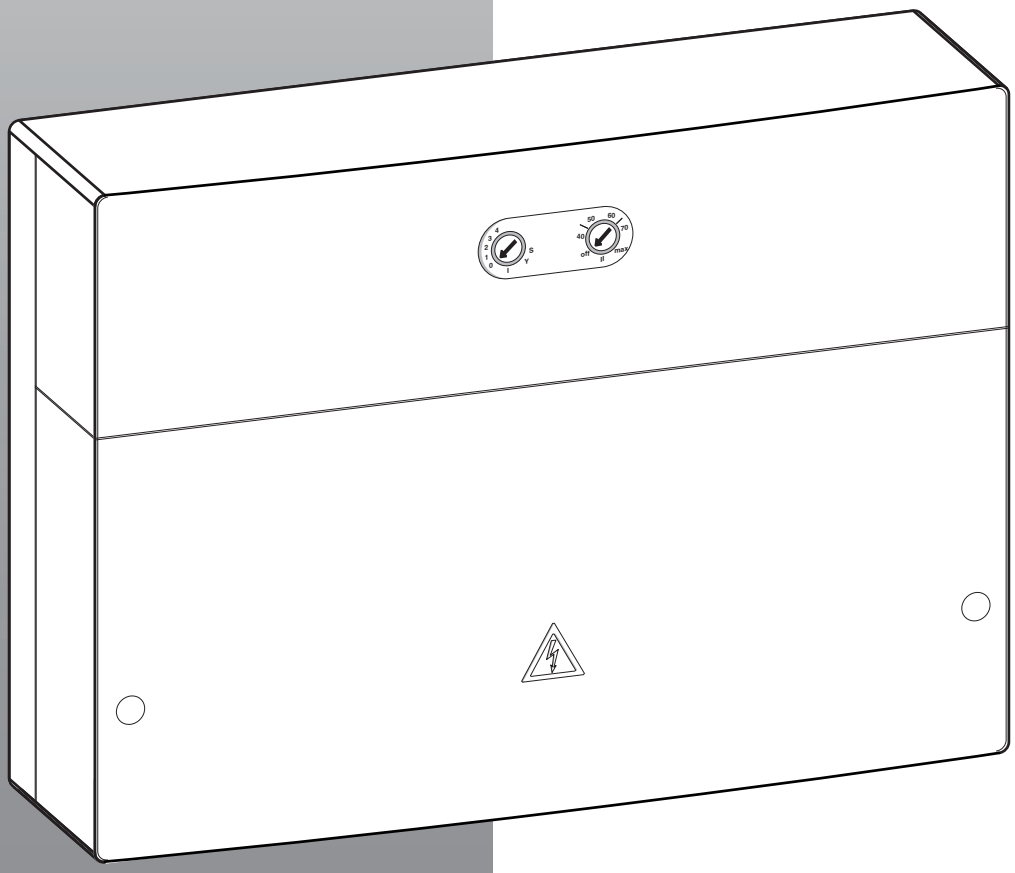
GREENSTAR WIRING CENTRE

EMS 2



0010016703-001

WORCESTER
Bosch Group

6720880441 (2018/01)

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1 Explanation of symbols and safety instructions

1.1 Explanation of symbols

Warnings

In warnings, signal words at the beginning of a warning are used to indicate the type and seriousness of the ensuing risk if measures for minimising danger are not taken.

The following signal words are defined and can be used in this document:

DANGER:

DANGER indicates that severe or life-threatening personal injury will occur.

WARNING:

WARNING indicates that severe to life-threatening personal injury may occur.

CAUTION:

CAUTION indicates that minor to medium personal injury may occur.

NOTICE:

NOTICE indicates that material damage may occur.

Important information

The info symbol indicates important information where there is no risk to people or property.

Additional symbols

Symbol	Meaning
▶	a step in an action sequence
→	a reference to a related part in the document
•	a list entry
–	a list entry (second level)

Table 1

1.2 General safety instructions

⚠ Notices for the target group

These installation instructions are intended for gas, plumbing, heating and electrical contractors. All instructions must be observed. Failure to comply with instructions may result in material damage and personal injury, including danger to life.

- ▶ Read the installation instructions (heat source, heating controller, etc.) before installation.
- ▶ Observe the safety instructions and warnings.
- ▶ Observe national and regional regulations, technical rules and guidelines.
- ▶ Document all work carried out.

⚠ Intended use

The module communicates via an EMS 2 interface with other EMS 2-enabled BUS nodes, such as Greenstar boilers.

Any other use is considered inappropriate. We accept no liability for damage caused through incorrect use.

⚠ Installation, commissioning and maintenance

Installation, commissioning and maintenance must only be carried out by a competent person.

- ▶ Never install the product in wet rooms.
- ▶ Only use genuine spare parts.

⚠ Electrical work

Electrical work must only be carried out by a qualified electrician.

- ▶ Before starting electrical work:
  - Isolate all poles of the mains power supply and secure against reconnection.
  - Make sure the mains voltage is disconnected.
- ▶ The product requires different voltages.
  Do not connect the extra-low voltage side to the mains voltage or vice versa.
- ▶ Also observe the connection diagrams of other system components.

⚠ Handover to the user

When handing over, instruct the user how to operate the heating system and inform the user about its operating conditions.

- ▶ Explain how to operate the heating system and draw the user's attention to any safety relevant action
- ▶ Explain that conversions and repairs must only be carried out by a competent person.
- ▶ Point out the need for inspections and maintenance for safe and environmentally-compatible operation.
- ▶ Leave the installation instructions and the operating instructions with the user for safekeeping.

⚠ Damage caused by frost

The solar system can freeze if it is switched off:

- ▶ Observe the notices regarding frost protection.
- ▶ Due to the additional functions, e.g. DHW heating or anti-seizing function, the system should always be left on.
- ▶ Correct any faults immediately.

2 Product Information

In these instructions, the Greenstar Wiring Centre will be referred to as the module.

- The module controls the pump and motorised valves in
  - a 3-way valve (Y-plan) system
    -or-
  - a two-port valve (S-plan) system
    -or-
  - 3 heating circuits without electronic mixing valves
    -or-
  - 2 heating circuits without electronic mixing valves and cylinder charging circuits (S-plan Plus), with 2x Comfort II RF programmable room thermostats for load compensation
- The module collects
  - the temperature of the DHW cylinder via the cylinder temperature sensor supplied
  - the demand signals (from room and/or frost stats optionally)
- Pump seizure protection function:
  - The connected pump is monitored and automatically operated for a short time after being idle for 24 hours. This prevents the pump from seizing.

The coding switch has a factory setting of **Y**. The module will therefore operate the system as a 3-way valve (Y-plan) system. S (S-plan) or other configurations can be selected when necessary.

2.1 Important notices on use

⚠ WARNING:

Risk of scalding!

- ▶ If DHW temperatures are set above 60 °C or thermal disinfection is engaged (where temperature switch II is temporarily over 60 °C), a mixer must be installed.

NOTICE:

Floor damage!

- ▶ If the product is used in a heating circuit with an underfloor heating system, it must only be operated in conjunction with an additional temperature switch.

2.2 Scope of delivery

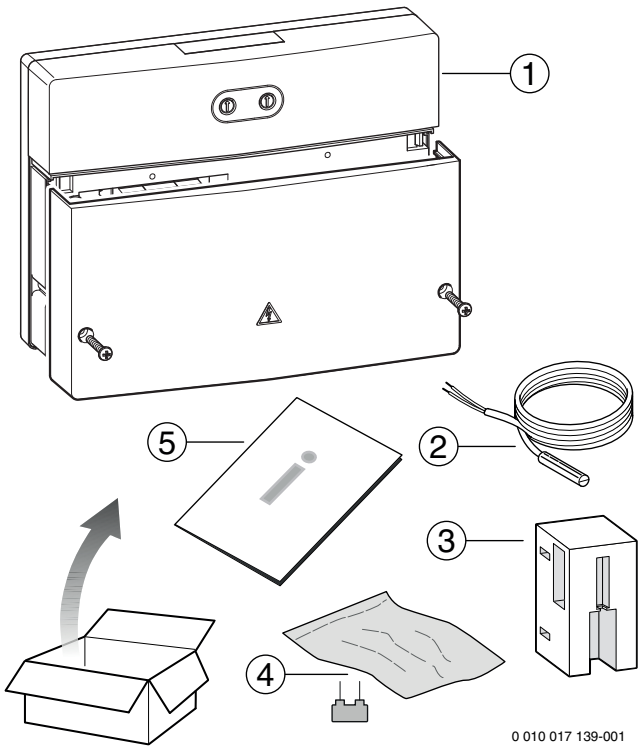


Fig. 1 Scope of delivery

[1] Module
[2] Cylinder temperature sensor (TC1)
[3] Cylinder temperature sensor (TC1) holder. To enable satisfactory installation of the cylinder temperature sensor on hot water cylinders without sensor pockets.
[4] Bag with installation materials and jumper
[5] Installation instructions

2.3 Specifications

CE In terms of design and operation, this product conforms to the European Directives and supplementary national requirements. Its conformity is demonstrated by the CE marking.

You can request the declaration of conformity for the product. Please refer to the contact address on the back cover of these instructions.

Specifications	
Dimensions (W × H × D)	151 × 184 × 61 mm (further dimensions → Fig. 2)
Maximum conductor cross-section • Terminal 230 V • Extra-low voltage terminal	 • 2.5 mm^2 • 1.5 mm^2
Rated voltages • BUS • Module power supply • User interface • Pump and mixer	 • 15 V DC • 230 V AC, 50 Hz • 15 V DC (reverse-polarity-protected) • 230 V AC, 50 Hz
Fuse	230 V, 5 AT
BUS interface	EMS 2
Power consumption on – standby	< 1 W
Maximum power output • per connection (PZ1 ... PZ3) • per connection (IZ1 ... IZ4)	 • 400 W (high-efficiency pumps permitted; max. 40 A/µs) • 230 V AC, max. 0.5 A
Set temperature sensor measuring range • Lower fault limit • Display area • Upper fault limit	 • < – 10 °C • 0 ... 100 °C • > 125 °C
Permissible ambient temperature	0 ... 60 °C
IP rating	IP 44
Protection class	I
ID no.	Data plate (→ Fig. 3, page 4)

Table 2 Specifications

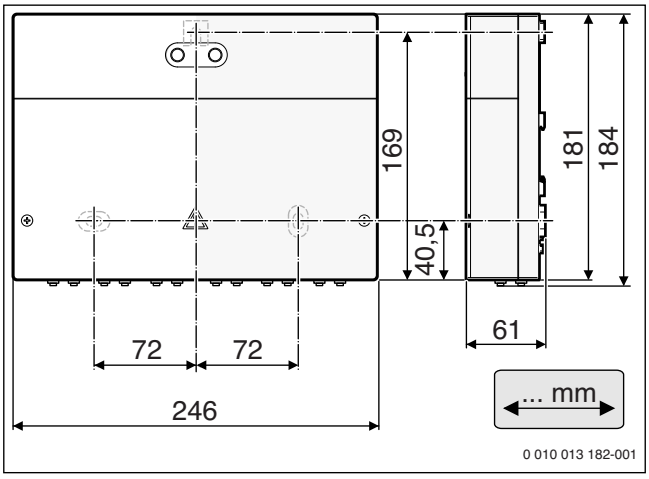


Fig. 2 Dimensions

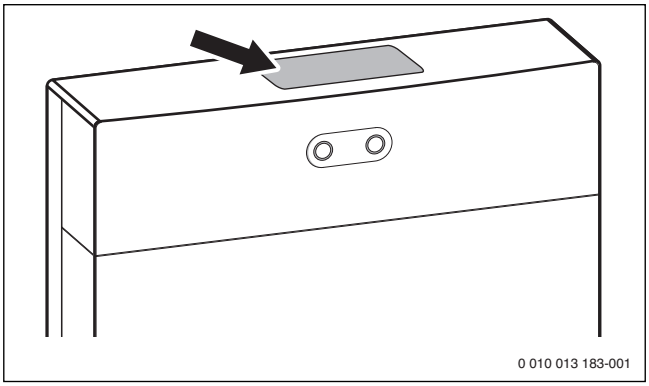


Fig. 3 Position of data plate

°C	Ω	°C	Ω
20	14772	**56**	3723
26	11500	**62**	3032
32	9043	**68**	2488
38	7174	**74**	2053
44	5730	**80**	1704
50	4608	**86**	1421

Table 3 Test values for the cylinder temperature sensor (included with the product)

2.4 Cleaning and care

▶ If required, wipe the casing with a damp cloth. Never use aggressive or acidic cleaning agents for this.

2.5 Additional accessories

For precise information regarding suitable accessories, refer to the catalogue.

- For a 3-way valve (Y-plan) system:
  - Circulating pump; connection to PZ3
  - Y-plan diverter valve; connection to PZ1 and PZ2
  - Room and/or frost stats (optional); connection to IZ3 and IZ4
- For a two-port valve (S-plan) system:
  - Circulating pump; connection to PZ3
  - 2 x two-port valves (with limit switches); connection to PZ1 and IZ1 and to PZ2 and IZ2
  - Room and/or frost stat (optional); connection to IZ3 and IZ4

- For heating circuits with separate heating pumps without electronic mixing valves (e.g. downstream of low-loss header):
  - Circulating pump; connection to PZ1...3
  - Room thermostat (optional); connection to IZ1...3

- For a cylinder charging circuit with separate cylinder primary pump (e.g. downstream of low-loss header):
  - Cylinder primary pump; connection to PZ1
  - Cylinder temperature sensor; connection to TC1

Installation of additional accessories

- ▶ Fit additional accessories according to legal requirements and the installation instructions supplied.
- ▶ The Greenstar Wiring Centre is compatible with the following Worcester plug-in wireless programmable devices and room temperature-dependent controllers:
  - 7733 600 001; Comfort I RF twin-channel timer and room thermostat
  - 7733 600 002; Comfort II RF programmable room thermostat and receiver

3 Installation

DANGER:

Danger to life due to current!

Touching live parts can result in an electric shock.

- ▶ Before installing this product: Disconnect the heat source and all other BUS nodes from the mains voltage across all poles.
- ▶ Before commissioning: fit the cover (→ Fig. 19, page 9).

3.1 Installation

Wall installation

- ▶ Mount the module on a wall.

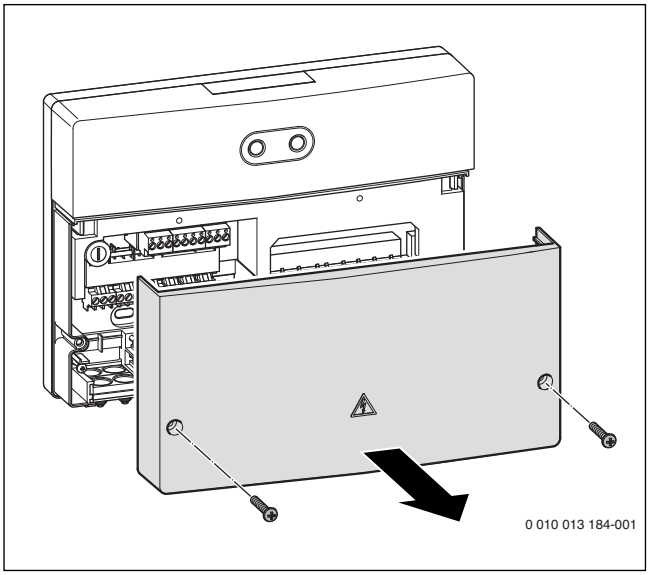


Fig. 4 Wall installation – Step 1

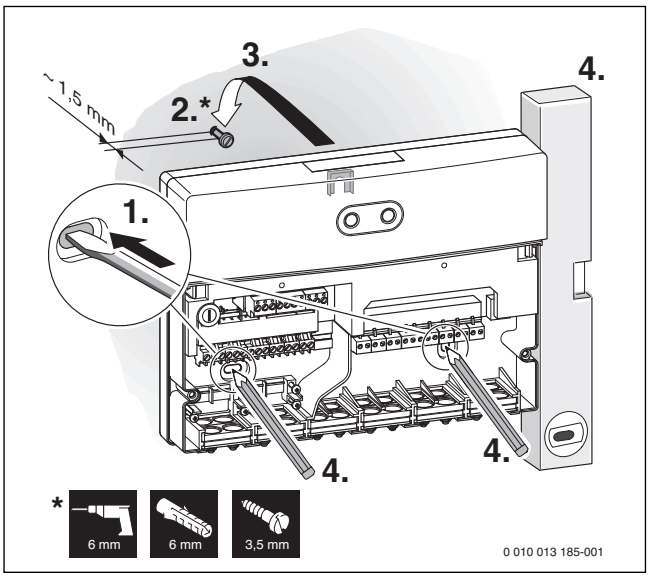


Fig. 5 Wall installation – Step 2

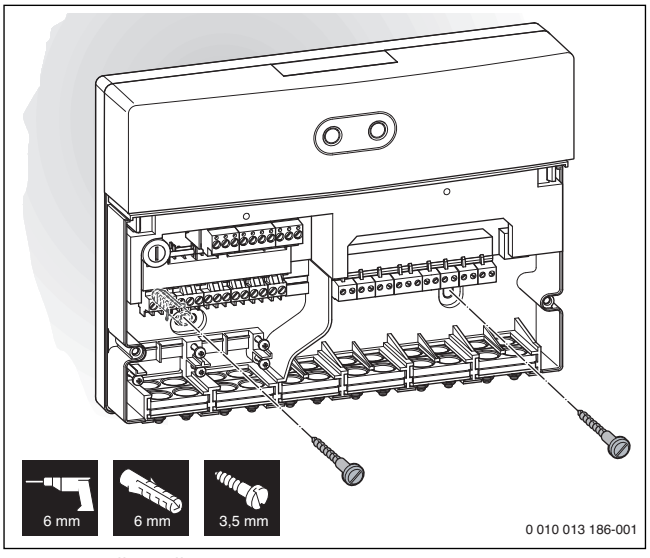


Fig. 6 Wall installation – Step 3

Mounting rail installation

▶ Mount the module on a mounting rail.

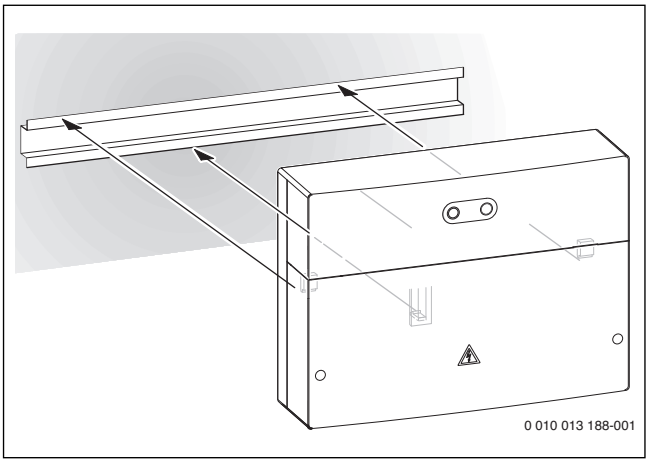


Fig. 7 Mounting rail installation

▶ Unmount the module from the mounting rail.

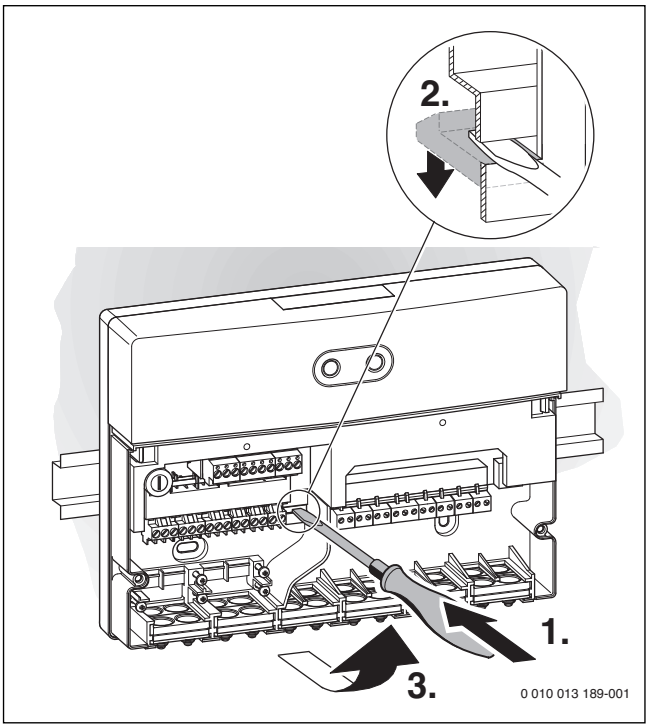


Fig. 8 Disassembly from mounting rail

3.2 Electrical connection

DANGER:

Danger to life due to current!

▶ Secure the wires of all connected cables together. This can only be carried out by stripping back a short section of cable sheath or by using cable ties close to the terminals (→ Fig. 9).

▶ Observe current regulations applicable to power connections, and use at least cable type H05 VV-...

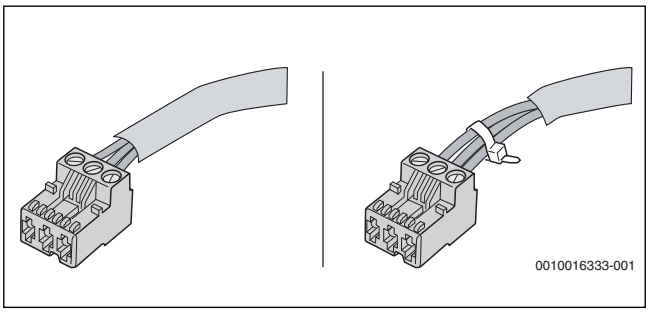


Fig. 9 Secure the wires of all connected cables

3.2.1 Connecting the BUS connection and temperature sensor (extra-low voltage side)

If the maximum cable length of the BUS connections between all BUS nodes is exceeded, or if the BUS system has a ring structure, the system cannot be commissioned.

Maximum total length of BUS connections:

- 100 m with 0.50 mm^2 conductor cross-section
- 300 m with 1.50 mm^2 conductor cross-section

▶ To avoid inductive interference: make sure all low-voltage cables are routed separately to mains voltage cables (min. clearance 100 mm).

▶ In the case of external inductive interferences (e.g. from PV systems), use shielded cables (e.g. LIYCY) and earth the shield on one side. The shield should be connected to the building's earth lead, e.g. to a free earth conductor terminal or water pipe, and not to the terminal for the earth lead in the module.

▶ Connect 1 pair of BUS terminals (BUS 1 and BUS 2) to the BUS terminals of the boiler.

▶ Connect the cylinder temperature sensor supplied to the terminal TC1.

For hot water cylinders without sensor pockets, use the cylinder sensor retaining device to mount the cylinder temperature sensor securely to the side of the cylinder.

When sensor leads are extended, use the following conductor cross-sections:

- Up to 20 m with 0.75 mm^2 to 1.50 mm^2 conductor cross-section
- 20 m to 100 m with 1.50 mm^2 conductor cross-section

▶ Route cables through the grommets provided and connect them as described in chapter 3.3.

3.2.2 Mains voltage, pump and valve connection (mains voltage side)

The allocation of the electrical connections depends on the system installed. The description in Fig. 11 to Fig. 19 is a possible suggestion for the electrical connection. Some steps are not shown in black. This makes it easier to recognise which steps belong together.

DANGER:

Danger to life due to current!

If the heating system is wired so that the Greenstar Wiring Centre and boiler have separate isolating devices (→ Fig. 10, page 7):

- Attach a warning label to each point of isolation. This label has to advise that it is not the sole point of isolation and it has to identify the location of the other means of isolation.
- Electrically isolate the boiler and system components. Secure against unintentional reconnection and make sure the power supply is disconnected.

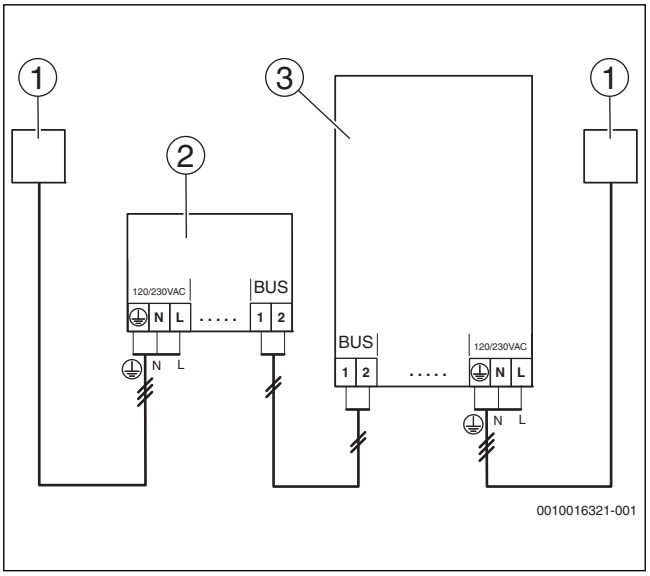


Fig. 10 Separate isolating devices

[1] Fused spur
[2] Greenstar Wiring Centre
[3] Greenstar boiler[1)]

The maximum power consumption of the connected components and assemblies must not exceed the output stated in the module specifications (→ chapter 2.3, page 4).

- As the power supply is not provided via the electronic circuitry of the heat source, install a circuit breaker complying to the applicable standards to interrupt all phases of the power supply (acc. to EN 60335-1).

The module cover needs to be removed to carry out the electrical connections.

- Only use electric cable of similar quality.
- Ensure that the power supply is connected to the live, neutral and earth terminals.

1) Refer to the installation, commissioning and service instructions for the compatible Greenstar boiler for specific boiler wiring connections.

Electrical connection – Step 1

1. Remove grommets from the module.
2. Route cable through a grommet.
3. Remove plug from the socket.
4. Connect cable to plug and ensure that it is connected to the right terminals (→ chapter 3.3).
5. Route cable through the same grommet.
6. Remove plug from the socket.
7. Connect cable to plug and ensure that it is connected to the right terminals (→ chapter 3.3).

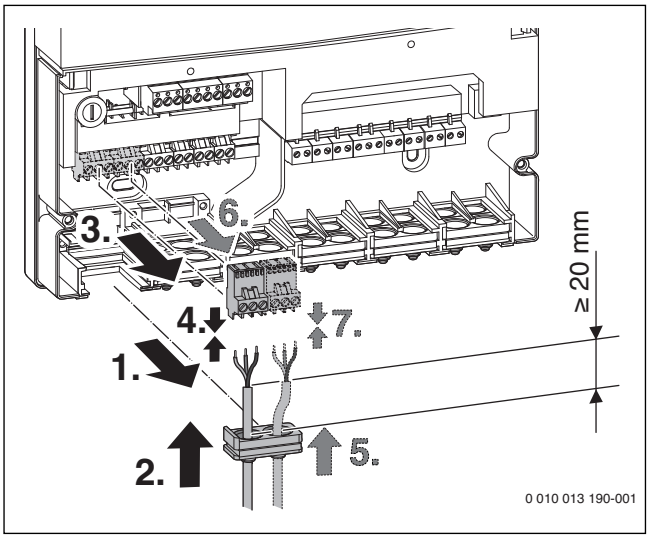


Fig. 11 Electrical connection – Step 1

Electrical connection – Step 2

1. Put the grommet used in Step 1 back into place.
2. Plug in first connected plug from where it was removed.
3. Plug in second connected plug from where it was removed.

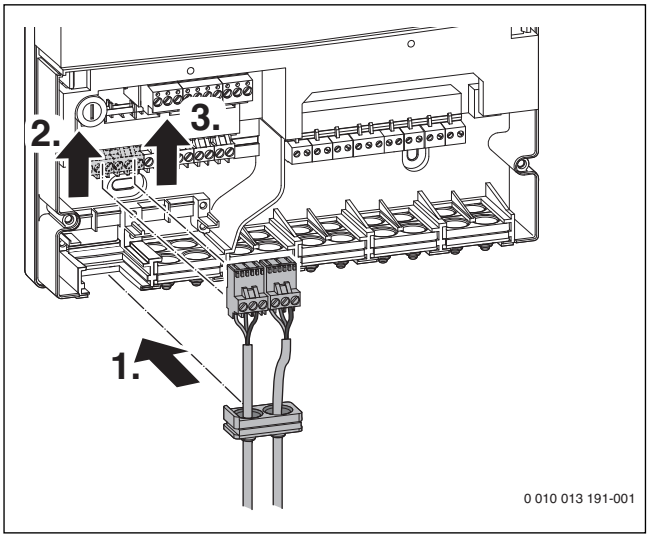


Fig. 12 Electrical connection – Step 2

Electrical connection – Step 3

1. Remove grommets from the module.
2. Route cable through a grommet.
3. Remove plug from the socket.
4. Connect cable to plug and ensure that it is connected to the right terminals (→ chapter 3.3).
5. Route cable through the same grommet.
6. Remove plug from the socket.
7. Connect cable to plug and ensure that it is connected to the right terminals (→ chapter 3.3).

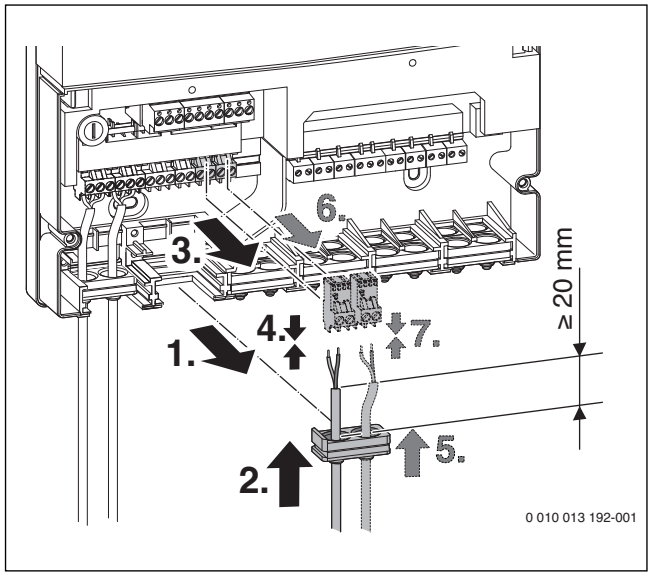


Fig. 13 Electrical connection – Step 3

Electrical connection – Step 4

1. Put the grommet used in Step 3 back into place.
2. Plug in first connected plug from where it was removed.
3. Plug in second connected plug from where it was removed.

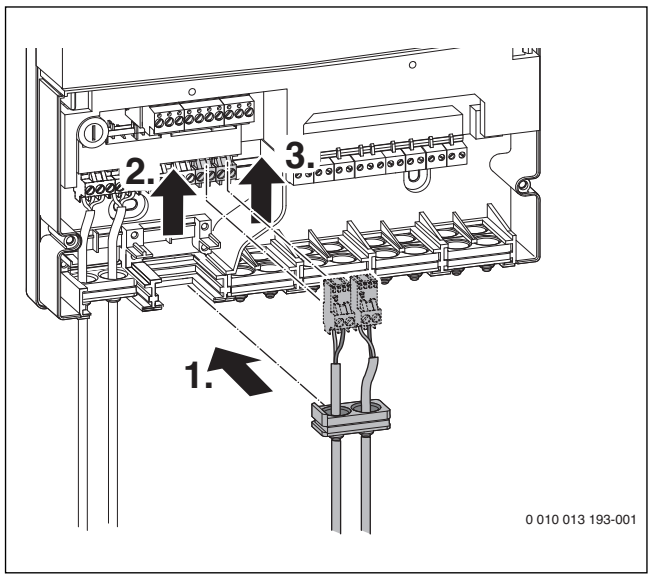


Fig. 14 Electrical connection – Step 4

Electrical connection – Step 5

▶ Secure cables connected in Steps 1-4 with the strain relief supplied.

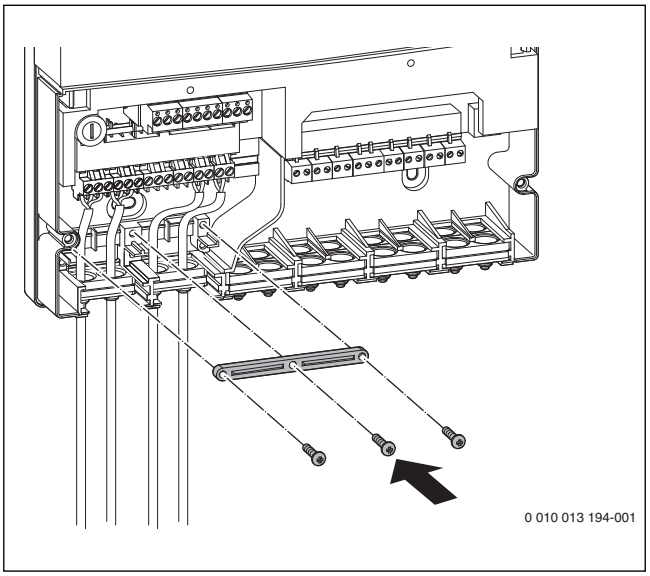


Fig. 15 Electrical connection – Step 5

Electrical connection – Step 6

1. Route cable through a grommet.
2. Remove plug from the socket.
3. Connect cable to plug and ensure that it is connected to the right terminals (→ chapter 3.3).
4. Remove plug from the socket.
5. Connect cable to plug and ensure that it is connected to the right terminals (→ chapter 3.3).
6. Route cable through the same grommet.
7. Remove plug from the socket.
8. Connect cable to plug and ensure that it is connected to the right terminals (→ chapter 3.3).

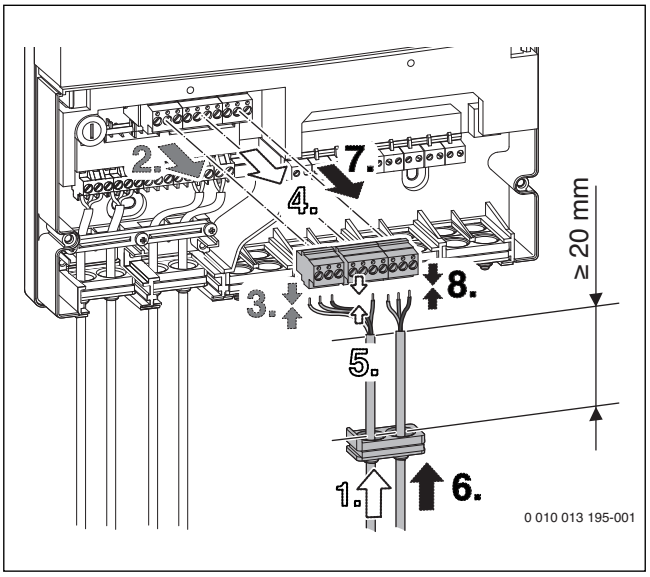


Fig. 16 Electrical connection – Step 6

Electrical connection – Step 7

▶ Secure cable connected in Step 6 with the strain relief supplied.

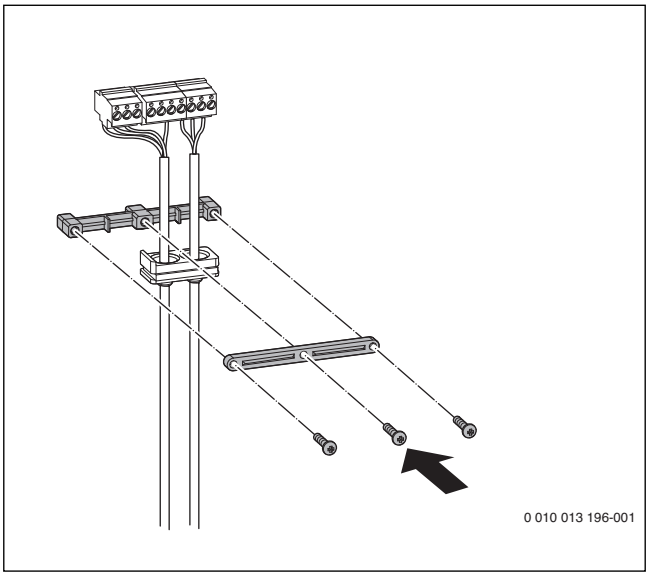


Fig. 17 Electrical connection – Step 7

Electrical connection – Step 8

1. Put the grommets back into place.
2. Plug in first connected plug from where it was removed.
3. Plug in second connected plug from where it was removed.
4. Plug in third connected plug from where it was removed.

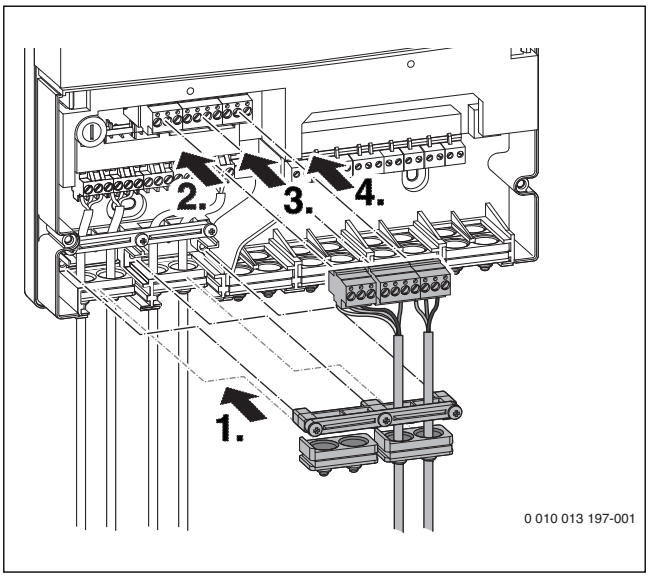


Fig. 18 Electrical connection – Step 8

Fitting the cover – Step 9

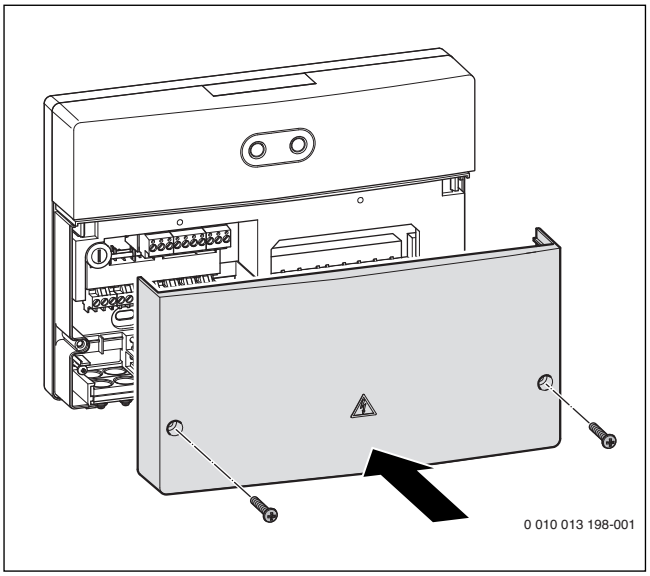


Fig. 19 Fitting the cover – Step 9

3.3 Connection diagrams with system schematics

The circuit diagrams are only schematic illustrations and provide a non-binding indication of possible installations. Install safety equipment in accordance with applicable standards and local regulations. For further information refer to the installation instructions of the boiler and control accessory selected or for the the additional system components (not supplied by Worcester, Bosch Group) those supplied by the manufacturer.

The Worcester, Bosch Group customer service may be contacted on the telephone number on the back of these instructions.

When using any other controls other than Worcester Comfort controls, install the jumper supplied with the Greenstar Wiring Centre which can be found in the bag with the installation materials.

To ensure an economical and comfortable DHW temperature and sufficient protection against bacterial contamination in the DHW cylinder, **temperature switch II** should be set to at least 60 °C. To reduce the risk of scalding, **temperature switch II** should be set below 60 °C.

Installation of room thermostat or link wire

The Greenstar Wiring Centre is compatible with the following Worcester plug-in wireless programmable devices and room temperature-dependent controllers:

- 7733 600 001; Comfort I RF twin-channel timer and room thermostat
- 7733 600 002; Comfort II RF programmable room thermostat and receiver

▶ When using any other controls other than Worcester controls, install the jumper supplied with the Greenstar Wiring Centre which can be found in the bag with the installation materials (→ Fig. 1, page 4), connect terminals **IZ3 – L** and **IZ3 – IN**.

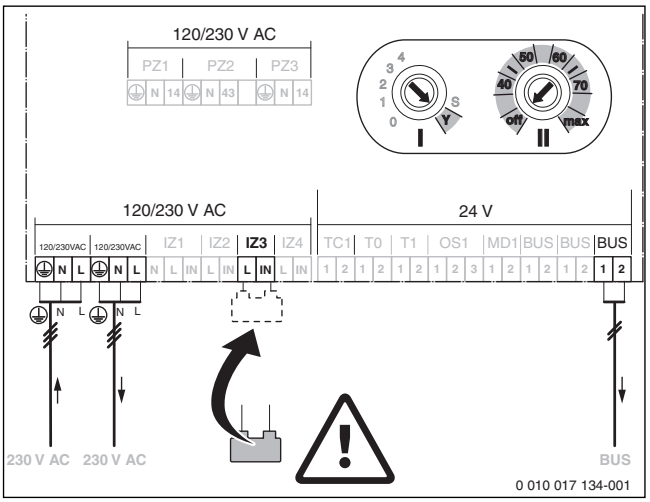


Fig. 20 Connection using the jumper supplied with the Greenstar Wiring Centre

230 V AC	Mains voltage
⏚	Earth lead
L	Phase (mains voltage)
N	Neutral conductor
I	Code switch I – system type
II	Temperature switch II – domestic hot water cylinder temperature
BUS	BUS EMS 2

Protection of unvented domestic hot water cylinders

NOTICE:

Greenstar Wiring Centre fault isolation!

▶ Never take the feed to the safety limit thermostat through the control thermostat. The cylinder will never reach the temperature set using temperature switch II if the control thermostat is set at a lower temperature.

The Greenstar Wiring Centre must be wired as follows when installed in combination with an unvented domestic hot water cylinder:

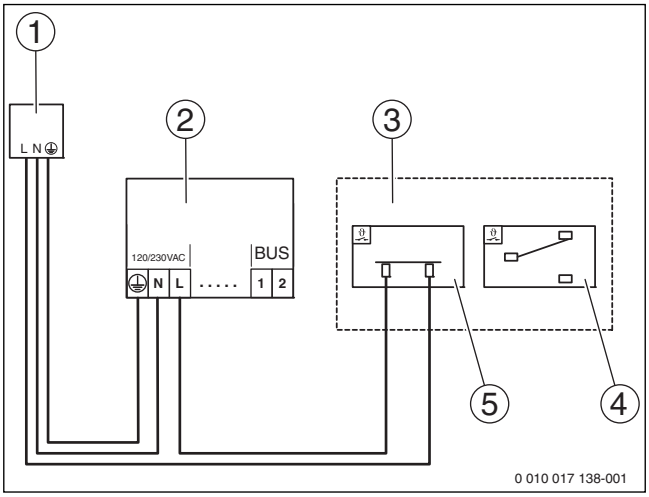


Fig. 21 Connection of power supply for installation in combination with an unvented domestic hot water cylinder

1	Fused spur
2	Greenstar Wiring Centre
3	Unvented domestic hot water cylinder's dual thermostat
4	Dual thermostat's control thermostat (must not be used)
5	Dual thermostats high limit thermostat
⏚	Earth lead
L	Phase (230 V AC)
N	Neutral conductor

- The installation will use the cylinder temperature sensor (Greenstar) supplied with the TC1 Wiring Centre.
- The installation therefore does **not** need to use the hot water control thermostat of the cylinder's dual thermostat.
- The installation may require altered wiring of the dual thermostat (depending on the cylinder and thermostat manufacturer) to exclusively use the safety thermostat of the dual thermostat.
- The safety thermostat section of the dual thermostat **must** be wired in such a way as to interrupt the permanent live connection to the Greenstar Wiring Centre (→ Fig. 21).
- The two-port valve supplied with the unvented cylinder must be installed and connected correctly (→ Fig. 25, page 14).

3-way valve (Y-plan) system:

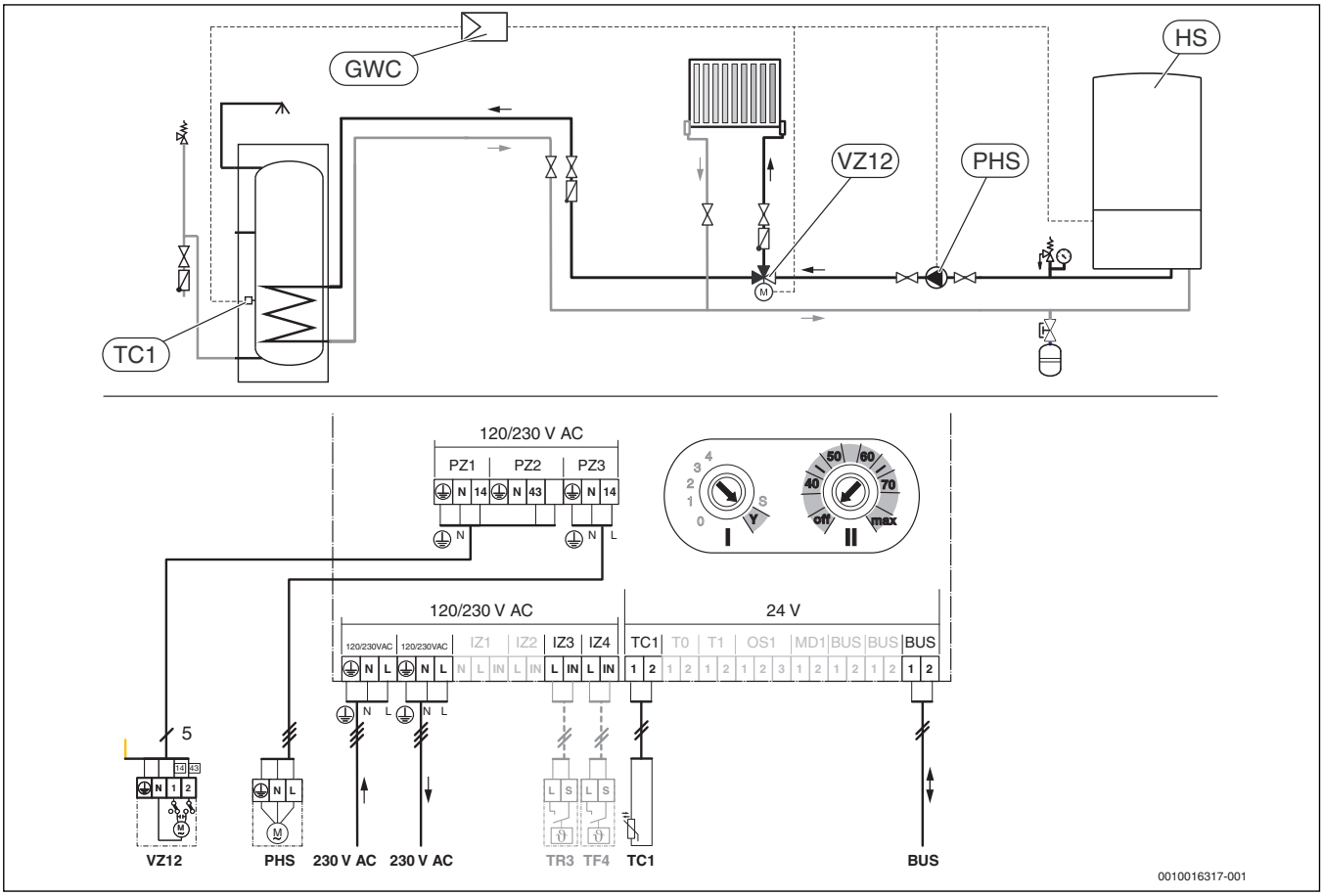


Fig. 22 3-way valve system

⏚ Earth lead
L Phase (mains voltage)
N Neutral conductor

Switch:

I Code switch I – system type
II Temperature switch II – domestic hot water cylinder temperature

Terminal identification:

230 V AC Mains voltage
BUS EMS 2 **BUS**
IZ1 No function
IZ2 No function
IZ3 Room thermostat (**I**nput **Z**one; ϑ: temperature/temperature sensor)
IZ4 Frost stat (ϑ: temperature/temperature sensor)
MD1 No function
OS1 No function
PZ1…2 3-way valve:
Terminal 14: DHW off:
Terminal 43: heating mode
PZ3 DHW circulation pump (**P**ump **Z**one)
T0 No function
T1 No function
TC1 Cylinder temperature sensor (**T**emperature sensor **C**ylinder)

System components:

230 V AC Mains voltage
BUS EMS 2 **BUS** system (connection between Greenstar Wiring Centre and boiler)
GWC Greenstar Wiring Centre
HS Boiler (**H**eat **S**ource)
PHS Domestic hot water circulation pump (**P**ump **H**eat **S**ource)
TC1 Cylinder temperature sensor (**T**emperature sensor **C**ylinder)
TR3 Room thermostat (**T**hermostat **R**oom temperature); optional; not shown in Fig. 20
TF4 Frost stat (**T**hermostat **F**rost protection); optional; not shown in Fig. 20
VZ12 Diverter valve (**V**alve **Z**one); connect as follows: green/yellow to: PZ1-⏚
blue to: PZ1 – N
grey to: PZ1 – 14
white to: PZ2 – 43
orange to: PZ2 – no description (no function)

When there is a simultaneous demand for central heating and domestic hot water, the Y-plan diverter valve will operate for 10 minutes at a time between both until both demands have been met. To reduce extended heat-up times for central heating and hot water, it is recommended to adjust the program to meet the demand for hot water before the central heating demand is started.

Two-port valve (S-plan) system:

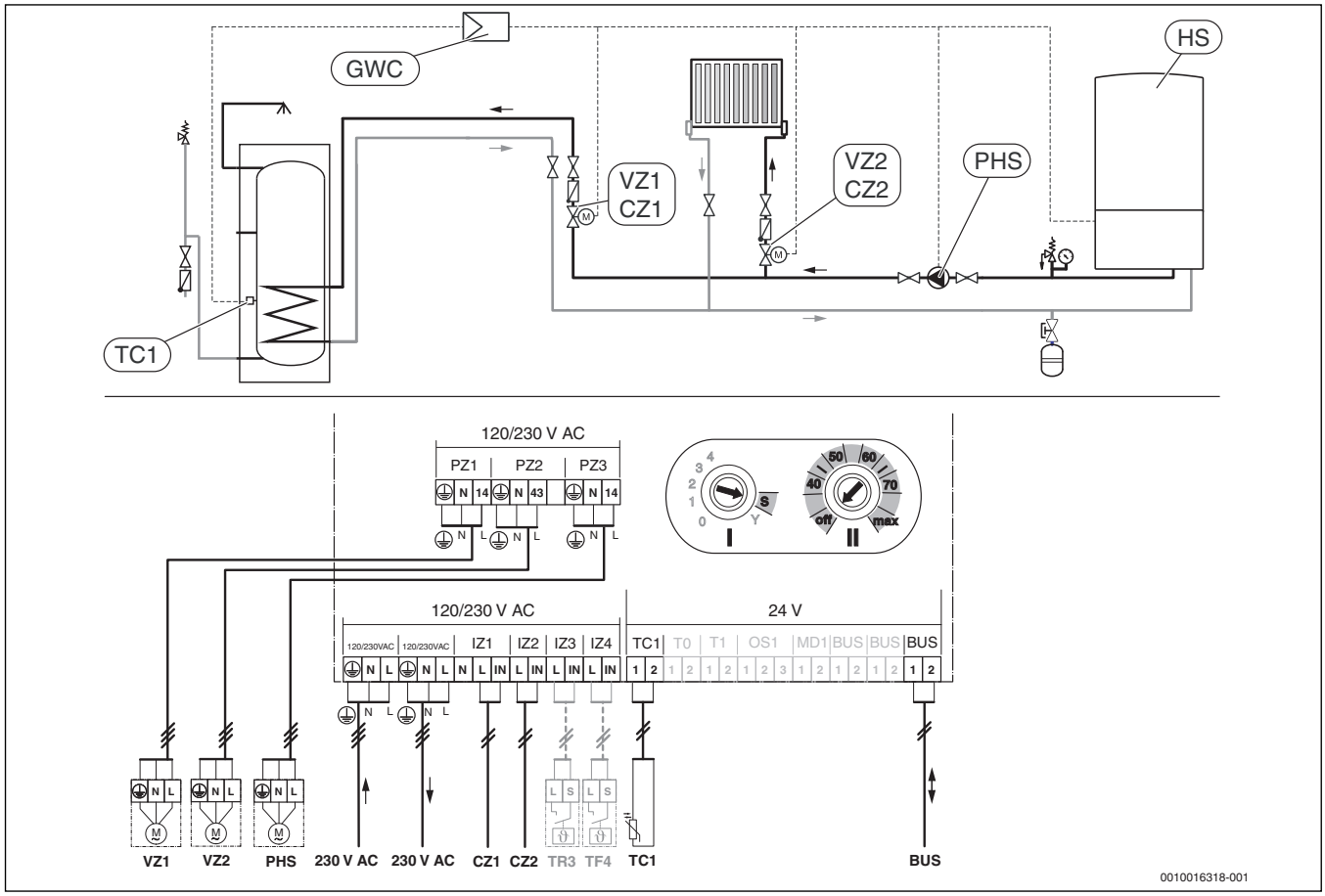


Fig. 23 Two-port valve system

⏚ Earth lead
L Phase (mains voltage)
N Neutral conductor

Switch:

I Code switch I – system type
II Temperature switch II – domestic hot water cylinder temperature

Terminal identification:

230 V AC Mains voltage
BUS EMS 2 **BUS**
IZ1 DHW two-port valve end switch
IZ2 Central heating two-port valve limit switch
IZ3 Room thermostat (**I**nput **Z**one; ϑ: temperature/temperature sensor)
IZ4 Frost stat (ϑ: temperature/temperature sensor)
MD1 No function
OS1 No function
PZ1 DHW two-port valve motor
PZ2 Central heating two-port valve motor
PZ3 DHW circulation pump (**P**ump **Z**one)
T0 No function
T1 No function
TC1 Cylinder temperature sensor (**T**emperature sensor **C**ylinder)

System components:

230 V AC Mains voltage
BUS EMS 2 **BUS** (connection between Greenstar Wiring Centre and boiler)
CZ1 Two-port valve limit switch, valve switch for DHW (**C**ontact **Z**one)
CZ2 Two-port valve limit switch, valve switch for heating (**C**ontact **Z**one)
GWC Greenstar Wiring Centre
HS Boiler (**H**eat **S**ource)
PHS Domestic hot water circulation pump (**P**ump **H**eat **S**ource)
TC1 Cylinder temperature sensor (**T**emperature sensor **C**ylinder)
TR3 Room thermostat (**T**hermostat **R**oom temperature); optional; not shown in Fig. 21
TF4 Frost stat (**T**hermostat **F**rost protection); optional; not shown in Fig. 21
VZ1 Two-port valve for DHW (**V**alve **Z**one)
VZ2 Two-port valve for heating (**V**alve **Z**one)

When there is a simultaneous demand for central heating and domestic hot water, the S-plan diverter valve will operate for 10 minutes at a time between both until both demands have been met. To reduce extended heat-up times for central heating and hot water, it is recommended to adjust the program to meet the demand for hot water before the central heating demand is started

3 central heating circuits without electronic mixing valves:

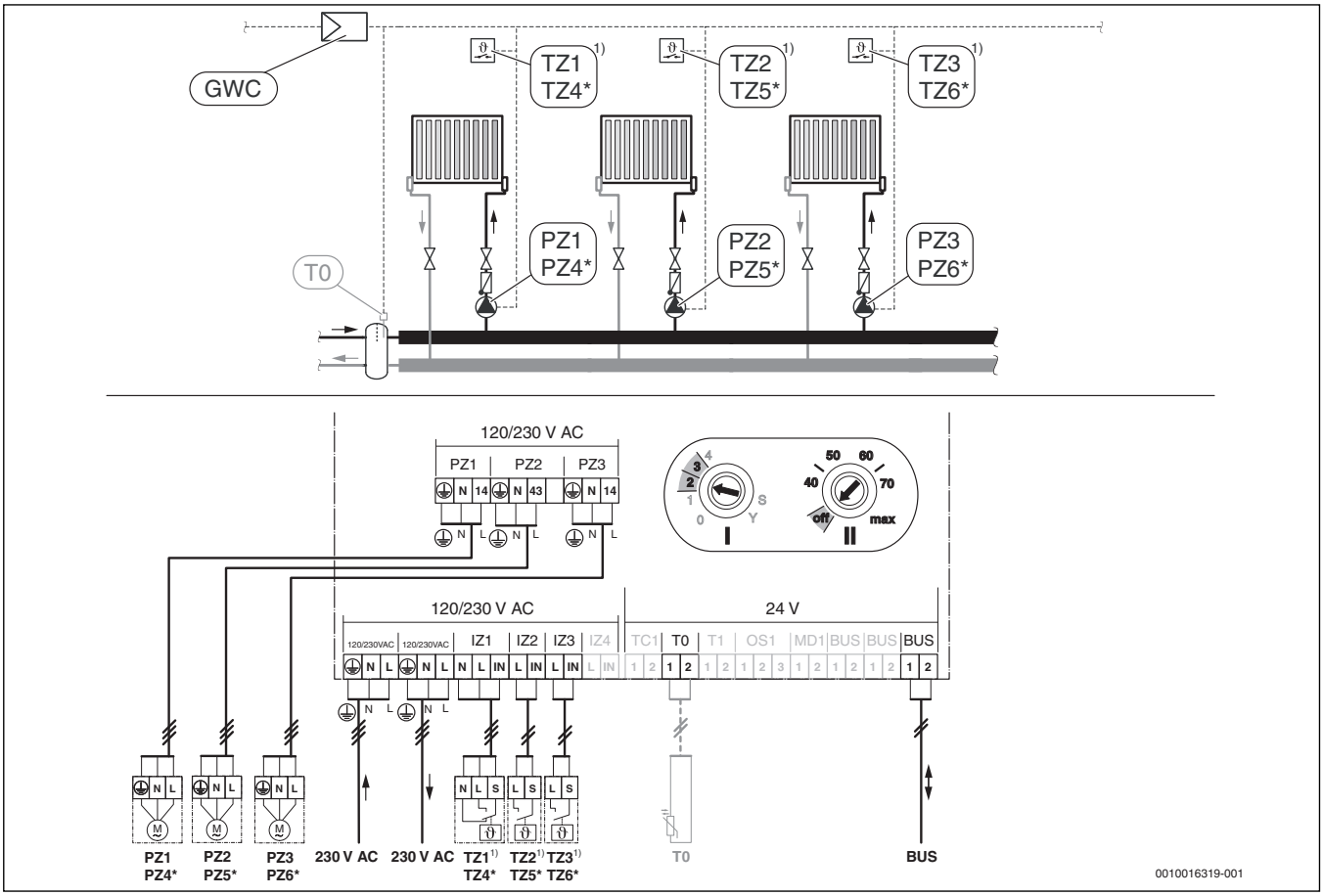


Fig. 24 3 heating circuits without electronic mixing valves

⏚ Earth lead
L Phase (mains voltage)
N Neutral conductor

Switch:

I Code switch I – system type
II Temperature switch II – domestic hot water cylinder temperature

Terminal identification:

230 V AC Mains voltage
BUS EMS 2 **BUS**
IZ1...3 Room thermostat (**I**nput **Z**one; ϑ: temperature/temperature sensor)
IZ4 No function
MD1 No function
OS1 No function
PZ1...3 DHW circulation pump (**P**ump **Z**one)
T0 Flow temperature sensor for the low-loss header (**T**emperature sensor); optional
T1 No function
TC1 No function

System components:

230 V AC Mains voltage
BUS EMS 2 **BUS** (connection between Greenstar Wiring Centre and boiler)
GWC Greenstar Wiring Centre
PZ1...6 DHW circulation pump in each heating circuit (**P**ump **Z**one); allocation of heating units 1, 2 and 3 or 4, 5 and 6 according to coding (→ chapter 4, page 15)
T0 Flow temperature sensor at the low-loss header (**T**emperature sensor); optional
TZ1...6 Room thermostat (**T**hermostat room temperature **Z**one; ϑ: temperature/temperature sensor); allocation of heating circuits 1, 2 and 3 or 4, 5 and 6 according to coding (→ chapter 4, page 15)
*) The marked system components are connected to the module with coding 3 (coding → chapter 4, page 15).
1) Thermostats TZ1 to 6 must be programmable room thermostats and compatible with 230 V AC operation. Pay attention to the module codes (→ chapter 4, page 15).

2 heating circuits without electronic mixing valves and one domestic hot water cylinder circuit (S-plan Plus), with 2x Comfort II RF programmable room thermostats for load compensation:

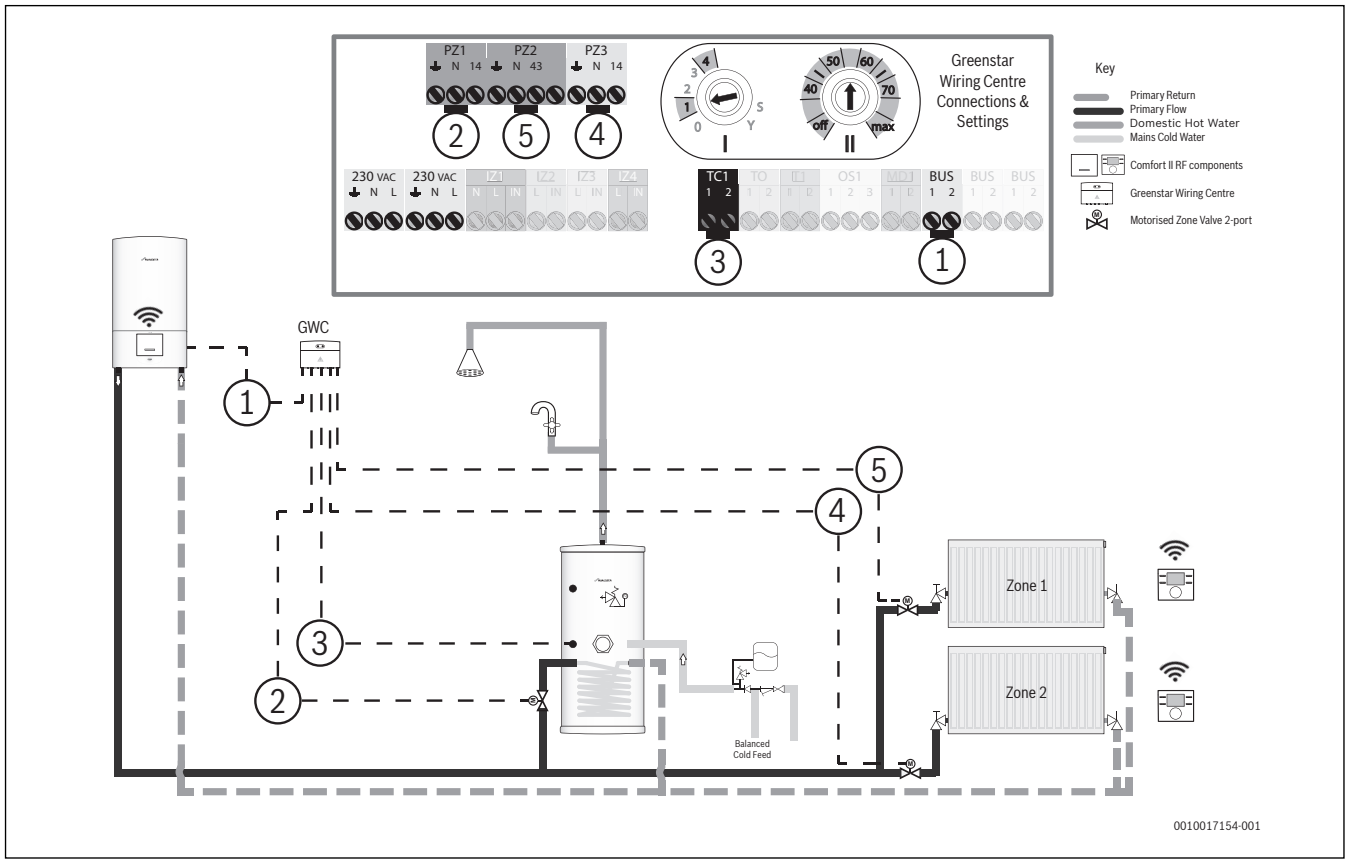


Fig. 25

3.4 Installing the system

Worcester products required:

- Greenstar i System OR i System compact boiler (without optional internal diverter kit), OR regular Greenstar 27/30 Ri boiler
- Comfort II RF Programmable room thermostat pack (7-733-600-002)
- Additional Comfort II RF Programmable room thermostat (8-716-117-239)
- Greenstar Wiring Centre manufactured from December 2016 (FD 660)

This solution is not compatible with the Greenstar CDi Classic System boiler.

Fig. 25 is a schematic diagram intended to demonstrate how a system utilising these products might be laid out. Detail is included for what system fixtures are wired to the Wiring Centre in the form of labels and a key.

2-port motorised zone valves must be of the spring return type. Only the 3 motor wires of each zone valve are used (live, neutral conductors and earth lead). The remaining switch wires (for example: orange, grey, white) are unused.

If installing this system with the Greenstar 27/30 Ri boiler, the external pump must be wired back to the boiler's dedicated pump live, neutral conductors and earth lead. Refer to the boiler's specific installation instructions for more detail.

Unvented DHW cylinder G3 compliance

If using an unvented DHW cylinder, G3 compliance can be achieved by supplying the power to the Greenstar Wiring Centre through the DHW cylinder safety thermostat. This ensures that when the safety thermostat is tripped, the heat source is isolated.

Commissioning the Greenstar Wiring Centre

The required settings of the dial on the front of the Greenstar Wiring Centre are shown in Fig. 25.

In the event of the hot water dial indicator flashing green, adjust the hot water temperature selector dial in small increments to select a valid temperature setting. Only temperatures indicated on the control dial can be selected. Once set correctly, the hot water temperature selector dial indicator will cease to flash.

In order to provide effective protection against legionella, the domestic hot water temperature should be set to at least 60 °C degrees.

If the green light continues to flash once a valid temperature has been selected, see chapter 26, page 16 for further guidance.

Commissioning the Comfort II RF

Comfort II RF (7-733-600-002) comes pre-paired with its receiver and is used to control zone 1 and sanitary hot water heating. It does not require pairing.

Comfort II RF (8-716-117-239) must be paired with the same receiver unit and is used to control zone 2 central heating.

3.5 Using the system

The following are features of normal operation and ensure safe and efficient operation of the heating system:

- During a simultaneous central heating and hot water demand, priority will be given to the hot water cylinder.
- Valves may take up to 3 minutes to motor to their closed position after any heating demand.
- The "flame symbol" on the Comfort II RF may take up to 6 minutes to appear/disappear during and after the boiler's burner has switched off.

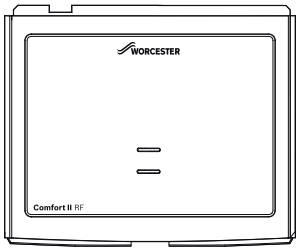
3.6 Step-by-step pairing instructions for Comfort II RF

Do not pair devices twice as this will affect their function. When replacing one device, remember to unpair the device that you will keep before pairing the new unit or this will affect their function. To connect an additional programmable room thermostat to the receiver, Greenstar Wiring Centre (7-738-110-116) is required.

Pairing

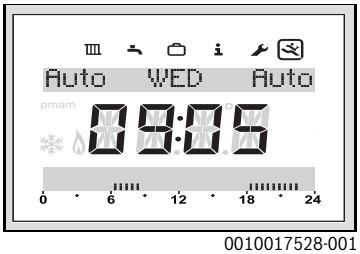
1. Press and hold the **Override/Pairing** button until it flashes LED 2 times consecutively in a 5-second period (press and hold for more than 5 seconds but less than 10 seconds).

The receiver pairing mode lasts for one minute.



0010017529-001

2. Press and hold the **Menu** and **Return** buttons together for more than 3 seconds.
3. In the resulting menu, select **Installer** > **Radio Settings** > **Pairing** > **Pairing** and press the dial to select.



0010017528-001

4. When pairing between the devices is complete, **HC Assignment 1** will appear automatically on the room thermostat.

For 2-zone heating, 1 hot water solution: when pairing a second room thermostat (8-716-117-239)

- ▶ if **HC Assignment 1** appears, this must be changed to **HC Assignment 2** using the dial.

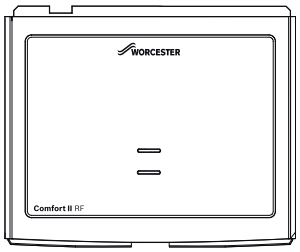
5. Press the dial and the main screen appears. The receiver's LED stops flashing. Pairing is now complete.

The receiver pairing mode lasts for up to one minute.

Unpairing

1. Press the Override/Pairing button until it flashes LED 5 times consecutively in a 5-second period (press and hold for about 10 seconds).

This should not be confused with the flashing frequency of the pairing mode (see Step 1 of the pairing process). The receiver unpairing mode lasts for one minute.



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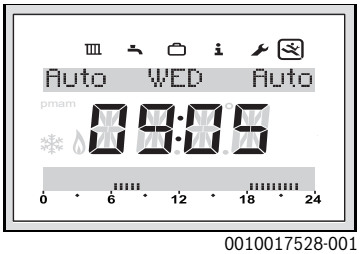
2. Press and hold the **Menu** and **Return** buttons together for more than 3 seconds.
3. In the resulting menu, select **Installer** > **Radio Settings** > **Pairing** > **Unpairing** and press the dial to select.



0010017528-001

4. When unpairing between the devices is complete, **A28** will appear on the room thermostat and the receiver's LED will flash once per second. This takes up to 1 minute.

4 Commissioning

First make all electrical connections correctly and only then carry out the commissioning!

- ▶ Follow all installation instructions for all components and assemblies in the system.
- ▶ Only switch on the power supply once the module has been set up.

NOTICE:

Connected pumps can start as soon as the system is switched on unless the control unit has not detected the module.

- ▶ Fill the system before switching it on so that the pump does not run dry.

Code switch I

The system type is set on the module using **code switch I**:

- 3-way valve (Y-plan) system: code switch I set to **Y**
- Two-port valve (S-plan) system: code switch I set to **S**
- 3 central heating circuits without electronic mixing valves:
  - Module for heating circuits 1, 2 and 3 = set code switch 1 to **2**
  - Module for heating circuits 4, 5 and 6 = set code switch I to **3**
- 2 heating circuits without electronic mixing valves and one cylinder charging circuit: set code switch I to **1**

Temperature switch II

WARNING:

Risk of scalding from hot water!

▶ If water temperatures are set above 60 °C or thermal disinfection is engaged (where temperature switch II is temporarily over 60 °C), a mixer must be installed.

Automatic legionella protection function: this function becomes active if the DHW cylinder does not reach a temperature of 60 °C during a 5-day period. This function automatically heats the cylinder 65 °C for 2 hours.

The **cylinder setpoint temperature** is adjusted using **temperature switch II**:

- The temperature in the DHW cylinder can be adjusted in increments of 5 °C.
- To ensure an economical and comfortable DHW temperature and sufficient protection against bacterial contamination in the DHW cylinder, **temperature switch II** should be set to at least 60 °C.
- A maximum setpoint temperature 75 °C is available: set the temperature switch to **max** (two valid switch positions)

In the event of the hot water dial indicator flashing green, adjust the hot water temperature selector dial in small increments to select a valid temperature setting. Only temperatures indicated on the control dial can be selected. Once set correctly, the hot water temperature selector dial indicator will cease to flash.

System and module commissioning

1. Set the system type for the module using code switch **I**.
2. Set the cylinder temperature using temperature switch **II**.
   -or-
   Set temperature switch **II** to **off**.
3. Switch on the power supply (230 V AC) for the entire system, the Greenstar Wiring Centre and the boiler.

When the status indicator of module lights up green:

4. Commission and set up the boiler and control system accessories in accordance with the installation instructions supplied with those products.

5 Troubleshooting

Use only original spare parts. Damage caused by the use of spare parts not supplied by the manufacturer are excluded from the warranty.

▶ If a fault cannot be rectified, please contact your local service engineer.

5.1 Status indicator

The indicator shows the operating status of the module.

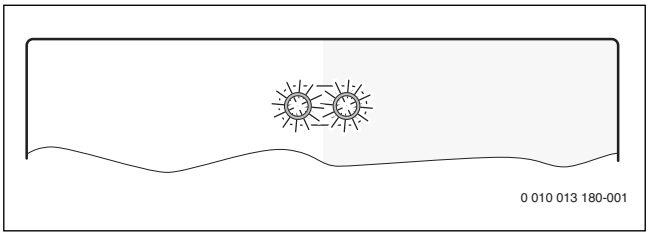


Fig. 26 Module status indicator

Status indicator	Possible cause	Remedy
permanently off (at code switch I)	Code switch on **0**	▶ Set the code switch (→ chapter 4, page 15).
	Power supply interrupted	▶ Turn on the power supply.
	Fuse is defective	▶ With the power supply turned off, replace the fuse (→ chapter 5.2 and Fig. 27, page 17).
	Short circuit in the BUS connection	▶ Check BUS connection and repair if required.
permanently red (at code switch I)	Internal fault	▶ Replace module.
Flashing red (on code switch I)	Code switch in invalid position or in intermediate position	▶ Set the code switch (→ chapter 4, page 15).
Flashing green (on code switch I)	Maximum cable length for BUS connection exceeded	▶ Make shorter BUS connection.
	Temperature sensor is defective	▶ Replace the temperature sensor.
	Temperature switch in invalid position or in intermediate position	▶ Adjust the temperature switch (→ chapter 4, page 15).
	No signal from the 2-way zone valve limit switch received within 30 seconds after commissioning	▶ Check the cabling between the zone valve and zone valve limit switch
	Temperature for legionella protection not reached in the 2-hour phase	▶ Insufficient heat transfer via the cylinder ignition coil, or; ▶ Check the sensor position on the cylinder.
Permanently green (at code switch I)	No fault	Normal operation

Table 4 Troubleshooting

5.2 Replacing the fuse

DANGER:

Danger to life due to current!

Touching live parts can result in an electric shock.

▶ Electrically isolate the boiler and system components. Secure against unintentional reconnection and make sure the power supply is disconnected.

To replace the fuse the cover of the module has to be removed.

1. Release fuse.
2. Take defective fuse out of fuse socket.
3. Dispose of defective fuse.
4. Replace fuse into fuse socket.
5. Secure fuse.
6. Fit the cover.

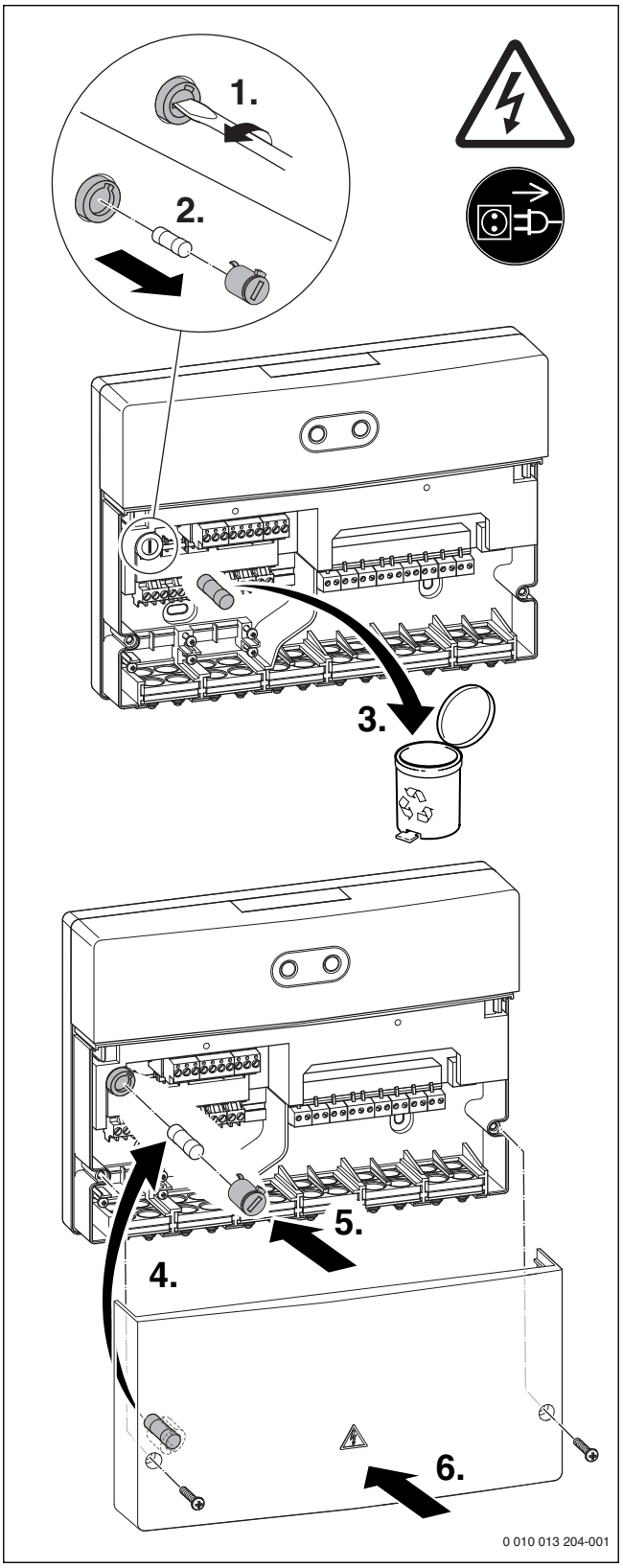


Fig. 27 Replace the fuse

6 Environmenta l protection/disposal

Environmental protection is a key commitment of the Bosch Group. Quality of products, efficiency and environmental protection are equally important objectives for us. Environmental protection laws and regulations are strictly observed.
To protect the environment, we use the best possible technology and materials while taking into account economic considerations.

Packaging

Where packaging is concerned, we participate in country-specific recycling processes that ensure optimum recycling.
All of our packaging materials are environmentally compatible and can be recycled.

Old electrical and electronic appliances

Electrical or electronic appliances that are no longer serviceable must be collected separately and sent for environmentally compatible recycling (in accordance with the European Directive on Waste Electrical and Electronic Equipment).

To dispose of old electrical or electronic appliances, you should use the return and collection systems put in place in the country concerned.

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