

3.2 PCD7.LRxx BACnet room controllers can be configured and commissioned via an Android app

3.2.1 Overview and advantages of the PCD7.LRxx system

BTL®-listed PCD7.LRxx BACnet room controller

A new, easy way to commission room applications – via an Android device and the RoomUp app

The new BACnet room controller in the PCD7.LRxx series allows efficient, quick commissioning and testing of the connected actuators and sensors.

The room controllers have universal inputs that can be configured for a variety of functions, and their form factors also allow them to be installed in electrical sub-distribution systems. They also have a Sylk bus interface for connecting digital room operating devices.

The following applications can be configured:

- ▶ Fan convectors, fans with 1–3 speeds or fans with a variable speed
- ▶ Inlet air flap control with combined air quality monitoring and temperature control
- ▶ Cooled ceiling
- ▶ Under-floor heating
- ▶ Radiator heating
- ▶ A combination of the aforementioned applications

Advantages

No programming needed

Applications can be created quickly and easily because the controller comes supplied with pre-installed applications which can be configured via the app.

Quick installation of applications across projects – as soon as an individual room is configured, the application configuration can be extended to other rooms via the RoomUp app ("template concept").

Easier installation

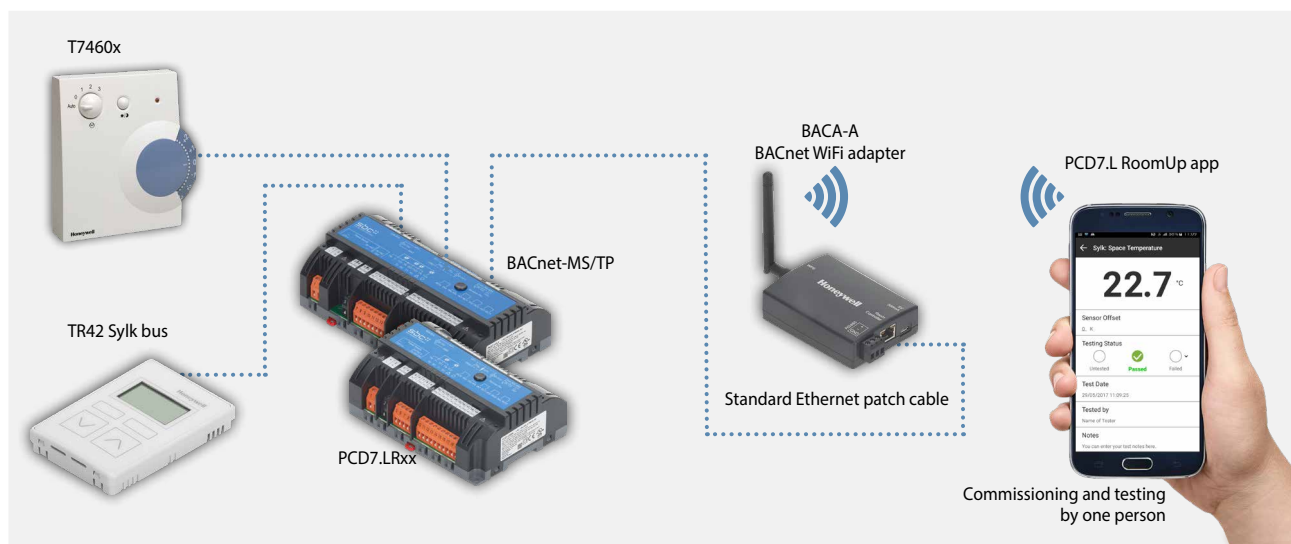
In order to cater for various installation requirements, the controller can be mounted universally on DIN top hat rails, in small installation housings and on walls (including optional terminal covers).

Triac outputs can be controlled with 24 VAC or 230 VAC.

Easier commissioning

The solutions allow very efficient "commissioning by one person" via the "RoomUp" app with quick, straightforward and reliable test procedures on location thanks to the "RoomUp" app's guided testing and reporting.

Automatic MS/TP-MAC addressing by scanning a barcode.



3.2.2 Set-up information with RoomUp and integration with the PG5

RoomUp

A unique commissioning experience

RoomUp is used to configure, commission and test the application.

RoomUp offers an entirely new way of commissioning room systems and carrying out final tests:


- ▶ Quick and easy commissioning by one person via a smartphone or tablet
- ▶ Easier, reliable tests on location thanks to the wireless connection with guided testing and integrated reporting
- ▶ Efficient, automatic device addressing
- ▶ Wireless communication allows commissioning before bus installation is complete

A template concept helps the user to determine the standard room types used in the building (templates). The template is used on all controllers for the relevant room type. A change to the template can easily be applied to all controllers with the same template.

The RoomUp app can be downloaded from the Google Play Store.


In order to activate the downloaded RoomUp app, a RoomUp licensing key with the order number PCD7.L-ROOMUP is required.


RoomUp is an Android app for smartphones and tablets running Android 5.0 or higher.



See for yourself the advantages.

RoomUp video
<http://sbc.do/Tc2kPraY>



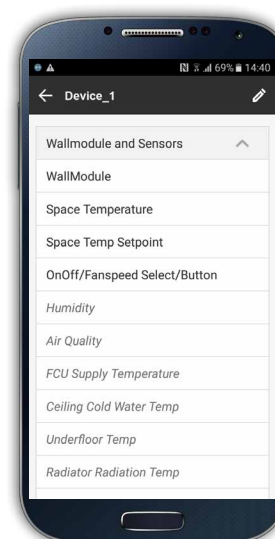
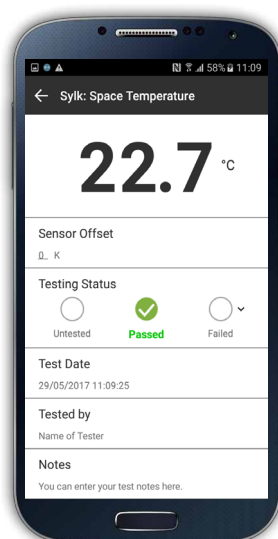
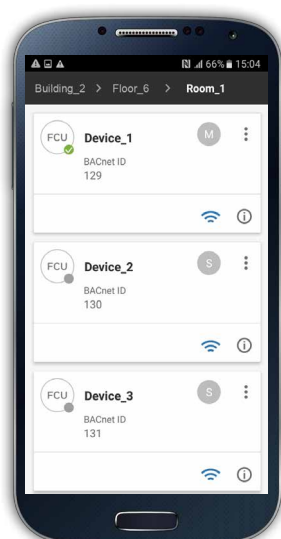
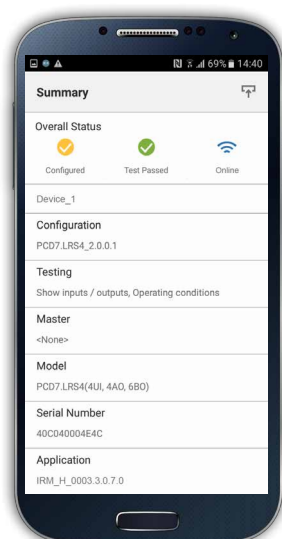


Addressing

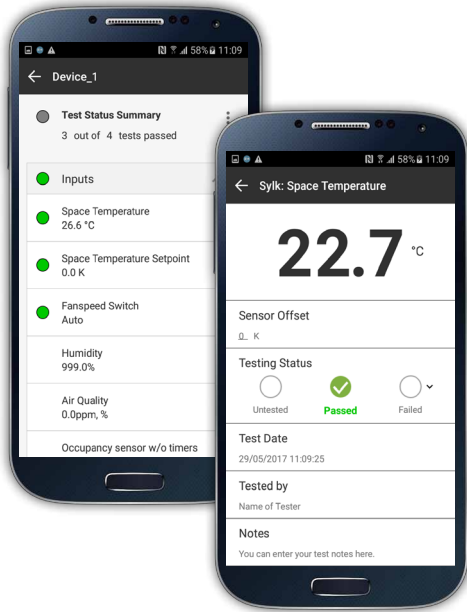
The person commissioning the system does not need to set addresses via address switches. PCD7.LRxx automatically uses an unused BACnet address (automatic MS/TP-MAC addressing). Assignment to a specific room is easily possible via the service button or by scanning the barcode label. 1 barcode label is placed on the controller and 1 barcode label can be removed and stuck to the layout.

Recommended system size with RoomUp

- ▶ Buildings can be analysed on the basis of the layout in order to select suitable divisions with system controllers
- ▶ The project is subdivided into a number of BACnet MS/TP segments with a maximum of 30 devices per segment
- ▶ Large systems should be subdivided into a number of RoomUp projects with 300 devices per project (maximum permitted size)
- ▶ A RoomUp project should be commissioned by one person



Wiring and device testing as well as an automatic test report for the project handover



I/O report

Port	Signal	Comment
3	24 V	24 VAC supply inp./outp.
4	24 V0	24 VAC zero supply inp./outp.
5	TN	TN
6	T	T
7	TO1	RCU cooling
8	TN	Triacs N

Port	Signal	Comment
9	TO2	FCU heating
10	RO4	
11	IN4	Relay 4 L in
12	RN	Line N switched on/off
13	RN	Line N switched on/off
14	IN1	Relay 1 L in
15	RO1	1-speed fan
16	IN2	Relay 2 L in

Test report

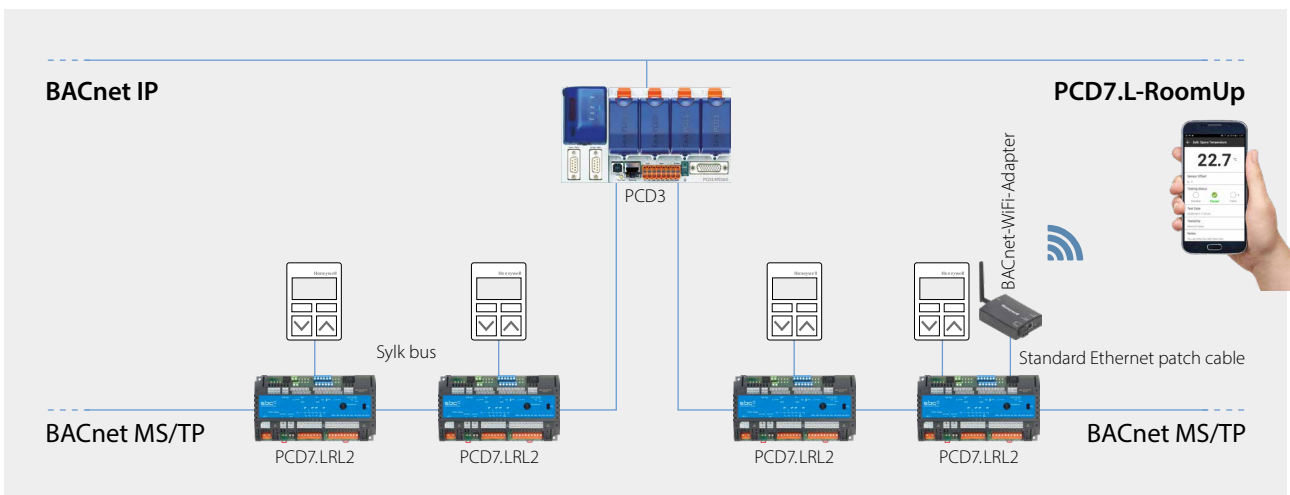
Connection point type	Connection name	Data point name	Last value	Units	Sensor offset	Test status	Tested by	Test date	Re-remarks	Error message
Analogue input	Sylk	RmTemp	26.85674	°C		Passed	Johann Klempner	26.07.2016 16:24:48		
Analogue input	Sylk	RmTempSp	2.5	°C		Passed	Johann Klempner	26.07.2016 16:24:48		
Multi-level value	Sylk	WMFanManSwCmd	3				Johann Klempner	26.07.2016 16:24:48		
Analogue output	AOPWMTO1	FCUClgCtl	100	%		Passed	Johann Klempner	26.07.2016 16:24:48		
Analogue output	AOPWMTO2	FCUHTgCtl	0	%		Passed	Johann Klempner	26.07.2016 16:24:48		
Multi-level value		FCUFanStgCmd	2			Passed	Johann Klempner	26.07.2016 16:24:48		

If necessary, the reports generated can be sent straight to an e-mail address.

Typical system architecture

For BACnet MS/TP communication, the PCD requires the following modules (see chapter B2.6.1):

- ▶ BACnet MS/TP communication interface: PCD3.F215 or PCD2.F2150 (and an additional PCD7.F110S for a second BACnet MS/TP interface)
- ▶ BACnet optional module for firmware expansion: PCD7.R562 or PCD3.R562



The following PCDs are compatible with the PCD7.LRxx controller:

PCD1

- ▶ PCD1.M2160
- ▶ PCD1.M2220-C15

PCD2

- ▶ PCD2.M4160, PCD2.M4560

PCD3

- ▶ PCD3.M3160, PCD3.M3360, PCD3.M5360
- ▶ PCD3.M5560
- ▶ PCD3.M6860, PCD3.M6880

Restrictions and performance

A maximum of 30 PCD7.LRxx controllers can be connected to an MS/TP line. Per PCD, up to 4 MS/TP lines can be used to connect the PCD7.LRxx controllers.

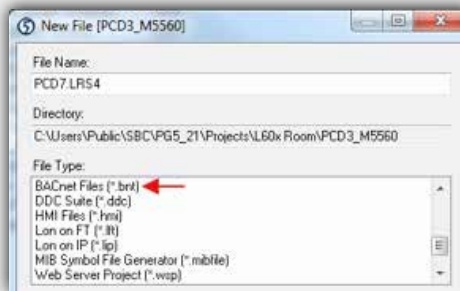
Performance of PCD3.M5560 at a communication speed of 38.4 kbits/s:

- ▶ Communication cycle time: With 30 PCD7.LRxx controllers on an MS/TP line, the token cycle time is 1.64 seconds
- ▶ With 30 PCD7.LRxx controllers, the maximum change of value per minute (COV/min) is 1,100 COV/min (this maximum value depends on the limits of the MS/TP network and the communication cycle time)

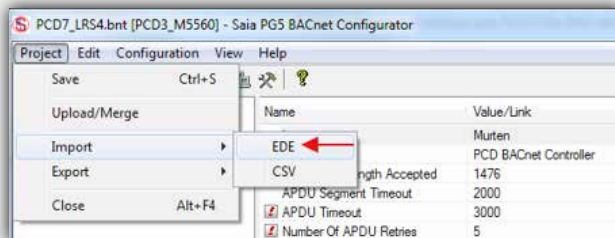
Importing application BACnet objects using the .ede file in PG5

Version PG5.2.2.200 or higher must be used. This version includes the BACnet Stack Rev. 14, the automatic assignment and creation of symbols and the BACShark tool for generating an .ede file.

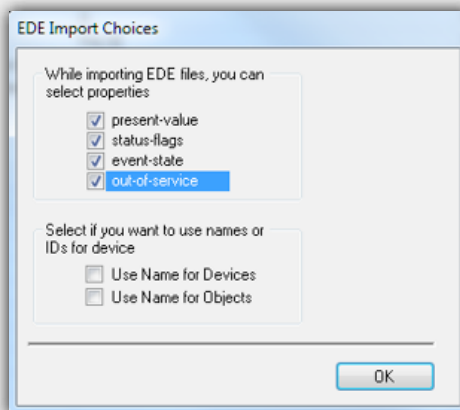
Creating a BACnet configurator page



Importing the .ede file created by BACShark or BACeye



You can select the properties which are automatically assigned to flags and registered.



Multiple .ede files to be imported together into the BACnet Configurator can be selected. This automatically creates the global symbols for all BACnet objects in the "BAC" folder with the following structure: BAC.Device Name.Object Name

3.2.3 Application overview

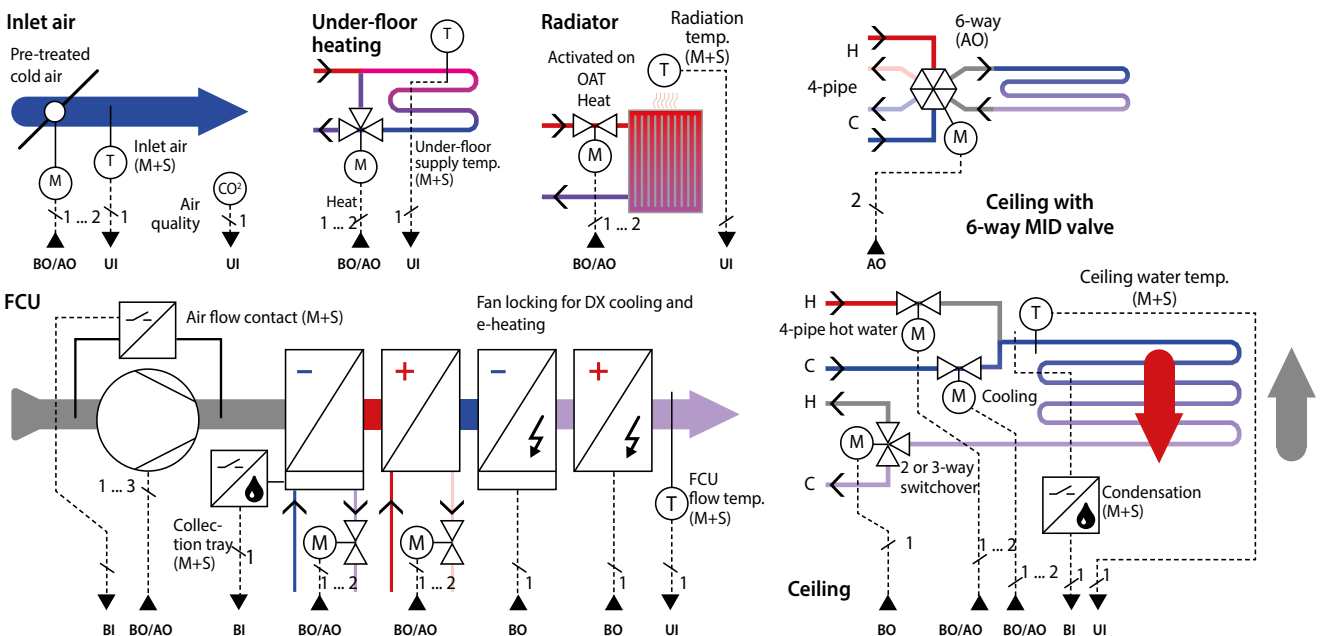
Configurable application

Fan convector	Ceiling	Inlet air	Radiator	Under-floor heating
Device configurations				
Cooling the coolant	Cooling	Cooling	Heating	Heating
DX cooling	Heating	Inlet air flap		
Hot water heating				
Electric heating				
2-pipe switching or 4-pipe system	2-pipe switching, 4-pipe system or 6-way MID valve			
Control strategy modes				
Room temperature control	Room temperature control	Room temperature control	Room temperature control	Room temperature control
Cascade temperature control		Room temperature control with cooling with lower limit value	Room temperature control with heating with lower limit value	Room temperature control with heating with lower limit value
Room temperature control with lower limit values for heating and cooling		Air quality and cooling control (optionally with cooling with lower limit value)		
Fan with 1, 2 or 3 speeds				
Fan with variable speed		Air quality monitoring only		

Straightforward system-wide application installation

After configuring an individual room, the application configuration can be extended to other rooms via the RoomUp app ("template concept"). This "template concept" also allows an automatic adjustment of the application configuration for a room in any room which is assigned the same template. This saves significant amounts of time when planning, especially in the case of projects where many rooms/zones are similar and the same application is used. Via master/slave configurations, applications can easily be adapted to changes in room design over the life of the building.

The following diagram provides an overview of the applications supported. Functions can be added by clicking on symbols.



3.2.4 Product overview and wiring examples

PCD7.LRxx system overview

	Order number	Power supply	Analogue outputs	Universal inputs	Relays	Triacs (24 V or 230 V)	Total I/Os	LED output	24 V AC for field devices
Large controller 198 × 110 × 59 mm	PCD7.LRL2	230 V AC	2	6	4	4	16	1	300 mA
	IRM-RLC	Package including 10 large terminal covers							
Small controller 162 × 110 × 59 mm)	PCD7.LRS4	230 V AC	4	4	4	2	14	0	300 mA
	PCD7.LRS5	24 V AC	4	4	4	2	14	0	600 mA
	IRM-RSC	Package including 10 small terminal covers							
Commissioning	BACA-A	Wi-Fi adapter and RJ45 cable							
	PCD7.L-RoomUp	SBC RoomUp licence							
	RoomUp	Smartphone app for PCD7.LRxx commissioning requires Android 5.0 or higher. The app is available via the Play Store							
Room operating devices	Syk bus: TR40, TR40-CO2 without display / TR42, TR42-CO2 with display								
	Hard-wired to the controller's I/Os: T7460x								

Dimensions:



PCD7.LRL2 (large housing):
W × L × H = 110 × 198 × 59 mm



PCD7.LRSx (small housing):
W × L × H = 110 × 162 × 59 mm



PCD7.LRS4
+2 × IRM-RSC



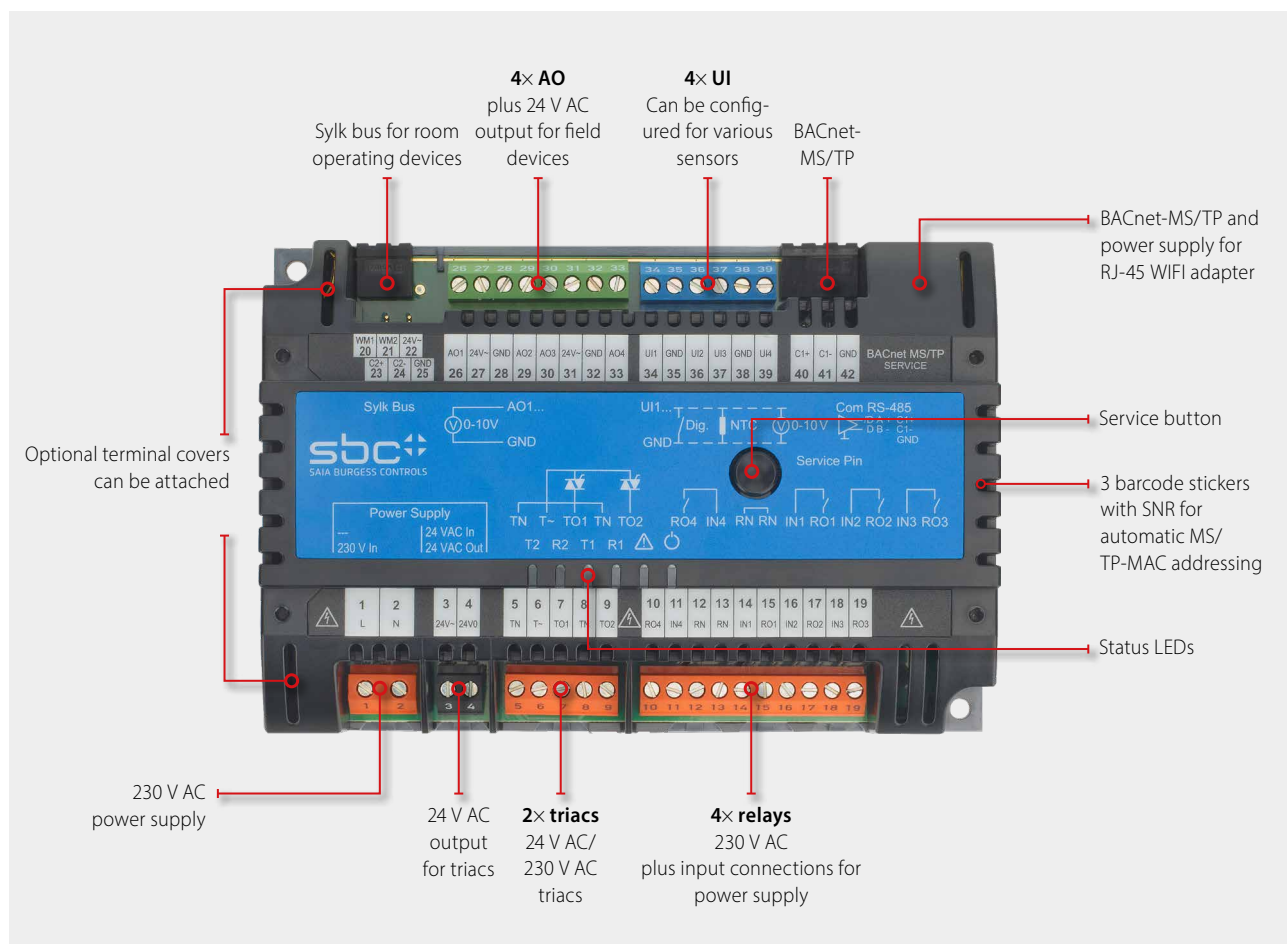
PCD7.LRS5
+2 × IRM-RSC



PCD7.LRL2
+2 × IRM-RLC

PCD7.LRxx with
optional
covers
(covers are supplied
in sets of 10)

Controller example: PCD7.LRS4



Automation stations

1

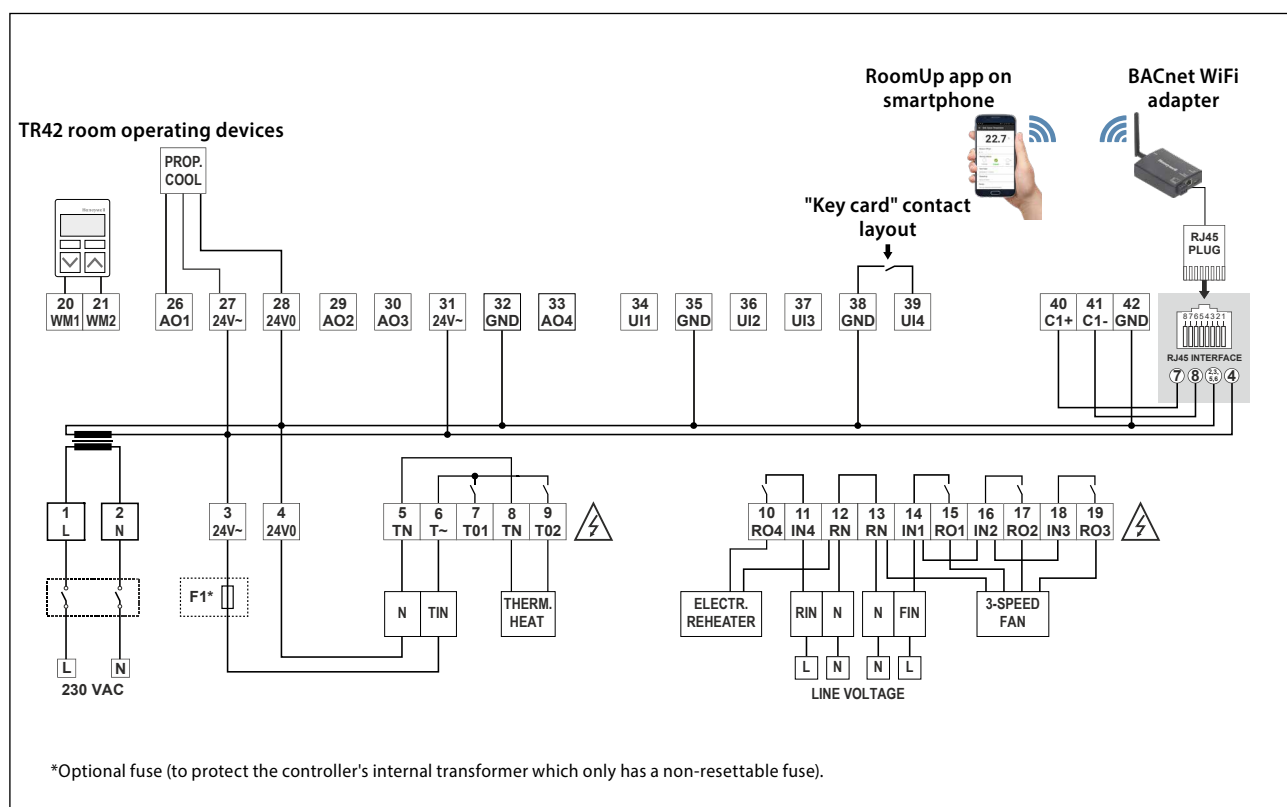
Operation and monitoring

2

Room controllers

3

Wiring example for a PCD7.LRS4 controller



Consumer data acquisition

4

Switch cabinet components

5

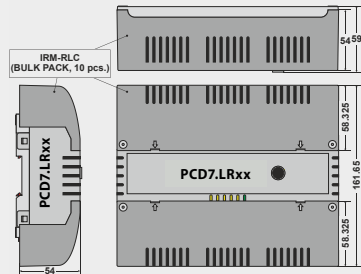
3.2.5 PCD7.LRxx accessories

IRM-RSC/IRM-RLC

Terminal covers

Clip-on terminal covers (IP30 contact protection) for small or large controllers to prevent the user touching the 230 VAC terminals.

Optional for IP30



BACA-A

Mobile BACnet MS/TP access point for RoomUp

Straightforward one-cable connection to the PCD7.LRxx controller

Additional option for connecting MS/TP cables and power supply via mini-USB

Wi-Fi-protected setup (WPS) for quick device connection

Web interface for device configuration



Compatible room operating devices

Sylk bus room operating devices

- Types with integrated sensors for temperature, humidity and CO2 sensor in one device

PCD7.LR-TR42

Room temperature sensor
+ setting option for setpoint,
presence and fan speed
+ LCD display
(+ humidity and CO2 sensor)

Order number:

PCD7.LR-TR42
PCD7.LR-TR42-H
PCD7.LR-TR42-CO2
PCD7.LR-TR42-H-CO2



PCD7.LR-TR40

Room temperature sensor
(+ humidity and CO2 sensor)
with Sylk bus connection
to the controller.

Order number:

PCD7.LR-TR40
PCD7.LR-TR40-H
PCD7.LR-TR40-CO2
PCD7.LR-TR40-H-CO2



Wired room operating devices from Honeywell

T7460x

Room temperature sensor
+ setpoint setter
+ occupancy button
+ fan speed adjuster

Order number:

T7460A1001 T7460D1005
T7460B1009 T7460F1000
T7460C1007



Room operating devices with connectors for connecting to the controller inputs.