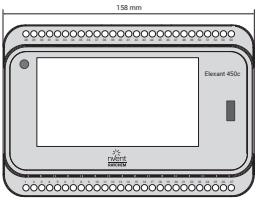
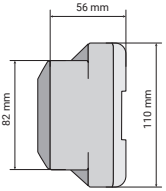
Elexant 450c
PCN 1244-021970
Elexant 450c-Modbus
PCN 1244-022623

1. PRODUCT OVERVIEW

A





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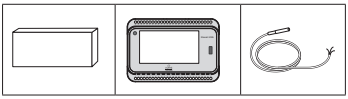

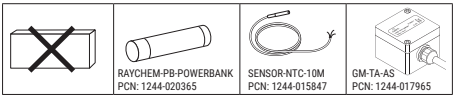

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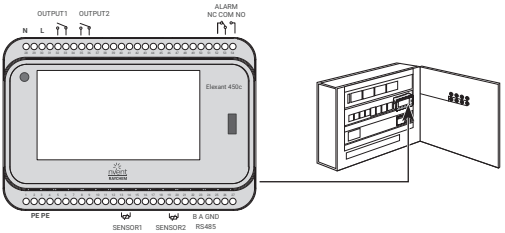
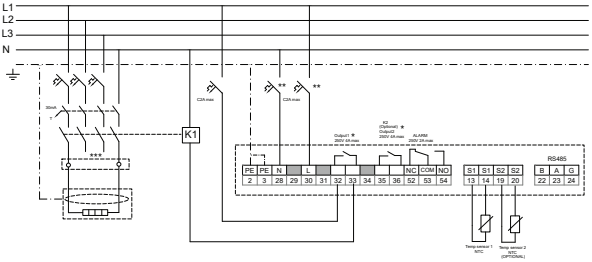


D1 **Standard: NTC Sensor**

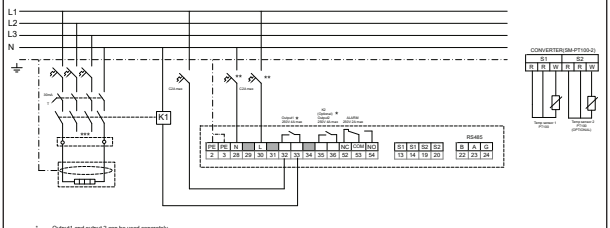
Enlarged picture see page 60



* Output1 and output 2 can be used separately.
** Electrical protection by circuit breaker may be needed for local circumstances, standards and regulations.
*** Depending on the application, one or three- pole circuit breakers or contactors maybe used.

D2 Option: PT100 Sensor

Enlarged picture see page 61



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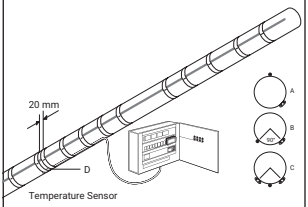
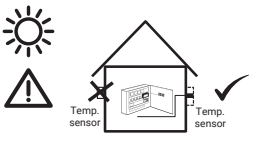
E1



E2



IMPORTANT SAFEGUARDS AND WARNINGS
WARNING: FIRE AND SHOCK HAZARD

nVent RAYCHEM Elexant Systems must be installed correctly to ensure proper operation and to prevent shock and fire. Read these important warnings and carefully follow all the installation instructions.

Follow the guidelines included in this document in order to minimize the risk of electrical shock or fire and to comply with nVent's requirements as well as agency and national electrical codes.

Description

nVent RAYCHEM Elexant 450c is an electronic control thermostat with colour touch display for DIN rail mounting in panels, advanced alarm facilities and the capability of switching 1 (standard version) or 2 (2nd heating zone: optional) independent heating zones via external contactors.

Electronic temperature control unit for pipe freeze protection and grease line temperature maintenance of nVent RAYCHEM pipe freeze protection heating cables.

The Elexant 450c is designed to control nVent heating cable systems. Heating cables can be controlled (switched ON/OFF) via a suitably rated contactor for heating loads up to 20 A. The Elexant 450c-Modbus version (1244-022623) allowing flexible Modbus connectivity for remote monitoring, configuration, and ease of integration in a Building Management System (BMS).

Installation and all wiring must be in accordance with applicable regulations.
The device must be installed in non-hazardous areas only.

2. INSTALLATION INSTRUCTIONS

Electrical connections to be made by qualified electricians.

Attention: mistakes made when connecting the device can cause damage to the control unit. nVent is not liable for any damage caused by faulty connection and/or incorrect handling.

- Before working on the device, switch off the power supply.
- The device may only be connected and serviced by authorised, trained personnel.
- The device is only designed to be connected to fixed cables.
- When installing the device, make sure that high-voltage cables, such as the main supply and extensions do not come into contact with low-voltage cables such as sensor cables.
- Ensure the installation is made in accordance with EN60730-1.
- Local standards for electrical connection must be observed.
- If the device does not work, please first check all connections and the main power supply.

2.1 Mounting of the enclosure

This device must be installed in a housing and snapped onto DIN rails (DIN EN 50022-35). It is designed to be mounted in switch and distribution boxes. nVent provides a wide range of panels as standard or tailor-made products.

2.2 Sensor installations

Location of the sensor: on pipe - see picture E1

- as indicated in the system design documentation
- not on valves, flanges, supports, pumps or other heat sinks
- at the top of the pipe for thermally sensitive pipe contents (A)
- on lower quadrant of pipe 90° for single heating cable (B)
- on lower quadrant of pipe centrally between the heating cables if they are two or more

Attachment of the sensor

- fix sensor firmly on surface with adequate fixing tape (same tape as used to fix heater to the pipe) in two places (D1/2)
- fix sensor parallel to pipe (D1/2)
- route sensor cable and eventual extension cable to avoid damage in use. Fix to pipe with adequate tape where appropriate

Location of the sensor: outdoor - see picture E2

Mount the sensor in a position exposed to normal weather conditions but shielded from direct sunlight. The sensor should not be located against surfaces that are heated from within or may be heated by sunlight. We recommend using the sensor with housing GM-TA-AS (PCN 1244-017965) for outside areas for ambient temperature detection.

Warning: Do not install sensor at ambient temperatures below –20°C. Do not bend the final 50mm of the sensor. Min. bending radius for sensor cable: 10 mm.

Wiring sensor to Elexant 450c

Enter the sensor cable according to the drawing for sensor 1 or sensor 2 shown in the wiring diagram (page 2). Please pay attention to color coding of the wiring. The unit will be provided with 1 sensor (NTC -type). A second sensor can be connected but needs to be ordered separately. Sensor-NTC-10 M (PCN 1244-015847).

Sensor extension

The sensor cable can be extended up to 150 m when a cross section of 2 x 1,5 mm² is used (max. 20 Ω per conductor). The connection between sensor cable and sensor extension can be made in junction box JB-86 or equivalent. Use a shielded cable for extension to avoid interference. The shielding braid is to be earthed in the panel/ thermostat.

Ensure that the pipe and sensor are thermally insulated and clad to the design specification after installation of the thermostat.

Sensor temperature range extension

By using the accessory item Sensor Module SM-PT100-2 (PCN 1244-022442) for connection to a PT100 type of sensor, the temperature range can be extended up to 245°C.

Modbus connection

The Elexant 450c-Modbus (PCN 1244-022623) can be connected to a Building Management System (BMS) by using MONI-RS485-WIRE shielded, twisted 2-core cable (max. 1000 m) for the connection master / slave and BMS.

3. OPERATION

If Elexant 450c / 450c-Modbus is not programmed, the unit will start a quickstart menu after powering up. For further detailed parameters and settings use the separate operation manual and the Modbus register map document.This can be downloaded from www.nVent.com/RAYCHEM.

Note: The pre-programming of the controller can be done with an external power-bank in case of no power supply on site during controller/panel installation.

4. COMMISSIONING REPORT

Elexant 450c ☐	**Project location:**
Elexant 450c-Modbus ☐	**Date:**
SERIAL-NUMBER:	

PARAMETER	**HEATING ZONE 1**	**HEATING ZONE 2**
OPERATION MODE	OFF: ☐ AMBIENT: ☐ LINE: ☐	OFF: ☐ AMBIENT: ☐ LINE: ☐
SETPOINT °C		
HYSTERESIS		
LOW TEMP. SETPOINT		
HIGH TEMP: SETPOINT		
HEATER OPERATION IF SENSOR ERROR		
SENSOR NUMBER		
SENSOR LENGTHS		
HEATING CABLE		
RCD	mA	mA
CB TYPE		
INSTALLER COMPANY		
INSTALLER NAME		

5. TECHNICAL SPECIFICATIONS

HEATING CABLES	nVent RAYCHEM XL-TRACE; FROSTOP-BLACK; FS-C10-2X
Electrical Properties	
Supply voltage	230 VAC -15/+10%; 50/60 Hz
Power consumption	4 VA
Output relay / contactor / heating cable	2 x 4 A / 230 VAC
Power supply terminals	3 x 1,5 mm²
Heating cables terminals contactor	2 x 2 x 1,5 mm²
Alarm terminals	3 x 1,5 mm²
Sensor terminals	2 x 2 x 1,5 mm²
Alarm relay	Single pole double throw relay, voltage–free, rating 2A/250 VAC
Real time clock	Automatic summer/winter time and leap year correction
Clock back up	10 days
Clock accuracy	A variation of +/- 10 min per year is possible
Settings	All settings are stored in a non-volatile memory
Exposure temperature	0°C to +40°C
Storage temperature	−20°C to +50°C
Selectable temperature range	0°C to +80°C (when used with SM-PT100-2 up to +245°C)

Enclosure	
Material	PPE (polyphenylene ether)
Dimensions	158 mm x 110 mm x 56 mm
Ingress protection class	IP20
Weight	550 g
Mounting	DIN-Rail mountable 35 mm
Flammability class	D category (DIN EN60730/VDE0631-1)

Sensor

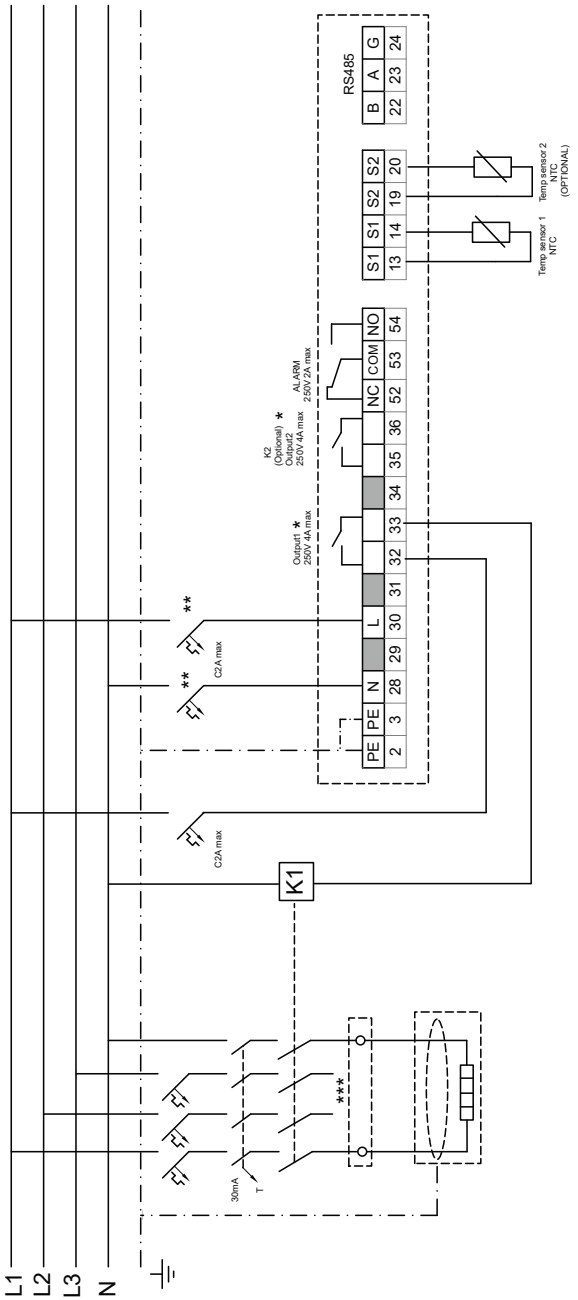
	Standard	**With SM-PT100-2 Module**	
	(included in box)	**HARD-78**	**MONI-PT100-260/2**
Temperature sensor type	NTC 2 KOhm / 25°C, 2-wire	PT100	PT100
Sensor tip dimensions	Ø 5 mm, length 20 mm	Ø 6 mm, length 50 mm	Ø 6 mm, length 50 mm
Sensor cable length	5 m	3 m	2 m
Cable extension	Up to 150 m, cross section extension cable: 2 x 1,5 mm²	Up to 150 m, 3 x 1,5 mm²	Up to 150 m, 3 x 1,5 mm²
Temperature range	−40°C to +90°C	−40°C to +150°C	−50°C to +260°C

Sensor data (NTC)

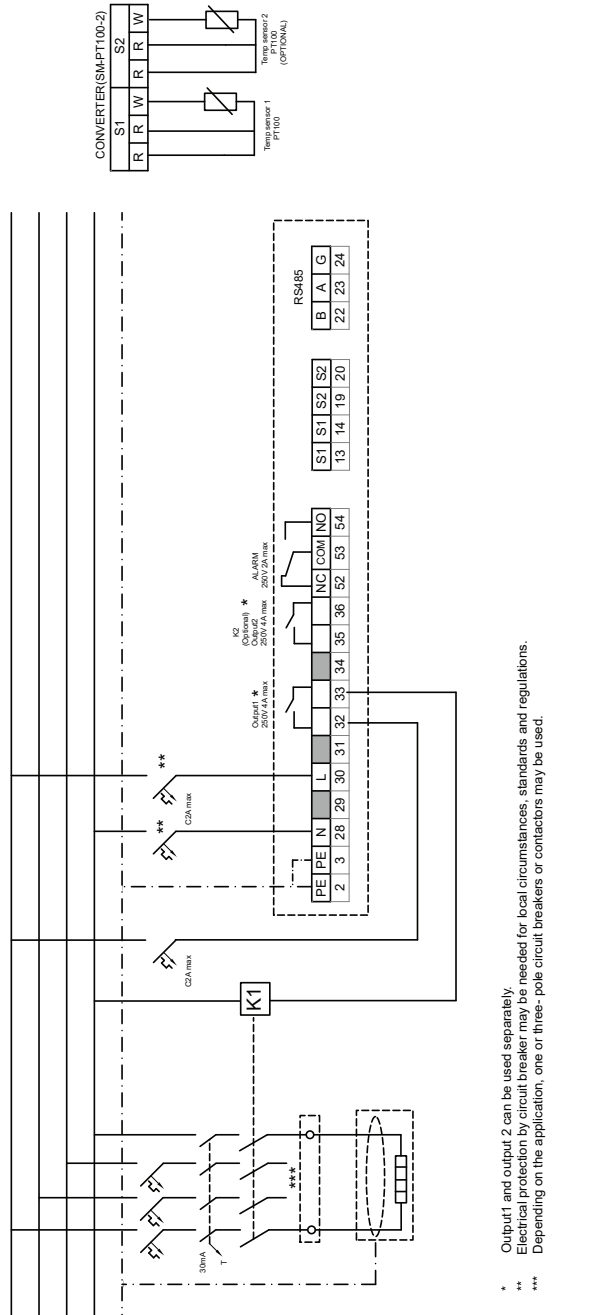
Temperature	Resistance in KOhm
−40°C	32,34
−35°C	24,96
−30°C	19,48
−25°C	15,29
−20°C	12,11
−15°C	9,655
−10°C	7,763
−5°C	6,277
0°C	5,114
+5°C	4,188
+10°C	3,454
+15°C	2,862
+20°C	2,387
+30°C	1,684
+40°C	1,211
+50°C	0,8854
+60°C	0,6587
+70°C	0,4975
+80°C	0,3807

Approval	
CE	EMC: EN 61000-6-3, EN 61000-6-2

Standard: NTC Sensor



Option: PT100 Sensor



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