital Input / Output 5 for Remote Control
11	DIO6	Digital Input / Output 6 for Remote Control
12	DIO7	Digital Input / Output 7 for Remote Control
13	RXD	Received Data output from LRM to host UART RX
14	TXD	Transmit Data input from host UART TX to LRM
15	M0	MODE Selection Bit 0
16	M1	MODE Selection Bit 1
17	M2	MODE Selection Bit 2
18	CTS	Clear To Send hardware flow control output for RS232
19	RTS/DE	Request To Send hardware flow control input for RS232 Driver Enable for RS485 driver
20	NC	Not Connected (reserved for future)
21	VCC	4V-16V DC Power Supply Voltage for internal 3.3V LDO voltage regulator
22	GND	Power Supply Ground
23	NC	Not Connected (reserved for future)
24	NC	Not Connected (reserved for future)
25	C2D	C2 Programming Data input for firmware upgrade
26	RSTb/C2CK	C2 Programming Clock or Active-low Reset with internal 1kΩ pull-up to 3.3V

Mode	M2 M1 M0	Description
0	H H H	Transceiver Mode for Bidirectional Remote Control 4 Digital Inputs (DIO3-DIO0), 4 Digital Outputs (DIO7-DIO4)
1	H H L	Receiver Mode for Unidirectional 8 Digital Output Remote Control
2	H L H	Transmitter Mode for Unidirectional 8 Digital Input Remote Control
3	H L L	AT Command Configuration Serial Data Modem
4	L H H	Master Transmitter in ping pong range test mode
5	L H L	Slave Receiver in ping pong range test mode