

# Connection module (wired)

Art.-No. BTEAR2

BTEAR6



Operating instructions



# 1. About these operating instructions

## 1.1 About these operating instructions

These operating instructions describe the connection module "EAR2 / EAR6" (also referred to as "product" in these operating instructions). These operating instructions are part of the product.

- You may only use the product if you have fully read and understood these operating instructions.
- Verify that these operating instructions are always accessible for any type of work performed on or with the product.
- Pass these operating instructions as well as all other product-related documents on to all owners of the product.
- If you feel that these operating instructions contain errors, inconsistencies, ambiguities or other issues, contact the manufacturer prior to using the product.

These operating instructions are protected by copyright and may only be used as provided for by the corresponding copyright legislation. We reserve the right to modifications. The manufacturer shall not be liable in any form whatsoever for direct or consequential damage resulting from failure to observe these operating instructions or from failure to comply with directives, regulations and standards and any other statutory requirements applicable at the installation site of the product.

# 2. Information on safety

## 2.1 Safety messages and hazard categories

These operating instructions contain safety messages to alert you to potential hazards and risks. In addition to the instructions provided in these operating instructions, you must comply with all directives, standards and safety regulations applicable at the installation site of the product. Verify that you are familiar with all directives, standards and safety regulations and ensure compliance with them prior to using the product.

Safety messages in these operating instructions are highlighted with warning symbols and warning words. Depending on the severity of a hazard, the safety messages are classified according to different hazard categories.



## DANGER

DANGER indicates a hazardous situation, which, if not avoided, will result in death or serious injury.

## NOTICE

NOTICE indicates a hazardous situation, which, if not avoided, can result in equipment damage.

In addition, the following symbols are used in these operating instructions:



This is the general safety alert symbol. It alerts to injury hazards or equipment damage. Comply with all safety instructions in conjunction with this symbol to help avoid possible death, injury or equipment damage.



This symbol alerts to hazardous electrical voltage. If this symbol is used in a safety message, there is a hazard of electric shock.

## 2.2 Intended use

This product may only be used to control the temperature in single rooms with an underfloor heating system (heating/cooling). The product may only be used to control the thermal actuators via the signals of the room sensors and the base module Control. Any use other than the application explicitly permitted in these operating instructions is not permitted and could potentially cause hazards. Verify that the product is suitable for the application planned by you prior to using the product. In doing so, take into account at least the following:

- All directives, standards and safety regulations applicable at the installation site of the product
- All conditions and data specified for the product
- The conditions of the planned application

In addition, perform a risk assessment in view of the planned application, according to an approved risk assessment method, and implement the appropriate safety measures, based on the results of the risk assessment. Take into account the consequences of installing or integrating the product into a system or a plant. When using the product, perform all work and all other activities in conjunction with the product in compliance with the conditions specified in the operating instructions and on the nameplate, as well as with all directives, standards and safety regulations applicable at the installation site of the product.

## 2.3 Predictable incorrect application

The product must never be used in the following cases and for the following purposes:

- Hazardous area (EX)
  - If the product is operated in hazardous areas, sparks may cause deflagrations, fires or explosions.
- In conjunction with products which are used for health-saving or life-saving purposes or whose operation may incur hazards to humans, animals or property.

## 2.4 Qualification of personnel

Only appropriately trained persons who are familiar with and understand the contents of these operating instructions and all other pertinent product documentation are authorized to work on and with this product. These persons must have sufficient technical training, knowledge and experience and be able to foresee and detect potential hazards that may be caused by using the product. All persons working on and with the product must be fully familiar with all directives, standards and safety regulations that must be observed for performing such work.

## 2.5 Personal protective equipment.

Always wear the required personal protective equipment. When performing work on and with the product, take into account that hazards may be present at the installation site which do not directly result from the product itself.

## 2.6 Modifications to the product

Only perform work on and with the product which is explicitly described in these operating instructions. Do not make any modifications to the product which are not described in these operating instructions.

### 3. Transport and storage

The product may be damaged as a result of improper transport or storage.

## NOTICE

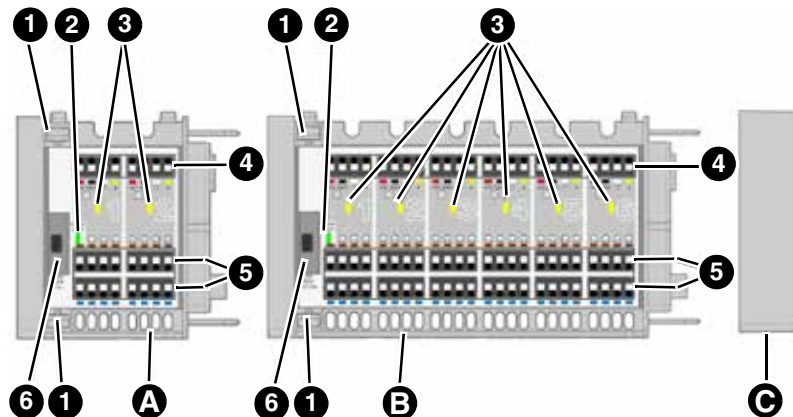
#### **DAMAGE TO THE PRODUCT**

- Verify compliance with the specified ambient conditions during transport or storage of the product.
- Use the original packaging when transporting the product.
- Store the product in a clean and dry environment.
- Verify that the product is protected against shocks and impact during transport and storage.

**Failure to follow these instructions can result in equipment damage.**

## 4. Product description

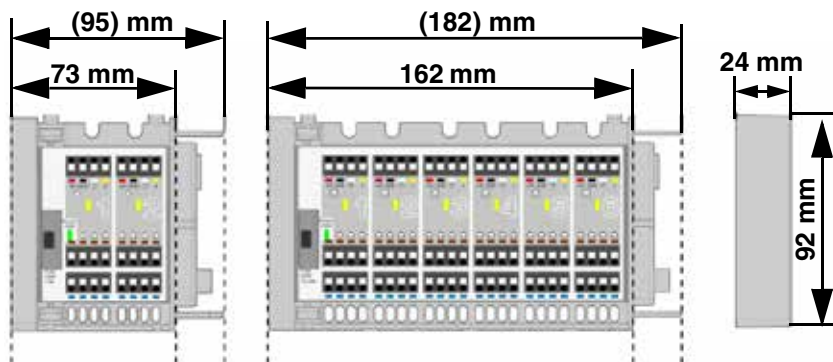
### 4.1 Overview



- A. Connection module "EAR2"
- B. Connection module "EAR6"
- C. End cover

- 1. Catch
- 2. Operation mains voltage (LED green)
- 3. Thermal actuator active (LED yellow)
- 4. Terminal block for room sensors
- 5. Terminal block for thermal actuators
- 6. Fuse compartment

### 4.2 Dimensions



### 4.3 Application example(s)

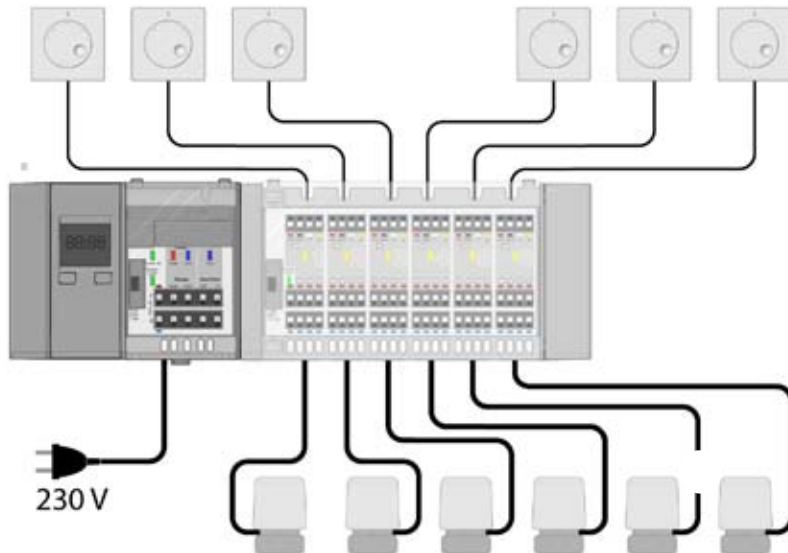


Fig. 1: Base module Control with connection module, timer unit, room sensors and actuators

### 4.4 Function

The single room temperature controller is used to control the temperature in rooms with underfloor heating system (heat/cool).

The product with 2 or 6 independent control circuits controls the thermal actuators via the signals of the room sensors and the base module Control. Multiple products with 2 or 6 control circuits can be installed adjacent to each other.

The room sensor is connected to the product by means of a cable (cable type: J-Y (St) Y 2 x 2 x 0.6 mm, wire colours: red, black, white, yellow).

### 4.5 Approvals, conformities, certifications

The product complies with:

- EMC Directive (2014/30/EU)
- Low Voltage Directive (2014/35/EU)
- Ecodesign Directive (2009/125/EC)
- RoHS Directive (2011/65/EU)

Approval:

- eu.bac certification as per EN 15500:2008

## 4.6 Technical specifications

Parameter	EAR2	EAR6
<b>General specifications</b>		
Dimensions (W x H x D)	73 x 92 x 45 mm	162 x 92 x 45 mm
Weight	130 g	260 g
Housing material	PC/ABS	PC/ABS
<b>Operating temperature range</b>		
Ambient	-20/+60 °C	-20/+60 °C
Storage	-20/+65 °C	-20/+65 °C
Max. humidity	Non-condensing	Non-condensing
<b>Supply voltage</b>		
Nominal voltage	Via base module Control AC 230 V, 5 V DC (SELV)	
Nominal power (connection module only)	0.1 W	0.3 W
Fuse for thermal actuators	T 1 A	T 3.15 A
Permissible cable type to thermal actuators	H03 VV-H2-F 2 x 0.75 mm <sup>2</sup>	
Permissible cable type for room sensors	J-Y (St) Y 2 x 2 x 0.6 mm Wire colours: red, black, white, yellow	
<b>The following components may be connected to one product</b>		
Room sensors	max. 2	max. 6
Thermal actuators	max. 8	max. 24
<b>Electrical safety</b>		
Protection class	II (EN 60730-1)	II (EN 60730-1)
Degree of protection	IP 20 (EN 60529)	IP 20 (EN 60529)
<b>Electromagnetic compatibility (EMC)</b>		
Emitted interference/immunity	EN 61326-1: 2006-10	EN 61326-1: 2006-10

## 5. Mounting

### 5.1 Mounting the product

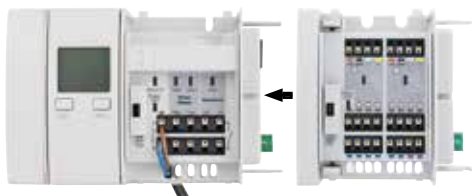
⇒ Verify that the base module Control is disconnected from mains.



1. Open the cover using a screwdriver.



2. Pull off the end cover.



3. Connect the connection module WL/connection module(s) to the base module Control.

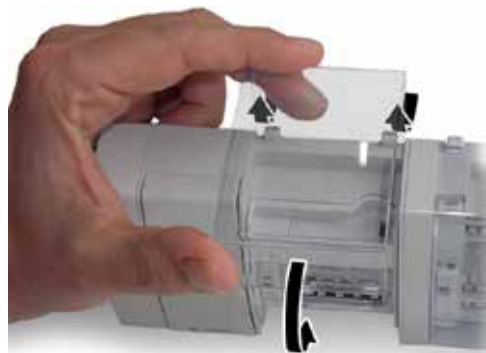


4. Push down the two catches.





5. Fit the end cover onto the last connection module / connection module WL.



6. Refit the cover and close it.



## 5.2 Electrical connection



# DANGER

### ELECTRIC SHOCK

- Verify that the degree of protection against electric shock (protection class, double insulation) is not reduced by the type of electrical installation.
- Failure to follow these instructions will result in death or serious injury.**

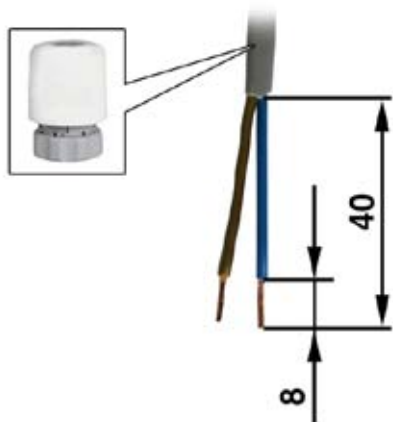


# DANGER

### ELECTRIC SHOCK CAUSED BY LIVE PARTS

- Disconnect the mains voltage supply before performing the work and ensure that it cannot be switched on.
- Verify that no hazards can be caused by electrically conductive objects or media.

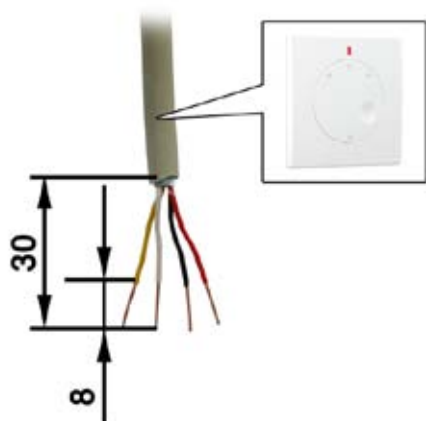
**Failure to follow these instructions will result in death or serious injury.**



- ⇒ Verify that a connection concept has been created.
- ⇒ Verify that all cables are disconnected from power.
  - Verify that the correct assignment of the switching channels for the timer unit has been considered.

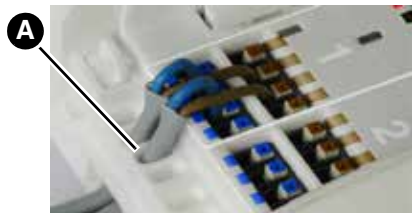
1. Strip the cables as shown.

Permissible cable type for actuator:  
H03 VV-H2-F 2 x 0.75 mm<sup>2</sup>

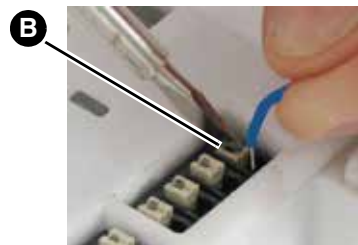


Permissible cable type room sensor: J-Y (St)Y 2 x 2 x 0.6 mm  
Wire colours: red, black, white, yellow

### 5.2.1 Connecting the thermal actuators



1. Route the cables of the thermal actuators through the strain reliefs (A) and connect the wires to the corresponding terminals (observe colour coding).

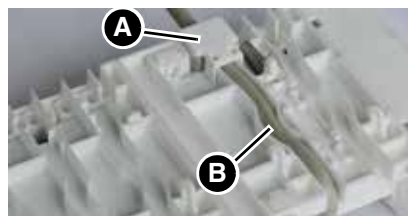


2. Push the stripped wires all the way into the terminals.
3. In the case of flexible wires or for disconnecting wires, push the catch (B).

### 5.2.2 Connecting room sensors



1. Connect the wires of the cable of the room sensor to the terminals of the corresponding heating circuit at the product (observe colour coding).

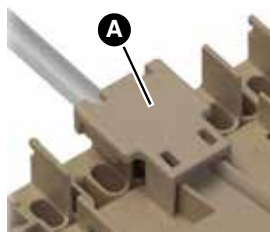
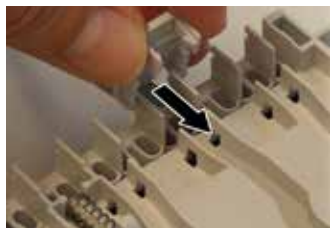


2. Route the cable through the cable guide (B) at the rear of the product.
3. Fix the cable of the room sensor and the cable of the thermal actuator with the cable clamp (A).
4. Repeat this procedure for all other cables.

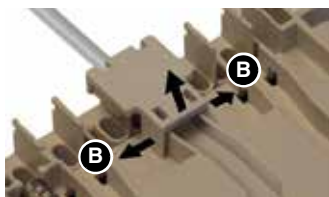
### 5.2.3 Fitting the cable clamp



1. Fix the cable at the rear of the product using the cable clamp (A).



- If room sensors with a wired connection are used, first make the electrical connection of the room sensors and then fit the cable clamp.



2. Repeat this procedure for all other cables.
3. It is possible to open the cable clamps. To do so, pull the two tabs (B) outwards and remove the cable clamp.

### 5.3 Mounting modules on a DIN rail

- ⇒ Verify that all modules (base module Control and connection modules) are plugged together and firmly locked.
- ⇒ Verify that all cables are connected.

1. Fit the modules into the DIN rail with the upper hooks.





2. Push the lower end of the modules towards the DIN rail until they snap in with a click.

#### 5.4 Removing modules from a DIN rail



1. Slightly lift the modules.



2. Tilt the top away from the DIN rail.



3. Remove the connected modules towards the bottom.

## 6. Commissioning

### 6.1 Commissioning the product

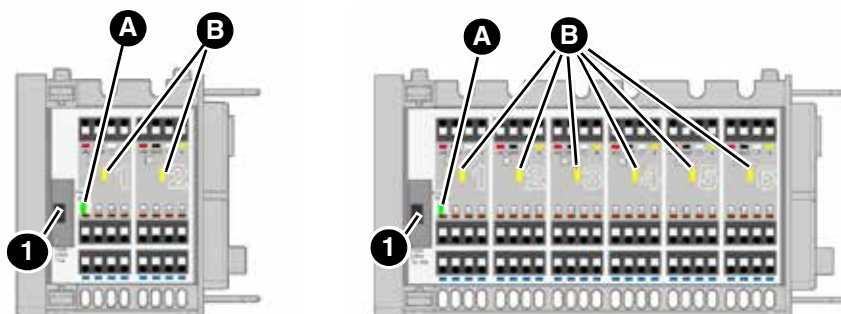
- ⇒ Verify that the modules are properly connected.
- ⇒ Verify that the product is properly mounted to the DIN rail.
- 1. Apply mains voltage.
  - The green LEDs (operation) of the base module Control and of the product light up.

### 6.2 Function test Room sensor

- ⇒ Verify that the room temperature is between +15 °C and +25 °C.
- 1. Set the room sensor to be tested to frost protection.
- 2. Set the room sensor to be tested to +30 °C.
- 3. After no more than one minute, the yellow LED lights up at the connection module to which the room sensor is connected.
- 4. Verify that the room sensor to be tested is connected to the correct control circuit.
- 5. Repeat this procedure for all other room sensors.

## 7. Operation

### 7.1 Overview of the LED signals



Indication	State	Explanation
A. Operation AC 230 V (LED green)	Light on	When mains voltage for the thermal actuators is applied.
	Light off	In the case of power outage. If the fuse in the base module Control trips. If the fuse (1) trips.
B. LED yellow	Light on	When the room sensor WL connected to this control circuit is requesting heating energy or cooling.

## 8. Maintenance

The product is maintenance-free.

## 9. Troubleshooting

Any malfunctions that cannot be removed by means of the measures described in this chapter may only be repaired by a trained expert.

Problem	Possible reason	Repair
LED operation mains voltage not lit (green LED)	No mains voltage	Check the supply voltage
	Fuse defective	Check the fuse
LED 5 V operation not lit (green LED)	No mains voltage	Check the supply voltage
	Fuse defective	Check the fuse
Other malfunctions	Power supply unit defective	Contact your specialised company

### 9.1 Replacing the fuse

⇒ Verify that the mains voltage is disconnected and cannot be switched on.



1. Open the cover using a screwdriver.

Example: Replacing the fuse in the base module Control.



2. Remove the fuse holder.



3. Replace the defective fuse with a G fuse insert 5 x 20 mm.



4. Insert the fuse holder into the fuse compartment.
5. Close the cover.

Art.-No.	Product	Fuse type
BTEBC	Base module Control	T 10 A
BTEAR2, BTEAR2WL	Connection module for 2 room sensors	T 1 A
BTEAR6, BTEAR6WL	Connection module for 6 room sensors	T 3.15 A

Table 1: Overview fuse types

## 10. Decommissioning, disposal

Dispose of the product in compliance with all applicable directives, standards and safety regulations. Electronic components must not be disposed of together with the normal household waste.



1. Disconnect the product from mains.
2. Dismount the product (see chapter "Mounting", reverse sequence of steps).
3. Dispose of the product.

## 11. Warranty

See our terms and conditions or your purchase contract for information on warranty.



## 12. Spare parts and accessories



# NOTICE

### DAMAGE DUE TO UNSUITABLE PARTS

- Only use genuine spare parts and accessories provided by the manufacturer.

**Failure to follow these instructions can result in equipment damage.**

### Product

Product designation	Art.-No.	Figure
Connection module "EAR2"	BTEAR2	
Connection module "EAR6"	BTEAR6	

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