# RCW112-L, RCW113-L, RCW115-L, RCW116-L

#### RCW11x-L technolon® room controller

#### Application

technolon® room controller RCW112-L, RCW113-L, RCW115-L, RCW116-L for individual room temperature control via radiator, heating/cooling ceiling, or fan coil systems with a temperature sensor, back-lit LCD, and operating unit.

Can be used either as a stand-alone room controller or as part of a LON network.

Standard software application that complies with LonMark profile 8020 "Fan Coil Unit. Room controller with pre-set standard configuration.

6 standard applications can be selected directly on the RCW11x-L. A total of 9 standard applications can be selected using the LON plug-in.

2 outputs for control valves (configurable as either 0 V to 10 V or as binary outputs for thermoactuators), 2 voltage-free binary inputs.

Analog fan control or via LON bus, 3-stage.

Functional extension through RMU123 accessory for direct control of 3-stage fans of up to AC 230 V max., or analog control of heating/cooling ceilings.



**RCW112-L** 



**RCW115-L** 



**RCW113-L** 



**RCW116-L** 

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# Product Description

# Important Information Regarding Product Safety

#### Safety Instructions

This data sheet contains information on installing and commissioning the product "RCW112-L, RCW113-L, RCW115-L, RCW116-L". Each person who carries out work on this product must have read and understood this data sheet. If you have any questions that are not resolved by this data sheet, you can obtain further information from the supplier or manufacturer.

If the product is not used in accordance with this data sheet, the protection provided will be impaired.

Applicable regulations must be observed when installing and using the device. Within the EU, these include regulations regarding occupational safety and accident prevention as well as those from the VDE (Association for Electrical, Electronic & Information Technologies). If the device is used in other countries, it is the responsibility of the system installer or operator to comply with local regulations.

Mounting, installation and commissioning work on the devices may only be carried out by qualified technicians. Qualified technicians are persons who are familiar with the described product and who can assess given tasks and recognize possible dangers due to technical training, knowledge and experience as well as knowledge of the appropriate regulations.

#### Legend



# WARNING

Indicates a hazard of medium risk which can result in death or severe bodily injury if it is not avoided.



#### CAUTION

Indicates a hazard of low risk which can result in minor or medium bodily injury if it is not avoided.



### CAUTION

Indicates a hazard of medium risk which can result in material damage or malfunctions if it is not avoided.



# NOTE

Indicates additional information that can simplify the work with the product for you.

#### **Notes on Disposal**

For disposal, the product is considered waste from electrical and electronic equipment (electronic waste) and must not be disposed of as household waste. Special treatment for specific components may be legally binding or ecologically sensible. The local and currently applicable legislation must be observed.

# RCW112-L, RCW113-L, RCW115-L, RCW116-L

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RCW112-L	technolon® room controller with LCD and operating unit, used for adjusting the room temper- ature setpoint
RCW113-L	technolon® room controller with LCD and operating unit, used for adjusting the room temper- ature setpoint with Occupancy button
RCW115-L	technolon® room controller with LCD and operating unit, used for adjusting the room temper- ature setpoint and for three-level fan control
RCW116-L	technolon® room controller with LCD and operating unit, used for adjusting the room temper- ature setpoint with Occupancy button and for three-level fan control

Technical Data					
Nominal voltage	AC/DC 24 V ± 10%; 100 mA				
Inputs	2 binary input (BI) floating contacts, freely definable 5 V; 2 mA				
Outputs	2 universal outputs, configurable as either 010 V (analog outputs (AO); 5 mA (analog heating/cooling and fan), or as AC/DC 24 V binary outputs (BO); 0.5 A				
	connected to each output				
Display LCD:					
	Room temperature actual value 0 °C45.0 °C, in steps of 0.1 K				
	Setpoint correction ± 15 K configurable, in steps of 0.1 K				
	Icon to indicate operating mode				
	Fan levels				
	■ LC Tim	D back-lighting can be set as part of configuration (Off / Always on / ne for automatic switching-off)			
RCW112-L controls	-+	Button, adjusts the room temperature setpoint			
RCW113-L controls	Î	Button, switches to Occupiedor Unoccupied or extends programmed times			
	-+	Button, adjusts the room temperature setpoint			
RCW115-L controls	⋏	Button, controls the fan speed (on, manual control increasing from level 1 to 3)			
	⋏	Button, controls the fan speed (off, manual control decreasing from level 3 to 1)			
	Auto	Button, fan in automatic mode			
	-+	Button, adjusts the room temperature setpoint			
RCW116-L controls	ㅅ	Button, controls the fan speed (on, manual control increasing from level 1 to 3)			
	ㅅ	Button, controls the fan speed (off, manual control decreasing from level 3 to 1)			
	Auto	Button, fan in automatic mode			
	Î	Button, switches to Occupiedor Unoccupied or extends programmed times			
	-+	Button, adjusts the room temperature setpoint			

**Product Description** 

Issue 2014-12-15



NOTE

The RCW11x-L devices switch into Occupiedmode when you press any button 🔆

Interfaces	LON FTT10, 78 kbit/s Application as per LonMark standard: LONMARK-Profil #8020 FanCoil Unit
Measured variable	Room temperature of spaces in homes or commercial premises
Measuring system	Integrated digital room sensor
Measuring range	0 °C to 45 °C
Connection	Terminal connection, max. 2.5 mm <sup>2</sup>
Housing	Plastic housing, color RAL9010 (pure white), other colors available on request
Degree of protection	IP30
Ambient temperature	0 °C to 45 °C
Ambient humidity	Non-condensing
Mounting	Flush-mounted box
Dimensions	WxHxD: 82.5 x 82.5 x 28.3 mm
Weight	160 g

# Accessories (not included in delivery)

RMU123

Flush-mounted room module for extending the functions of a RCW1xx-L

#### Dimensions





# RCW112-L, RCW113-L, RCW115-L, RCW116-L

# Connection

The building's wiring carries potentially life-threatening voltages. Only qualified technicians may connect the device and switch on the mains power supply. Please ensure that this process complies with local wiring regulations.



The connection of outputs depends on the DIP switch position (see p. 13) - Heating and cooling with PWM



- Heating and cooling with analog DC 0..10 V control



- Heating with PWM and cooling with analog DC 0..10 V control



- Heating and cooling with six-way valve and analog DC 0..10 V fan control



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#### RCW112-L, RCW113-L, RCW115-L, RCW116-L

#### Mounting



# WARNING

Contact with live parts of electrical domestic installation can cause death due to electric shock. Mounting/removal may only be carried out when power is switched off.

The room controller can be mounted onto the flush-mounted box.

Choose an installation location that is subject to the air flow of the room to ensure that the room controller can quickly and accurately measure the room temperature.















# Operation

#### **Operating the RCW112-L**

#### Displays

Function symbols depend on operating mode:

- ☆ Occupied
- (Unoccupied
- OStand-by mode
- Fan levels

Automatic switching via central program or presence detector

LCD display depends on configuration:

- Room temperature (actual value) with function symbol I
- Room temperature nominal value with function symbol \$\$



- 1 Function symbols
- 2 LCD display

#### Adjusting the room temperature setpoint

The room temperature setpoint for day, night or stand-by mode is automatically specified by the program. Depending on the configuration, the room temperature setpoint can be manually adjusted by  $\pm$  15 K.

Manual setting adjusts the setpoint for the operating modes day  $mathrmath{\mathfrak{B}}$  and stand-by  $\bigcirc$ .

Example: If the current "day" setpoint temperature is increased by 2 K, the "stand-by" setpoint will also be increased by 2 K.

- Press the -i+ button once to switch the room controller to "setpoint setting" temperature mode. The function symbol 🔆 1 is displayed, and the first decimal place of the current setpoint correction flashes at the same time.
- Use the -++ button to increase or decrease the room temperature setpoint in steps of 0.1 K.
- If 5 seconds pass without a button being pressed, the room controller automatically switches back to the standard display. The new room temperature setpoint is saved.

#### RCW112-L, RCW113-L, RCW115-L, RCW116-L

#### **Operating the RCW113-L**

#### Displays

Function symbols depend on operating mode:

- ☆ Occupied
- (Unoccupied
- OStand-by mode
- Fan levels

Automatic switching via central program or presence detector

LCD display depends on configuration:

- Room temperature (actual value) with function symbol 1
- Room temperature nominal value with function symbol \$\$



Function symbols
LCD display

#### Adjusting the room temperature setpoint

The room temperature setpoint for day, night or stand-by mode is automatically specified by the program. Depending on the configuration, the room temperature setpoint can be manually adjusted by  $\pm$  15 K.

Manual setting adjusts the setpoint for the operating modes day  $mathbb{B}$  and stand-by  $\bigcirc$ .

Example: If the current "day" setpoint temperature is increased by 2 K, the "stand-by" setpoint will also be increased by 2 K.

- Press the -I+ button once to switch the room controller to "setpoint setting" temperature mode. The function symbol 🔆 1 is displayed, and the first decimal place of the current setpoint correction flashes at the same time.
- Use the -+ button to increase or decrease the room temperature setpoint in steps of 0.1 K.
- If 5 seconds pass without a button being pressed, the room controller automatically switches back to the standard display. The new room temperature setpoint is saved.

#### **Occupancy button**

You can use the Occupancy button for to set the following operating modes: present, Unoccupied, stand-by and extended programmed time.

The following variants are possible with and without a central program:

No central specification	Occupancy buttor	ו LCD		Comment
Day Day	(f)	*		
With central specification (e.g. BMS) using nvi Occ ManCmd	Occupancy but- ton Unoccupied	LCD	C	omment
Day	<u>۱</u>	☆		
Day	<u>۱</u>	0	St	tand-by
Night		<del></del>	lf ex di 2.	pressed for 3 seconds, ktended programmed time is splayed (factory setting = 00 h)
Night		<b>()</b>		



#### **Operating the RCW115-L**

#### Display

Function symbols depend on operating mode:

- -☆ Occupied
- (Unoccupied
- OStand-by mode
- -Fan levels

Automatic switching via central program or presence detector

LCD display depends on configuration:

- Room temperature (actual value) with function symbol I
- Room temperature nominal value with function symbol \$\$



- 1 Function symbols
- 2 LCD display

#### Adjusting the room temperature setpoint

The room temperature setpoint for day, night or stand-by mode is automatically specified by the program. Depending on the configuration, the room temperature setpoint can be manually adjusted by  $\pm$  15 K.

Manual setting adjusts the setpoint for the operating modes day 3 and stand-by  $\bigcirc$ .

Example: If the current "day" setpoint temperature is increased by 2 K, the "stand-by" setpoint will also be increased by 2 K.

Press the -+ button once to switch the room controller to "setpoint setting" temperature mode.

The function symbol 3 is displayed, and the first decimal place of the current setpoint correction flashes at the same time.

- Use the -+ button to increase or decrease the room temperature setpoint in steps of 0.1 K.
- If 5 seconds pass without a button being pressed, the room controller automatically switches back to the standard display. The new room temperature setpoint is saved.

#### Switching fan levels on or off

Fan levels are automatically switched on and off by the program. If necessary, fan levels can also be switched manually by the user.

Manual control: Press  $\blacktriangle$  or  $\bigstar$  once to switch the room controller to the manually adjustable fan mode. The function symbol  $\bigstar$  is displayed, and the current fan setting flashes at the same time.

- Fan off: no function symbol
- Fan level 1: function symbol \_\_
- Fan level 2: function symbol \_\_\_\_
- Fan level 3: function symbol \_\_\_\_

Automatic mode: Press **Auto** once to switch the room controller to automatic mode. The function symbol \_\_\_\_ flashes every second.

If no button is pressed for 5 seconds, the room controller automatically switches back to the standard display. The fan then switches to the selected setting.

# Product Description

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#### RCW112-L, RCW113-L, RCW115-L, RCW116-L

#### **Operating the RCW116-L**

#### Displays

Function symbols depend on operating mode:

- ☆ Occupied
- (Unoccupied
- OStand-by mode
- Fan levels

Automatic switching via central program or presence detector

LCD display depends on configuration:

- Room temperature (actual value) with function symbol
- Room temperature nominal value with function symbol \$\$



Function symbols
LCD display

#### Adjusting the room temperature setpoint

The room temperature setpoint for day, night or stand-by mode is automatically specified by the program. Depending on the configuration, the room temperature setpoint can be manually adjusted by  $\pm$  15 K.

Manual setting adjusts the setpoint for the operating modes day  $\overset{}{\times}$  and stand-by  $\bigcirc$ .

Example: If the current "day" setpoint temperature is increased by 2 K, the "stand-by" setpoint will also be increased by 2 K.

Press the -+ button once to switch the room controller to "setpoint setting" temperature mode.

The function symbol 33 is displayed, and the first decimal place of the current setpoint correction flashes at the same time.

- Use the -+ button to increase or decrease the room temperature setpoint in steps of 0.1 K.
- If 5 seconds pass without a button being pressed, the room controller automatically switches back to the standard display. The new room temperature setpoint is saved.

#### Switching fan levels on or off

Fan levels are automatically switched on and off by the program. If necessary, fan levels can also be switched manually by the user.

Manual control: Press  $\blacktriangle$  or  $\checkmark$  once to switch the room controller to the manually adjustable fan mode. The function symbol  $\bigstar$  is displayed, and the current fan setting flashes at the same time.

- Fan off: no function symbol
- Fan level 1: function symbol \_\_\_\_
- Fan level 2: function symbol \_\_\_\_
- Fan level 3: function symbol \_\_\_\_

Automatic mode: Press **Auto** once to switch the room controller to automatic mode. The function symbol \_\_\_\_ flashes every second.

If no button is pressed for 5 seconds, the room controller automatically switches back to the standard display. The fan then switches to the selected setting.

#### **Occupancy button**

You can use the Occupancy button 1 to set the following operating modes: present, Unoccupied, stand-by and extended programmed time.

The following variants are possible with and without a central program:

### **Product Description**

No central specification	Occupancy but- ton Unoccupied	LCD	Comment
Day	Û	*	
Day	<u>۱</u>	(	
With central specification (e.g. BMS) using nvi Occ ManCmd	Occupancy but- ton Unoccupied	LCD	Comment
Day	Ê	*	
Day	Î	0	Stand-by
Night	Û	*	If pressed for 3 seconds, extended programmed time is displayed (factory setting = 2.00 h)
Night		<b>俞</b>	

# **DIP Switch Setting**



1 DIP switch

DIP switch	Outputs	Notes
	K1 K2	Default setting: Heating and cooling PWM (pulse width modulation)
	Y1 Y2	Heating and cooling DC 010 V or heating and cooling with six-way valve and analog DC 010 V fan control
	K1 Y2	Heating PWM (pulse width modulation) and cooling DC 010 V or heating and cooling with PWM and analog DC 010 V fan control
		Test function and application setting 1 to 5 and 10

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# RCW112-L, RCW113-L, RCW115-L, RCW116-L

#### Test function (not for RCW100-L)

#### Activating the test mode

Put the DIP switch in the test position.



After the power supply is switched on, [t E S t] appears on the LCD display.



# NOTE

When checking either the Y or K outputs, the other output (i.e., the output not being checked) must be set to the value "0".



#### NOTE

If no buttons are pressed for approx. 20 minutes, the LCD display returns to displaying [t E S t].

#### Checking the Y1 (heating) output

Press the "-" button until [H 0] appears on the LCD display.

Select the control value using the "+" button. Three control values can be set (0, 50, 100). [H 0], [H 50] and [H 100] appear on the LCD display.

#### Checking the Y1 (heating) output

Press the "-" button until [H 0] appears on the LCD display. Select the control value using the "+" button. Three control values can be set (0, 50, 100). [H 0], [H 50] and [H 100] appear on the LCD display.

#### Checking the K1 (heating) output

Press the "-" button until [ H  $\,$  0  $\,$  ] appears on the LCD display. The status value is shown roughly in the middle of the LCD display.

Switch the contact using the "+" button.  $[H \ 0]$  appears on the LCD display if the contact is off,  $[H \ 1]$  if the contact is on.

#### Checking the K2 (cooling) output

Press the "-" button until [ C 0 ] appears on the LCD display. The status value is shown roughly in the middle of the LCD display.

Switch the contact using the "+" button. [C 0 ] appears on the LCD display if the contact is off, [C 1 ] if the contact is on.

#### Checking the K3 input

Press the "-" button until [d 1 0] or [d 1 1] appears on the LCD display. [d 1 0] appears on the LCD display if the contact is open, [d 1 1] if the contact is closed.

#### Checking the K4 input

Press the "-" button until [d 2 0] or [d 2 1] appears on the LCD display. [d 2 0] appears on the LCD display if the contact is open, [d 2 1] if the contact is closed.



#### Checking the K5, K6 and K7 (fan) outputs of the RMU123

Press the "-" button until [ F  $\,$  0 ] appears on the LCD display. The status value is shown roughly in the middle of the LCD display.

Switch the contacts K5, K6, K7 (fan levels 1 to 3) one after the other by pressing the "+" button.  $[F \ 0]$ ;  $[F \ 1]$ ,  $[F \ 2]$ ,  $[F \ 3]$  appears on the LCD display for the individual fan levels.

#### Setting the application

Press the "-" button until [A 1] appears on the LCD display.

Select the desired application using the "+" button. The following applications can be set:

- 1: Radiator
- 2: Cooling ceiling
- 3: Cooling ceiling and radiator 4-pipe system
- 4: Heating and cooling ceiling 2-pipe system ChangeOver
- 5: Fan coil heating/cooling 4-pipe system
- 10: Cooling with fan coil and heating with radiator

# RCW112-L, RCW113-L, RCW115-L, RCW116-L

#### **Network Installation**

Network installation is performed using a network management tool based on LonWorks LNS3 network services.

#### **Offline installation**

The Neuron ID of the RCW11x-L room controller can be found on the included pull-off bar code label, which is used for plant documentation.

A simple bar code reader can be used for reading in the Neuron ID.

#### Online installation



- 1 Service LED
- 2 Magnet

A node is identified by manually inputting the Neuron ID code or by activating the service PIN on the RCW11x-L Raumregler Technolon®. To do so, guide a magnet (2) along the right side of the RCW11x-L. Internally, this triggers the service PIN in the RCW11x-L. To verify this, a service LED (1) in the top part of the housing lights up green.

**Product Description**