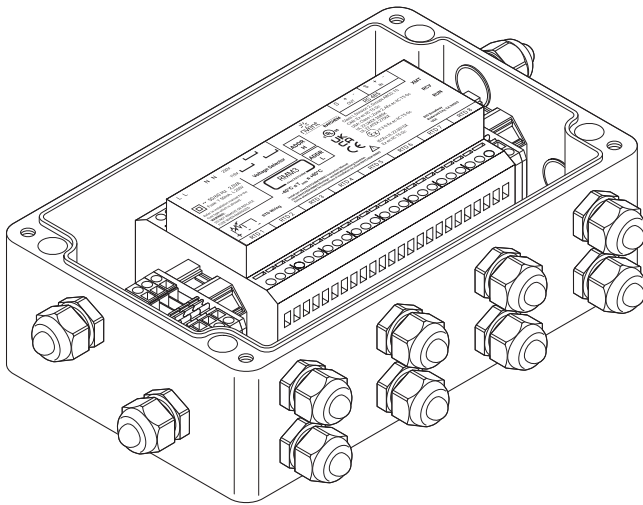# RMM3

Heat-tracing remote monitoring module ⟨Ex⟩

PRODUCT OVERVIEW

The Remote Monitoring Modules (RMM3) provide temperature monitoring capability for the nVent RAYCHEM Elexant and NGC controller family. The RMM3 accepts inputs from up to eight PT 100 temperature sensors that measure pipe or ambient temperatures in a heat-tracing system. Multiple RMM3 units communicate with a single nVent RAYCHEM User Interface providing centralised monitoring of temperatures.

A single, twisted pair RS-485 cable connects up to 247 RMM3 modules in the field.

Control and monitoring

A nVent RAYCHEM control network can consist of many heat-tracing circuits based on ambient and/or pipe temperatures. The RMM3 may be used to collect both ambient and pipe temperatures for control or for extensive monitoring of the heat-tracing system. The RMM3 units are placed near desired monitoring locations, even in hazardous areas (Zone 2). Multiple temperature sensor inputs are networked over a single cable, significantly reducing installation cost for temperature monitoring.

Alarms

Low and high temperature alarms may be set for sensors connected to the nVent RAYCHEM controllers via the RMM3. Alarm limits are set and alarm conditions are reported to the user. Additional alarms are triggered for failed temperature sensors and communication errors. Alarms may be reported remotely through the Modbus communication to the process control system, via an alarm relay in the User Interface or via nVent RAYCHEM Supervisor.
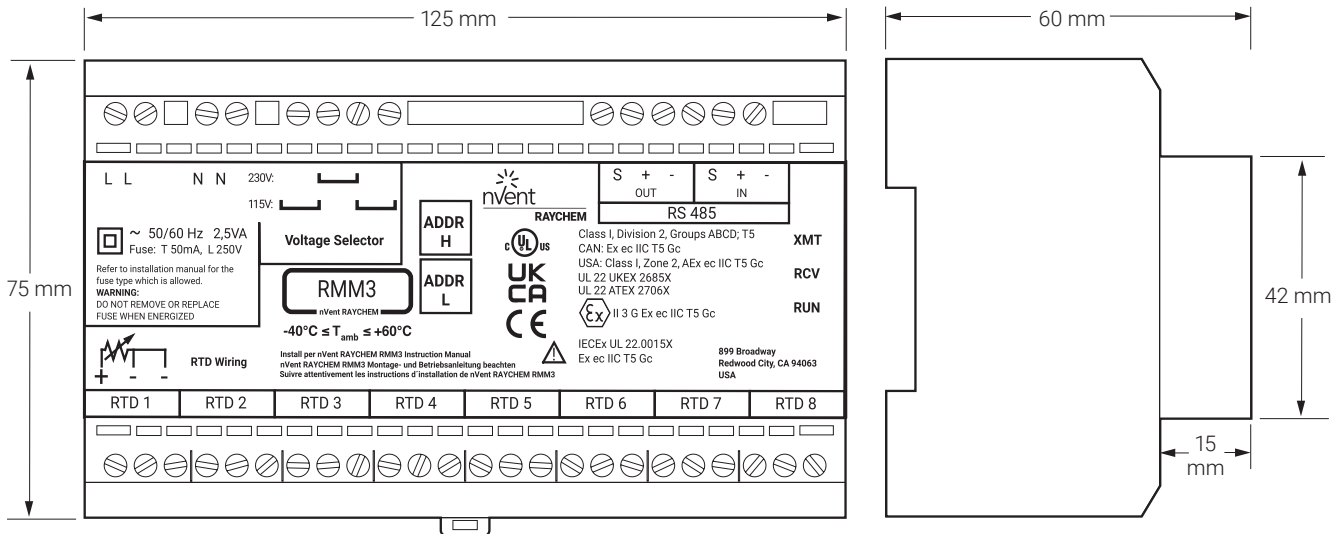
Configurations

The RMM3 is an electronic device that clips to a DIN rail. The unit is available as 230/115 Vac version and 24 Vdc version. The complete kit for ordinary and hazardous areas (Zone 2) includes an RMM3 mounted in a rugged polyester enclosure with appropriate terminals and cable glands. For other installation options, contact nVent.
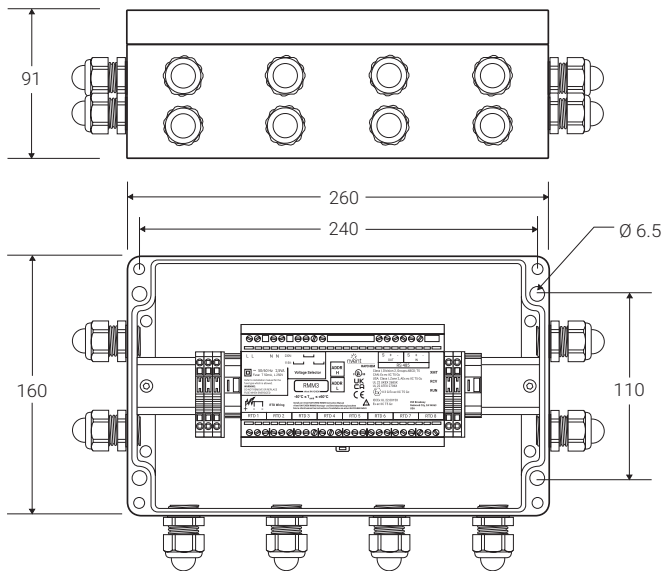
PRODUCT SPECIFICATIONS

Dimensions (in mm)

RMM3 module

Hazardous area enclosure

Technical details

Ambient operating temperature range	−40°C to +60°C
Ambient storage temperature range	−51°C to +60°C
Relative humidity	max. 95%, noncondensing
RMM3 supply voltage (nominal)	115/230 Vac +10% −10% 50/60 Hz (jumper selectable)
RMM3-24Vdc supply voltage (nominal)	24 Vdc (10-30 Vdc)
Internal power consumption	2.5 VA

RMM3 Hazardous Area Enclosure	nVent RAYCHEM RMM3-EX-E and RMM3-24VDC-EX-E
Protection	IP66
Base and lid	Material: glassfibre-reinforced polyester, lid seal: silicone
Colour	Black
Ambient temperature range	−40°C to +60°C
Lid fixing	4 x M6, cheese-head, captive, stainless steel
Entries	12 x M20 for cable diameters ranging from 6 to 12 mm
Glands provided (Ex e)	12 x M20 with integral stopping plugs
Mounting	Surface mounting with 4 fixing holes on 240 x 110 mm centres hole diameter: 5 mm

Temperature sensors

Type	3 wire PT 100, temperature coefficient per IEC 751-1983
Quantity to be connected	Up to 8 PT 100 per RMM3 The sensor cable may be extended with a 3 (+PE)-wire signal cable adding 20 Ohms lead resistance maximum. When using 1.5 mm^2 cable this equals to ±150 m of cable. When the sensor cable is laid in cable ducts or in the vicinity of high voltage carrying cables the sensor extension cable should be shielded. The shield of the extension cable should be grounded at one end only.
Area of use	Use sensors with the appropriate approvals required for the area of use

Communication

Type	RS-485
Cable	1 shielded twisted pair
Length	1200 m max.
Quantity	By Modbus standards limited up to 247 units, maximum number of units defined by control network. See installation manual of control systems for more details.
Address	Switch-selectable on RMM3
Communication	Modbus RTU, modbus settings can be modified (baud rate, bits, parity, stop bits, tx delay)

Connection terminals

Supply (in-out)	4 terminals for cables 0.2 mm^2 to 4 mm^2
Earth	10 terminals for cables up to 4 mm^2 aside the RMM3 unit
PT 100 connections	8 x 3 terminals for cables 0.2 mm^2 to 2.5 mm^2
RS-485 connection	2 x 3 terminals for cables 0.2 mm^2 to 2.5 mm^2

Electromagnetic compatibility

Immunity	Complies with EN 50 082-2 (heavy industrial)
Emissions	Complies with EN 50 081-1 (light industrial)

APPROVALS

For use in ordinary and hazardous area Zone 2 (Gas)

Temperature classification
T6

Product certification

More details about product certification, approvals and conditions of safe use are available in the installation manual at nVent.com/RAYCHEM.

ORDERING DETAILS

RMM3	Part Descriptions	Product Number	Weight
115 VAC/230 VAC No enclosure, internal electronics module only	RMM3	1244-022749	1.2 kg
115 VAC/230 VAC version with hazardous area enclosure	RMM3-EX-E	1244-022750	3.2 kg
24 VDC version, no enclosure, electronics module only	RMM3-24VDC	1244-022782	1.2 kg
24 VDC version with hazardous area enclosure	RMM3-24VDC-EX-E	1244-022783	3.2 kg

Pipe Temperature Sensors (PT 100)			
PT 100 temperature sensor for Zone 1	MONI-PT100-EXE	967094-000	0.6 kg
PT 100 temperature sensor for ordinary areas	MONI-PT100-NH	140910-000	0.2 kg

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