

## MULTI-APPLICATION HEAT TRACING CONTROL & MONITORING IN COMMERCIAL AND RESIDENTIAL BUILDINGS POWER & CONTROL MODULE (PCM)



### DESCRIPTION

The nVent RAYCHEM ACS-30-EU-PCM2 power & control module provides power connection, control, and power distribution to the heat tracing circuits within an ACS-30 modular system.

The robust enclosure is approved for non-hazardous installation indoor. The PCM provides connection to the incoming power supply and power distribution & electrical protection to the heat tracing circuits.

The PCM module also provides:

- Ground fault monitoring
- Line current monitoring
- Alarm capability
- RTD (Resistance Temperature Detector) input capability for each individual heating circuit.

### TECHNICAL INFORMATION

Approvals	CE marked. In accordance with EN 60439 'Low-voltage switchgear and controlgear assemblies'.
Voltage	400 VAC/230 VAC (configurable), 3L/N/PE, 50 Hz
Ambient operating temperature range	0-35°C
Enclosure IP rating	External IP54, Internal IP20
Installation location	Indoor, non-hazardous
Number of heating circuits	5, 10, or 15 circuits
Max load per circuit (Amps)	32A per circuit
Communication with UIT	2 wire RS-485 (shielded, twisted pair) max length 1200 m

## TECHNICAL INFORMATION

Product Name	ACS-30-EU-PCM2-5-32A	ACS-30-EU-PCM2-10-32A	ACS-30-EU-PCM2-15-32A
No. of Circuits/Panel	5	10	15
Panel Dimensions	760 mm x 760 mm x 300 mm	1000 mm x 1000 mm x 300 mm	1000 mm x 1400 mm x 300 mm
Maximum No. of panels connected to a single UIT	52	26	17
Main Switch	1 x 80A, 4-pole	1 x 125A, 4-pole	1 x 160A, 4-pole
Main CB	1 x 80A, C-type, 4-pole	1 x 125A, C-type, 4-pole	-
Auxiliary CB	1 x 4A, C-type, 2-pole 1 x 1.6A C-type, 1pole	1 x 4A, C-type, 2-pole 1 x 1.6A C-type, 1pole	1 x 4A, C-type, 2-pole 1 x 1.6A C-type, 1pole
Combination CB/RCD	5 x 32A, C-Type, 30mA, 2-pole with auxiliary contact	10 x 32A, C-Type, 30mA, 2-pole with auxiliary contact	15 x 32A, C-Type, 30mA, 2-pole with auxiliary contact
Short circuit breaking capacity (based on IEC/EN 60947-2)	10 kA	10 kA	10 kA
Contactors	5 x 3-pole, 35A AC1	10 x 3-pole, 35A AC1	15 x 3-pole, 35A AC1
CRM boards	1	2	3
PT100 temperature input*	5	10	15
Alarm relay	1 x 3A @277 VAC, SPDT	1 x 3A @277 VAC, SPDT	1 x 3A @277 VAC, SPDT
Line current sensor	5 Max current: 60A Accuracy: +/-2% of reading	10 Max current: 60A Accuracy: +/-2% of reading	15 Max current: 60A Accuracy: +/-2% of reading
Ground fault sensor <sup>i</sup>	5 Range: 10-200mA Accuracy: +/-2% of reading	10 Range: 10-200mA Accuracy: +/-2% of reading	15 Range: 10-200mA Accuracy: +/-2% of reading
'Fault' Signal Lamp	1	1	1

\* The sensor cable may be extended with a 3 (+PE)-wire signal cable adding 20 Ohms lead resistance maximum. When using 1.5 mm<sup>2</sup> 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 cable the sensor extension cable should be shielded. The shield of the extension cable should be grounded at the controller end only.

## INSTALLATION AND SAFETY REMARKS

Select a suitable location for the enclosure and mount it on a wall using suitable screws.

Install all cables ensuring adequate protection against all the extension leads disconnecting. This can be achieved installing suitable glands on the lower side of the enclosure.

### Remarks: For electricians!

Attention: Mistakes during connecting up the device can cause damage to the control unit. nVent RAYCHEM is not liable for any damage caused by faulty connections and/or incorrect handling.

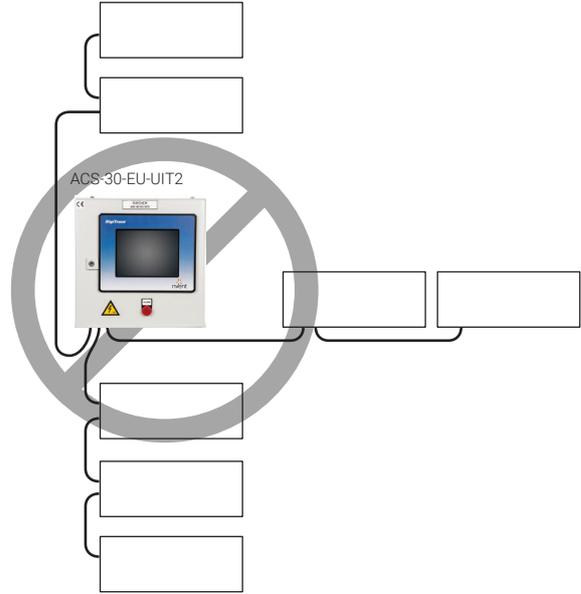
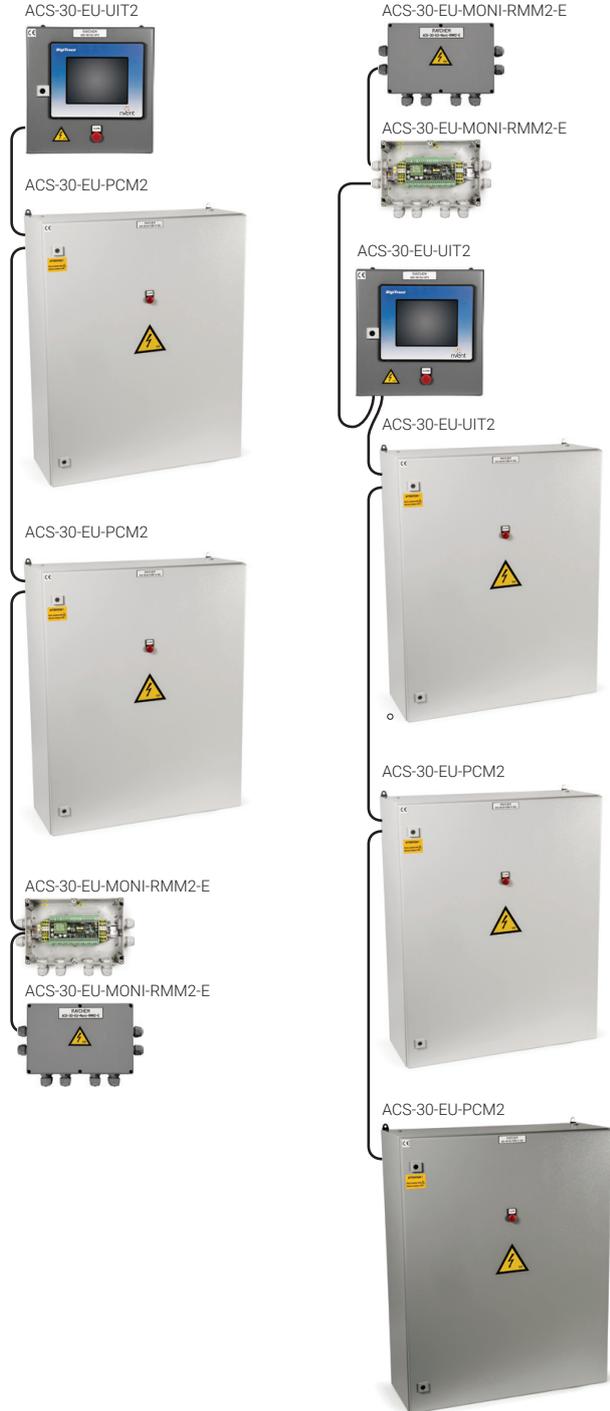
- Before working on the device, switch off the power supply!
- The device may only be connected and serviced by and authorised, trained electrician.
- Electrical connection must be carried out according to the schematics provided with the product.
- Do not lay sensor cables together with other live wires in order to avoid electromagnetic interference.
- Local standards for electrical connection must be observed.
- If the device does not function as expected please first check all connections and the mains power supply.

## CONNECTING THE RS-485 DEVICE NETWORK

The ACS-30-EU-UIT2 display is typically linked to a network of RAYCHEM ACCS-PCM2-5 power panels (incorporating the ACCS-CRMs) and optional RMM2 devices. These are connected to the RAYCHEM ACS-30-EU-UIT2 using an RS-485 communication cable (shielded, two conductor, twisted pair). The following illustration shows how the RS-485 network for the ACCS system can be configured.

**Device must be mounted in series.**  
(Terminated devices are shown in gray)

**Branching of the network is not allowed.**  
Connect no more than two RS-485 cables to any device.

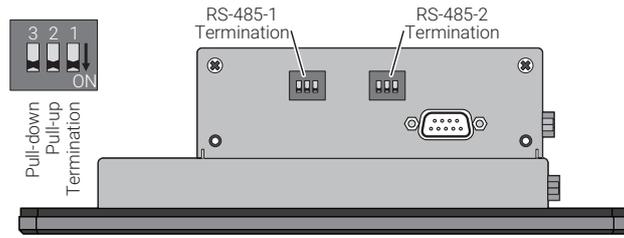


In order for the RS-485 network to work properly, you must enable the termination resistor for the first and last device. The devices shown in gray in the illustration above represent the devices for which you must enable the termination resistors. The devices that are not grayed out represent the devices for which you should not enable the termination resistors.

- For PCM modules with multiple CRM boards, only the last board in the line should have the termination resistor enabled.
- The drawings of the modules ACS-30-EU-PCM2 represents a 5 circuits power module. The concept is valid for 10 and 15 circuits modules as well.

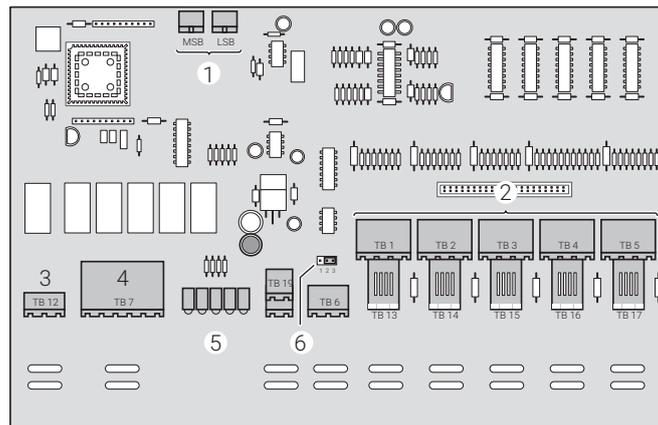
## TERMINATION OF RS-485 NETWORK (IF FIRST OR LAST IN NETWORK)

### ACS-30-EU-UIT2



Switch	Position	On	Off	Comments
Pull-down	(As-shipped default)	RS-485 network “-” signal is forced to a determinate state when idle.	RS-485 network “-” signal is not forced to a determinate state when idle.	One device (typically this ACS-30-EU-UIT2) on the RS-485 network should force the network “-” signal to a determinate state.
Pull-up	(As-shipped default)	RS-485 network “+” signal is forced to a determinate state when idle.	RS-485 network “+” signal is not forced to a determinate state when idle.	One device (typically this ACS-30-EU-UIT2) on the RS-485 network should force the network “+” signal to a determinate state.
Termination	(As-shipped default)	RS-485 network is terminated with 120-ohm resistor.	RS-485 network is not terminated.	Terminate the device (ACS-30-EU-UIT2 or other) that is at each end of the RS-485 network, for a total of two terminated devices. No other devices on the network should be terminated.

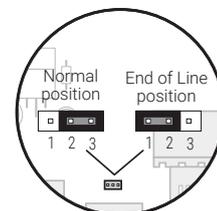
### ACCS-CRM



- 1 Address Switches
- 2 RTD Inputs (x5)
- 3 Alarm Output
- 4 Relay Outputs (x5)
- 5 Status LEDs
- 6 End of Line (EOL) jumper

#### END OF LINE (EOL) JUMPER 6

If this device (ACCS-CRM) is the last device in the RS-485 network, the J1 jumper needs to be moved from terminals 2 & 3 to terminals 1 & 2.



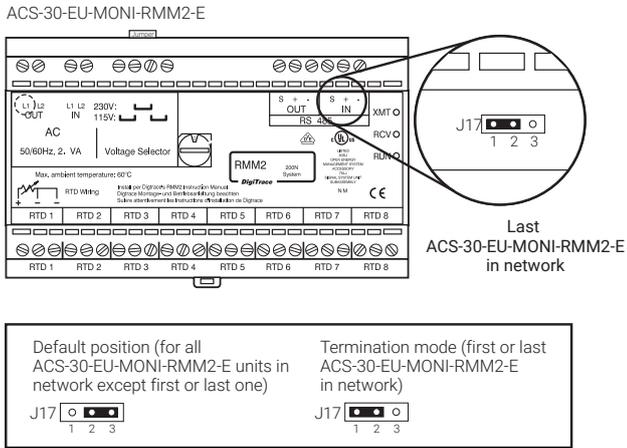
## OPTIONAL ACS-30-EU-MONI-RMM2-E INSTALLED IN THE FIELD

A RS-485 cable from the ACS-30-EU-MONI-RMM2-E to the ACS-30-PCM2 panel has to be connected while maintaining the correct polarity.

To make this connection, a pre-wired terminal block has been provided in the power panel.

If the ACS-30-EU-MONI-RMM2-E module is the first or last device in the RS-485 network, connect the J17 termination jumper to pins 1 and 2. If the ACS-30-EU-MONI-RMM2-E is not the first or last device in the RS-485 network, connect the J17 termination jumper to pins 2 and 3.

Note: in the picture is represented the RMM2 device contained in the ACS-30-EU-MONI-ACS-30-EU-MONI-RMM2-E.



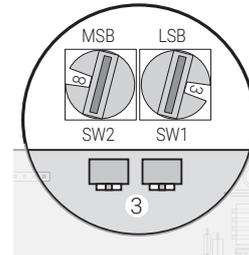
The ACS-30-EU-MONI-RMM2-E uses address range 32 – 47. Refer to the ACS-30-EU-MONI-RMM2-E Remote Monitoring Module Instruction (EU0012) for setting address switch.

## SETTING ADDRESS SWITCHES ON CRM BOARD

### Address Switches (SW1 & SW2) 1

Each ACCS-CRM must have a unique communication address. The valid address switch range for the ACS-30-EU-UIT2 is 1–99. SW1 is the ones digit (0–9) and SW2 is the tens digit (0–9).

Note: When adding an ACCS-CRM to the system, you must first cycle power on the CRM board and then perform a network update at the ACS-30-EU-UIT2.

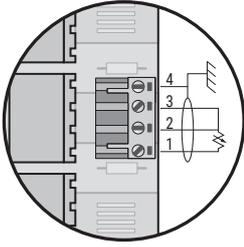


## CONNECTING RTD SENSORS - AS REQUIRED

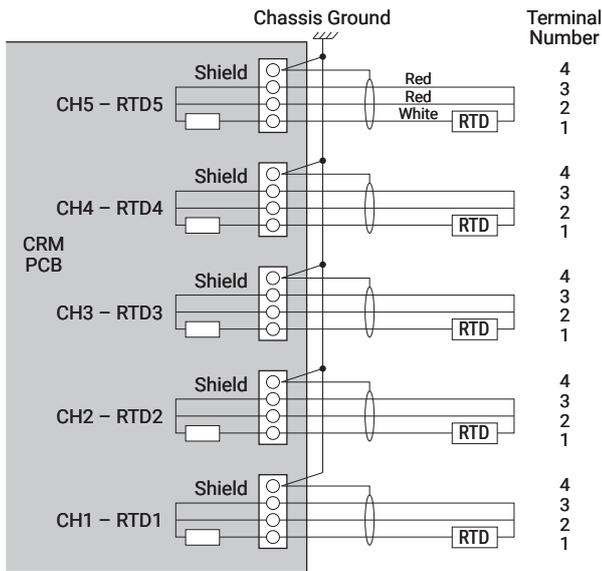
### RTD Inputs 2

3-wire RTDs with shield may be connected to RTD Ch1 thru Ch5 (TB1 – TB5).

The two common wires (usually red, red) are connected to terminals 2 & 3, the source (usually white) to terminal 1 and the braid to terminal 4 (earth ground).



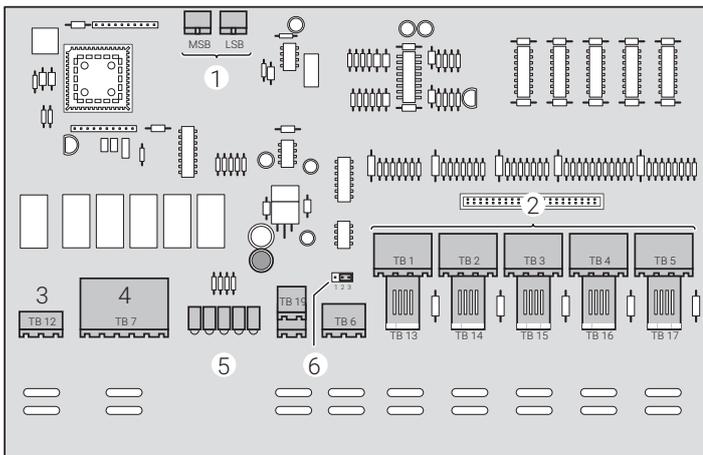
RTD connected directly to the CRM board



## COMMUNICATIONS AND FUNCTION STATUS LEDs

### Status LEDs 5

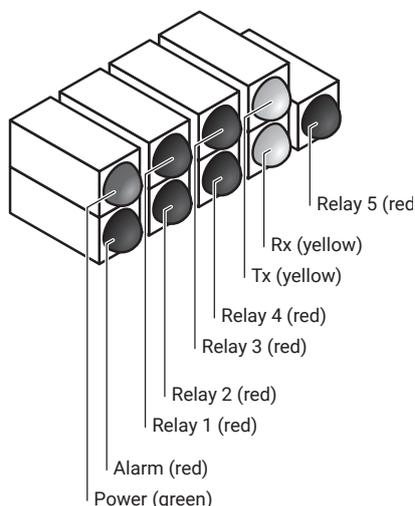
A cluster of 9 LED's are positioned on the CRM board which present the status of the circuit in the ACCS-PCM2-5 panel.



- |                    |                            |
|--------------------|----------------------------|
| 1 Address Switches | 4 Relay Outputs (x5)       |
| 2 RTD Inputs (x5)  | 5 Status LEDs              |
| 3 Alarm Output     | 6 End of Line (EOL) jumper |

**THE FOLLOWING TABLE SUMMARIZES THE STATUS LEDS:**

Function	Color	Description
Power	Green	Indicates power is supplied to the ACCS-CRM board.
Alarm	Red	Indicates that the ACCS-CRM board registered an alarm condition. Check the ACS-30-EU-UIT2 screen for events log to determine the alarm condition and to re-set the boards.
Relay 1-5	Red	Indicates that the heating cable relay is energized.
Rx	Yellow	Flickering indicates data reception
Tx	Yellow	Flickering indicates data transmission



**PART NUMBERING AND ORDERING DESCRIPTION**

PCN	Product Name	Description	EAN Code
1244-012871	ACS-30-EU-PCM2-5-32A	5 circuit power and control module for ACS-30	5414506014372
1244-012872	ACS-30-EU-PCM2-10-32A	10 circuit power and control module for ACS-30	5414506014389
1244-012873	ACS-30-EU-PCM2-15-32A	15 circuit power and control module for ACS-30	5414506014396

**RELATED PRODUCTS**

PCN	Product Name	Description	EAN Code
1244-012864	ACS-30-EU-UIT2	User Interface module for the ACS-30 Control and Monitoring System	5414506014303
1244-012865	ACS-30-EU-EMDR-10-MOD	Gutter & Roof snow melting sensor module for the ACWS-30 Control and Monitoring System	5414506014310
1244-012866	ACS-30-EU-VIA-DU-20-MOD	Snow melting and surface de-icing sensor module for the ACS-30 Control and Monitoring System	5414506014327
1244-012867	ACS-30-EU-Moni-RMM2-E	Remote monitoring module for the ACS-30 Control and Monitoring System	5414506014334
1244-012868	ACS-30-EU-PCM2-5-20A	Power Control Module for ACS-30 (5 circuit module with 20 Amp electrical protection per circuit)	5414506014341
1244-012869	ACS-30-EU-PCM2-10-20A	Power Control Module for ACS-30 (10 circuit module with 20 Amp electrical protection per circuit)	5414506014358
1244-012870	ACS-30-EU-PCM2-15-20A	Power Control Module for ACS-30 (15 circuit module with 20 Amp electrical protection per circuit)	5414506014365

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