



# EMERSON RMM-X Power Line Remote Monitoring Modem User Guide

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**EMERSON RMM-X Power Line Remote Monitoring Modem**



## Product Information

### Specifications

- Item no: 8500-160 (Version 1.3)
- Manufacturer: Emerson Climate Technologies Transportation Solutions
- Model: RMM-X
- Compatible with Thermo King MP4000 units

### Product Usage Instructions

#### General Warning

The RMM-X unit contains non-insulated dangerous voltage inside the product area, which may cause electric shock. Additionally, the device is static sensitive. To ensure safe usage:

- Avoid contact with water, humidity, or any other type of liquid as it can damage the electronic circuits.
- Comply with the temperature and humidity limits specified in the manual for proper storage of the product.
- Do not install the device in environments where temperatures are outside the specified limits.
- Avoid cleaning the device with corrosive chemical products, solvents, or aggressive detergents.

### Product Disposal WEE

In accordance with the DIRECTIVE 2012/19/UE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL, please follow these guidelines for proper disposal of the RMM-X unit:

- Do not dispose of the product as mixed urban waste.
- Separate waste collection of WEEE is required. Use public or private collection systems as per local laws.
- If purchasing a new unit, you can return the old equipment to the distributor.
- The product may contain hazardous substances, so improper use or incorrect disposal can have negative effects on human health and the environment.
- Look for the symbol on the product or packaging, indicating separate waste treatment.

## **GENERAL WARNING**

- Symbol warns the user about the presence of non-insulated “dangerous voltage” inside the product area, which may cause electric shock.
- Symbol warns the user that the device is static sensitive.
- The product generates radio frequency (RF) power. When using the product, care must be taken on safety issues related to RF interference as well as regulations of RF equipment. Do not use this product in aircraft, hospitals, petrol stations or in places where using cellular products is prohibited. Be sure that the product will not be interfering with nearby equipment. For example: pacemakers or medical equipment. Always keep the product with minimum safety distance of 20cm or more from human body.
- Emerson reserves the right to modify this manual without prior notice.
- This manual is part of the product and must always be kept near the device for easy and quick reference.
- Verify that the power supply voltage is correct before connecting the device. Warning: Disconnect all the electric connections before performing maintenance.
- The customer shall bear full responsibility and risk for product configuration in order to achieve the results pertaining to installation and/or final equipment/system.
- It is good practice to bear the following in mind for the product:
  - Prevent the electronic circuits from getting wet as contact made with water, humidity or any other type of liquid can damage them. Comply with the temperature and humidity limits specified in the manual in order to store the product correctly.
  - The device must not be installed in environments where temperatures are out of the temperature and humidity limits specified in the manual.
  - Do not clean the device with corrosive chemical products, solvents or aggressive detergents.

## **RMM-X Installation and User Guide for Thermo King MP4000 Units**

- The device must not be used in applications that differ from that specified in the following material.

## **Product Disposal WEE**

With reference to the DIRECTIVE 2012/19 / UE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 on Waste Electrical and Electronic Equipment (WEEE), and to the relevant national implementation regulations, we inform you that users of EEE in households: There is an obligation not to dispose of WEEE as mixed urban waste and to separate waste collection of WEEE. Public or private collection systems required by local laws must be used for disposal. It is also possible, at the end of its life, to return the equipment to the distributor in case of purchase of a new one. This equipment may contain hazardous substances; improper use or incorrect disposal could have negative effects on human health and the environment. The symbol shown on the product or on the packaging indicates that the product must be treated with separate waste. In case of incorrect disposal, sanctions can be applied as established by the local laws on waste disposal.

## Product Notice

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## Technicians Use Only

This unit must be installed by a suitably qualified technician who will install this unit in accordance with these instructions and the standards in their particular industry/country.

The unique antennas permitted are reported in this document. The device is not stand-alone and can only work when connected to the controller unit. The product is not available via retail or order by email to average consumer. Operators of the unit should be aware of the regulations and standards in their industry/country for the operation of this unit. These notes are only intended as a guide and the manufacturer bears no responsibility for the installation or operation of this unit. Failure to install and operate the unit in accordance with these instructions and with industry guidelines may cause serious injury including death and the manufacturer will not be held responsible in this regard.

## FCC Regulation

This mobile router 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.

This mobile router 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 radiated 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.

### FCC Note:

**Caution:** Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## RF Exposure Information

This device meets the government's requirements for exposure to radio waves. This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government. This device complies with FCC radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20 cm (7.8 inches) during normal operation.

## CE Declaration

Hereby, Emerson declares that the radio equipment type GSM, LTE, BLE is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available, please contact our support ([coldchain.technicalservices@emerson.com](mailto:coldchain.technicalservices@emerson.com)). The device could be used with a separation distance of 20cm to the human body. Caution Risk of explosion if battery replaced by an incorrect type. Dispose of used batteries according to the instructions.

## RATINGS AND REQUIREMENTS

### Product Supply Ratings

- Power Supply: 24 VAC +20/-30% 50-60 Hz or 24-41 VDC
- Power consumption max: 0.4 Amp at 24VAC

### Conducted Power

Band	Max EIRP power(dBm)
BT	9.9

Band	Max power(dBm)
GSM900	31
GSM1800	30
Cat M1 B1	24
Cat M1 B3	24
Cat M1 B8	24
Cat M1 B20	24
Cat M1 B28	24
NB-IOT B1	24
NB-IOT B3	24
NB-IOT B8	24
NB-IOT B20	24
NB-IOT B28	24

### **RMM-X Installation and User Guide for Thermo King MP4000 Units Disconnect Device**

- The installation of this product requires a disconnected reefer.

### **Warning**

- This product is for intended use only in a restricted access location. Access can only be gained by SERVICE PERSONS or by USERS who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken
- This product is for build in only and requires a suitable electrical and fire enclosure in the final place of

installation. Minimum fire requirement for electrical enclosure is UL 94 V-0.

RMM-X Installation and User Guide for Thermo King MP4000 Units




REQUIRED TOOLS

- 1. Step drill 33 mm
- 2. Tool for removing burrs.
- 3. Side cutting pliers.
- 4. Torque wrench 6,5Nm
- 5. Cable binders
- 6. Permanent Marker
- 7. Vacuum cleaner (to clean e.g. control box from slivers)



RMM-X ACCESSORIES (MP4000 UNIT)

A complete RMM-X accessory kit includes the RMM-X unit and one of the two antennas showed below:

RMM-X unit	OTS Antenna (PN: 2625-028)	Dull Antenna (PN: 2625-055)
		

INSTALLATION

INSTALLATION DETAILS

Range of ambient temperature: 0 – 40°C

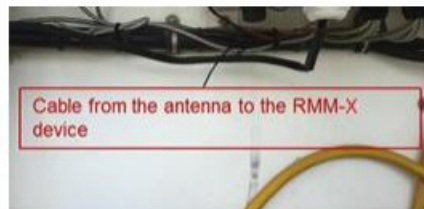
INSTALLATION OF THE ANTENNA (ALL UNITS)



1. Antenna has to be fitted at the valve cover next to the “V” frame.
2. Mark the 19mm hole before drilling. Antenna must be centered.
3. Use a step drill or a 19mm drill to drill the hole. Remove all burrs after drilling.
4. Loosen the screw and tilt the valve cover.
5. Fit the antenna with the supplied M18x1.5 nut. Tighten the nut firmly (Torque 6.5 Nm). Arrow must point upwards.
6. Mount the valve cover with antenna.
7. Make sure that the antenna cable follows a smoothly curved route and is not kinked or crushed and that the cable ties do not squeeze or pull the cable. Antenna cable must be bonded according to the pictures below and fixed with cable ties. Cable ties to be used as installation support.





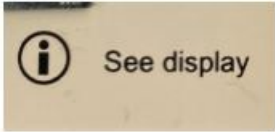


8. Mark the 33 mm hole before drilling (check available space at the bottom of the controller enclosure – protect cables). Use a step drill to drill the hole. Remove all burrs after drilling
9. Fit the supplied M32 cable glands. Tighten the nut firmly (Torque 6.5 Nm)
10. M32 cable gland is fitted at the bottom of the controller enclosure






## INSTALLATION OF THE RMM-X UNIT



Remove the MP-4000 Li-Ion battery as shown.	
Fit the RMM-X device at the available expansion slot as shown in the picture and guide the cables. Use cable ties to fasten the cable.	
Reinstall MP-4000 battery.	
Connect the plugs for the antenna by matching the colors	
Reconnect power and turn on the unit. The LED on the RMM-X will light up when the appropriate signal is detected.	
See matrix on next page for verification.	
Check the MP4000 controller display to view device details and communication status.	
See symbols on Main Menu for quick communication status.	
See Main Menu => Info => RMM-X for details.	 

## RMM-X USER INTERFACE ON MP-4000 DISPLAY

Turn on the reefer and read or verify functionality of the RMM-X device. On MP4000 Display Main Menu one or more of the following symbols are shown at upper right corner of the display to indicate quick state of RMM-X functions:

MP4000 Display			
Symbol	Function	State	Description
	Bluetooth LE	ON	Active
		OFF	Not active
	GPS Signal	ON	GPS Fix
		OFF	Not present
		Flashing B1	RMM-X not ready
		Flashing B2	No GPS Fix
	Cell	ON	Connected to Cell network and Global Monitoring Server
		OFF	Not present
		Flashing B1	RMM-X not ready
		Flashing B2	Cell network offline
		Flashing B3	GMS offline

### Flashing mode:

- B1: 25% on
- B2: 50% on
- B3: 75% on

For more information follow the path below in the MP-4000 display: Main Menu => Info => RMM-X.





## DOCUMENT REVISION RECORD

Rev.	Date	Author	Brief description of change	Pages affected
1.0	220901	NP	Original Issue	All
1.1	230131	ADM		All
1.2	230310	JRL	Added section "General Warning", general update	All
1.3	230314	ADM	Added FCC specs and other approvals requirements	All

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## Documents / Resources

 	<b><a href="#">EMERSON RMM-X Power Line Remote Monitoring Modem</a></b> [pdf] User Guide RMM-X, RMM-X Power Line Remote Monitoring Modem, Power Line Remote Monitoring Mode m, Line Remote Monitoring Modem, Remote Monitoring Modem, Monitoring Modem, Modem
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## References

- [User Manual](#)