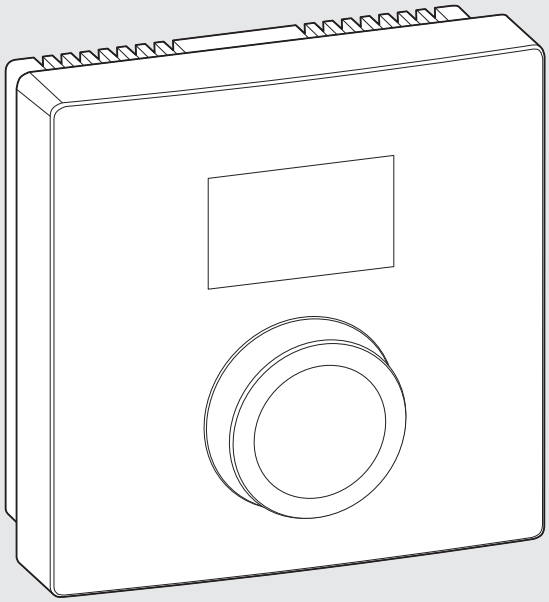


EMS 2

6 720 646 193-00.2O

CE

CR 10

BOSCH

6720830560 (2015/06) div

1 General safety instructions

Installation and commissioning

- ▶ Observe all country-specific regulations and standards during installation and operation!
- ▶ All instructions must be observed. Failure to comply with instructions may result in material damage and personal injury, including possible loss of life.
- ▶ Ensure that the user interface is installed and commissioned by an approved contractor.
- ▶ Do not install the user interface in wet areas.
- ▶ Install and commission the heat source and other accessories in accordance with the relevant instructions.
- ▶ Never connect the user interface to the 230 V mains.
- ▶ Before installing the user interface: electrically isolate the heat source and all other BUS units from the power supply and secure against unintentional reconnection, making sure that the power supply is completely disconnected.

Damage caused by frost

The system can freeze, if it is not in operation:

- ▶ Leave the system switched on, if the outside temperature is below 0 °C.
- ▶ If the user interface is used as a controller, system frost protection is not possible. System frost protection can only be reliably guaranteed, if weather-compensated control is used.
- ▶ Correct any faults immediately.

2 Product Description

Possible applications

- **Room temperature-dependent controller** for systems with one heating circuit without mixer
- **Zone controller** for one heating circuit without mixer but with zone module and max. 8 heating circuits in systems without a higher-level user interface

- **Remote control** in systems with higher-level user interface (e.g. CW 400 with max. 4 heating circuits or CW 800 with max. 8 heating circuits), can be used solely as a remote control in conjunction with heat sources with an external cylinder primary pump

Use

- Heat source with 2-wire BUS system, EMS 2 or OpenTherm
- Combination with timers (e.g. MT10, ...) is possible
- Combination with TR..., TA..., FR... and FW... is not possible.

Scope of delivery

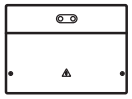
- User interface
- Technical documentation

Technical specifications

Dimensions (W × H × D)	82 x 82 x 23 mm
Rated voltage	10 ... 24 V DC
Rated current	4 mA
BUS interface	EMS 2 (2-wire BUS, OpenTherm)
Control range	5 ... 30 °C
Permitted ambient temperature	0 ... 60 °C
Protection class	III
IP rating	IP20

Product data on energy consumption

The following product data complies with the requirements of EU Regulation 811/2013 as a supplement to Directive 2010/30/EU. The class of temperature controller is required to calculate the central heating energy efficiency of an integrated system, and it is therefore incorporated into the system data sheet.

Function	Class[1)]	[%][1),2)]	
CR 10			
Room temperature-dependent, modulating	**V**	**3.0**	●
CR 10 & zone module	 ≥ 3x **&** 		
Room temperature control system with ≥ 3 temperature sensors (zone control), modulating	**VIII**	**5.0**	●

● Delivered condition

1) Classification in accordance with EU Regulation No. 811/2013 for identification of integrated systems

2) Contribution to seasonal energy efficiency for central heating in %

2.1 Function as room temperature-dependent controller

The CR 10 controls the heat source via the room temperature. Only allowed with timer in Germany. The user interface is not suitable for controlling heat sources from other manufacturers with an OpenTherm BUS system (no OpenTherm certificate).

Output control (only 2-wire bus/EMS 2)

The heat output of the heat source changes according to the deviation between the current and required room temperature. This method of control is suitable for a uniform temperature level, e.g. open-plan house. There are fewer burner starts and shorter pump runtimes. This control mode may not be available depending on the heat source that is connected.

Flow temperature control (2-wire BUS/EMS 2/OpenTherm)

The flow temperature changes according to the deviation between the current and required room temperature. This method of control is suitable for residential units and houses with different temperature zones. The accuracy of control is greater and the flow temperature is limited. This saves fuel.

The pump runtimes can be shortened by means of optimised running of the pump.

2.2 Function as zone controller (only 2-wire BUS/EMS 2)

The CR 10 can be used in conjunction with zone modules without a higher-level user interface as a controller for max. 8 heating circuits (for further information, see the technical documentation of the zone module).

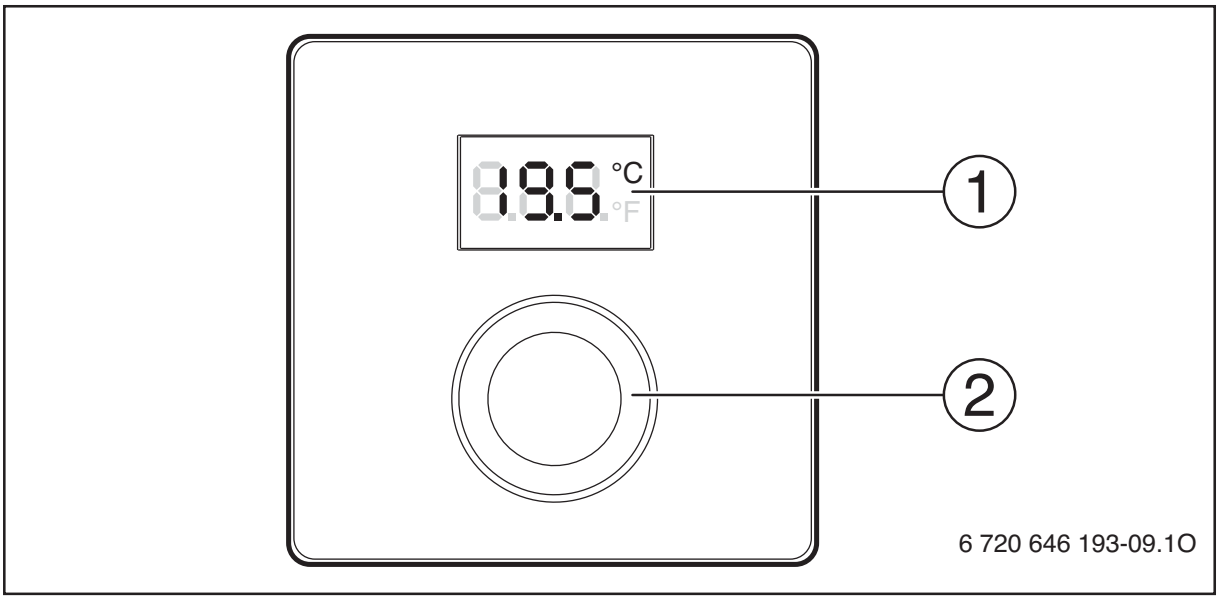
The zone temperature is controlled in the same way as with the function of a room temperature-dependent controller with set flow temperature control.

2.3 Function as remote control (only 2-wire BUS/EMS 2)

The CR 10 can be used as a remote control for a higher-level user interface.

The time program is determined by the higher-level user interface. The required room temperature can be temporarily changed at the CR 10 until the next switching time of the time program. After this, the higher-level user interface has priority until the setting is changed again at the CR 10.

3 Operation



[1] Display
[2] Selector: select (turn) and confirm (press)

Description of the displays	Example
Current room temperature (standard display)	
Required room temperature: ▶ Press selector to briefly display the required room temperature (flashing).	
Service display (maintenance required) ▶ Press selector to switch to the standard display.	
Fault display alternating between fault code and sub-code (eliminate → faults) ▶ Press selector to briefly display the current room temperature.	

Setting the required room temperature	Result
▶ Turn the selector to select the required room temperature.	
▶ Press the selector to confirm the setting.	

Switching off the heating system	Result
▶ Reduce the required room temperature until **OFF** appears. When the heating system is switched off, frost protection for the room is also switched off. Frost protection for the heat source remains active.	

4 Information for heating contractor

4.1 Installation

▶ Install the user interface on an even wall (→ Fig. 1 to 2 from page 22).

4.2 Electrical connection

Power is supplied to the user interface via the BUS cable.

Length	Recommended cross-section	Type of cable
≤ 100 m	0.50 mm^2	At least H05 VV ... (NYM-J...)
≤ 300 m	1.50 mm^2	

Table 1 Permitted BUS cable lengths

- ▶ Route and connect the BUS cable properly.
- ▶ Establish the BUS connection (→ Fig. 3, page 23).

For designation of the BUS terminal, see the technical documentation for the heat source.

4.3 Connection diagrams with system schematics

The hydraulic diagrams are only schematic illustrations and provide a non-binding indication of a possible hydraulic circuit.

E.g. Fig. 4, page 24 shows a system schematic for 2 heating circuits without mixer but with zone module and DHW heating, with individual setting of the 2 CR 10 and the MZ 100 zone module

4.4 Commissioning

Initial commissioning or commissioning after a reset.

Systems with one heating circuit (room controller)	
▶ Switch on the system / reset CR 10. Three dashes are displayed while the connection is being established. The room temperature is displayed after the connection has been established.	

Systems with several heating circuits (zone controller/remote control)	
▶ Switch on the system / reset CR 10. Three dashes are displayed while the connection is being established.	

Systems with several heating circuits (zone controller/remote control)	
▶ A.1 = Set and confirm SC (zone controller). **-or-** ▶ A.1 = Set and confirm Fb (remote control)	
▶ Select and confirm heating circuit (HC = 1...8).	

4.5 Settings in the service menu

Setting	Adjustment range[1)]	Description
A.1	**CO** | Fb | SC	Controller (CO), remote control (Fb), zone controller (SC)
HC	**HC1** | HC2 | ... | HC7 | HC8	Heating circuit/heating zone 1 to 8[2)]
d.1	2 | **3** | 4	Control characteristics (reaction speed) 2: 2K P range = Quick reaction 3: 3K P range = Medium reaction 4: 4K P range = Slow reaction
E.1	– 3.0 ... **0.0** ... 3.0	Correction value for the room temperature displayed
P.1	**4** | 5	Flow temperature control (4) or output control (5)
L 1	**1** | 0	Optimised running of the pump: in the case of flow temperature control, the heating pump runs as briefly as possible. Switching-off if there is a buffer cylinder in the system.
C.1	**C** | F	Unit of displayed temperatures °C (C) or °F (F)

Setting	Adjustment range[1)]	Description
S.1	nF.12.01	Software version[3)]
F.1	1 | **0**	Reset CR 10 0: Do not reset 1: Reset

1) Values in bold = default setting

2) Only one CR 10 can be allocated to each heating circuit.

3) Turn the selector to read out the whole value.

A reset restores the default setting. In the event of a power failure, the settings including the heating circuit allocation are retained.

4.6 Operation (example)

Opening the service menu	Result
▶ Press and hold the selector until 2 dashes are displayed.	
▶ Release the selector to display the first setting.	

Changing the setting (e.g. heating circuit HC)	Result
▶ Select the setting.	
▶ Press the selector to display the current value.	
▶ Press the selector again to change the value.	
▶ Select and confirm the required value.	
▶ Press and hold the selector until the setting is displayed again.	

Closing the service menu	Result
▶ Press and hold the selector until 3 dashes are displayed.	
▶ Release the selector. The current room temperature is displayed and the user interface operates with the changed setting.	

5 Eliminating faults

If a fault cannot be eliminated, note down the fault code and sub-code:

- ▶ Contact the approved contractor or Customer Service.
- ▶ Advise the type of fault and ID no. of the user interface.

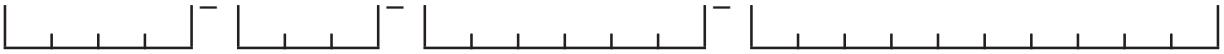


Table 2 ID no. on the rear of the user interface (to be entered by the installer)

If there is a fault, the display shows alternately the fault code and the 3-digit sub-code.

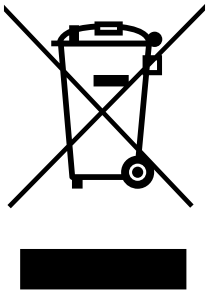
In the case of 4-digit sub-codes, initially the first two digits and then the last two digits are displayed alternately with the fault code (e.g.: A21 ... 10 ... 01 ... A21 ... 10 ... 01 ...).

fault code	sub-code	Possible cause and assistance from the contractor
A61 ... A68	3091 ... 3098	Room temperature sensor of the CR 10 defective (A61/ 3091: Heating circuit 1, ..., A68/3098: Heating circuit 8). ▶ Replace the CR 10.
A21	1001	CR 10 in Heating circuit 1 incorrectly configured. ▶ If a higher-level user interface (e.g. CW 400) is installed, set A.1 = Fb (remote control). ▶ If a zone module is installed and recognized, set A.1 = SC (zone controller). ▶ If no higher-level user interface and only one heating circuit is installed, set A.1 = CO (controller).
A22 ... A28	1001	BUS signal from the higher-level user interface for remote heating is missing (A22: Heating circuit 2, ..., A28: Heating circuit 8). ▶ Install the higher-level user interface (e.g. CW 400). ▶ Establish the BUS connection.
A61 ... A68	1081 ... 1088	CR 10 incorrectly configured (A61/1081: Heating circuit 1, ..., A68/1088: Heating circuit 8). ▶ Set A.1 = Fb (remote control).
A61 ... A68	3061 ... 3068	CR 10 incorrectly configured (A61/3061: Heating circuit 1, ..., A68/3068: Heating circuit 8). ▶ For assistance, see Fault code A21.
Fill	-	Water pressure in the heating system is too low. ▶ Top up the heating water (even without a contractor, → technical documentation about the heat source).

Table 3 Fault code and sub-code for the contractor

For further information, see the service manual if necessary

6 Old electrical and electronic appliances



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

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

1 一般安全提示

安装和调试

- ▶ 请遵守所在国关于安装和运行的相关条例和标准。
- ▶ 必须遵守所有说明书中的指示。忽视说明可能造成财产损失和人员伤亡。
- ▶ 操作装置必须由获得许可的专业人员进行安装和调试。
- ▶ 切勿将操作装置安装在潮湿环境中。
- ▶ 按照说明书安装热源和其他附件并将其投入使用。
- ▶ 操作装置绝对不能连接 230 V 电网。
- ▶ 开始安装操作装置之前：将热源和所有其他总线用户全相断电，防止意外重启，确保不通电。

冰冻导致设备损坏

设备不运行时可能上冻：

- ▶ 室外温度低于 0 °C 时启动设备。
- ▶ 如将操作装置用作控制器，则无法防冻。只有采用室外温度感应控制方式时才能保证安全防冻。
- ▶ 发生故障后立即排除。

2 产品说明

应用可能性

- **室内温度感应式控制器**用于配备非混水供暖回路的设备
- **区域控制器**用于一个带区域模块的非混水供暖回路和最多 8 个设备中不含上级操作装置的供暖回路
- **远程控制**用于带上级操作装置的设备 （例如带最多 4 个供暖回路的 CW 400 或者带最多 8 个供暖回路的 CW 800），与带外部水箱动力泵的热源配套使用时，只能用作远程控制装置

应用

- 配备双线总线、 EMS 2 或 OpenTherm 总线系统的热源
- 可与定时器组合应用 （例如 MT10 等）

- 不支持与 TR...、 TA...、 FR... 和 FW... 配套使用

供货范围

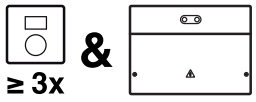
- 操作装置
- 技术文档

技术数据

尺寸 （宽 × 高 × 深）	82 x 82 x 23 mm
额定电压	10 ~ 24 V DC
额定电流	4 mA
总线接口	EMS 2 （双线总线， OpenTherm
调控范围	5 ~ 30 °C
允许的环境温度	0 ~ 60 °C
防护级别	III
防护等级	IP20

能耗产品数据

下列产品数据符合 2010/30/EU 欧盟指令的 811/2013 号补充法令的要求。计算复合设备的室内采暖能源效率时需要使用温控器的级别，该级别记录在系统数据页中。

功能	级别 1)	[%] 1),2)	
CR 10			
室温感应，调制	**V**	**3.0**	●
CR 10 & 区域模块			
配备 ≥ 3 个温度传感器 （区域控制）的室温控制系统，调制	**VIII**	**5.0**	●

● 交货状态

1) 类别符合欧盟 811/2013 号法令关于复合设备标识的说明

2) 年度室内采暖能效数值显示为百分数

2.1 用作室温感应式控制器

CR 10 通过室内温度调控热源。德国仅允许使用定时器。操作装置不适于控制其他制造商生产的配备 OpenTherm 总线系统的热源 （无 OpenTherm 证书）。

功率控制 （仅限双线总线 /EMS 2）

热源的热功率会根据当前室温和理想室温之间的偏差进行改变。调控行为适用于统一的温度水平，例如采用开放式结构的房间。这可减少燃烧器的启动次数，缩短泵的运行时间。取决于连接的热源，这种控制方式可能不可用。

采暖出水温度控制 （双线总线 /EMS 2/OpenTherm）

采暖出水温度根据当前室温和理想室温之间的偏差进行改变。控制行为适用于温度区域多样的居所和房间。控制精度更高，采暖出水温度受限。这样可以节省燃料。

通过优化泵运行可以缩短泵的运行时间。

2.2 用作区域控制器 （仅限双线总线 /EMS 2）

CR 10 可与区域模块组合使用，不带上级操作装置，作为控制器用于调控最多 8 个供暖回路 （详细信息请参阅区域模块的技术文档）。

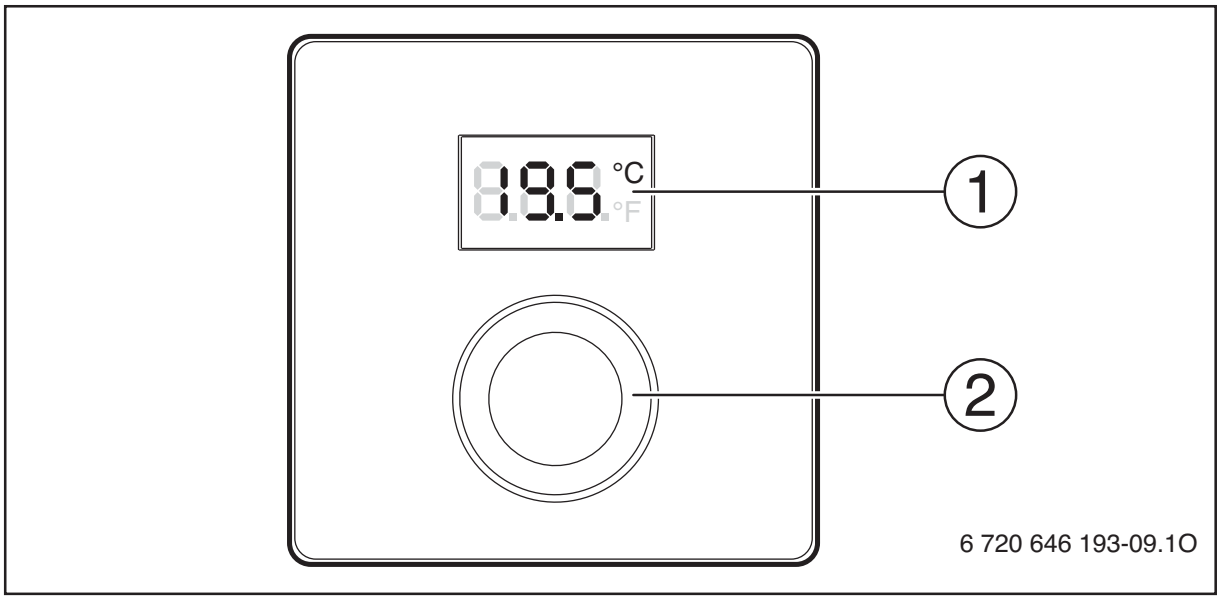
调控区域温度与使用设定的采暖出水温度控制数据的室温感应式控制器，二者的作用原理相同。

2.3 用作远程控制装置 （仅限双线总线 /EMS 2）

CR 10 可以用作上级操作装置的远程控制装置。

通过上级操作装置设置时间程序。在 CR 10 上可以短时更改理想室温，下一次切换时间程序时失效。之后上级操作装置重新主导，直至再次在 CR 10 上更改设置。

3 操作



[1] 显示屏
[2] 选择按钮：选择 （旋转）和确认 （按压）

显示文本说明	示例
当前室温 （默认显示）	
理想室温： ▶ 按压选择按钮，短时显示理想室温 （闪烁）。	
维护显示 （需要保养） ▶ 按压选择按钮，切换至默认显示。	
进行故障显示时，交替显示故障代码和附加码 （→ 排除故障） ▶ 按压选择按钮，短时显示当前室温。	

设置理想室温	事件
▶ 旋转选择按钮，选择理想室温。	
▶ 按压选择按钮，确认设置。	

关闭采暖装置	事件
▶ 降低理想室温，直至显示 **OFF**。采暖装置关闭时，室内防冻功能也关闭。热源的防冻功能仍处于激活状态。	

4 针对专业人员的信息

4.1 信息

▶ 将操作装置安装在平整的墙壁上 （à 图 1 至 2，自第 22 页起）。

4.2 电气连接

操作装置通过总线导线供电。

长度	建议的截面尺寸	电缆类型
≤ 100 m	0.50 mm^2	至少 H05 VV-... (NYM-J...)
≤ 300 m	1.50 mm^2	

表 *4* 允许的总线导线长度

▶ 专业敷设和连接总线导线。

▶ 建立总线连接 （à 图 3，第 23 页）。

总线连接端子名称请参阅热源的技术文档。

4.3 设备示例接线图

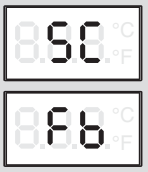
仅图解显示液压连接并提供一种非强制性液压连接建议。

例如，图 4 （第 24 页）显示的设备，是两个带区域模块和热水制备装置的非混水供暖回路，自定义设置 2 个 CR 10 和 MZ 100 区域模块

4.4 调试

首次调试或重置后调试。

带一个供暖回路的设备 （室温控制器）	
▶ 接通设备 / 复位 CR 10 建立连接时显示 3 条线。成功建立连接后显示室内温度。	

带多个供暖回路的设备 （区域控制 / 远程控制）	
▶ 接通设备 / 复位 CR 10 建立连接时显示 3 条线。	
▶ A.1 = 接通并确认 SC （区域控制器）。 **-or-** ▶ A.1 = 接通并确认 Fb （远程控制装置）	
▶ 选择并确认供暖回路 (HC = 1 ~ 8)。	

4.5 维护菜单中的设置

设置	调节范围[1)]	说明
A.1	**CO** | Fb | SC	控制器 (CO)、远程控制装置 (Fb)、区域控制器 (SC)
H.C	**HC1** | HC2 | ... | HC7 | HC8	供暖回路 / 供暖区 1 8[2)]
d.1	2 | **3** | 4	调控特性 （响应速度） 2 2K P 区域 = 快速响应 3 3K P 区域 = 中等速度响应 4 4K P 区域 = 响应慢
E.1	– 3.0 ~ **0.0** ~ 3.0	所显示室温的校正值
P.1	**4** | 5	采暖出水温度控制 (4) 或功率控制 (5)
L.1	**1** | 0	最佳泵运行：进行采暖出水调控时，热泵运行的时间尽量短。在设备中进行缓冲存储时关闭。

设置	调节范围[1)]	说明
C.1	**C** | F	显示温度的单位：℃ (C)　℉ (F)
S.1	nF.12.01	软件版本[3)]
F.1	1 | **0**	复位 CR 10 0：不复位 1：复位

1) 粗体数字 = 初始设置

2) 每个供暖回路仅分配一个 CR 10。

3) 旋转选择按钮，读取完整数值。

复位时恢复初始设置。断电时保留设置和供暖回路分配设置。

4.6 操作 （示例）

打开维护菜单	事件
▶ 按住选择按钮，直至显示 2 条线。	
▶ 松开选择按钮，显示第一个设置。	

更改设置 （例如供暖回路 **H.C**）	事件
▶ 选择事件。	
▶ 按压选择按钮，显示当前数值。	
▶ 再次按压选择按钮，更改数值。	
▶ 选择并确认所需数值。	
▶ 按住选择按钮，直至重新显示设置。	

关闭维护菜单	事件
▶ 按住选择按钮，直至显示 3 条线。	
▶ 松开选择按钮。 显示当前室温，操作装置使用更改后的设置数据工作。	

5 排除故障

如果无法排除故障，请记录故障代码和附加码：

▶ 联系客服或者获得授权的专业公司。

▶ 告知故障类型和操作装置的 ID 编号。

表 *5* 操作装置背面的 *ID* 编号 （装配工填写）

出现故障后，显示屏交替显示故障代码和 3 位附加码。

如果附加码为 4 位，则先交替显示故障代码和前两位数字，再显示后两位数字 （例如 A21 ... 10 ... 01 ... A21 ... 10 ... 01 ...）。

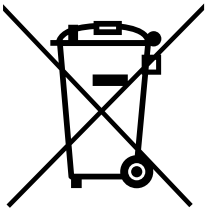
故障代码	附加码	可能的原因 专业人员补救措施
A61 ~ A68	3091 ~ 3098	CR 10 的室温传感器损坏 （A61/3091：供暖回路 1, ..., A68/3098：供暖回路 8）。 ▶ 更换 CR 10。
A21	1001	供暖回路 1 中的 CR 10 配置错误。 ▶ 如果安装了上级操作装置 （例如 CW 400），设置 A.1 = Fb （远程控制） ▶ 如果安装并识别到区域模块，设置 A.1 = SC （区域控制器）。 ▶ 如未安装上级操作装置且只安装了一个供暖回路，设置 A.1 = CO （控制器）。

故障代码	附加码	可能的原因 专业人员补救措施
A22 ~ A28	1001	上级操作装置用于进行远程控制的总线信号缺失（A22：供暖回路 2，…，A28：供暖回路 8）。 ▶ 安装上级操作装置（例如 CW 400）。 ▶ 建立总线连接。
A61 ~ A68	1081 ~ 1088	CR 10 配置错误（A61/1081：供暖回路 1，…，A68/1088：供暖回路 8）。 ▶ 设置 A.1 = Fb（远程控制）。
A61 ~ A68	3061 ~ 3068	CR 10 配置错误（A61/3061：供暖回路 1，…，A68/3068：供暖回路 8）。 ▶ 补救措施请参见故障代码 A21。
Fill	-	采暖设备中的水压过低。 ▶ 补注采暖水（无需专业人员，→ 热源的技术文档）。

表 *6* 针对专业人员的故障代码和附加码

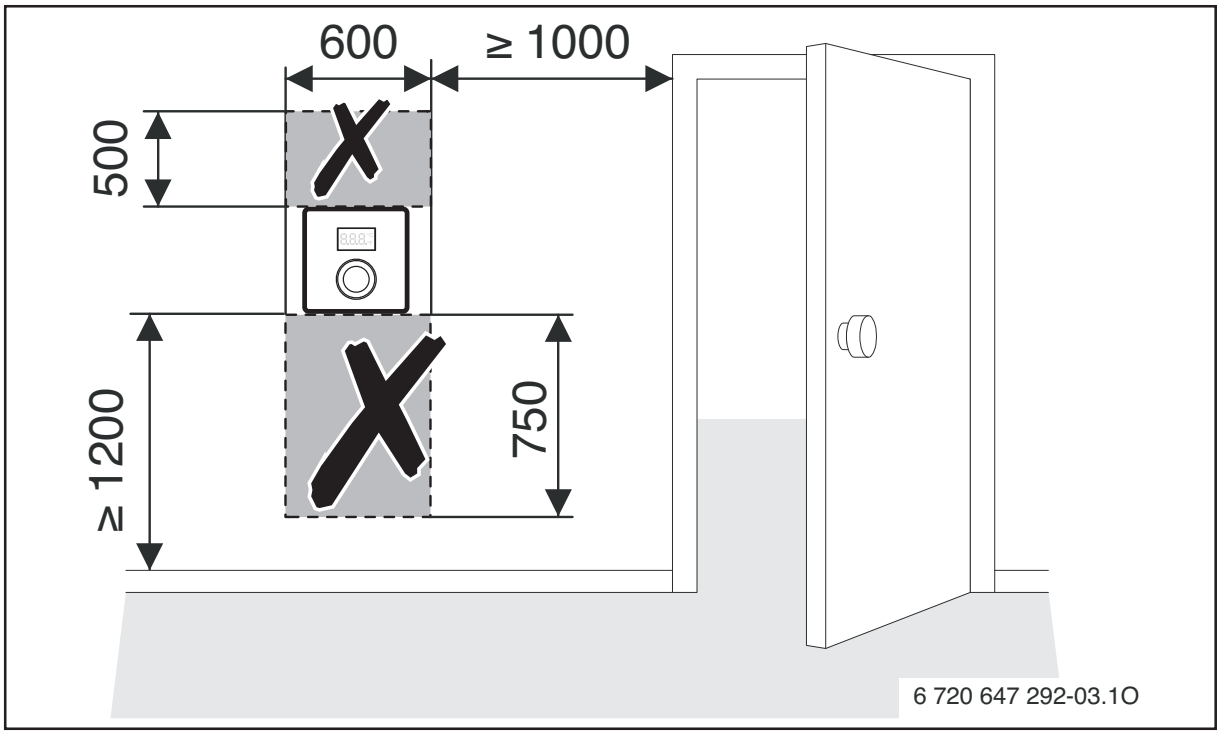
详细信息请参阅维护手册

6 老旧的电子电气设备

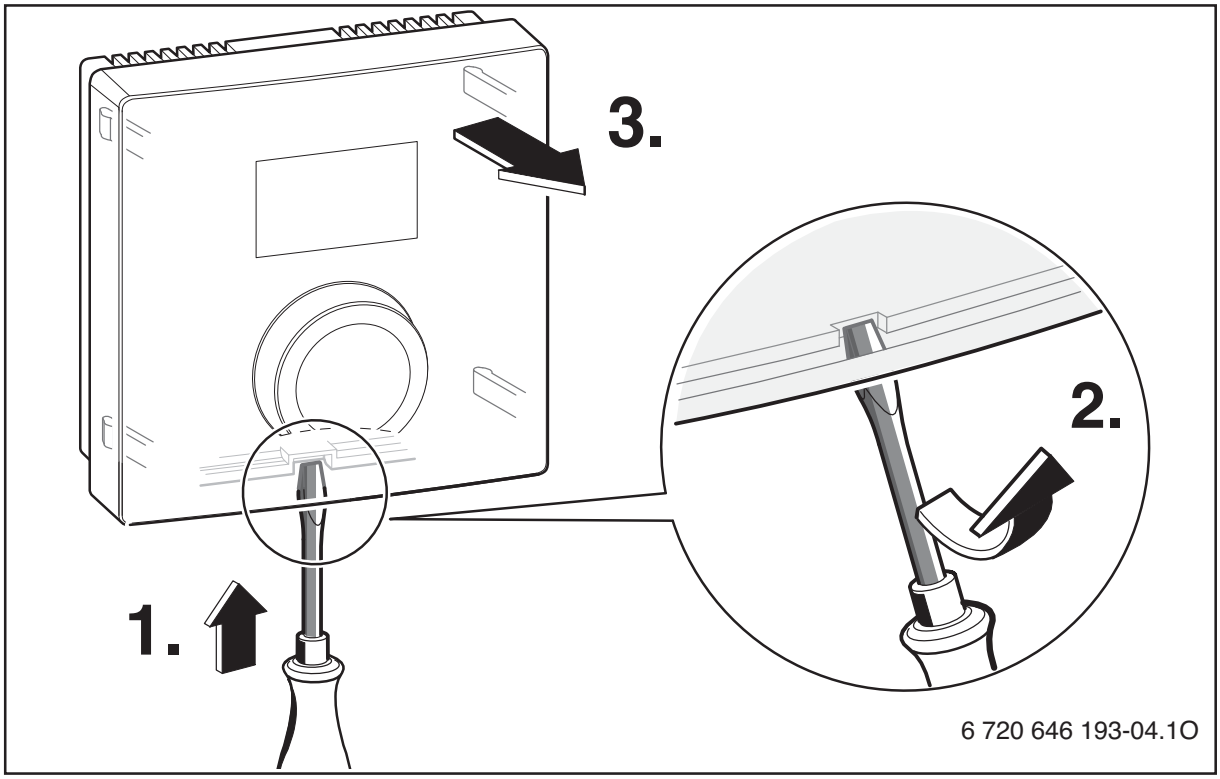


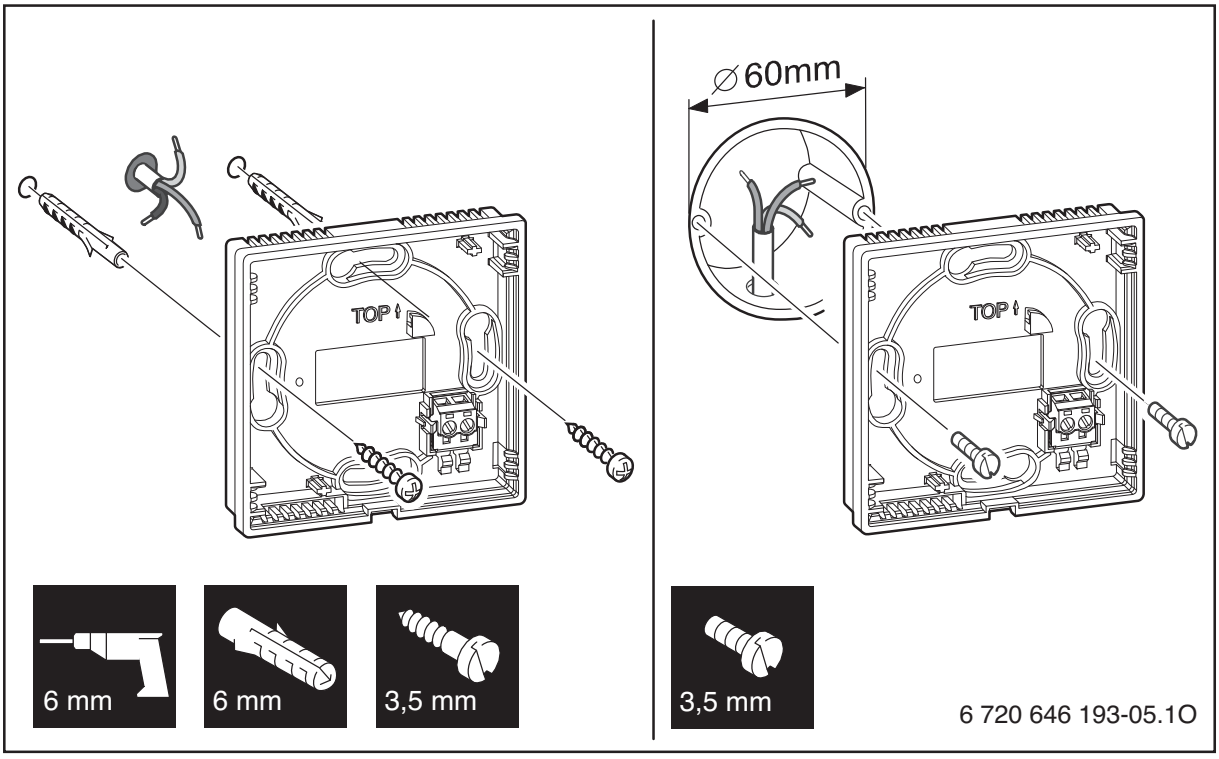
不再使用的电子电气设备必须单独收集并进行环保回收（关于老旧电子电气设备的欧盟指令）。

请通过所在国的回收和收集系统对老旧的电子电气设备进行废弃处理。

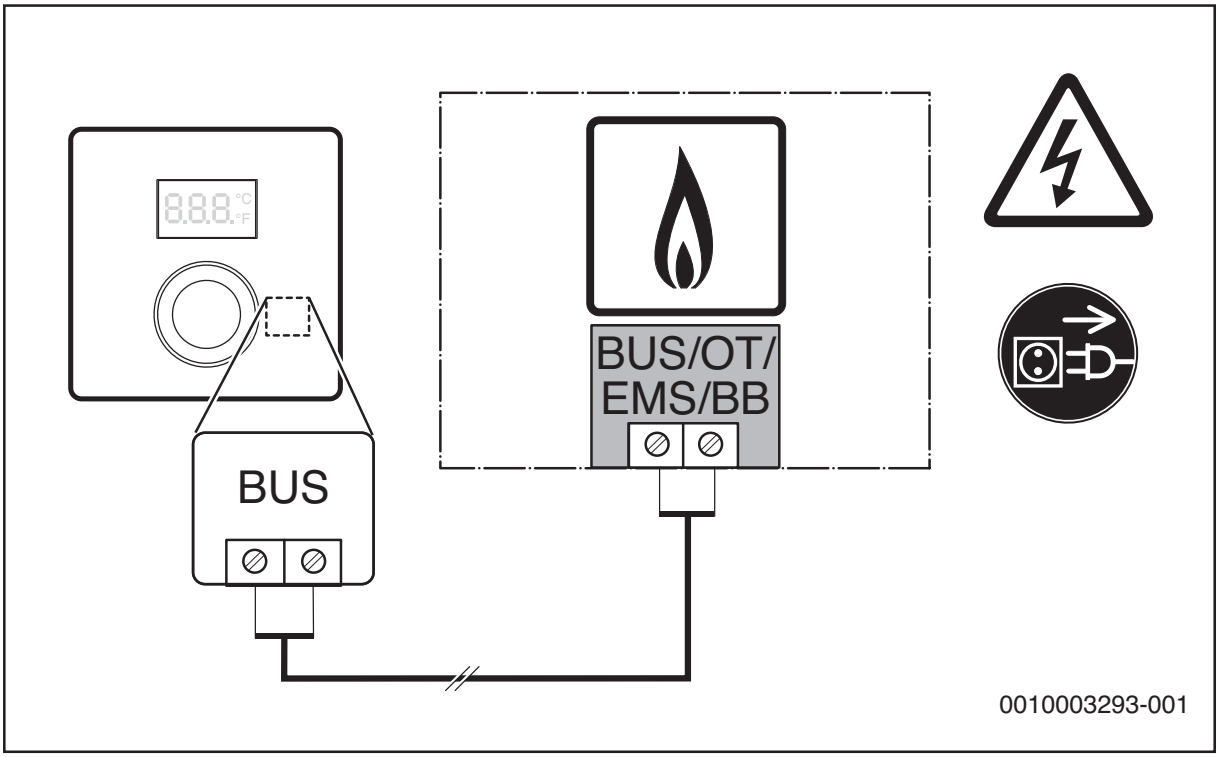


1

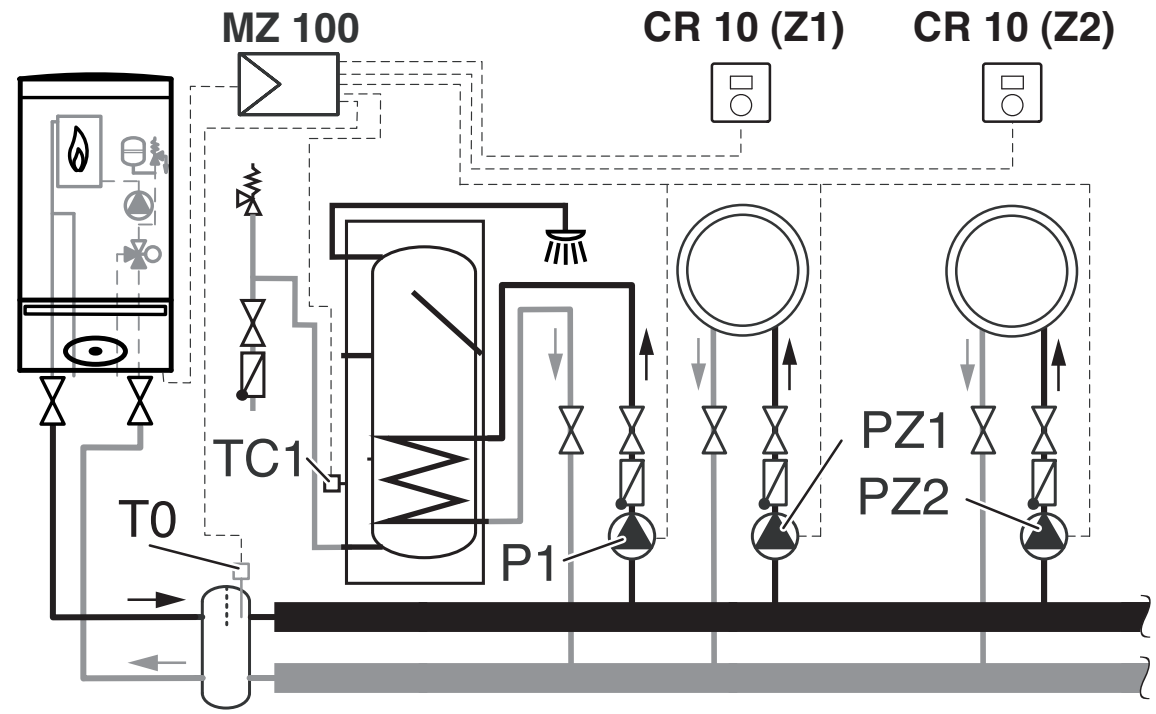


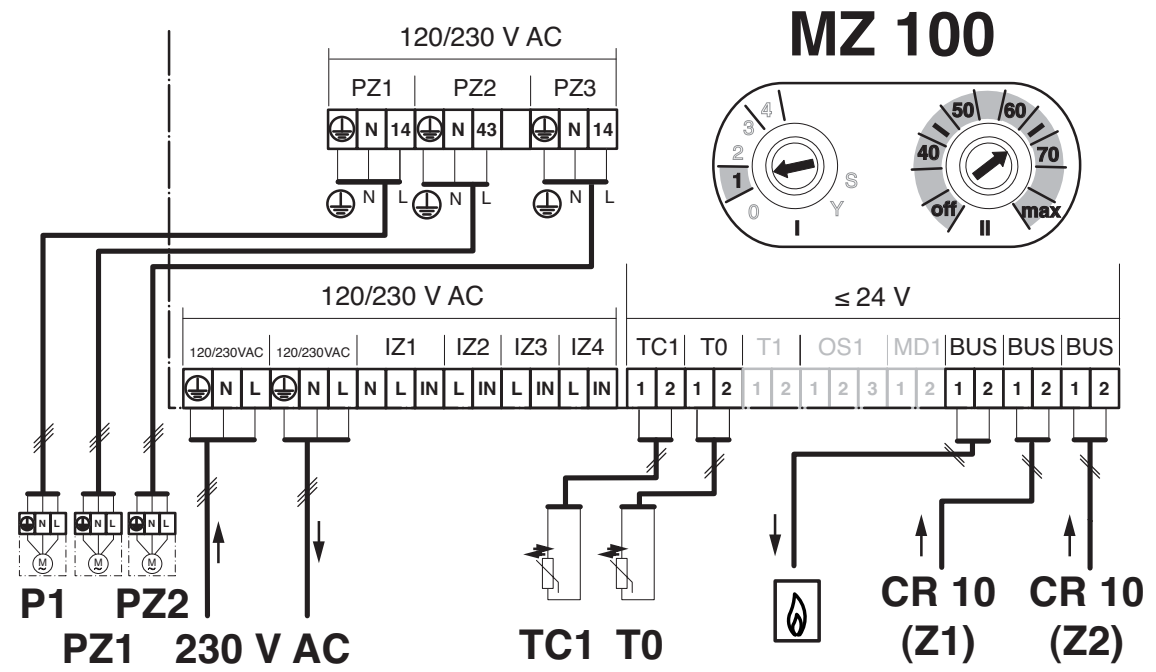

⌀60mm
TOP
TOP
6 mm
6 mm
3,5 mm
3,5 mm
6 720 646 193-05.1O

2


BUS
BUS/OT/
EMS/BB
0010003293-001

3

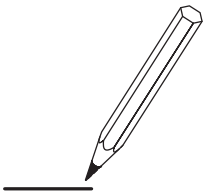


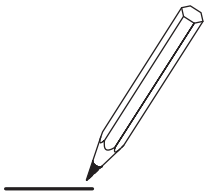


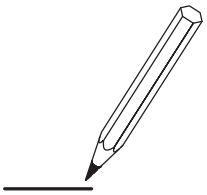
CR 10 (Z1)	CR 10 (Z2)	MZ 100	
A.1 = SC H.C = HC1	A.1 = SC H.C = HC2	I = 1 HC1 = 1 HC2 = 2	II = 65 TC1 = 65 °C

0010005730-002

4







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