

## ELECTRONIC CONTROLLER FOR PIPE FREEZE PROTECTION AND TEMPERATURE MAINTENANCE SYSTEMS



### PRODUCT OVERVIEW

The nVent RAYCHEM RAYSTAT V5 controller is designed for operation with the nVent RAYCHEM self-regulating heating cables.

### FEATURES

- Easy set-up and programming of the unit
- Flexible temperature control of pipe freeze protection and temperature maintenance systems
- Line sensing and/or ambient sensing
- Proportional Ambient Sensing Control (PASC) algorithm for enhanced energy savings in ambient sensing mode
- Alarm relay with change over contact to signal power, temperature or communication problems
- Pipe temperature monitoring with high and low temperature alarm
- Offsite configurable - can be set up prior to final installation
- On wall mountable for outdoor location

### GENERAL

Area of use Non-hazardous locations; for nVent RAYCHEM heating cables

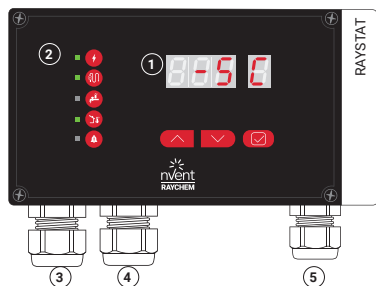
### ELECTRICAL PROPERTIES

Supply voltage	230 VAC (+10%, -15%); 50/60Hz
Operating temperature	-40°C to +40°C ambient
Power consumption	Max. 3,5 VA
Switching capacity output relay	25 A 230 VAC
Size power supply terminals	3 x 6 mm <sup>2</sup> max.
Size heating cable terminals	3 x 6 mm <sup>2</sup> max.
Size alarm terminals	3 x 1,5 mm <sup>2</sup> max.
Size pipe sensor terminals	2 x 1,5 mm <sup>2</sup> max.
Alarm relay	Single pole double throw relay, volt-free; Max. switching capacity (resistive load only) 1 A/30 VDC 0.5 A/125 VAC, Max.: 60 VDC/125 VAC
Keylock	Password protection for parameter settings
USB port	For pre-setup in power off mode; for firmware upgrades

## ENCLOSURE

Dimensions	210 mm x 110 mm x 85 mm
Ingress protection class	IP65
Enclosure material	Polycarbonate
Mounting option	On wall; mountable DIN rail 35 mm (included in the package)
Cable entries	2 x M25 and 1 x M20; 2 x M20 pre-punched
Storage temperature	-40°C to +50°C
Flammability class	DIN EN 60730/VDE 0631-1
Weight	990 g

## MODULE LAYOUT



1. LED Display
2. LED Green:
  - a - Power to the unit
  - b - Power to the heating cable
  - c - Line sensor connected or
  - d - Ambient sensor connected
  - e - Alarm/Error info
3. M25 Gland: Power cable
4. M25 Gland: Heating cable
5. M20 Gland: Sensor/Sensor pipe/External alarm

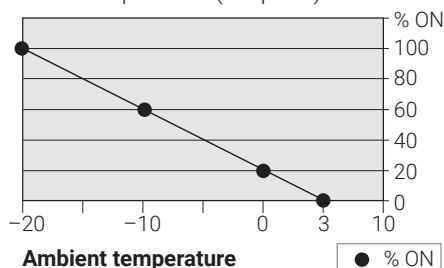
## PROGRAMMING

Selectable set temperatures	0°C to +90°C (line sensing) and 0°C to +30°C (ambient sensing); optional 0°C to +250°C (line sensing, when used with SM-PT100-1)
Parameter	Operation modes, high and low temperature alarm, hysteresis

## ENERGY SAVING WITH PROPORTIONAL AMBIENT SENSING CONTROL (PASC)

Duty cycle (power to heater on) depends on the ambient temperature. For example:  
If minimum temperature = -20°C and if maintain temperature (set point) = +5°C

ambient t°	% ON	
-20	100	
-10	60	Min. Ambient
0	20	
3	0	Set point



**Result: At ambient temperature of -10°C, 50% energy is saved**

## SENSOR

	Standard	With SM-PT100-1 Module	
	(included in box)	HARD-78	MONI-PT100-260/2
Temperature sensor type	NTC 2 KOhm / 25°C, 2-wire	PT100	PT100
Sensor tip dimensions	Ø 5 mm; length 20 mm	Ø 6 mm, length 50 mm	Ø 6 mm, length 50 mm
Sensor cable length	5 m	3 m	2 m
Cable extension	Up to 150 m, cross section extension cable: 2 x 1,5 mm <sup>2</sup>	Up to 150 m, 3 x 1,5 mm <sup>2</sup>	
Temperature range	-40°C to +90°C	-40°C to +150°C	-50°C to +260°C

## MONITORING

Temperature alarm	High temperature alarm	Adjustable range: maintain temperature to +2°C to +250°C, OFF
	Low temperature alarm	Adjustable range: maintain temperature to -40°C to +245°C, OFF
Sensor alarm	Sensor open circuit Sensor short circuit	
Heating cable connection	Heating cable open circuit	

## MEMORY

Parameters All parameters are stored in nonvolatile memory

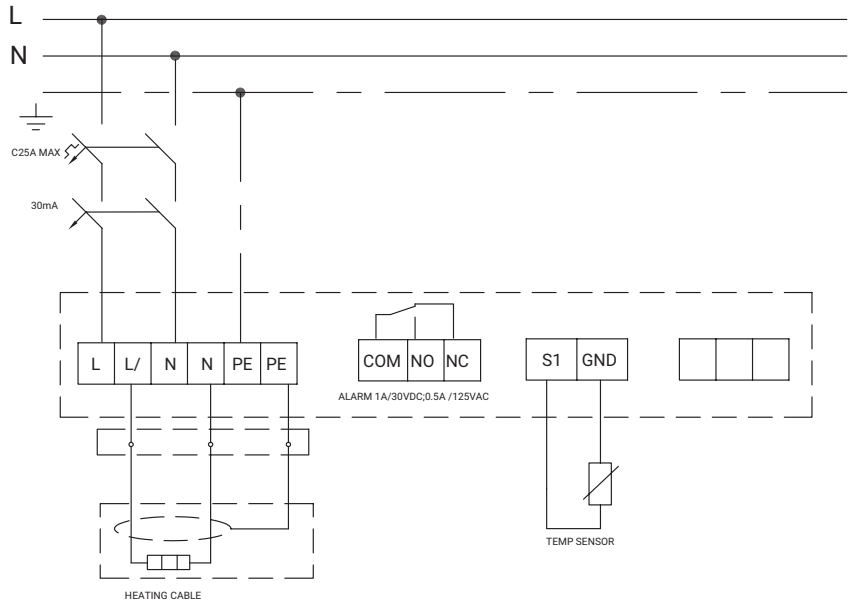
## APPROVALS

Approvals CE, ROHS, WEEE

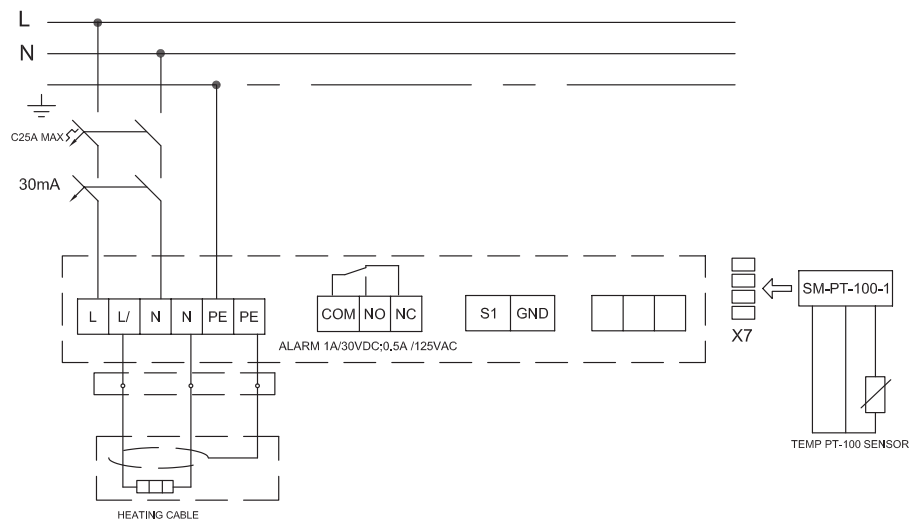
Electromagnetic Compatibility (EMC) EN 61000-6-1: 2007; EN 61000-6-3:2007 + A1:2011

## ELECTRICAL SCHEME

### Standard: NTC Sensor



### Option: PT100 Sensor



## ORDERING DETAILS

Catalog number	RAYSTAT V5
Part number	1244-022440
Weight	990 g
In package	Control unit, Din-rail, 1 Line sensor

## ACCESSORY

Product description	PCN number
SENSOR-NTC-10M (-40°C ... +90°C)	1244-015847
Sensor Module for PT 100 (up to +250°C) SM-PT100-1	1244-022441
PT-100 Sensor HARD-78 (-40°C ... +150°C)	213430-000
PT-100-Sensor MONI-PT100-260/2 (-50°C ... +260°C)	1244-006615
GM-TA-AS NTC-Sensor / Ambient sensor in enclosure	1244-017965
nVent RAYCHEM PB-POWERBANK	1244-020365

**Important:** The nVent RAYCHEM RAYSTAT controller is for use with the nVent RAYCHEM heating cables only. The warranty and system listing will be invalidated if the RAYSTAT controller is used with other heating cables.

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