



Manual

Long Range Wireless Communication Module

For Heat-Timer Wireless Product

050184-00

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Description

The RF Module 050184-00 is a RF module based on LoRa® technology which provides long-range, low data rate connectivity for Heat-Timer wireless sensors, repeaters, and gateway. The RF module is to be used with Heat-timer end product only.

Hardware Specifications

Hardware spec for the RF module	Description
Voltage Input	3V
MCU clock speed	32Mhz
Current consumption	
Tx mode	80mA
Rx mode	12mA
Idle mode	1.2uA
Modulation	LoRa DTS, CSS. - Long Range Radio Communication technique. - Digital Transmission System - Chirp Spread Spectrum
RF Frequency	918 Mhz
RF Tx power	max. +19dbm
RF Rx sensitivity	
SF5	-120dBm
SF7	-125dBm
SF12	-141dBm

Operation

When the 20 pin header block provides the power of the +3.6V DC, the LDO regulator block changes the +3.6V DC to +3.3V DC.

When the +3.3V DC is provided to RF module chipset block, the RF module chipset block is started and operated to receive a RF signal from SMA connector.

A RF signal coming from SMA connector has the RF signal characteristics such as 918Mhz frequency, LoRa chirp spread spectrum modulation, 500Khz bandwidth, 7 spreading factor, and less than 20 dbm power.

A RF signal coming from SMA connector is delivered to the 3-1 block, and the 3-1 block is changed to RF signal to the digital data.

The 3-2 block collects the digital data by SPI interface and check if the digital data is available.

If the digital data is available, then the LEDs are turned on by u-processor.

Finally, the digital data is passed to 20 pin header block by UART interface.

It is normally listening the LoRa packet from the room sensor and is collecting the LoRa packet.

- The collected data is transmitted to the server by the LoRa.
- It is using 3.5VDC provided from the controller.

FCC Statement

This equipment complies with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. If this equipment does cause harmful interference to radio or television reception, which can be determined, by turning this equipment OFF and ON, the user may correct the

interference by: (1) Reorienting or relocating the receiving antenna, (2) Increasing separation between the equipment and wireless components, (3) Connecting the equipment to a different outlet circuit from that of the wireless components, or (4) Consulting an experienced radio/TV technician for assistance. The antenna supplied by Heat-Timer Corporation must be used (gain $\leq 6\text{dB}$). It is recommended not to operate the device (transceiver) with persons closer than 20cm to the antenna. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.