




nVent RAYCHEM RMM2-E Trace Heating Remote Monitoring Instructions

[Home](#) » [nVent RAYCHEM](#) » nVent RAYCHEM RMM2-E Trace Heating Remote Monitoring Instructions 

Contents

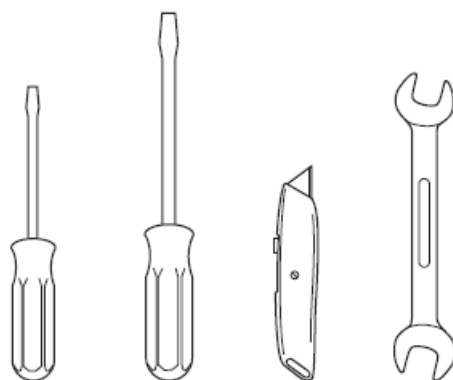
- [1 nVent RAYCHEM RMM2-E Trace Heating Remote Monitoring](#)
- [2 TOOLS INCLUDED](#)
- [3 DIMENSIONS](#)
- [4 Remote monitoring module RMM2-E](#)
- [5 Specifications](#)
- [6 Installation materials](#)
 - [6.1 Installation Instructions](#)
- [7 Overview of installation procedure for the RMM2-EX](#)
- [8 Documents / Resources](#)
 - [8.1 References](#)
- [9 Related Posts](#)



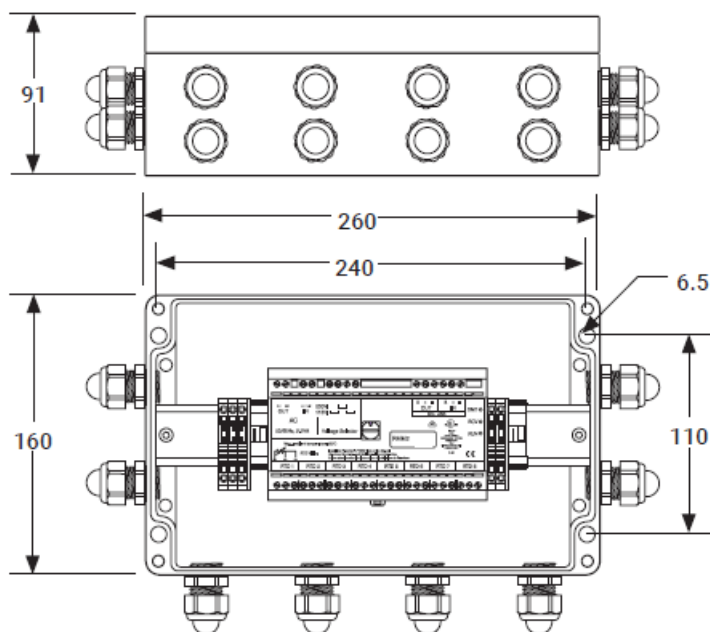
nVent RAYCHEM RMM2-E Trace Heating Remote Monitoring



TOOLS INCLUDED

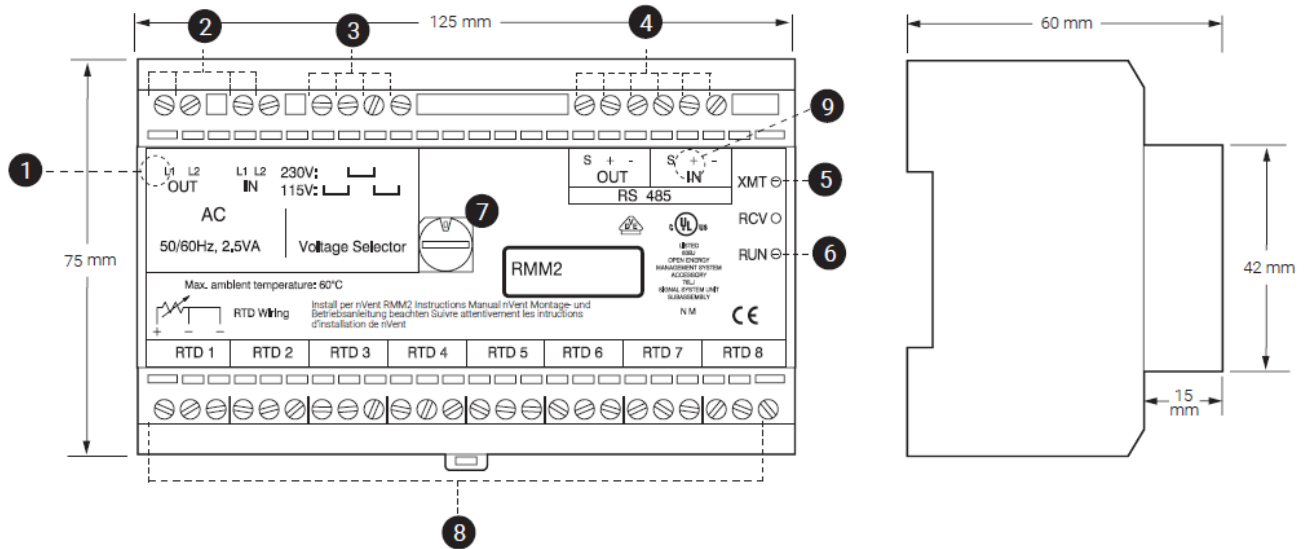


DIMENSIONS



Remote monitoring module RMM2-E

1.



Fuse

2. Terminals for power input with provision for daisy chaining
3. Voltage selector jumpers bridges
4. Terminals for RS-485 bus
5. LEDs which indicate communications activity
6. LED which indicates power to the RMM2-E unit
7. Rotary switch (16 position) to assign RS-485 address
8. Terminals for RTD lead wires
9. Shorting block to select RS-485 termination mode

Hazardous Locations (1)

II 3 G/D T=70°C EExn R II T6 (Ta -20°C to +60°C) 2Ex nR II T6 Gc IP66 Ta -55°C...+60°C

Non-hazardous Locations (2)

RTD and RS-485 circuitry are isolated from power mains circuitry by protective separation. (3)

WARNING: This component is an electrical device. It must be installed correctly to ensure proper operation and to prevent frozen pipes, shock or fire. Read and carefully follow all the installation instructions.

Special conditions for safe use:

All unused entry holes must be sealed using the scheduled cable gland and stopping plug. Consider the effects of direct heating on the exterior of the enclosure and the impact this may have on the internal temperature rise.

Specifications

- **Supply voltage (nominal):** 115/230 Vac, $\pm 10\%$, jumper selectable, 50/60 Hz
- **Power consumption:** 2,5 VA
- **Ambient operating range:**
 - 40°C to +60°C
 - 20°C to +60°C

(Exn enclosure and glands)

- **Relative humidity:** 5 to 95%, noncondensing
- **Temperature sensors:** 3-wire RTD (Pt 100)
- **Temperature coefficient:** per IEC 751-1983 (100 Ω at 0°C)
- **Sensor connections:** Can be extended with a 3-core shielded cable of 20 Ω max. per conductor (e.g., 150 m with 3 x 1.5 mm² cable)
- **RS-485 connections:** Shielded, single twisted pair, max. 1200 m
- **Replaceable fuse:** F 200 mA/250 V, Wickmann part number 19370-034-K (FAST BLOW)

Installation materials

Fasteners

4 screws for 6.5 mm holes for mounting enclosures

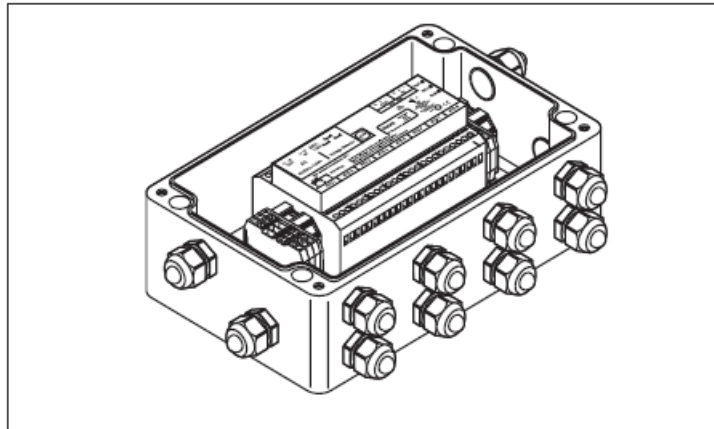
Pt 100 temperature sensors (RTDs)

- MONI-PT100-NH Temperature sensor for non-hazardous areas with M20 cable gland
- MONI-PT100-EXE Temperature sensor for hazardous areas

Installation Instructions

Description

The nVent RAYCHEM Remote Monitoring Module (RMM2-E) is part of the nVent RAYCHEM NGC control and monitoring system. The RMM2-E accepts inputs from up to 8 RTDs (3 wire Pt 100 temperature sensors) measuring pipe or ambient temperature in a trace heating system. Up to 16 RMM2-E units communicate with a nVent RAYCHEM NGC-30 or NGC-40 controller using a single RS-485 cable.



For technical assistance, call your local nVent representative or the nVent service center listed on the last page.

Parts (supplied)

- RMM2-E without enclosure
- RMM2-E Trace-heating Remote Monitoring Module
- Replacement fuses
- Jumper for voltage selection
- Label

Hazardous area unit (RMM2-EX-E)

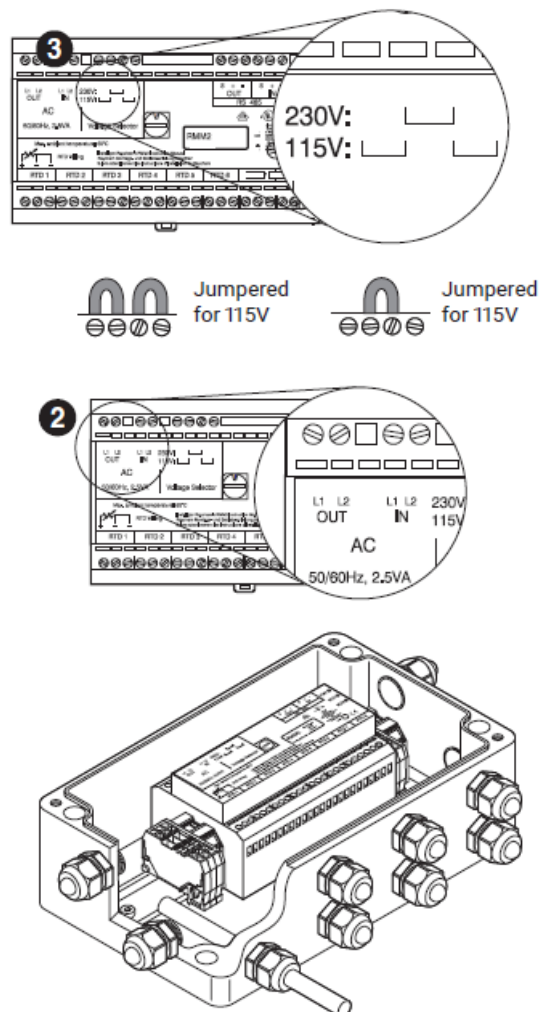
- RMM2-EX-E Trace-heating Remote Monitoring Module
- Exn R II T6 glassfibre-reinforced polyester enclosure
- 12 Ex e M20 glands for power cable (6 to 12 mm cable diameter) with mushroom stopping plugs
- Replacement fuses
- Jumper for voltage selection

Overview of installation procedure for the RMM2-EX

WARNING:

- Installation to be performed by suitable trained personnel.
- Keep the Remote Monitoring Module clean and dry prior to installation to avoid damage to internal components.
- When RMM2-E is used for DIN-rail installation in a local customised panel or enclosure, must be added 10 earth terminals for earthing of RTD's and power cables. Terminals should accept wires from 0.2 to 4 mm².

Mount enclosure and install cables

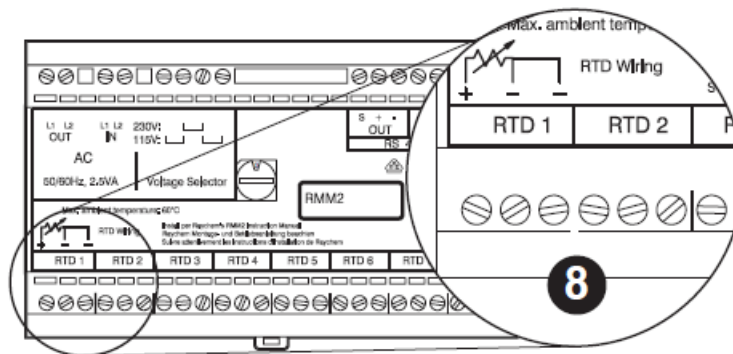


1. Select a suitable location for the RMM2-EX-E enclosure. The enclosure is suitable for use in Zone 2 areas. Do

- not mount in Zone 1 or Zone 0 areas. For installations in Zone 1 areas, contact nVent. Use the dimensions to locate mounting holes for the enclosure. Mount the enclosure using suitable screws (hole diameter 6 mm).
2. Install cables Install power cable(s), RS-485 cable(s) and RTD cables into enclosure using glands supplied. Keep stopping plugs in unused entries.
Connect power and earth wiring and select voltage operating range
 3. Select the voltage operating range Connect the supplied wire jumpers to the appropriate terminals to select input voltage. The RMM2-E is supplied jumpered for 230 volts.
 4. Connect wiring from power source to designated terminals on RMM2-E. Use only copper conductors. Connect power cable wires to the terminals marked L1 and L2 on the RMM2-E. If power is being daisy chained, be sure to maintain polarity of L1 and L2 wiring for incoming and outgoing wires. The terminals accept stranded wires from 0.2 – 2,5 mm². (0,2 – 4 mm² solid wire)
 5. Connect earth wiring. Connect the earth wire(s) to the earth terminals mounted on the DIN rail. The terminals accept 0,8 – 2,5 mm² solid or stranded wires.

Connect RTD Cables to the RMM2-E

The RMM2-E has terminals for 8 three-wire, RTDs (Pt 100 temperature sensors, to IEC 751); do not use other types of RTDs. Select RTDs appropriate for the usage:



- MONI-PT100-NH Temperature sensor for non-hazardous areas
- MONI-PT100-EXE Temperature sensor for hazardous areas

Install each RTD in accordance with the installation instructions shipped with it, and run the RTD lead wires to the RMM2-E.

Note: Resistance of lead wires from each RTD must not exceed 20 Ω (e.g. 150 m with 3 x 1,5 mm² cable).

Connect lead wires from each RTD to the selected RMM2-E terminal block

The RMM2-E has 8 terminal blocks to connect lead wires from 8 RTDs. Each RTD connection is numbered; the number identifies the RTD, and determines the order in which the NGC system displays the RTD measurement. Therefore, order the RTD connections in a manner that makes the NGC system display most meaningful. The RMM2-E cover shows the correct wiring arrangement for the RTD wires. With nVent RAYCHEM RTDs, connect the two RTD lead wires of the same colour to the terminals marked “-” and connect the RTD lead wire that is a different colour to the + terminal. If RTD-shield is not earthed elsewhere, connect shield to earth terminal. Record the location/identification for each RTD. Because the RMM2-E terminal connection number identifies the RTD in the NGC system, it is important to record the location of each RTD. Use the space below to record the connections, and label the RMM2-E or its enclosure with this RTD identification information

RMM2-E terminal no. Piping drawing identification Description or location

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8

Select RS-485 Address and Connect the RS-485 Bus Cables

Each RMM2-E connected to a NGC control and monitoring system must have a unique address; if two RMM2-E's are assigned the same address, communication faults will result. To ensure that you assign a unique address to each RMM2-E unit, do the following:

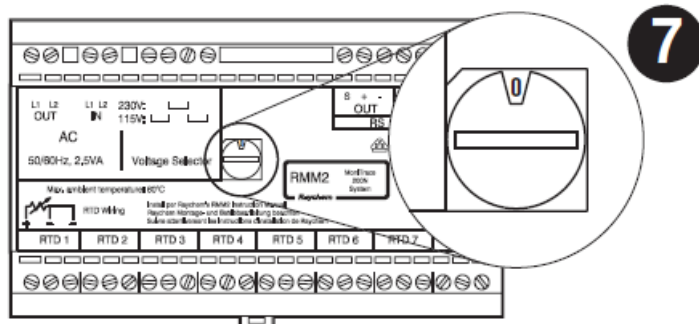
- Review the NGC system layout; if a layout document does not exist, create one. If it has not already been done, assign an RS-485 address to each RMM2-E (up to 16) connected to the NGC system.
- If you are adding one or more RMM2-E units to an existing NGC network, confirm that the RS-485 addresses for existing RMM2-E units correspond to the system layout. See for details the programming guide of the NGC system.

By checking the RS-485 addresses on an existing system, you can avoid potential conflicts that would be confusing and time consuming to troubleshoot otherwise. Record the RS-485 address selected for the Remote Monitoring Module you are currently installing, and label the exterior of the enclosure with the address assigned to the RMM2-E. For reference, here are the 16 possible RS-485 addresses: (0 -15 HEXADECIMAL)

0 1 2 3 4 5 6 7 8 9 A B C D E F

Set the RS-485 address for the RMM2-E unit using the rotary switch provided

Take of the lid and use a flat-blade screwdriver to rotate the RS-485 address switch to the desired position. The single character visible on the switch indicates the RS-485 address assigned.



The RMM2-E has two sets of terminals for connections to the RS-485 bus. One terminal block allows the RMM2-E to connect to the RS-485 bus, the second allows a continuation of the bus to other RMM2-E units on the network. Observe polarity, which is indicated on the RMM2-E. Connect the incoming RS-485 bus to the set of terminals marked “IN”, observing the polarity noted on the cover of the RMM2-E; use the terminal marked “S” for the shield of the RS-485 cable. Connect the continuation of the RS-485 bus to the set of terminals marked “OUT” in the same manner (not required for the last RMM2-E in the network).

Important: Do not connect the shield of the RS-485 cables to the enclosure’s grounding terminal. Connect the shield only to the RMM2-E terminals provided. To avoid the potential for spurious ground loops, the RS-485 cable

shield should be connected to ground only in the nVent RAYCHEM unit. For the last RMM2-E in the network, terminate the RS-485 bus by removing the shorting block on jumper location J17 from 2–3 and placing it across pins 1–2. nVent.com/RAYCHEM

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Documents / Resources

 RMM2-E Trace Heating Remote Monitoring/Heating RMM2-E Trace Heating Remote Monitoring, RMM2-E, Trace Heating Remote Monitoring, Heating Remote Monitoring, Remote Monitoring, Monitoring	nVent RAYCHEM RMM2-E Trace Heating Remote Monitoring [pdf] Instructions RMM2-E Trace Heating Remote Monitoring, RMM2-E, Trace Heating Remote Monitoring, Heating Remote Monitoring, Remote Monitoring, Monitoring
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References

-  [Electrical Heat Tracing | Heat Tracing | nVent RAYCHEM](#)