

## 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

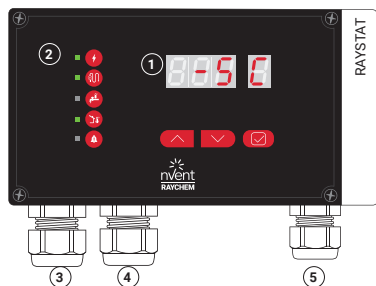
### ELECTRICAL PROPERTIES

|                                 |   |
|---------------------------------|---|
| 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

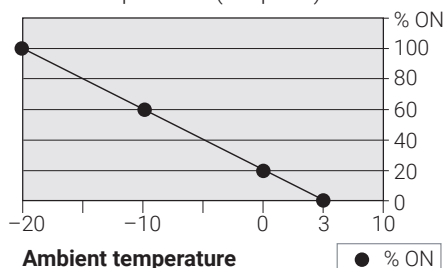
## PROGRAMMING

|                             |   |
|-----------------------------|---|
| Selectable set temperatures | 0°C to +90°C (line sensing) and 0°C to +30°C (ambient sensing);<br>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:<br>maintain temperature to +2°C to +250°C, OFF  |
|                          | Low temperature alarm                       | Adjustable range:<br>maintain temperature to -40°C to +245°C, OFF |
| Sensor alarm             | Sensor open circuit<br>Sensor short circuit |   |
| Heating cable connection | Heating cable open circuit                  |   |

## MEMORY

Parameters All parameters are stored in nonvolatile memory

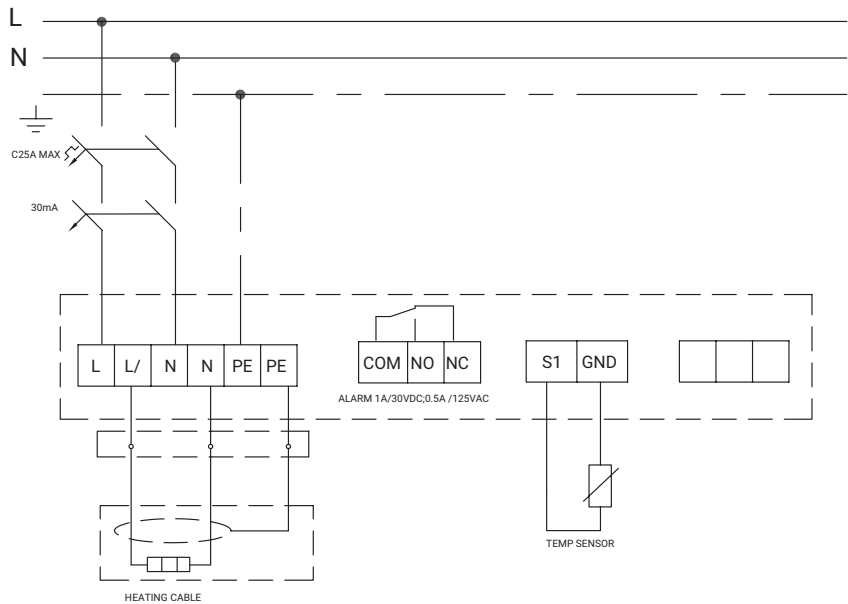
## APPROVALS

Approvals CE, ROHS, WEEE

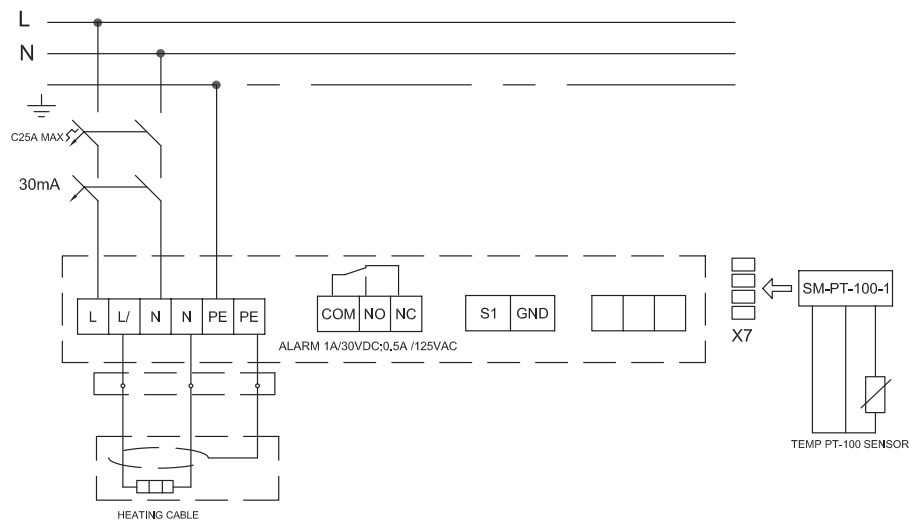
Electromagnetic Compatibility (EMC) EN 61000-6-1: 2007; EN 61000-6-3:2007 + A1:2011

## 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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