



User's Manual

For

RM01

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Engineered by  **Naztec**

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FCC Compliance

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.

FCC ID: MD5-RM01

This equipment has been tested and found to comply 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

WARNING: Changes or modifications to this device not expressly approved by Naztec, Inc. dba Trafficware could void the user's authority to operate the equipment.

RF Exposure WARNING: This equipment complies with FCC radio frequency energy exposure limits set forth for an uncontrolled public environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator and your body.

The OEM must include the above warnings in the final configuration user manual plus comply with the marking and warning requirements shown in section 2.1.

Table of Contents

1	INTRODUCTION.....	1-5
1.1	SPECIFICATIONS	1-5
1.2	MODULE PIN DEFINITIONS	1-5
1.3	MECHANICAL DRAWINGS	1-6
1.4	RM01 CO-LOCATION	1-6
2	FCC CERTIFICATION REQUIREMENTS.....	2-7
2.1	OEM LABELING REQUIREMENTS	2-7
2.2	FCC NOTICES.....	2-7
2.3	FCC APPROVED ANTENNAS.....	2-7

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1 Introduction

This document will provide a brief description on how to use the RM01 within FCC limitations. Just applying power, we have a configurable, high performance, simple to use 902-928 MHz radio at our disposal to be used in variety of applications. Radio Module has the capability to transmit at 20 dbm, and an in-built low noise amplifier in the receive path for extended range.

1.1 Specifications

RM01 Specifications		
Performance	Transmit Power Output	20 dbm
	RF Data Rate	100 Kbps
	Receiver Sensitivity	-104 dbm (Typical)
Power Requirements	Supply Voltage	5.0 – 5.5 V
	Transmit Current	90mA
	Idle/Receive Current	23mA
	Sleep Mode	2uA
General	Frequency	ISM 902-928MHz
	Spreading Method	Frequency Hopping (FHSS)
	Modulation	GFSK
	Number of Channels	60
	Dimensions	-
	Operating Temperature	-40 to 85 deg C.
	Antenna Options	External Reverse TNC <ul style="list-style-type: none"> - 12dbi Panel Antenna - 3dbi Phantom Antenna - 3dbi Fiberglass Omni Antenna - 12dbi Yagi Antenna - 0 dBi Quarter wave whip Antenna - 0 dBi Quarter wave Helical Antenna
Interface	Serial	4-wire SPI
Agency Approvals	FCC	FCC Part 15.247

1.2 Module Pin Definitions

RM01 Pin Assignments		
Pin	Name	Description
1	+5VDC	Input, DC Power, Positive
2	+5VDC	Input, DC Power, Positive
3	32.768 Khz	Input, Real Time Clock
4	+5VDC	Input, DC Power, Positive
5	DCGND	Input, DC Power, Negative
6	SPICLK	Input/Output, SPI Bus Clock
7	DCGND	Input, DC Power, Negative
8	SPIMISO	Output, SPI Bus
9	DCGND	Input, DC Power, Negative
10	SPIMOSI	Input, SPI Bus
11	1 Hz	Input, PRM Sync Signal
12	CS	Input, Chip Select from PXM
13	ACK	Output, Acknowledge to PXM
14	C2D	Input/Output, Data signal for C2 debug interface
15	C2CLK	Input/Output, Clock signal for C2 debug interface
16	DCGND	Input, DC Power, Negative

1.3 Mechanical Drawings



(Drawings pending.)

1.4 RM01 Co-location

Three RM01 co-located with each other. But the entire OEM should be installed and operated with minimum distance 20cm between the radiator and your body.

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2 FCC Certification Requirements

RM01 complies with Part 15.247 of FCC rules and regulations. When the RM01 is used compliance with the labeling requirements, FCC notices and antenna usage guidelines is required. In order to comply with FCC Certification requirements, the Original Equipment Manufacturer (OEM) must fulfill the following requirements.

1. The system integrator must place an exterior label on the outside of the final product housing the RM01. Figure below shows the contents that must be included in this label.
2. RM01 may only be used with the antenna that has been tested and approved for use with the module. Please refer to the antenna table provided in this section.

2.1 OEM Labeling Requirements

NOTICE: The OEM must make sure that FCC labeling requirements are met. This includes a clearly visible exterior label on the outside of the final product housing that includes the contents shown below.

CONTAINS FCC ID MD5-RM01

Additionally, the following text is required to appear on the product label:

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.

2.2 FCC Notices

NOTICE: OEM's must certify final end product to comply with unintentional radiators (FCC Section 15.107 and 15.109) before declaring compliance of their final product to Part 15 of the FCC Rules.

WARNING: The RM01 have been tested by the FCC for use with other products without further certification (as per FCC Section 2.1091). Changes or modifications to this device not expressly approved by Naztec, Inc. dba Trafficware could void the user's authority to operate the equipment.

2.3 FCC Approved Antennas

The RM01 are FCC-approved for fixed base station and mobile applications in the ISM 902 to 928MHz frequency band.

Notice: To reduce potential radio interference to other users, the antenna type and its gain should be chosen so that the equivalent isotropically radiated power (e.i.r.p.) is not more than that permitted for successful communication. This module has been designed to operate with the antennas listed in the table below, and having a maximum gain greater than the gain mentioned for a particular type of antenna is strictly prohibited for use with this device. The required antenna impedance is 50 ohms.

Approved FCC Antennas		
Type	Maximum Gain	Minimum Separation
Panel Antenna	12 dbi	20 cm
Yagi Antenna	12 dbi	20 cm
Phantom Mobile Antenna	3 dbi	20 cm
Fiber glass Omni Antenna	3 dbi	20 cm
Dipole (quarter wave whip)	0 dbi	20 cm
Helical antenna	0 dbi	20 cm

RF Exposure WARNING: This equipment 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 and your body.

NOTICE: The preceding statement must be included as a CAUTION statement in OEM product manuals in order to alert users of FCC RF Exposure compliance.

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Index

User Agreement, 1-2

