

# Installation and Service Instructions

for the installer/service engineer

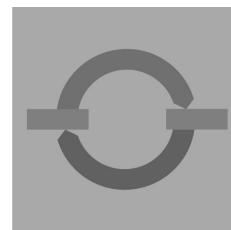
# VIESSMANN

**Vitotronic 050**

**Type HK1M**

Weather-compensated, digital heating circuit control unit

*Note on applicability: see page 2.*



## VITOTRONIC 050



### Safety instructions



Please follow these safety instructions closely to avoid the risk of injury to persons and damage to property.

#### Safety regulations

Please observe all relevant safety requirements defined by DIN, DIN EN, DVGW, TRF and VDE (GB: British Standards codes of practice). See also the red sheet headed "Important safety information" in the enclosed documents or in the "Vito-tec planning documentation" ring binder.

In certain countries, boilers and burners must be registered or issued with a permit in accordance with national regulations.

#### Boiler location

Please refer to the technical data sheet or technical guide for details of the conditions which must be fulfilled by the room in which the boiler is installed.

#### Work on the equipment

Installation, initial start-up, maintenance and repairs must be carried out by a competent person (heating engineer/service contractor). (See EN 50 110, Part 1, and VDE 1000, Part 10. (GB): British Standards codes of practice).

Before work is undertaken on the equipment/heating system, the mains voltage must be switched off (e.g. at the separate fuse or mains electrical isolator switch) and measures taken to prevent it from being switched on again. Disconnection must be carried out by means of an isolating device which simultaneously isolates all non-earthed conductors with at least 3 mm contact separation.

On gas-fired systems, also close the gas shut-off valve and make secure to prevent unauthorised opening.

Electrical components provided by the customer must be type-tested.

When carrying out work which involves opening up the control unit, no static discharge should be allowed to take place through the internal components.

Please observe the relevant safety requirements when connecting external switch contacts/components to the protective low voltage of the control unit, i.e. 8.0 mm air gap/creeping distance or 2.0 mm insulation thickness from active components.

Safe electrical isolation must be ensured in accordance with EN 60 335/IEC 65 for all components provided by the customer (including PC/laptop).

#### Gas installation work

Gas installation work must be carried out by an approved installer (GB: registered with C.O.R.G.I.). The requirements for starting up gas-fired systems and LPG-fired systems, as defined in TRGI'86/96 and TRF 1996 respectively, must be complied with.

#### Repairs

It is not permitted to carry out repairs on parts which serve a safety function.

#### Initial start-up

The initial start-up must be carried out by the installer of the system or a commissioning engineer designated by him; all readings should be recorded in a commissioning report.

#### Instruction of the system user

The installer of the system is required to give the system user the operating instructions and show him how to operate the system.

#### Safety instruction!

*This heading in these instructions denotes information which must be observed to safeguard persons and property.*



*This symbol indicates a reference to other instructions which must be observed.*

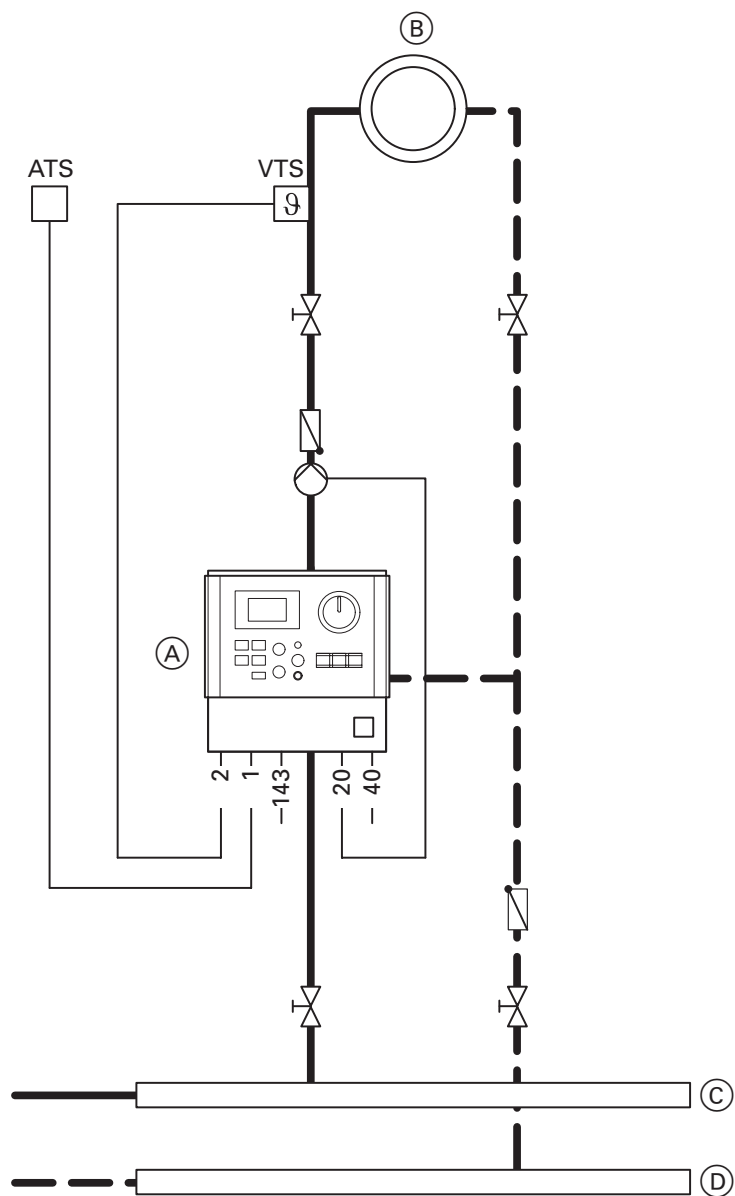
### Note on applicability

Applicable to the following control unit:

Vitotronic 050, Type HK1M  
Part No. 7143 159, from Serial No. 7143 159 000 000 000

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**Circuit diagram 1**



- (A) Vitotronic 050
- (B) Heating circuit
- (C) Flow distributor
- (D) Return collector

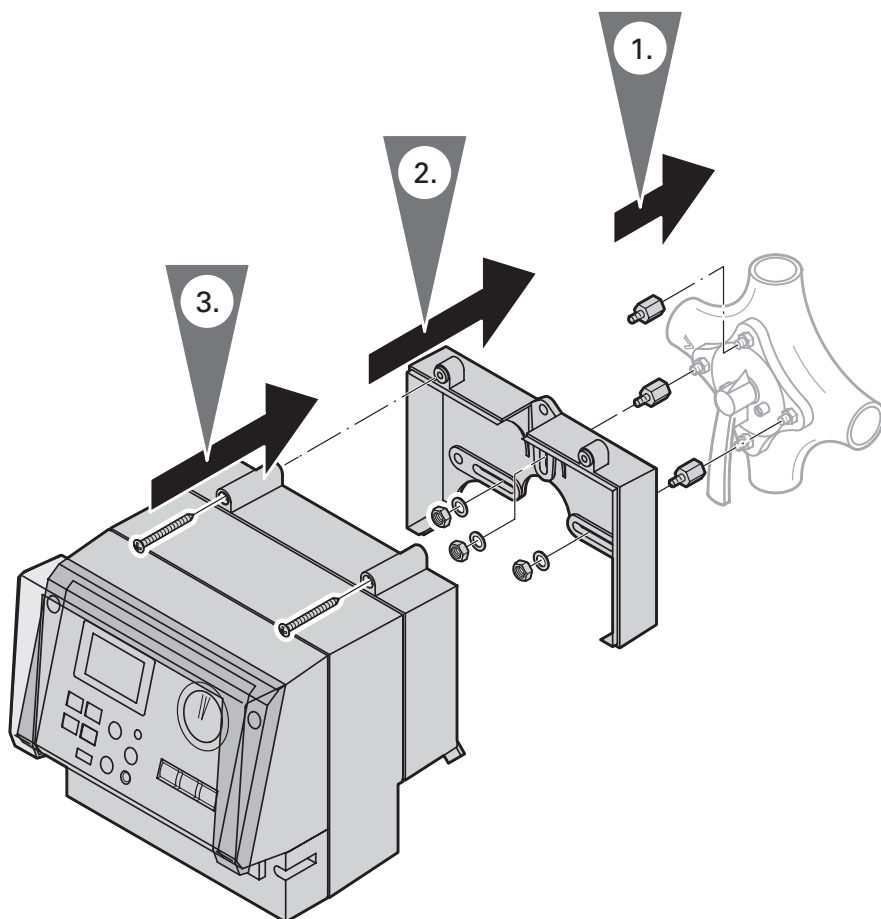
- 1 X3 Outdoor temperature sensor
- 2 X6 Flow temperature sensor
- 20 Heating circuit pump
- 40 Mains connection

- 143 X5 Connection of external equipment (see page 12)



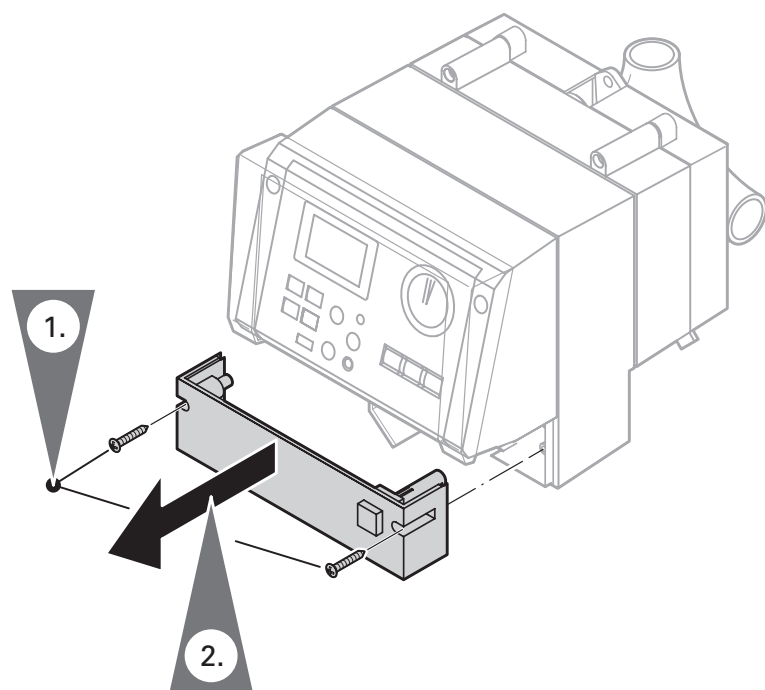
## Mounting the control unit

### Mounting the base plate and the rear part of the control unit



1. Screw the threaded bolts (M6 or M8 female thread depending on size of mixing valve) onto the threaded bolts of the mixing valve.
2. Place the base plate in position and screw on with the washers and nuts provided.
3. Snap the control unit with drive module onto the base plate; fasten with the screws provided.

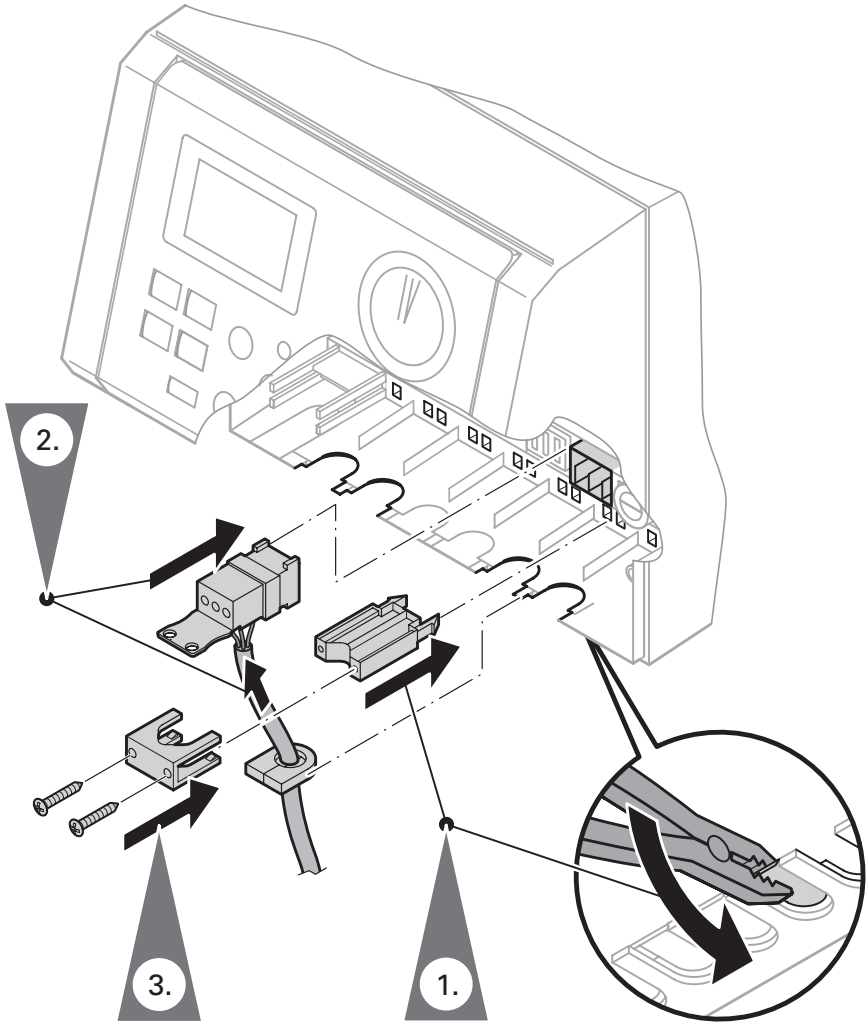
### Opening/closing the terminal compartment



- To open**
1. Unscrew the screws.
  2. Remove the cover.

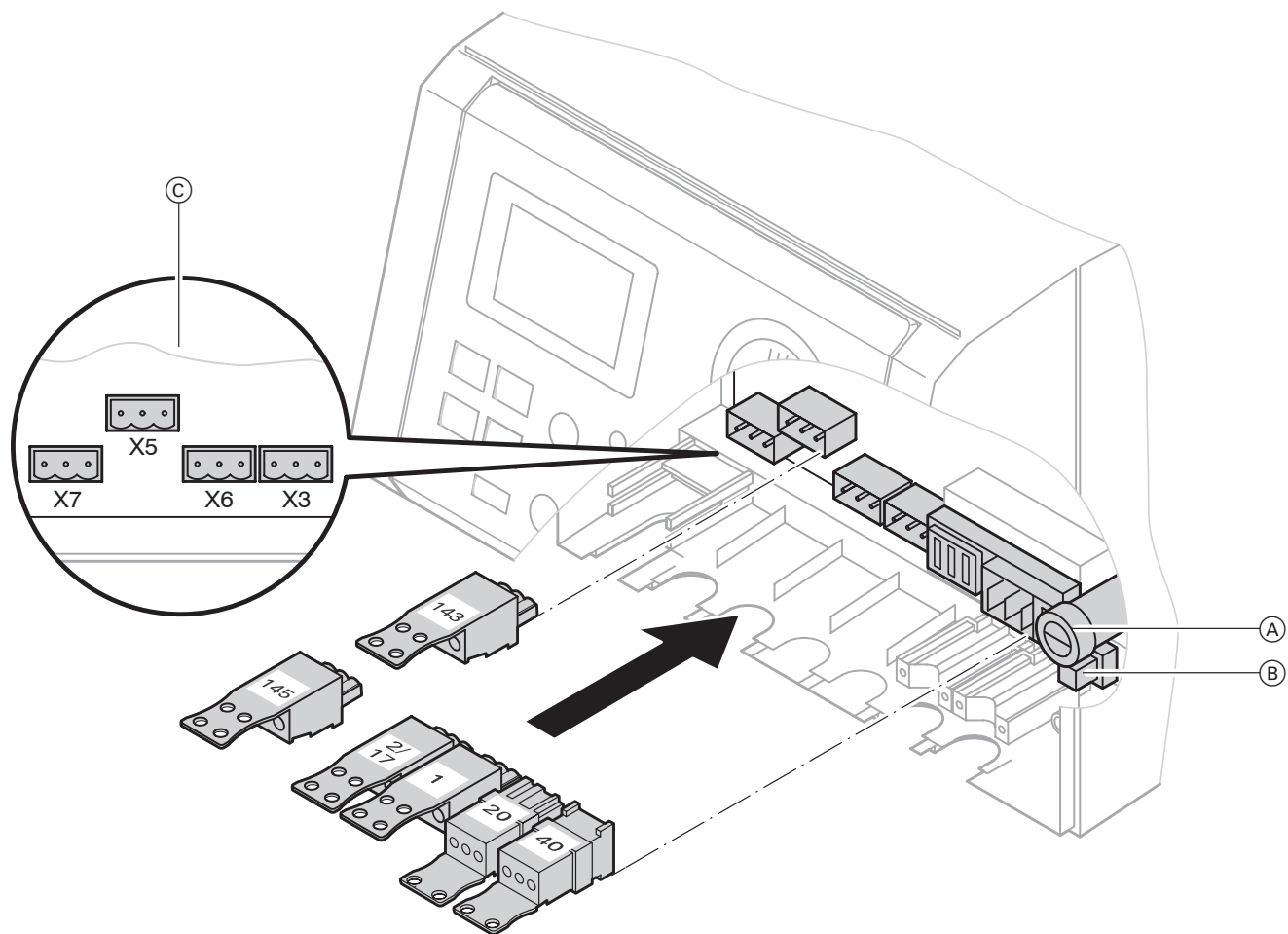
**To close**  
Put the cover on and fasten with the screws.

### Strain relief of cables



1. Break open the cable bushing and fit the bottom part of the strain relief clamp.
2. Run the cable through the cable bushing; insert the connector.
3. Screw down the top part of the strain relief clamp.

## Overview of electrical connections



- (A) Fuse
- (B) System on/off switch
- (C) Arrangement of low-voltage sockets

### Low-voltage connectors

- 1 X3 Outdoor temperature sensor
- 2/17 X6 Flow temperature sensor/return temperature sensor (accessory)
- 143 X5 Connection of external equipment
- 145 X7 KM BUS user, e.g. Vitotrol 200 remote control (accessory)

### 230 V~ connectors

- 20 Heating circuit pump (accessory)
- 40 Mains connection

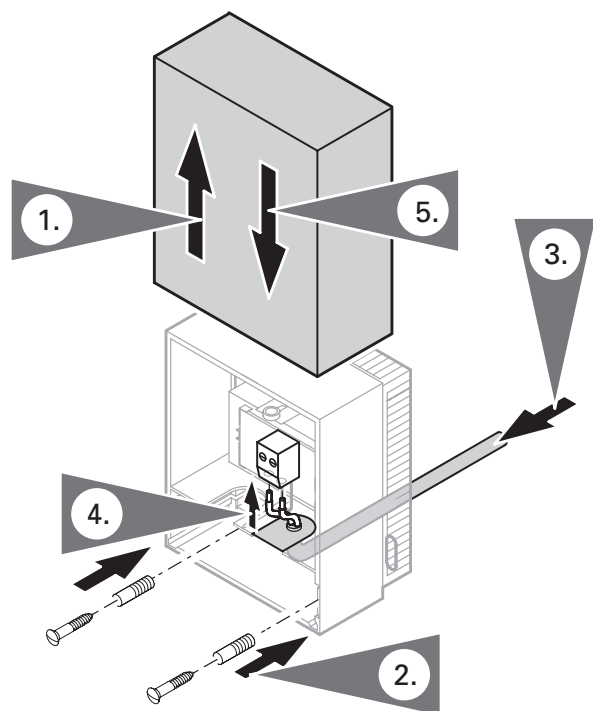


## Connection of the outdoor temperature sensor

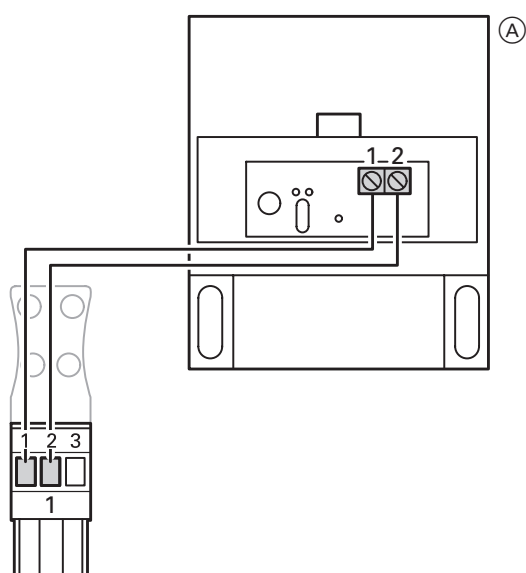
The outdoor temperature sensor should be mounted 2 to 2.5 metres above ground level on the north or north-west facing wall of the building. In the case of multi-storey buildings, it should be mounted in the upper half of the second storey.

Make sure that the sensor is not located over windows, doors and air vents, nor immediately beneath a balcony or guttering.

The outdoor temperature sensor must not be plastered over. If mounting on an unplastered wall, make allowances for the thickness of the plaster or remove the sensor before plastering the wall.



1. Remove the cap.
2. Mount the bottom part of the case.
3. Pull the cable through the opening in the terminal compartment and through the cable lead-through provided.
4. Connect the cable to the terminals.
5. Place the cap over the outdoor temperature sensor.



### Electrical connection

2-core cable, max. 35 m long with a conductor cross-section of 1.5 mm<sup>2</sup> copper.

1. Connect the 2-wire cable from the outdoor temperature sensor to terminals "1" and "2" in the connector **1**.
2. Insert the connector **1** in socket "X3".

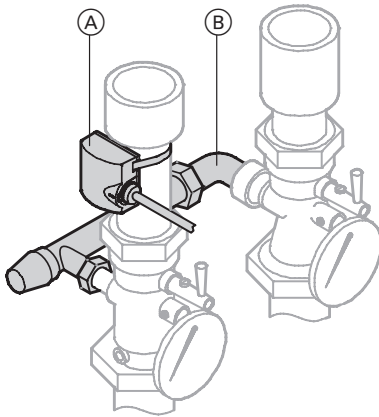
### Please note:

If a radio clock receiver (accessory) is to be connected, the connections should be carried out now (see page 35).



See installation instructions

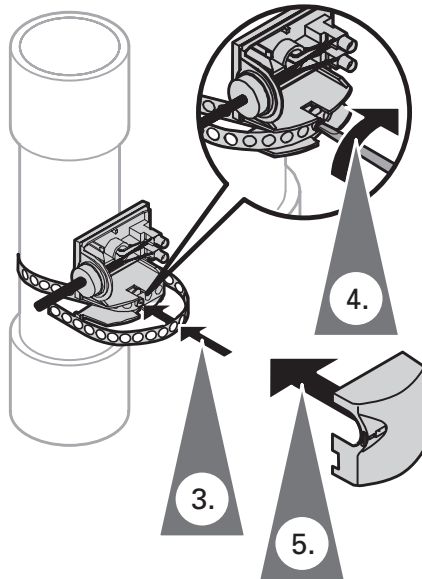
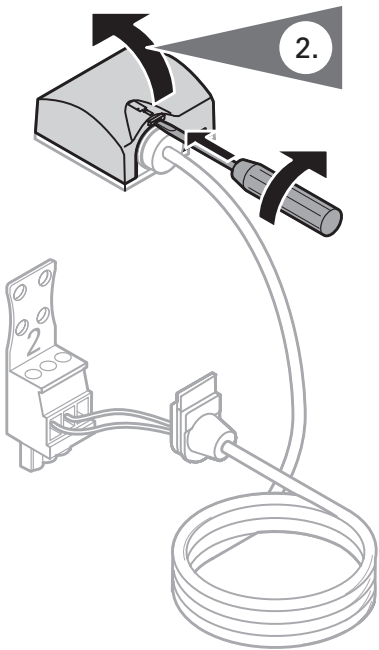
## Connection of the flow and return temperature sensor



(A) Flow temperature sensor  
(B) Overflow valve (if installed)

Mount the flow temperature sensor on the heating flow pipe immediately downstream from the heating circuit pump. Where plastic pipes are used, mount the sensor on an intermediate metal pipe section. It is not necessary to use heat conductive paste. If an overflow valve is installed, mount the flow sensor on the flow pipe immediately after the overflow valve.

1. Thoroughly clean the heating flow pipe until metallically bright.



2. Open the case of the sensor with a screwdriver.
3. Place the perforated mounting strap (supplied inside the sensor case) on the tensioning screw, run it around the flow pipe and place back on the tensioning screw.
4. Tighten the tensioning screw.
5. Close the sensor case.

**Please note:**  
The sensor must not be insulated.

### Electrical connection

The sensor is ready to plug in and is inserted in socket "X6" of the control unit.

In conjunction with optimized under-floor heating circuit control: Connect the return temperature sensor to terminals "2" and "3" of the connector [2].

**Please note:**  
Alternatively, an immersion temperature sensor can be used (see page 36).

## Connection of the heating circuit pump



Install pump (type-tested); see manufacturer's instructions.



### 230 V~ pump

**Please note:**

Rated current: max. 4 (2) A~

Recommended connection

cable: H05VV-F3G 0.75 mm<sup>2</sup>

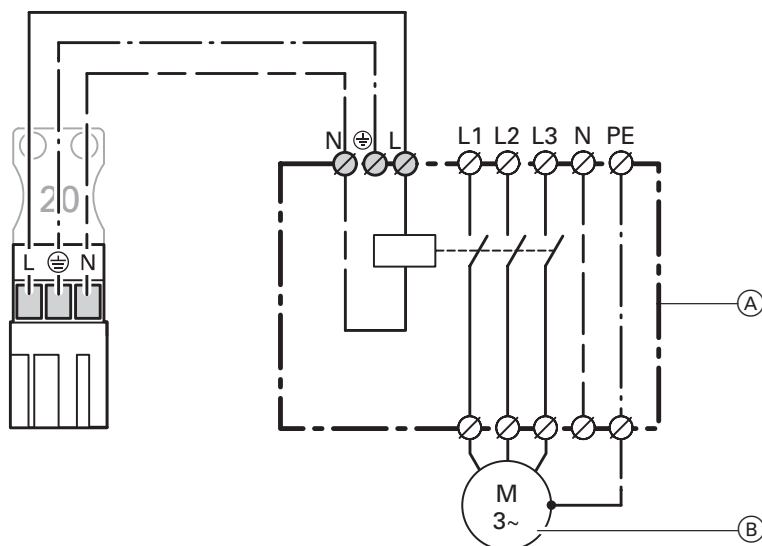
or

H05RN-F3G 0.75 mm<sup>2</sup>

(GB: 3 x 0.75 mm<sup>2</sup> to BS 6500, Table 9)

1. Connect the 3-wire cable from the pump to connector [20].

2. Insert the connector [20].



- (A) Contactor
- (B) Three-phase pump

### 400 V~ pump

**Please note:**

For activating the contactor:

Rated current: max. 4 (2) A~

Recommended connection

cable: H05VV-F3G 0.75 mm<sup>2</sup>

or

H05RN-F3G 0.75 mm<sup>2</sup>

(GB: 3 x 0.75 mm<sup>2</sup> to BS 6500, Table 9)

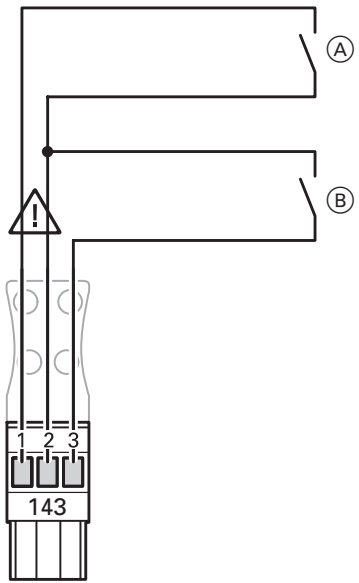
Please comply with current I.E.E. regulations and the connection conditions of the local energy supply company when connecting this equipment to the three-phase mains.

1. Select the contactor and the three-phase connecting cable in accordance with the rating of the pump that is to be connected.

2. Connect the pump, contactor and connector as shown in the Fig.

3. Insert the connector [20].

**Connection of external equipment to connector 143**



- Ⓐ External changeover of the heating program/"Open mixing valve" externally (floating contact)
- Ⓑ "Close mixing valve" externally (floating contact)

**External changeover of the heating program/"Open mixing valve"**

Connect floating contact to terminals "1" and "2".

The manually preselected heating program can be changed over (see table) and the mixing valve opened via the contact.

Set coding address "91: 1" and/or "9A: 1".

**"Close mixing valve" externally**

Connect floating contact to terminals "2" and "3".

The mixing valve is closed when the floating contact is closed.

**⚠ Please note:**  
While the mixing valve is being closed, there is no frost protection of the heating circuits.

Set coding "99: 1".

Manually preselected heating program (with contact open)		Coding 2		Heating program after changeover (with contact closed)
⏻ or ⏻	Space heating OFF	d5 : 0 (factory setting)	<->	Continuous operation with reduced room temperature
⏻	Space heating ON	d5 : 1	<->	Continuous operation with normal room temperature

## Connection to mains

### Regulations

Mains connection and safety measures (e.g. fault current circuit) must be carried out in accordance with IEC 364, the connection requirements of your local energy supply company and VDE regulations (GB: British Standards code of practice). The mains power cable to the control unit must be provided with fuse protection conforming to the regulations.

### Mains electrical isolator switch (if required)

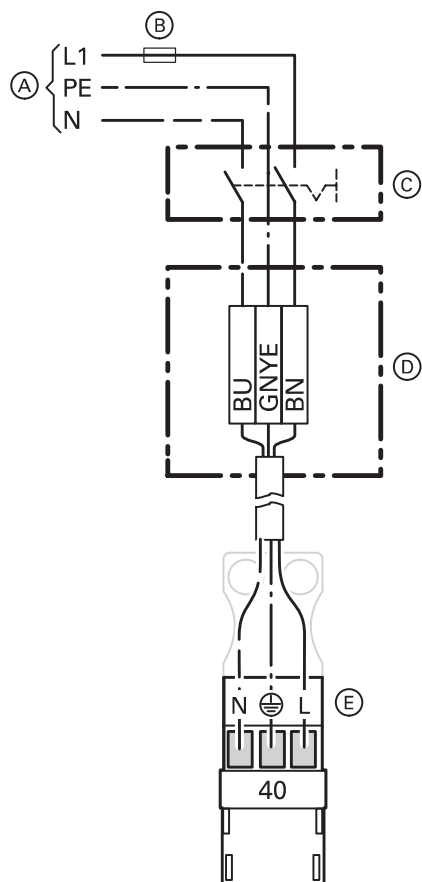
The mains electrical isolator switch must be installed outside the boiler room and must simultaneously isolate **all** non-earthed conductors with at least 3 mm contact separation.

### Replacement of the mains connection cable

A three-wire cable of the following type is required:

- HO5VV-F3G 0.75 mm<sup>2</sup>
- HO5RN-F3G 0.75 mm<sup>2</sup>

(GB: 3 x 0.75 mm<sup>2</sup> to BS 6500, Table 9)



- (A) Mains voltage 230 V~ 50 Hz
- (B) Fuse
- (C) Mains electrical isolator switch, if required, 2-pole (installed on site)
- (D) Junction box (installed on site)
- (E) Connector 40

### Colour codes to DIN/IEC 757

- BN Brown
- BU Blue
- GNYE Green/yellow

1. Check whether the mains power cable to the control unit is provided with fuse protection conforming to the regulations.

2. Connect the mains connection cable provided to the terminals in the junction box (to be installed on site).

### Safety instruction!

Take care **not** to interchange wires "L1" and "N".

L1: Brown

N: Blue

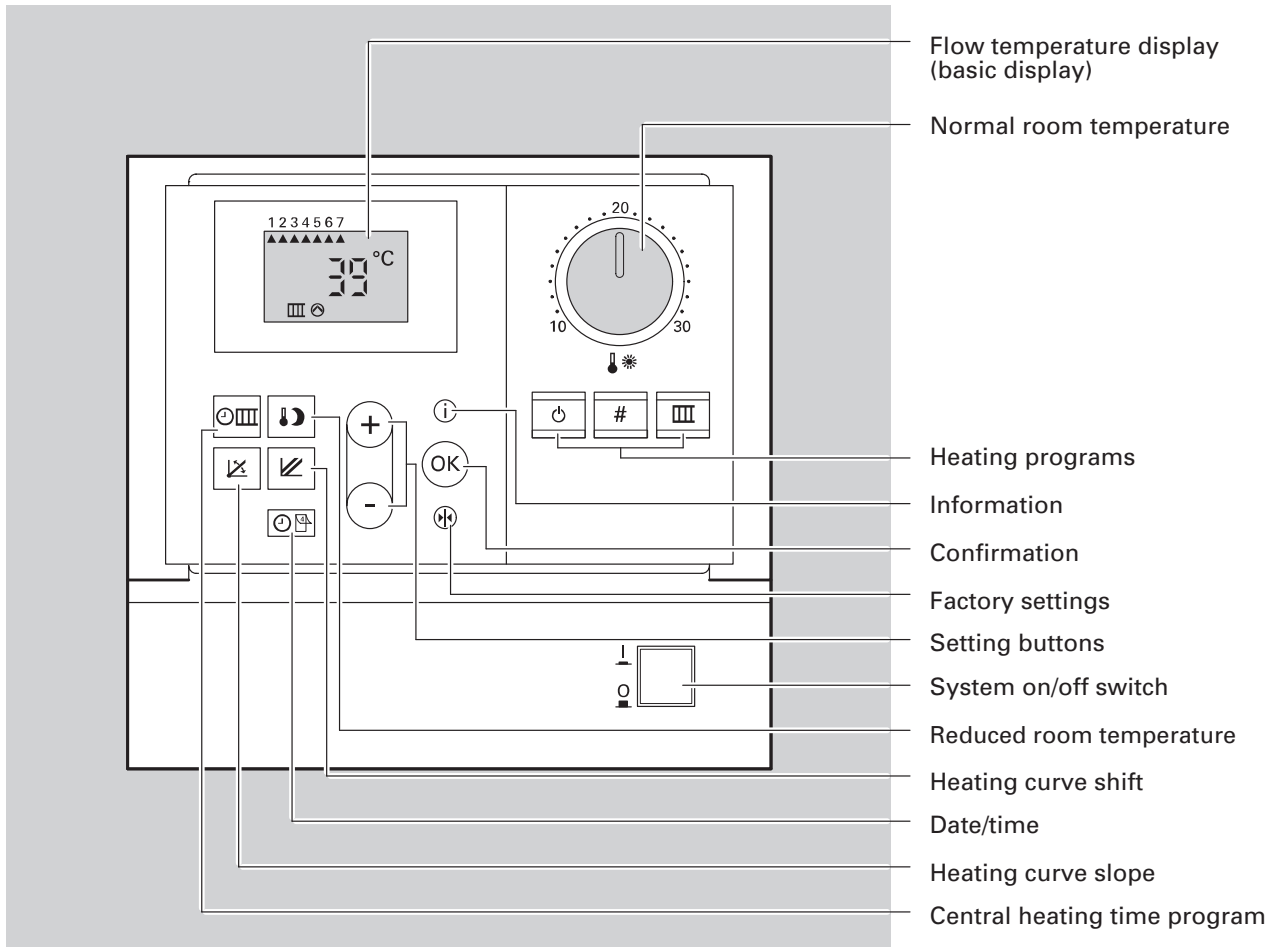
PE: Green/yellow

3. Connect the mains connection cable in connector 40.

4. Insert the connector 40 of the mains connection cable.

# Steps

## 1. Controls and indicators



**Steps** (continued)

**2. Integrate the control unit in the LON BUS system**

The LON communication module (accessory) must be inserted (see page 33).

**Set the LON user number**

Set the LON user number via coding address "77" in coding 1. → See page 40 for coding 1.

**Please note:**

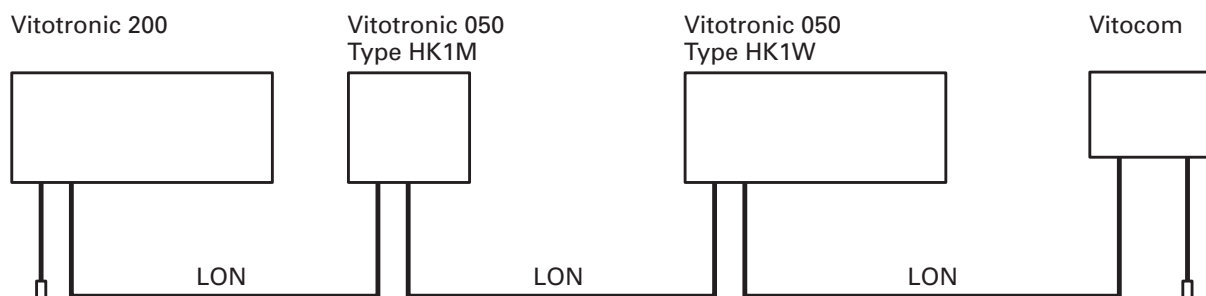
The same number must **not** be assigned twice within a LON BUS system.

Update the user list on the control unit which is coded as the error manager, and carry out the user check.



See service instruction of the corresponding control unit

**Example of single-boiler system with Vitotronic 050 heating circuit controls and Vitocom 300 connected downstream**

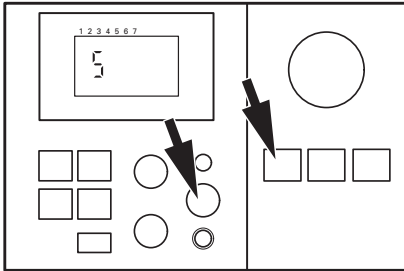


User No. 1 Coding "77 : 1"	User No. 10 Coding "77 : 10"	User No. 11 <b>Set</b> coding "77: 11"	User No. 99
Control unit is error manager Coding "79 : 1"	Control unit is not error manager Coding "79 : 0"	Control unit is not error manager Coding "79 : 0"	Unit is error manager
Transmit time via LON <b>Set</b> coding "7b : 1"	Time is received via LON <b>Set</b> coding "81 : 3"	Time is received via LON <b>Set</b> coding "81 : 3"	Time is received via LON
Transmit outdoor temperature via LON Coding "97 : 2"	Outdoor temperature is received via LON Set coding "97 : 1"	Outdoor temperature is received via LON <b>Set</b> coding "97: 1"	

## Start-up

### Steps (continued)

#### 3. Check outputs (actuators) and sensors



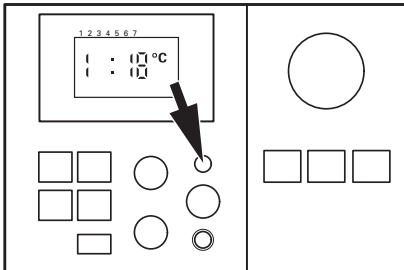
##### Carry out relay test

1. Press and simultaneously for approx. 2 seconds. → *Relay test is activated.*
2. Select relay outputs with the or button.
3. Press . → *Relay test is terminated.*

The following relay outputs can be selected:

Display	Relay function
	Heating circuit pump ON
	Mixing valve Open
	Mixing valve Neutral
	Mixing valve Closed

→ *Rotational direction changed via coding address "CA". See installation examples on page 17.*



##### Check sensors

1. Press . → *Scanning of operating status information is activated (see page 23).*
2. Scan actual temperatures with or .
3. Press . → *Scanning is terminated.*



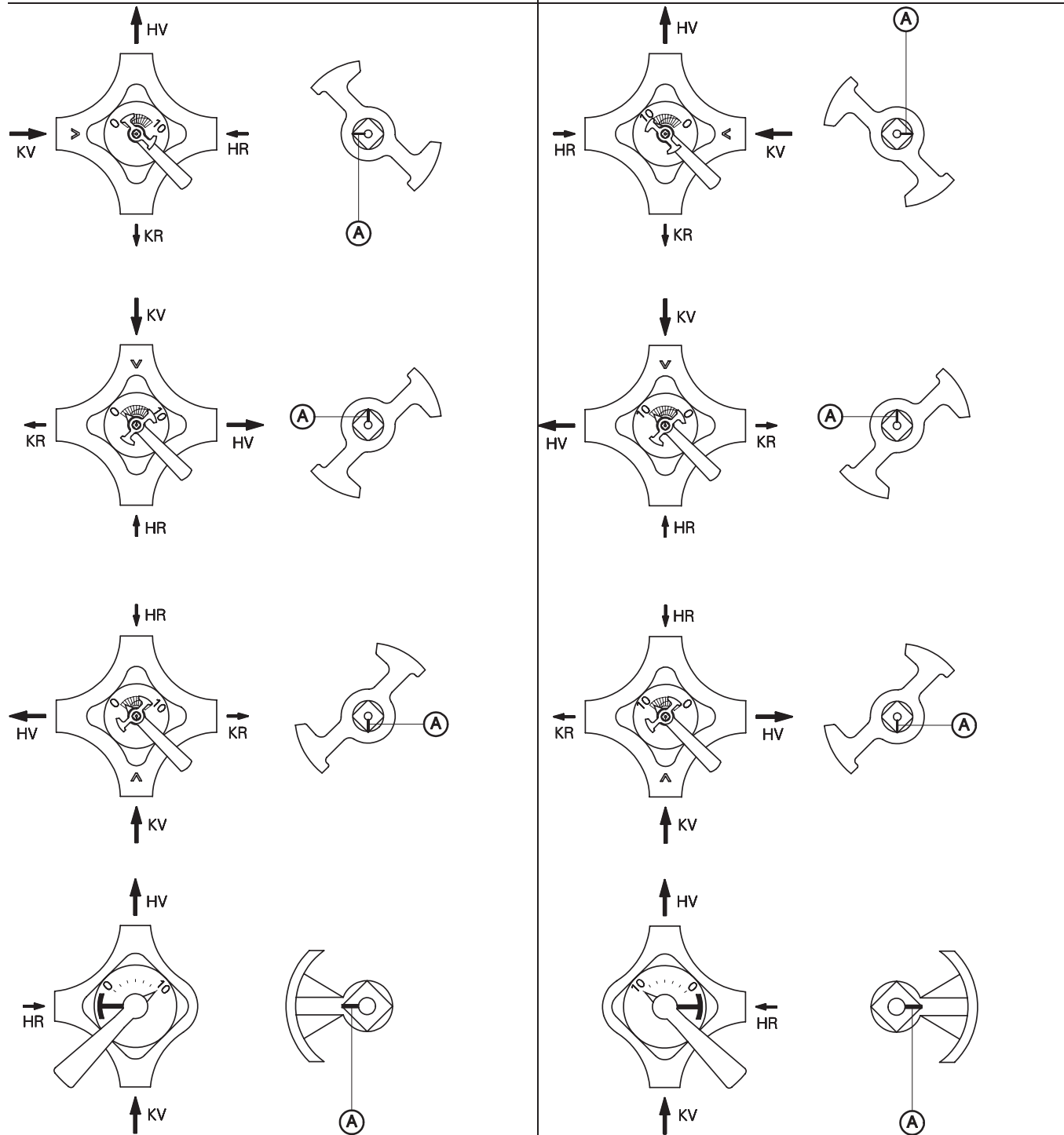
**Steps** (continued)

**3. Check outputs (actuators) and sensors (continued)**

**Installation examples**

In the **as delivered condition**, the electrical connections of the mixing valve motor are as required for the following installation examples; do not change.

The electrical connections of the mixing valve motor must be changed for the following installation examples.



Ⓐ Marker notch

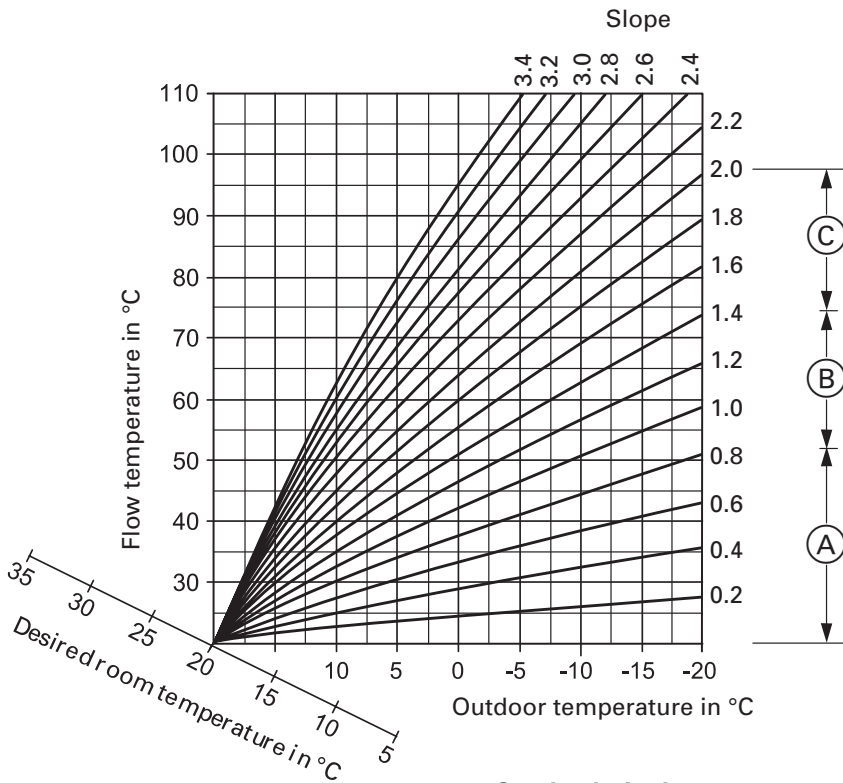
HR Heating return  
HV Heating flow

KR Boiler return  
KV Boiler flow

**Steps** (continued)

**4. Adjust the heating curves**

The heating curves represent the relationship between the outdoor temperature and the flow temperature. Put simply: The lower the outdoor temperature, the higher the flow temperature. In turn, the room temperature is dependent on the flow temperature.



The slope of the heating curve is normally within the range marked

- (A) for underfloor heating systems
- (B) for modulating heating systems,
- (C) for heating systems with boiler water temperatures over 75°.

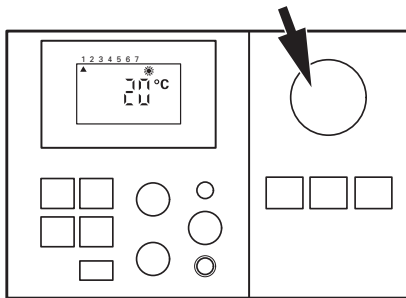
Factory settings:

- Slope "↘" = 1.4
- Shift "↙" = 0

**1. Set the desired room temperature**

- Normal room temperature  
Set the desired day temperature with the setpoint selector.

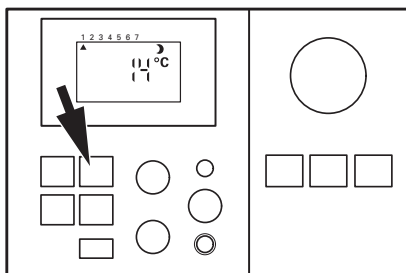
→ The value is automatically accepted after approx. 2 seconds.



- Reduced room temperature  
Press [↵] to call up the desired night temperature; adjust the desired night temperature with the (+) or (-) button.

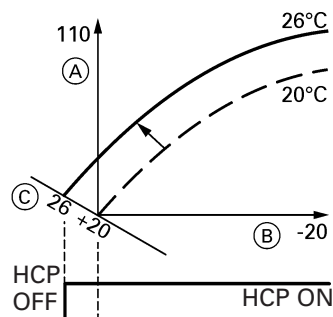
Press (OK) to confirm the selected value.

→ The display changes and shows the flow temperature.

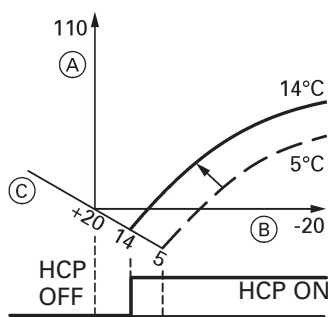


## Steps (continued)

### 4. Adjust the heating curves (continued)



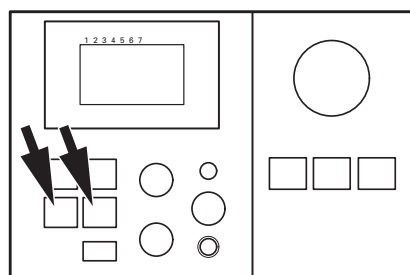
**Example 1:**  
Changing the normal room temperature from 20°C to 26°C.



**Example 2:**  
Changing the reduced room temperature from 5°C to 14°C.

→ The heating curve is adjusted accordingly along the desired room temperature axis and changes the on/off switching behaviour of the heating circuit pump (HCP) when the heating circuit pump logic function is activated (as delivered condition).

- Ⓐ Flow temperature in °C
- Ⓑ Outdoor temperature in °C
- Ⓒ Desired room temperature in °C

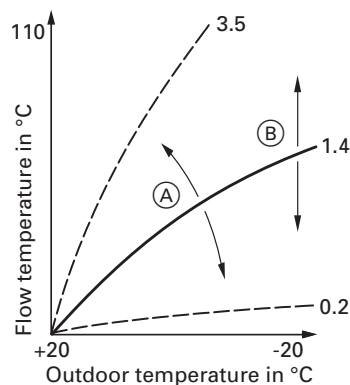


#### 2. Change the slope and shift

- Press to call up the slope; press to call up the shift.
- Adjust the value with the  $\oplus$  or  $\ominus$  button.
- Press  $\text{OK}$  to confirm the selected value.

→ Adjustable value 0.2 to 3.5.  
→ Adjustable value -13 to +40.

→ The display changes and shows the flow temperature.



- Ⓐ Change the slope
- Ⓑ Change the shift

#### 3. Change the maximum flow temperature limit

Factory setting 75°C, can be changed via coding address "C6".

→ **Please note:**

If an underfloor heating circuit is installed, a maximum flow temperature limit of, for example, 45°C can be set.

In the case of underfloor heating circuits, please observe the maximum permissible flow temperature required by the system.

The maximum flow temperature limit does not replace the max. limit thermostat required for underfloor heating systems.

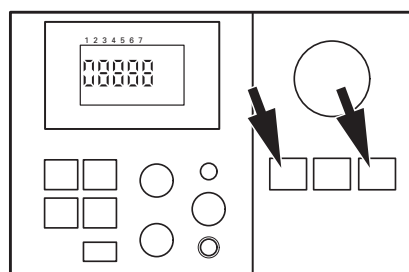
#### 4. Change the minimum flow temperature limit

Factory setting 20°C, can be changed via coding address "C5".

## Overview of service levels

Function	Button combination	To exit	Page
Temperatures and scans	Press  and  simultaneously for approx. 2 seconds	Press	20
Relay test	Press  and  simultaneously for approx. 2 seconds	Press	16
Operating status information	Press	Press	23

## Temperatures and scans



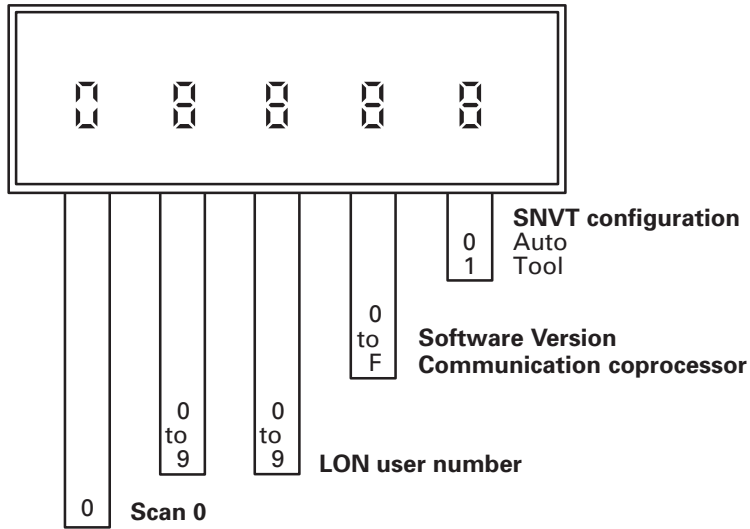
1. Press and simultaneously for approx. 2 seconds. → Access diagnosis level.
2. Select the required data for scanning with the or button.
3. Press . → Exit diagnosis level.

The following values can be scanned :

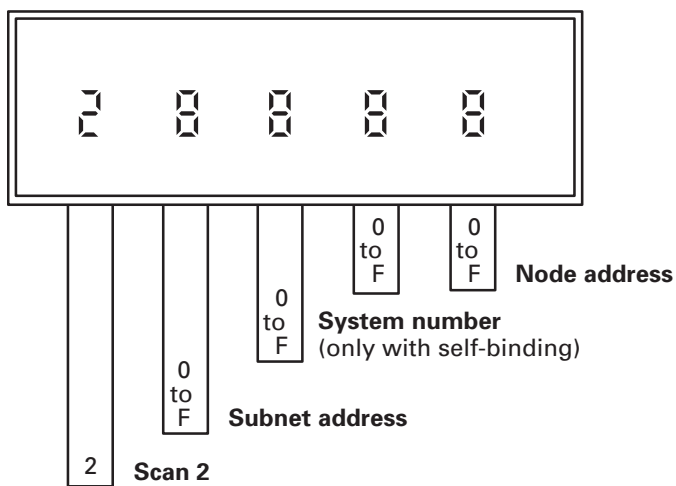
Display	Meaning
00000	Scan 0
1 10 °C	Damped outdoor temperature
20000	Scan 2
30000	Scan 3
40000	Scan 4
7 35 °C	Desired flow temperature
d 21 °C	Desired room temperature
00000	Scan 0

## Temperatures and scans (continued)

### Scan 0



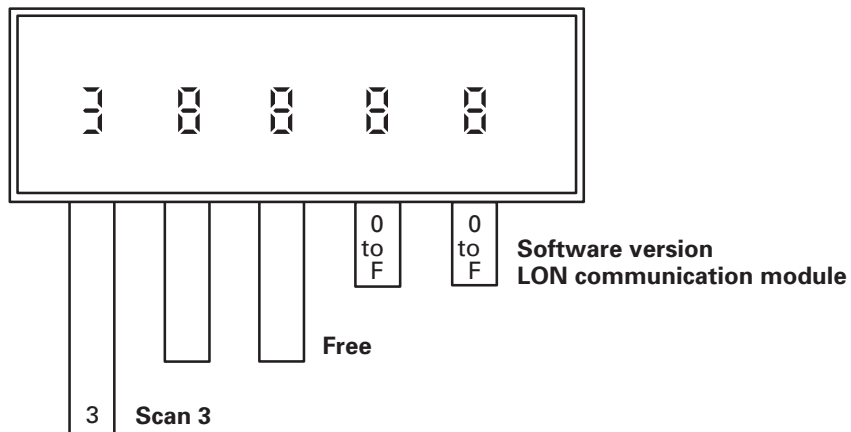
### Scan 2



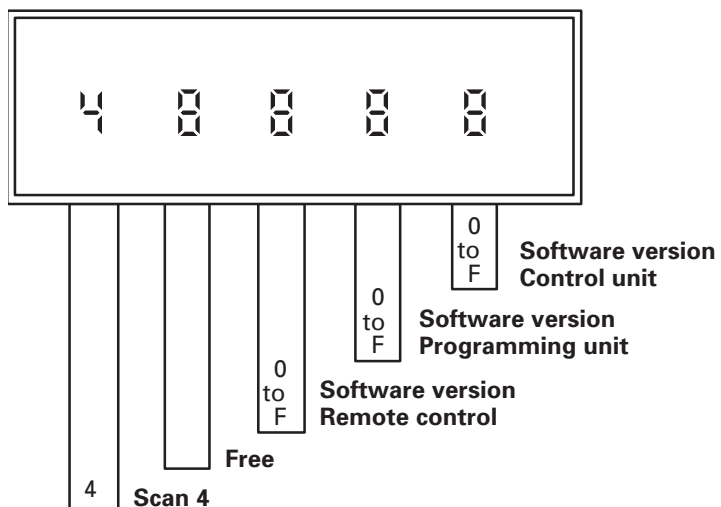
# Scanning service information

## Temperatures and scans (continued)

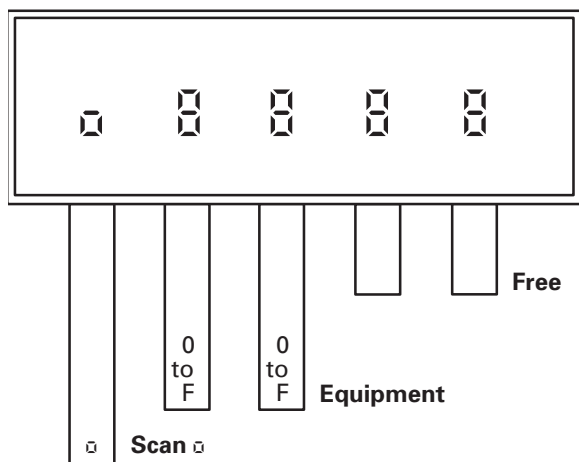
### Scan 3



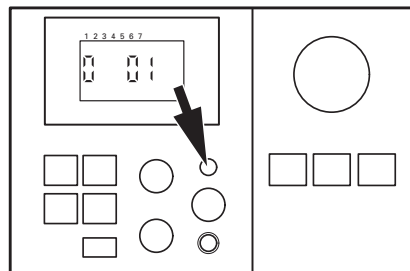
### Scan 4



### Scan □



**Scanning operating status information**

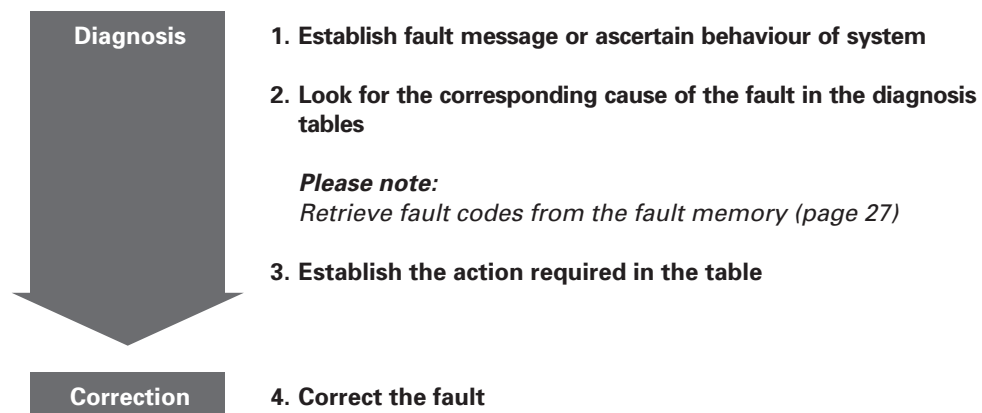


1. Press **i**. → *Operating status scanning mode is activated.*
2. Select the required operating status data for scanning with the **+** or **-** button.
3. Press **i**. → *Exit the operating status scanning mode.*

The following operating status information can be scanned depending on the system equipment installed:

Display	Meaning	Remarks
0 01	LON user number	Only displayed when LON communication module is connected
1 10 °C	Outdoor temperature	—
6 35 °C	Return temperature	Only displayed if return temperature sensor is connected
7 39 °C	Flow temperature	—
d 21 °C	Room temperature	Only displayed if Vitotrol remote control is installed
16:35 ⊕	Time	—
2001	Year	—
: 12	Month	—
23:	Day	Arrow ▲ points to current day of the week

## Troubleshooting steps

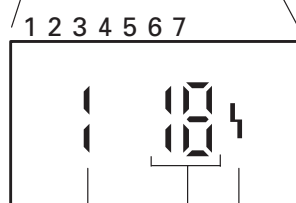
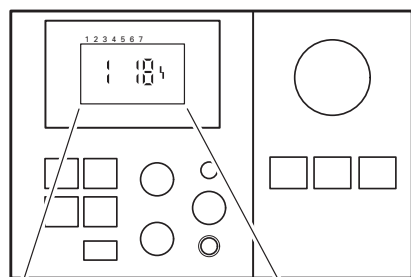




## Diagnosis

### Faults with fault display on the programming unit

The "1" symbol flashes whenever there is a fault.



When a fault message is transmitted, a fault code flashes in the display of the programming unit.

→ The meaning of the fault code is explained in the table on page 26 onwards.

Other fault codes which may be stored can be called up by pressing the ⊕ or ⊖ button.

→ The fault can be acknowledged by pressing ⊗. The fault message in the display is blanked out. If an acknowledged fault is not rectified, the fault message will re-appear at 7.00 hrs on the following day.

Fault symbol

Fault code

Fault number

**Diagnosis** (continued)

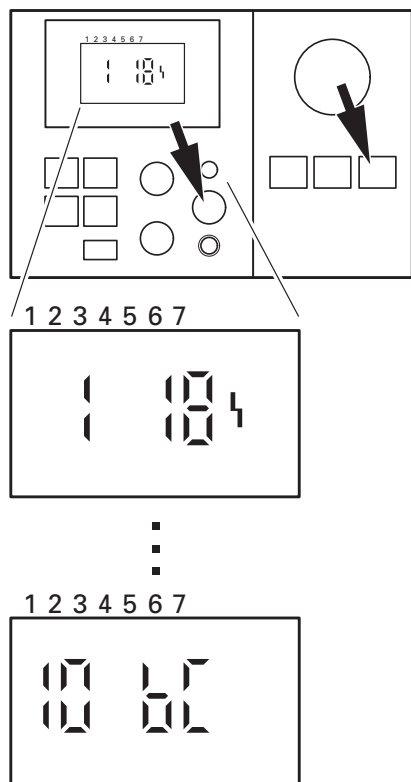
**Faults with fault display on the programming unit (continued)**

Fault code in display	Behaviour of system	Cause of fault	Action
00	Operates on basis of 0°C outdoor temperature	Short circuit Outdoor temperature sensor	Check outdoor temperature sensor (see page 34)
08	Operates on basis of 0°C outdoor temperature	Open circuit Outdoor temperature sensor	Check outdoor temperature sensor (see page 34)
20 22	Mixing valve is closed	Short circuit Flow temperature sensor	Check flow temperature sensor (see page 36)
28 22	Mixing valve is closed	Open circuit Flow temperature sensor	Check flow temperature sensor (see page 36)
70 02	Controlled operation without return temperature sensor	Short circuit Return temperature sensor	Check temperature sensor (see page 36)
78 02	Controlled operation without return temperature sensor	Open circuit Return temperature sensor	Check temperature sensor (see page 36)
b1	Controlled operation	Communication error Programming unit	Check connections, replace programming unit if necessary
b4	Controlled operation	Internal fault	Check electronics board
b5	Controlled operation	Internal fault	Check electronics board
b6 b2	Controlled operation without remote control	Communication error Vitol remote control	Check connections, cable, coding address "A0" and coding switch of remote control
b8	Controlled operation	Coding switch of remote control incorrectly set	Check coding switch of remote control (see page 38)
bE	Controlled operation	Coding switch of remote control incorrectly set	Check coding switch of remote control (see page 38)
bF b7	Controlled operation	Incorrect LON communication module	Replace communication module
cF	Controlled operation	Error LON communication module	Replace communication module
d8 d4	Controlled operation without influence of room temperature	Short circuit Room temperature sensor	Check room temperature sensor (see page 39)
d8 d4	Controlled operation without influence of room temperature	Open circuit Room temperature sensor	Check room temperature sensor (see page 39)
e0	Controlled operation	Open circuit Communication module	Check connection

**Diagnosis** (continued)

**Retrieving fault codes from the fault memory (error history)**

All faults which have occurred are stored and can be retrieved by scanning. The scanning sequence starts with the most recently stored fault code.



1. Press **III** and **OK** simultaneously for approx. 2 seconds. → Scanning of error history is activated.

2. Access the individual fault codes by pressing the **+** or **-** button. → All stored fault codes can be deleted by pressing **\*.**

Sequence of stored fault codes	Fault code
{	Last (most recent) fault code
⋮	⋮
0	Last fault code but nine

3. Press **OK**. → Scanning of error history is terminated.

## Functional description

### Heating circuit control

#### Brief description

The flow temperature setpoint value is determined by the outdoor temperature, the desired room temperature, the operating mode and the heating curve.

The flow temperature of the mixing valve circuit is controlled by opening and closing the mixing valve in steps.

The mixing valve motor control varies the actuation and interval times as a function of the control difference (control deviation).

#### Functions

The flow temperature of the mixing valve circuit is measured by the flow temperature sensor (contact sensor).

##### Time program

The timer of the control unit changes the operating mode at the programmed times in the "Central heating" program, switching between "Central heating with normal room temperature" and "Central heating with reduced room temperature". Each operating mode has its own setpoint value.

##### Outdoor temperature

A heating curve must be adjusted to match the control unit to the building and the heating circuit.

The heating curve determines the desired flow temperature value as a function of the outdoor temperature. Control takes place on the basis of the mean outdoor temperature. This is derived from the actual and the damped outdoor temperature.

The heating curve can be changed via the setpoint or operating mode selector switches.

##### Room temperature

In conjunction with room temperature dependent control

Compared with the outdoor temperature, the room temperature has a greater influence on the desired flow temperature. The magnitude of this influence can be changed via coding address "b2".

With control differences (i.e. deviations from the current value) of over 2 K room temperature, this influence can be intensified (via coding address "b6", rapid heating/fast set-back).

## Heating circuit control (continued)

### Functions (continued)

#### Summer energy saving function (heating circuit pump logic)

If the outdoor temperature is higher than the preset room temperature setpoint value, the heating circuit pump is switched off and the desired flow temperature value is set to 0° C. The switching threshold can be individually selected via coding address "A5".

#### Extended summer energy saving function

The heating circuit pump can be switched off

- if the outdoor temperature exceeds a value preselected via coding address "A6".
- if the desired room temperature is reduced via coding address "A9".
- if the mixing valve has been closed for longer than 12 minutes (mixing valve energy saving function, coding address "A7").

#### Screed drying function

**Please note:**

See DIN 4725 Part 4.

The screed function is selectable on the basis of four different temperature curves. The curves are activated via coding address "F1" (see page 48).

When the screed function is activated, the heating circuit pump of the mixing valve circuit is switched on and the flow temperature is controlled according to the selected curve. When the screed drying time (30 days) has expired, the mixing valve circuit is automatically controlled on the basis of the preset parameters.

#### System dynamics - mixing valve circuit

The control behaviour of the mixing valve can be influenced via coding address "C4".

#### Frost protection

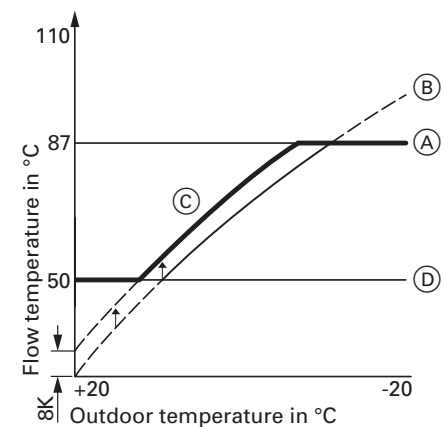
A flow temperature of 15 to 22 °C is assured for outdoor temperatures below +1°C (two-point control). For possible changes, see coding address "A3" (variable frost threshold).

#### Flow temperature control

Differential temperature:

The differential temperature can be selected via coding address "9F", factory setting: 8 K.

The differential temperature is the minimum difference by which the boiler water temperature should exceed the highest currently required flow temperature of the mixing valve circuit.



- (A) Max. boiler water temperature
- (B) Slope = 1.8
- (C) Boiler water temperature (with differential temperature = 8 K)
- (D) Minimum boiler water temperature

**Heating circuit control** (continued)

**Functions (continued)**

**Optimized control of the underfloor heating system**

To achieve optimum control of underfloor heating systems, a return temperature sensor (accessory) must be used in addition to the flow temperature sensor. This is recognized automatically and monitored for faults.

The control unit computes a return temperature setpoint value from an adjustable spread (coding address "C7") and the mean outdoor temperature.

The flow temperature is corrected in the heating up phase whenever the actual return temperature measured by the return temperature sensor <sup>17</sup> is higher than the computed return temperature setpoint value.

In addition, the heating mode can be started with a heating up phase (coding address "C9"), i.e. heating starts with an higher flow temperature setpoint value.

The heating up phase ends when the heat-up time expires or when the operating mode is changed.

**Upper limit of control range**

Electronic maximum limit  
Setting range: 1 to 127°C.  
Change via coding address "C6".

**Please note:**

*The maximum limit does not replace the limit thermostat required for underfloor heating systems.*

Limit thermostat for underfloor heating systems:

The limit thermostat switches the heating circuit pump off when the flow temperature rises above the preset value. In this situation, the flow temperature cools down only slowly, i.e. automatic re-starting can take several hours.

**Lower limit of control range**

Electronic minimum limit  
Setting range: 1 to 127°C.  
Change via coding address "C5".

**Coding addresses which influence the heating circuit control**

9F  
A2 to A7, A9, AA  
C4 to C9  
F1, F2.  
See pages 43 to 48 for description.

**Control sequence**

**Mixing valve circuit**

The mixing valve motor is not activated within the "neutral zone" ( $\pm 1$  K).

**Flow temperature falls**

(Setpoint value  $-1$  K)  
The mixing valve motor receives the signal "Open mixing valve".  
The greater the control difference, the longer the duration of the signal and the shorter the duration of the intervals.

**Flow temperature rises**

(Setpoint value  $+1$  K)  
The mixing valve motor receives the signal "Close mixing valve".  
The greater the control difference, the longer the duration of the signal and the shorter the duration of the intervals.

**Special features**

A relay test is carried out each time the control unit is re-started.  
1. The mixing valve is closed for 150 seconds.  
2. The system goes into the controlled operating mode.

**Overview**

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## Additional information

### Technical data

Rated voltage: 230 V~  
 Rated frequency: 50 Hz  
 Rated current: 4 A~  
 Power consumption: 8 W  
 Protection class: I  
 Degree of protection:

IP 22 D to EN 60 529, to be guaranteed by mounting/integration

Method of operation: Type 1B to EN 60 730-1

Ambient temperature

- during operation: 0 to 40 °C  
 For use in boiler rooms (normal ambient conditions)
- during storage and transport: -20 to 65 °C

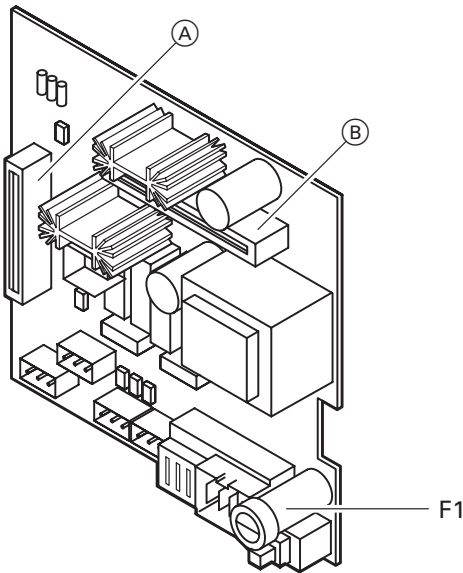
Relay outputs at 230 V~ for

- heating circuit pump [20]: 4 (2) A 230 V~\*1
- mixing valve motor [52]: 0.2 (0.1) A 230 V~\*1

\*1 Total max. 4 A 230 V~.

### System components

#### Mother board, Part No. 7144 128

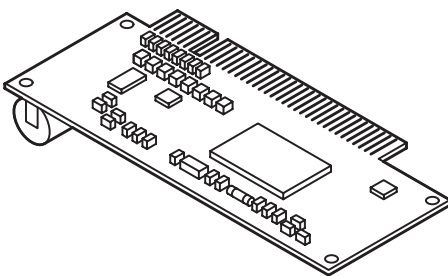


The mother board contains

- relays and outputs for activating the pump and the mixing valve motor
- sockets for connection of the sensors
- sockets for mains connection and heating circuit pump
- low-voltage supply
- fuse F1:4A
- system on/off switch
- plug-in location for electronics board and communication module

- Ⓐ Plug-in location for communication module  
 Ⓑ Plug-in location for electronics board

#### Electronics board, Part No. 7820 188



Circuit board for microprocessor with software

When replacing the board:

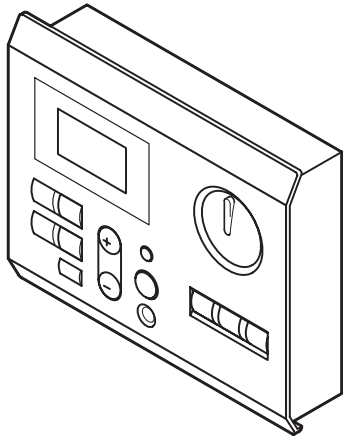
1. Make a note of the codings and settings on the control unit.
2. Replace the board.
3. Set coding "8A:176" and set coding address "92" (not listed in the overview) to "92:180".



**System components** (continued)

**Programming unit, Part No. 7820 845**

**Accessory**



The programming unit is inserted in the control unit.

For setting:

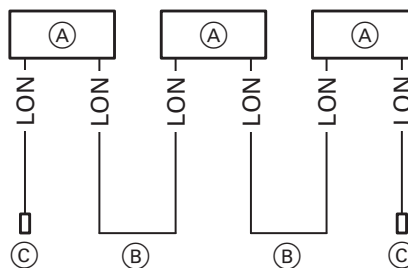
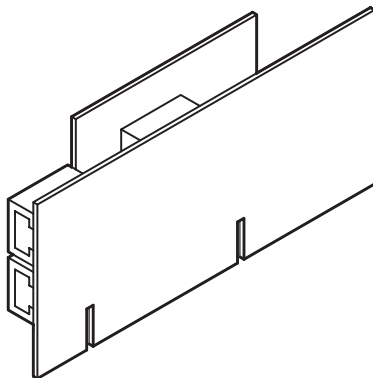
- heating program
- setpoint values
- switching times
- heating curve (shift and slope)
- date
- time

For displaying:

- temperatures
- operating status information
- faults

**LON communication module, Part No. 7143 426**

**Accessory**



Electronics board for data transfer. The communication module is inserted in the control unit (see page 32).

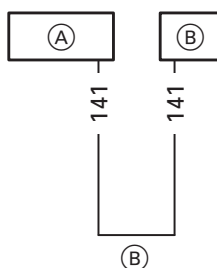
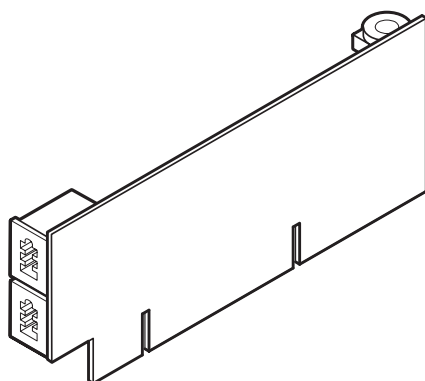
Interruption of communication is indicated.

1 terminal resistor is inserted on each of the first and last control unit.

- Ⓐ Control unit or Vitocom 300
- Ⓑ Connecting cable for data transfer between the control units (accessory)
- Ⓒ Terminal resistor, Part No. 7143 497 (accessory)

**Viessmann 2-wire BUS communication module, Part No. 7143 427**

**Accessory**



Electronics board for data transfer with Vitotronic 300, Type KW3, and weather-compensated control unit for wall-mounted gas boilers.

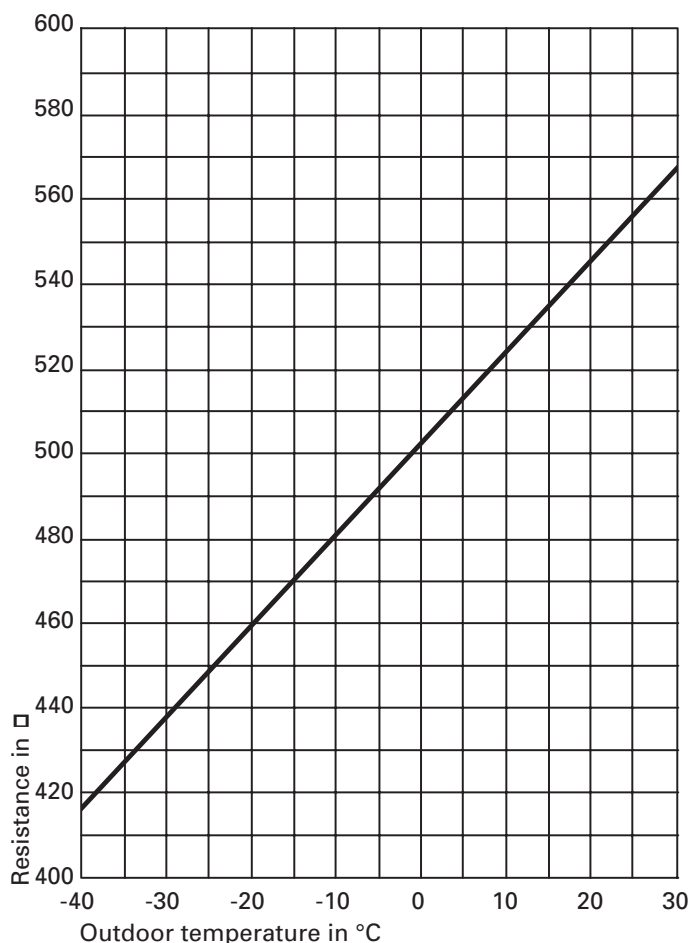
The communication module is inserted in the control unit (see page 32).

Interruption of communication is indicated.

- Ⓐ Vitotronic 300, Type KW3 with Viessmann 2-wire BUS expansion module
- Ⓑ Vitotronic 050, Type HK1M
- Ⓒ Connecting cable for data transfer between the control units (accessory)

**System components** (continued)

**Outdoor temperature sensor, Part No. 7820 148**



**Electrical connection**

See page 9.

**Check outdoor temperature sensor**

1. Disconnect plug 1 in the terminal compartment.
2. Measure resistance of sensor at terminals "1" and "2" of the plug.

Outdoor temperature in °C	Resistance in Ω
-10	480
0	500
20	546

3. If the resistance value measured differs significantly from the curve, disconnect the wires on the sensor, repeat the measurement on the sensor and compare with the current temperature (to scan: see page 23).
4. Depending on the result, replace the cable or the outdoor temperature sensor.
5. Call up the current temperature (see page 23).

**Technical data**

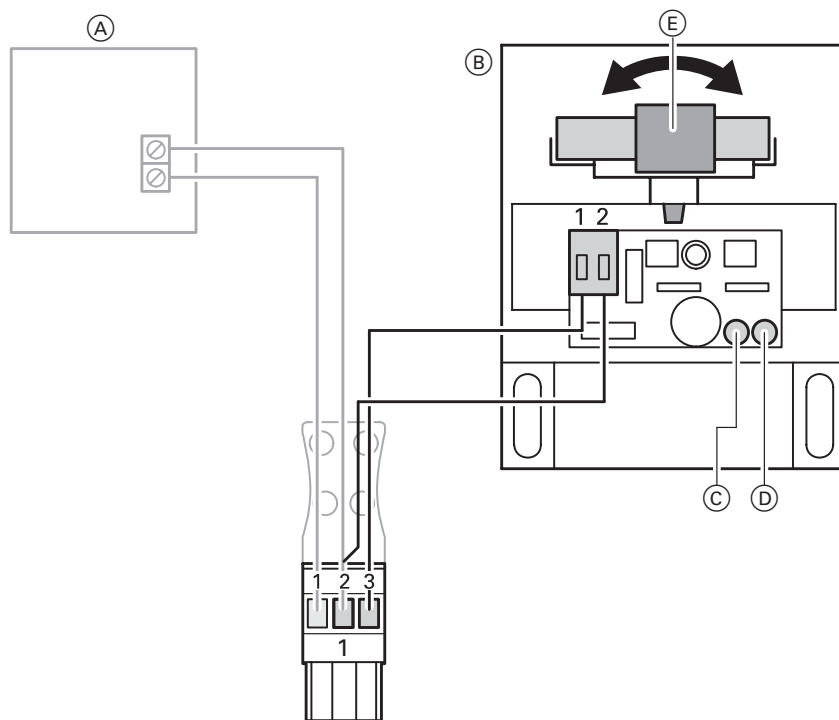
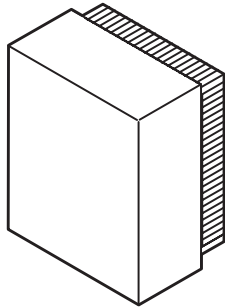
Degree of protection: IP 43  
 Ambient temperature during operation, storage and transport: -40 to + 70 °C

**System components** (continued)

Radio clock receiver, Part No. 7450 563

Accessory

*Fully automatic time settings for the control unit and remote control (if connected) are implemented via the radio clock receiver.*



- (A) Outdoor temperature sensor
- (B) Radio clock receiver

- (C) Green LED
- (D) Red LED
- (E) Antenna

**Electrical connection**

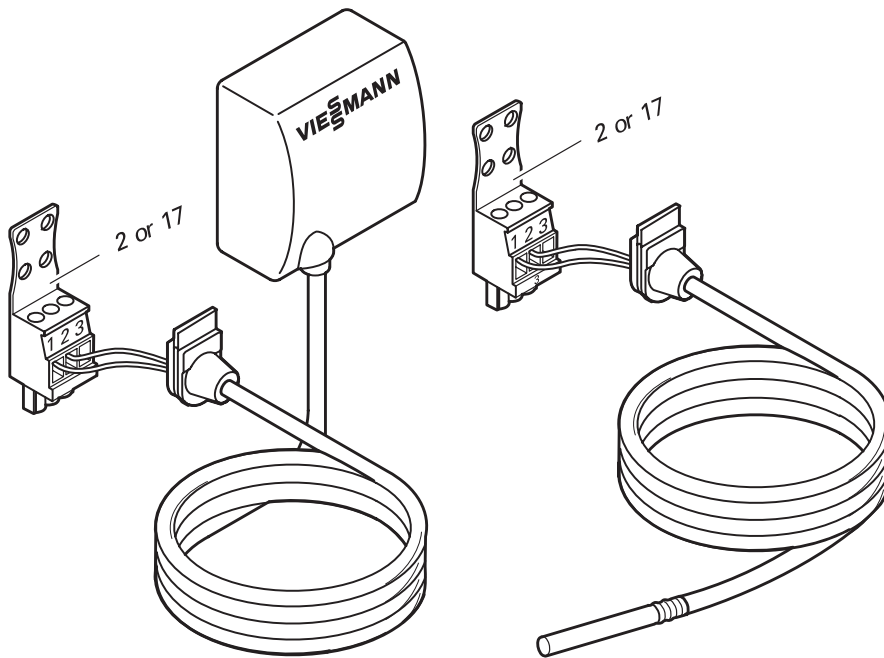
Two-core cable, max. 35 m long, with a conductor cross-section of 1.5 mm<sup>2</sup>, copper.  
Do **not** interchange the wires.

**To check reception**

The green LED in the radio clock receiver flashes to confirm reception. If the red LED is lit, turn the antenna until reception is confirmed by the flashing green LED.

**System components** (continued)

Contact temperature sensor, Part No. 7450 642, and immersion temperature sensor, Part No. 7450 641 Accessory



For measuring the flow and return temperature.

**Electrical connection**

The sensor is ready for connection and is inserted in socket "X6" on the control unit.

In conjunction with optimized under-floor heating circuit control: Connect the return temperature sensor to terminals "2" and "3" of the plug [2].

**Check the sensor**

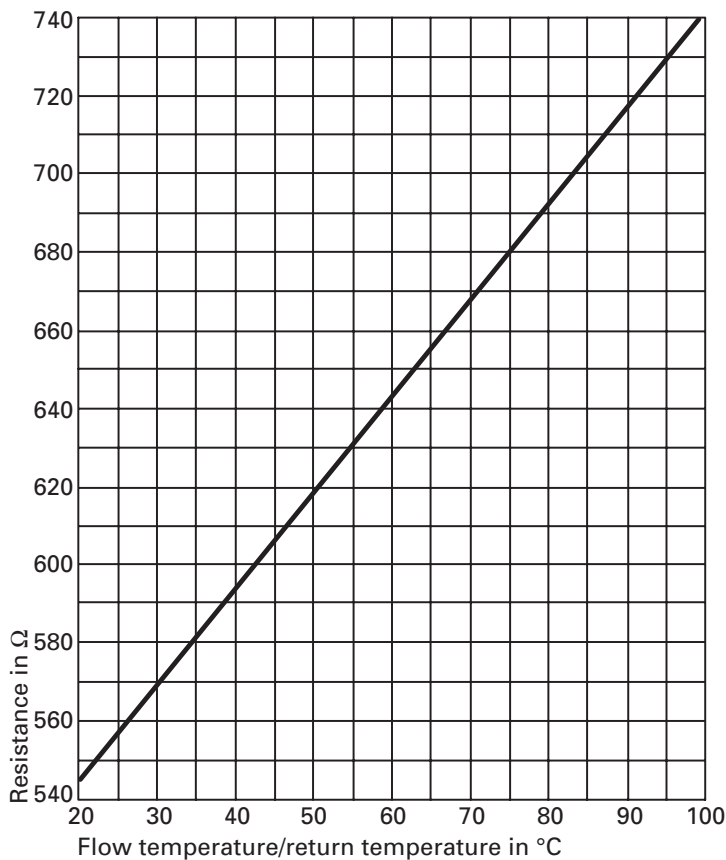
1. Disconnect plug [2]/[17] in the terminal compartment.
2. Measure resistance of sensor at terminals "1" and "2" or "2" and "3" of the plug.

Flow/return temperature in °C	Resistance in Ω
30	569
40	592
60	643

3. Compare the value measured with the current temperature (to scan: see page 23).  
If the value differs significantly, check installation and, if necessary, replace sensor.

**Technical data**

- Degree of protection: IP 32
- Ambient temperature
  - during operation: 0 to + 100 °C
  - during storage and transport: -20 to + 70 °C



**System components** (continued)

Limit thermostat, Part No. 7415 025 or 7450 026

Accessory

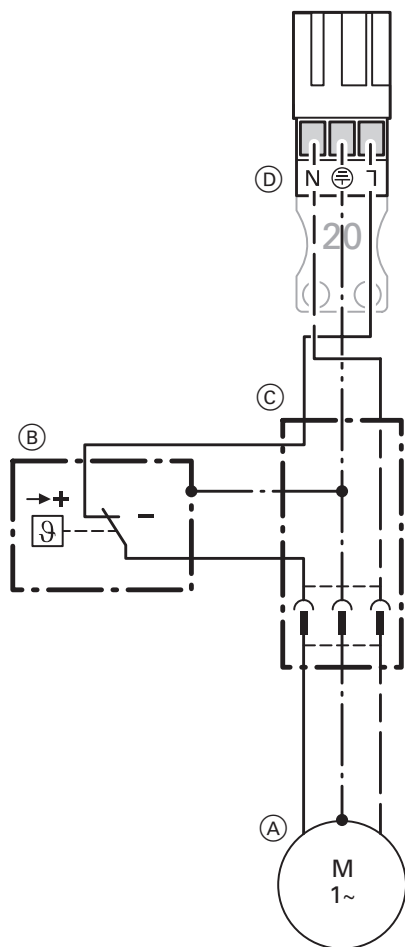
Limit thermostat available for use in sensor well, Part No. 7415 025, and as clip-on limit thermostat, Part No. 7415 026.

For protecting the underfloor heating system and the floor covering against excessively high temperatures in the event of a malfunction.

Electromechanical limit thermostat based on the liquid expansion principle. The heating circuit pump is switched off when the preset value is exceeded.

**Technical data**

Setting range: 30 to 100 °C  
 Connection terminals: Screw terminals for 1 mm<sup>2</sup>/1.5 mm<sup>2</sup>  
 Rated voltage: 24 to 250 V~  
 Breaking capacity: 10 (2) A 250V~  
 Switching differential: 8 K  
 DIN Register No.: DIN TW 1119 99



- (A) Heating circuit pump
- (B) Limit thermostat

- (C) Junction box for plug 20 of the heating circuit pump
- (D) Plug 20 of the limit thermostat for the control unit

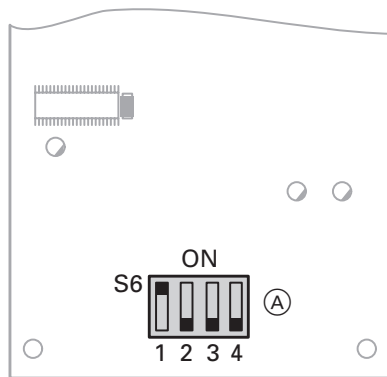
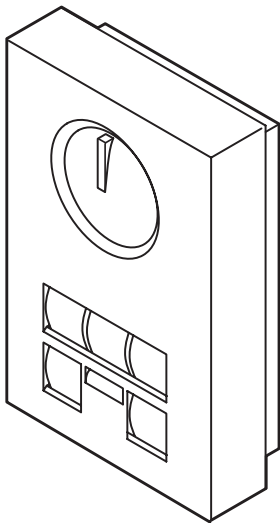
**System components** (continued)

Vitotrol 200, Part No. 7450 017

Accessory

The remote control can be used for setting the day temperature, the heating program, the energy saving mode and the party mode for the heating circuit. The remote control has a built-in room temperature sensor for room temperature-dependent control.

Functional changes can be made via the coding addresses "A0", "b0" to "b9", "C0" to "C2", "C8", "E1" and "E2" (see overview of all codings).



**Technical data**

Voltage supply via KM BUS.

Protection class: III

Degree of protection: IP 30

Ambient temperature

■ during operation: 0 to + 40 °C

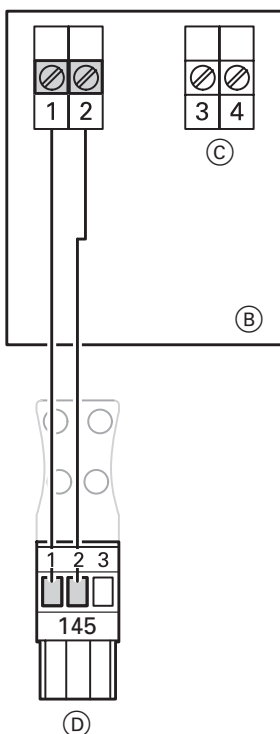
■ during storage and transport: -20 to + 65 °C

Setting range of desired room temperature:

10 to 30 °C;  
can be changed to  
3 to 23 °C or  
17 to 37 °C

The setting of the desired room temperature for reduced operation is made on the control unit.

(A) Do **not** change settings of coding switches on the circuit board (rear of top part of case)



**Electrical connection**

2-core cable (max. total cable length 50 metres).

When connecting a separate room temperature sensor, set the coding switch "S6.3" to "ON".

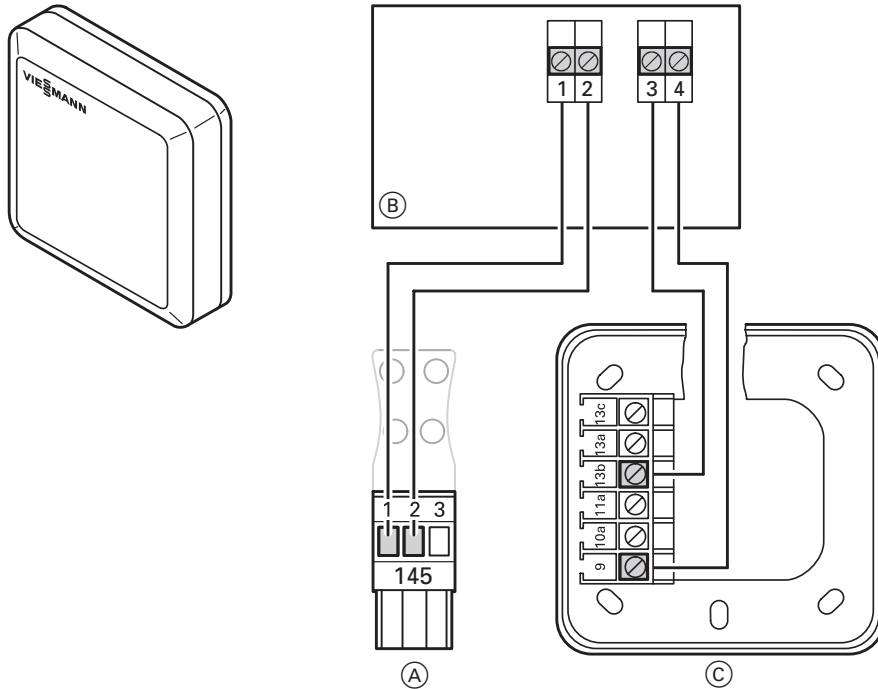


- (B) Wall mounting fixture of Vitotrol 200 remote control
- (C) Terminals for connecting a separate room temperature sensor
- (D) To control unit

**System components** (continued)

Room temperature sensor, Part No. 7408 012

Accessory



- (A) To control unit
- (B) Remote control
- (C) Room temperature sensor

The room temperature sensor serves to measure the room temperature where the remote control cannot be located in a suitable position.

**Technical data**

Degree of protection: IP 30  
 Ambient temperature  
 ■ during operation: 0 to + 40 °C  
 ■ during storage and transport: -20 to + 65 °C

**Electrical connection**

Two-core cable, max. 35 m long, with a conductor cross-section of 1.5 mm<sup>2</sup>, copper.

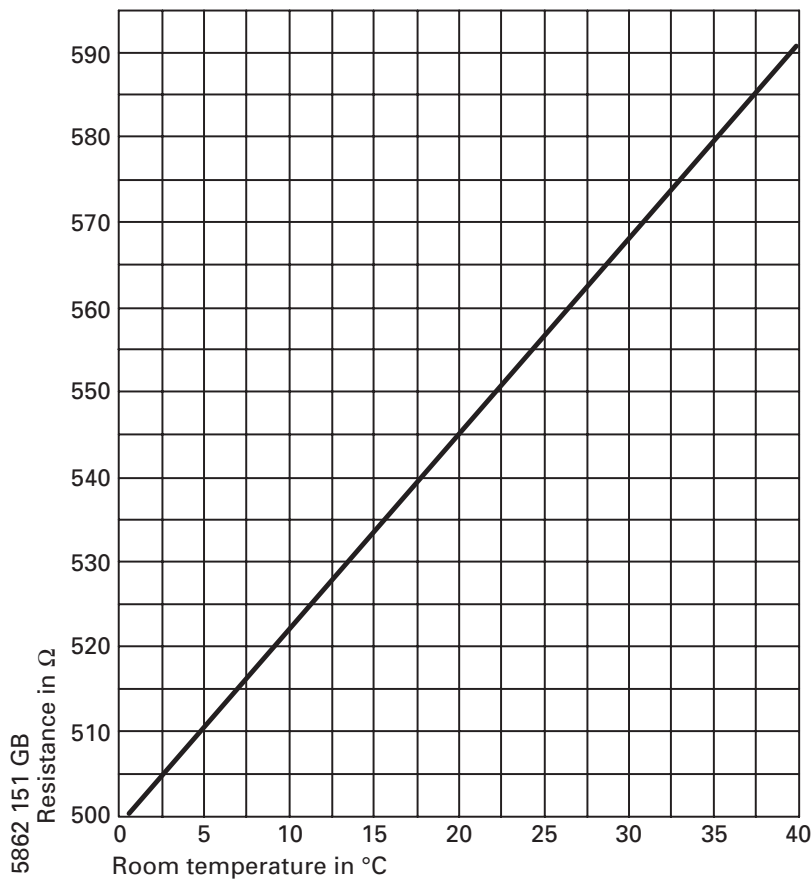
Set coding switch "S6.3" on the rear of the top part of the remote control case to "ON" (see page 38).

**Check room temperature sensor**

1. Disconnect the wires at the sensor terminals.
2. Measure the resistance of the sensor at terminals "9" and "13b".

Room temperature in °C	Resistance in Ω
10	522
15	534
25	557

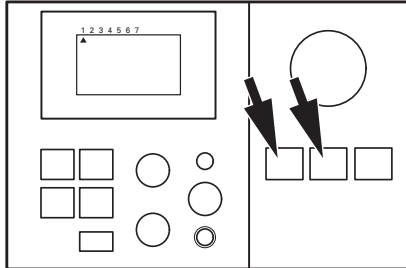
3. Compare the value measured with the current temperature (to scan: see page 23).  
 If the value differs significantly, check installation and, if necessary, replace sensor.



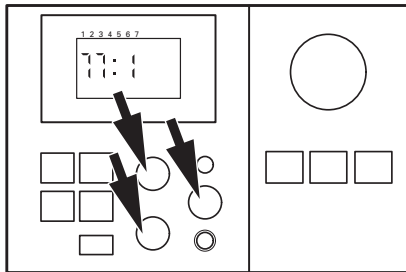
## Coding 1

### Call up coding level 1

Only those coding addresses are displayed which correspond to the system type and equipment concerned and can be changed accordingly.



1. Press **0** and **#** simultaneously for approx. 2 seconds. → Access coding level 1. The first arrow appears in the display.



2. Call up the required coding address with the **+** or **-** button; press **OK** to confirm. → Coding address flashes.  
→ Value flashes.
3. Change the value with the **+** or **-** button; press **OK** to confirm. → The value is stored and does not flash for approx. 2 seconds. Then the address flashes, and further addresses can now be selected with the **+** or **-** button.
4. Press **0** and **#** simultaneously for approx. 1 second. → Exit coding level 1.

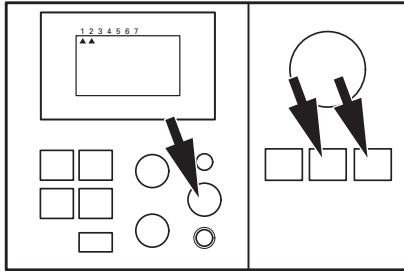
### Codings

Coding as per factory setting Address: Value	Function	New coding Address:Value	Possible change
77 : 1	<b>General</b> LON user number	77 : 2 to 77 : 99	LON user number selectable from 1 to 99 <b>Please note:</b> Each number may be assigned once <b>only</b> .
A2 : 2	<b>Mixing valve circuit</b> With DHW cylinder priority control over heating circuit pump and mixing valve	A2 : 0	Without DHW cylinder priority control
		A2 : 1	The mixing valve is closed and the heating circuit pump is ON when the cylinder is being heated
		A2 : 3 to A2 : 15	Without function
A5 : 5	<b>Mixing valve circuit</b> With heating circuit pump logic function (HPL function)	A5 : 0	Without heating circuit pump logic function (HPL function)
C5 : 20	<b>Mixing valve circuit</b> Electronic minimum flow temperature limit 20 °C	C5 : 1 to C5 : 127	Electronic minimum flow temperature limit variable between 1 and 127 °C
C6 : 75	<b>Mixing valve circuit</b> Electronic maximum flow temperature limit 75 °C	C6 : 10 to C6 : 127	Electronic maximum flow temperature limit variable between 10 and 127 °C
CA : 0	<b>Mixing valve circuit</b> Rotational direction of mixing valve motor	CA : 1	Rotational direction reversed



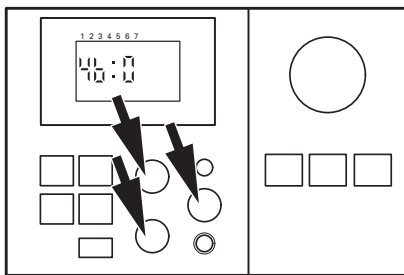
## Coding 2

### Call up coding level 2



1. Press **#** and **III** simultaneously for approx. 2 seconds; press **OK** to confirm.

→ Access coding level 2.  
The first two arrows appear in the display.



2. Call up the required coding address with the **+** or **-** button; press **OK** to confirm.
3. Change the value with the **+** or **-** button; press **OK** to confirm.

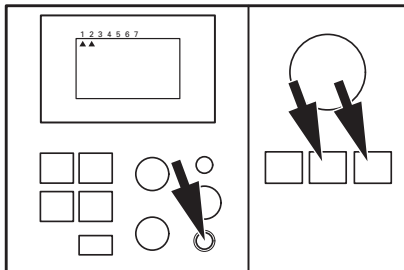
→ Coding address flashes.

→ The value is stored and does not flash for approx. 2 seconds. Then the address flashes, and further addresses can now be selected with the **+** or **-** button.

4. Press **#** and **III** simultaneously for approx. 1 second.

→ Exit coding level 2.

### Reset codings to factory settings



1. Press **#** and **III** simultaneously for approx. 2 seconds.

→ Access coding level 2.

2. Press **\***.

→ The codings are reset to the factory settings. The display changes and shows the flow temperature.

## Additional information

### Coding 2 (continued)

#### Overview of all codings

Coding as per factory setting Address: Value	Function	New coding Address: Value	Possible change
4b : 0	<b>General</b> Connector <input type="checkbox"/> 17 <input type="checkbox"/> B not installed	4b : 1	Connector <input type="checkbox"/> 17 <input type="checkbox"/> B installed, e.g. return temperature sensor; recognized automatically
76 : 0	<b>General</b> Without communication module	76 : 1	With LON communication module; recognized automatically
		76 : 2	With Viessmann 2-wire BUS communication module; recognized automatically
77 : 10	<b>General</b> LON user number	77 : 1 to 77 : 99	LON user number selectable from 1 to 99 <b>Please note:</b> Each number may be assigned once <b>only</b> .
78 : 1	<b>General</b> LON communication module released	78 : 0	LON communication module blocked
7b : 0	<b>General</b> Do not transmit time via LON BUS	7b : 1	Transmit time via BUS
80 : 1	<b>General</b> With 5 seconds time delay for fault message	80 : 0	Without time delay
		80 : 2 to 80 : 199	Time delay adjustable between 10 and 995 seconds; 1 increment $\Delta$ 5 seconds
81 : 1	<b>General</b> Automatic resetting to summer/winter time <b>Please note:</b> Coding addresses "82" to "87" are only possible if coding "81: 1" is set.	81 : 0	Manual resetting to summer/winter time
		81 : 2	Use of radio clock module automatically recognized
		81 : 3	Receive time from BUS
82 : 3	<b>General</b> Start of summer time: March	82 : 1 to 82 : 12	January to December
83 : 5	<b>General</b> Start of summer time: last week of month	83 : 1 to 83 : 4	Week 1 to Week 4 of the selected month
84 : 7	<b>General</b> Start of summer time: last of week (Sunday)	84 : 1 to 84 : 7	Monday to Sunday
85 : 10	<b>General</b> Start of winter time: October	85 : 1 to 85 : 12	January to December
86 : 5	<b>General</b> Start of winter time: last week of month	86 : 1 to 86 : 4	Week 1 to Week 4 of the selected month
87 : 7	<b>General</b> Start of winter time: last day of week (Sunday)	87 : 1 to 87 : 7	Monday to Sunday
88 : 0	<b>General</b> Temperatures displayed in Celsius	88 : 1	Temperatures displayed in Fahrenheit
8A : 175	<b>General</b> Display of codings which can be set for the system type concerned	8A : 176	All codings displayed regardless of system type and equipment installed

## Coding 2 (continued)

## Overview of all codings (continued)

Coding as per factory setting Address: Value	Function	New coding Address: Value	Possible change
8E : 4	<b>General</b> Display and acknowledgment of faults: on the programming unit and the remote control (on the remote control faults are only indicated by the flashing display)	8E : 0	Display and acknowledgement of faults only on the programming unit of the control unit
		8E : 1 to 8E : 3	Without function
90 : 128	<b>General</b> Time constant for calculating the outdoor temperature change 21.3 hours	90 : 0 to 90 : 199	Fast matching (lower values) or slow matching (higher values) of the flow temperature to the change in the outdoor temperature according to the selected value; 1 increment $\triangle$ 10 minutes
91 : 0	<b>General</b> Without changeover of the heating program	91 : 1	With changeover of the heating program (connection via connector <a href="#">143</a> )
97 : 0	<b>General</b> The outdoor temperature of the connected sensor is used	97 : 1	The outdoor temperature is taken from the BUS
		97 : 2	The outdoor temperature of the sensor connected to the control unit is used and transmitted to the BUS
98 : 1	<b>General</b> Viessmann system number (in conjunction with monitoring of several systems within one LON BUS system)	98 : 1 to 98 : 5	System number selectable from 1 to 5
99 : 0	<b>General</b> Connection at terminals "2" and "3" in connector <a href="#">143</a> : "Close mixing valve" externally not active	99 : 1	"Close mixing valve" externally active
		99 : 2 to 99 : 15	Without function
9A : 0	<b>General</b> Connection at terminals "1" and "2" in connector <a href="#">143</a> : "Open mixing valve" externally not active	9A : 1	"Open mixing valve" externally active
		9A : 2 to 9A : 15	Without function
9C : 20	<b>General</b> Monitoring of LON users If a user does not answer back, default values set within the control unit are used for the first 20 minutes. Then an error message is transmitted.	9C : 0	No monitoring
		9C : 1 to 9C : 60	Time selectable from 1 to 60 minutes
9F : 8	<b>General</b> Differential temperature 8 K is added to the currently required flow temperature	9F : 0 to 9F : 40	Differential temperature selectable from 0 to 40 K

Additional information

**Coding 2** (continued)

Overview of all codings (continued)

Coding as per factory setting Address: Value	Function	New coding Address: Value	Possible change
A0 : 0	<b>Mixing valve circuit</b> Without remote control	A0 : 1	With Vitotrol 200 remote control; recognized automatically
A2 : 2	<b>Mixing valve circuit</b> With DHW cylinder priority control over heating circuit pump and mixing valve	A2 : 0	Without DHW cylinder priority control
		A2 : 1	The mixing valve is closed and the heating circuit pump is ON when the cylinder is being heated
		A2 : 3 to A2 : 15	Without function
A3 : 2	<b>Mixing valve circuit</b> The heating circuit pump is switched on at outdoor temperatures below 1°C. The heating circuit pump is switched off at outdoor temperatures above 3°C.  ⚠ <b>Safety instruction:</b> <i>At settings below 1°C there is a risk that piping outside the insulation of the building may freeze, e.g. pipes in the roof space, to the garage, in radiator alcoves etc.</i> <i>Pay particular attention to the standby mode, e.g. during holiday periods.</i>	A3 : -9 A3 : -8 A3 : -7 A3 : -6 A3 : -5 A3 : -4 A3 : -3 A3 : -2 A3 : -1 A3 : 0 A3 : 1 A3 : 2 . . . A3 : 15	Heating circuit pump ON at      OFF at -10 °C    -8 °C - 9 °C    -7 °C - 8 °C    -6 °C - 7 °C    -5 °C - 6 °C    -4 °C - 5 °C    -3 °C - 4 °C    -2 °C - 3 °C    -1 °C - 2 °C    0 °C - 1 °C    1 °C 0 °C      2 °C 1 °C      3 °C .            . .            . .            . 14 °C    16 °C
A4 : 0	<b>Mixing valve circuit</b> With frost protection	A4 : 1	No frost protection. Setting only possible when coding "A3: -9" is set. <b>Please note:</b> See safety instruction above.
A5 : 5	<b>Mixing valve circuit</b> With the heating circuit pump logic function (HPL function), the heating circuit pump is switched off when the outdoor temperature (OT) rises 1 K above the desired room temperature (RT <sub>des</sub> ). OT > RT <sub>des</sub> + 1 K	A5 : 0	Without heating circuit pump logic function (HPL function)
		A5 : 1 A5 : 2 A5 : 3 A5 : 4 A5 : 5 A5 : 6 A5 : 7 . . . A5 : 15	With heating circuit pump logic function (HPL function): The heating circuit pump is switched off if OT > RT <sub>des</sub> + 5 K OT > RT <sub>des</sub> + 4 K OT > RT <sub>des</sub> + 3 K OT > RT <sub>des</sub> + 2 K OT > RT <sub>des</sub> + 1 K OT = RT <sub>des</sub> OT > RT <sub>des</sub> -1 K . . . OT > RT <sub>des</sub> -9 K

## Coding 2 (continued)

## Overview of all codings (continued)

Coding as per factory setting Address: Value	Function	New coding Address: Value	Possible change
A6 : 36	<b>Mixing valve circuit</b> Automatic changeover from normal heating to summer operation <b>not</b> active	A6 : 5 to A6 : 35	Automatic changeover from normal heating to summer operation* <sup>1</sup> at a variable setting value from 5 to 35 °C plus 1 °C at which the burner and heating circuit pump are switched off and the mixing valve is closed
A7 : 0	<b>Mixing valve circuit</b> Without mixing valve energy saving function	A7 : 1	With mixing valve energy saving function (extended heating circuit pump logic) The heating circuit pump can be switched off additionally when the mixing valve has been closed for longer than 20 minutes. The heating circuit pump is switched on again <ul style="list-style-type: none"> <li>■ when the mixing valve goes to its control mode</li> <li>or</li> <li>■ when there is a risk of freezing</li> </ul>
A9 : 7	<b>Mixing valve circuit</b> With pump stoppage time: Heating circuit pump logic function with change of setpoint (through changing the operating mode or changes on the "☀" selector knob or "☾" button).	A9 : 0	Without pump stoppage time
		A9 : 1 to A9 : 15	With pump stoppage time adjustable from 1 to 15
AA : 2	<b>Mixing valve circuit</b> With output reduction	AA : 0	Without output reduction
		AA : 1	Without function
b0 : 0	<b>Mixing valve circuit</b> In conjunction with remote control: Weather-compensated operation in normal heating mode and reduced operation	b0 : 1	Weather-compensated operation in normal heating mode and with room temperature dependent control switched in for reduced operation
		b0 : 2	Room temperature dependent control switched in for normal heating mode and weather-compensated operation for reduced operation
		b0 : 3	Room temperature dependent control switched in for normal heating mode and for reduced operation
b2 : 8	<b>Mixing valve circuit</b> In conjunction with remote control and for the heating circuit, "b0: 1", "b0: 2" or "b0: 3" must be coded Room influence factor: 8	b2 : 0	Without room influence
		b2 : 1 to b2 : 31	Room influence factor adjustable from 1 to 31

\*<sup>1</sup>Based on the damped outdoor temperature which is calculated from the current outdoor temperature and a time constant which takes into account the cooling characteristics of an average building.

**Coding 2** (continued)

Overview of all codings (continued)

Coding as per factory setting Address: Value	Function	New coding Address: Value	Possible change
b5 : 0	<p><b>Mixing valve circuit</b> In conjunction with remote control: No room temperature controlled heating circuit pump logic function</p>	b5 : 1	<ul style="list-style-type: none"> <li>■ Heating circuit pump OFF if actual room temperature (<math>RT_{act}</math>) is 1.5 K higher than desired room temperature (<math>RT_{des}</math>) <math>RT_{act} &gt; RT_{des} + 1.5\text{ K}</math></li> <li>■ Heating circuit pump ON if actual room temperature (<math>RT_{act}</math>) is 0.5 K higher than desired room temperature (<math>RT_{des}</math>) <math>RT_{act} &lt; RT_{des} + 0.5\text{ K}</math></li> </ul>
b6 : 0	<p><b>Mixing valve circuit</b> In conjunction with remote control in RS mode: Without rapid heat-up/fast setback</p>	b6 : 1	<p>With rapid heat-up/fast setback</p> <p>Fast setback: Only possible with weather-compensated operation with the room temperature sensor switched in. The desired room temperature value must be reduced by at least 2 K by</p> <ul style="list-style-type: none"> <li>■ pressing the energy saving button "S"</li> <li>■ switching over from normal heating to reduced operation</li> <li>■ optimized switch-off</li> </ul> <p>Fast setback is ended when the desired room temperature is reached.</p> <p>Rapid heat-up: Only possible with weather-compensated operation with the room temperature sensor switched in. The desired room temperature value must be increased by at least 2 K by</p> <ul style="list-style-type: none"> <li>■ pressing the party button</li> <li>■ switching over from reduced operation to normal heating</li> <li>■ optimized switch-on</li> </ul> <p>Rapid heat-up is ended when the desired room temperature is reached.</p>

## Coding 2 (continued)

## Overview of all codings (continued)

Coding as per factory setting Address: Value	Function	New coding Address: Value	Mögliche Umstellung
b7 : 0	<b>Mixing valve circuit</b> In conjunction with remote control in RS mode: Without optimized switch-on time	b7 : 1	With optimized switch-on time (max. time shift 2 hours 30 minutes)
		b7 : 2	With optimized switch-on time (max. time shift 15 hours 50 minutes)
b8 : 10	<b>Mixing valve circuit</b> In conjunction with remote control in RS mode: Heat-up gradient	b8 : 11	Heat-up gradient for optimized switch-on time variable between 11 and 255 minutes/Kelvin
b9 : 0	<b>Mixing valve circuit</b> In conjunction with remote control: Without learning optimized switch-on time	b9 : 1	With learning optimized switch-on time
C0 : 0	<b>Mixing valve circuit</b> In conjunction with remote control: Without optimized switch-off time	C0 : 1	With optimized switch-off time (max. time shift 1 hour)
		C0 : 2	With optimized switch-off time (max. time shift 2 hours)
C1 : 0	<b>Mixing valve circuit</b> In conjunction with remote control: Without optimized switch-off time	C1 : 1 to C1 : 12	With optimized switch-off time, max. time shift adjustable from 10 to 120 minutes; 1 increment $\Delta$ 10 minutes
C2 : 0	<b>Mixing valve circuit</b> In conjunction with remote control: Without learning optimized switch-off time	C2 : 1	With learning optimized switch-off time
C3 : 125	<b>Mixing valve circuit</b> Operating time of mixing valve 125 seconds	C3 : 10 to C3 : 255	Operating time adjustable from 10 to 255 seconds
C4 : 1	<b>Mixing valve circuit</b> System dynamics Control behaviour of mixing valve	C4 : 0 to C4 : 3	Controller operates too fast (oscillates between "Open" and "Closed"): set a lower value. Controller operates too slowly (does not adequately maintain temperature): set a higher value.
C5 : 20	<b>Mixing valve circuit</b> Electronic minimum flow temperature limit 20 °C	C5 : 1 to C5 : 127	Electronic minimum limit variable between 1 and 127 °C
C6 : 75	<b>Mixing valve circuit</b> Electronic maximum flow temperature limit 75 °C	C6 : 10 to C6 : 127	Electronic maximum limit variable between 10 and 127 °C
C7 : 0	<b>Mixing valve circuit</b> Without spread	C7 : 1 to C7 : 31	Spread (temperature difference between flow and return temperature) adjustable between 1 and 31 K at system design point -10 °C
C8 : 31	<b>Mixing valve circuit</b> In conjunction with remote control: Without limit on room influence	C8 : 1 to C8 : 30	Limit on room influence variable from 1 to 30 K

## Additional information

### Coding 2 (continued)

#### Overview of all codings (continued)

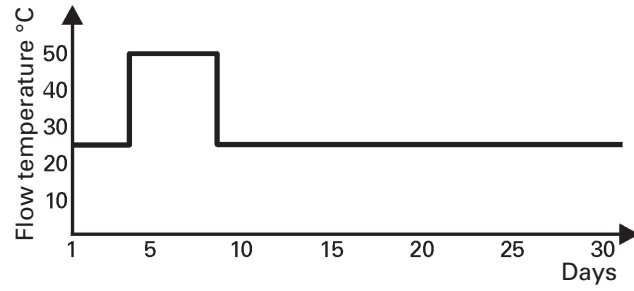
Coding as per factory setting Address: Value	Function	New coding Address: Value	Possible change
C9 : 0	<b>Mixing valve circuit</b> Optimized mixing valve control in conjunction with underfloor heating system: Without heat-up phase	C9 : 1	With heat-up phase
CA : 0	<b>Mixing valve circuit</b> Rotational direction of mixing valve motor	CA : 1	Rotational direction reversed
d5 : 0	<b>Mixing valve circuit</b> Heating program switches over to "Continuous operation with reduced room temperature"	d5 : 1	Heating program switches over to "Continuous space heating with normal room temperature"
E1 : 1	<b>Mixing valve circuit</b> In conjunction with remote control: Day setpoint value variable from 10 to 30 °C	E1 : 0	Day setpoint value variable from 3 to 23°C
		E1 : 2	Day setpoint value variable from 17 to 37°C
E2 : 50	<b>Mixing valve circuit</b> In conjunction with remote control: No correction of current room value	E2 : 0 to E2 : 49	Room correction value negative
		E2 : 51 to E2 : 99	Room correction value positive
F1 : 0	<b>Mixing valve circuit</b> Screed drying function not active	F1 : 1 to F1 : 4	See DIN 4725-2. The commissioning/service report to be completed by the heating contractor must contain the following data regarding heating up: <ul style="list-style-type: none"> <li>■ Heat-up data for the corresponding flow temperatures</li> <li>■ Max. flow temperature reached</li> <li>■ Operating status and outdoor temperature on handing-over the installation</li> </ul> Screed function selectable on basis of four temperature/time curves see page 49). <b>Please note:</b> <i>Refer to the data and instructions provided by the floor screed manufacturer.</i> The function is resumed after a power failure or after the control unit is switched off. When the screed function has terminated or the address is reset manually to 0, the "III" heating program is switched on.
F2 : 8	<b>Mixing valve circuit</b> In conjunction with remote control: Time limit for party mode 8 hours	F2 : 0	No time limit for party mode
		F2 : 1 to F2 : 12	Time limit for party mode variable between 1 and 12 hours



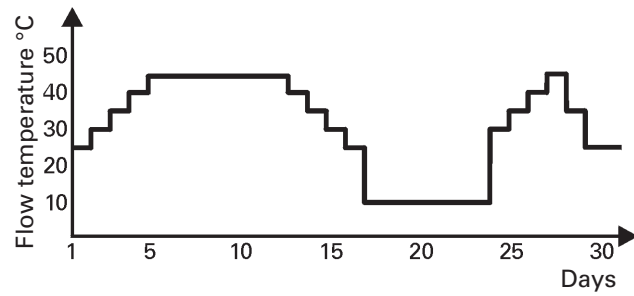
**Coding 2** (continued)

**Screed function diagrams**

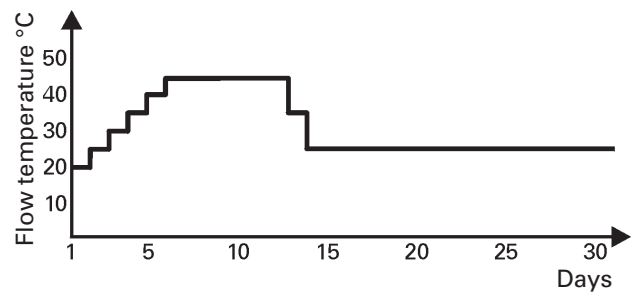
Temperature/time curve 1 (F1: 1)



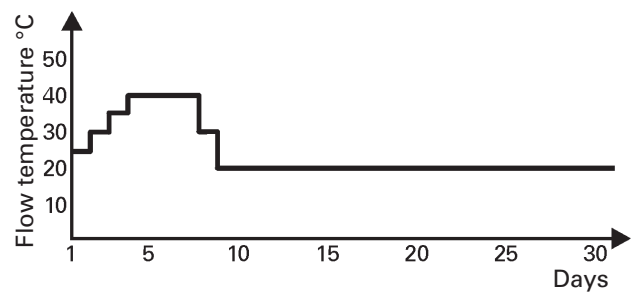
Temperature/time curve 2 (F1: 2)



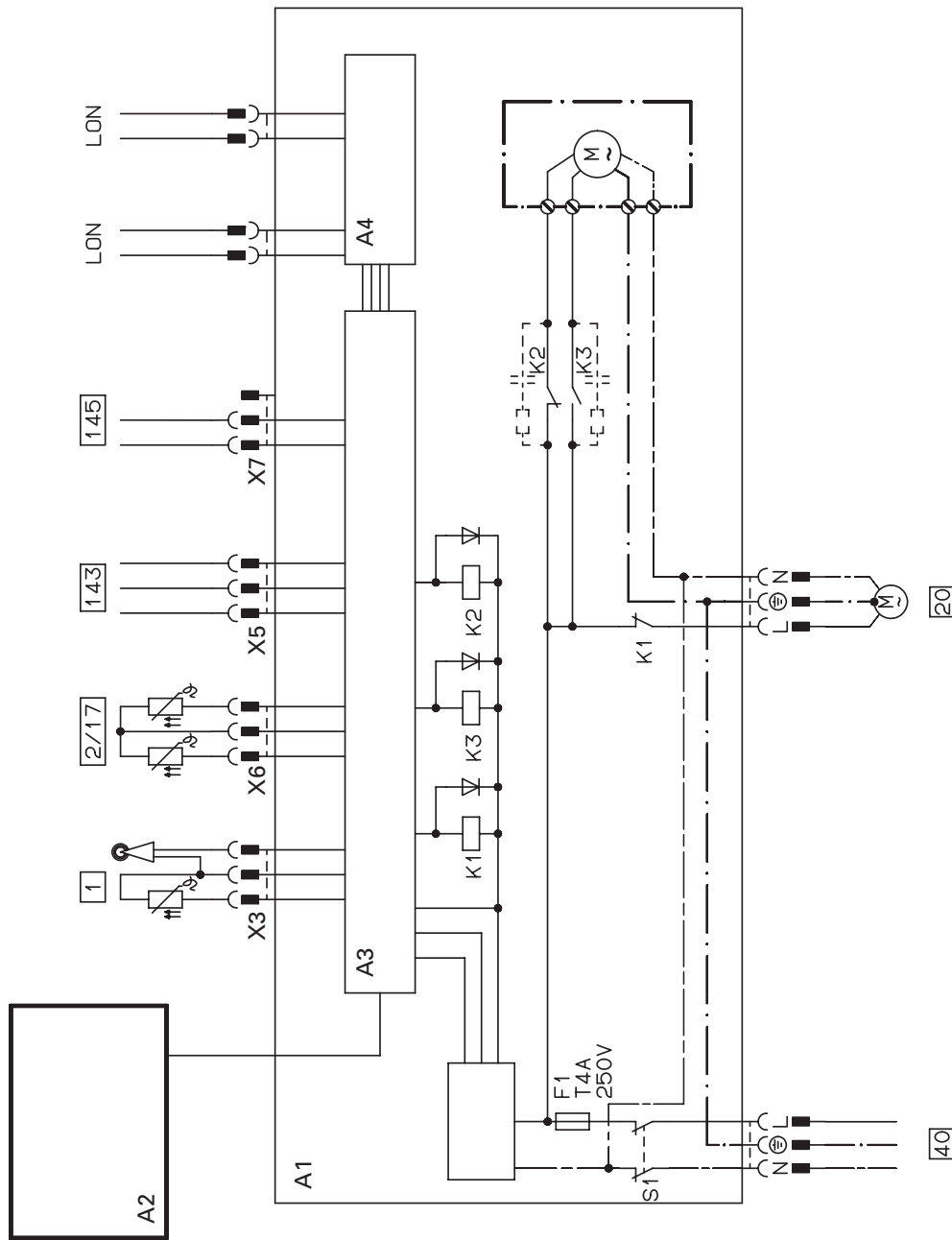
Temperature/time curve 3 (F1: 3)



Temperature/time curve 4 (F1: 4)



**Wiring diagram**



- A1 Mother board
- A2 Programming unit
- A3 Electronics board
- A4 LON communication module (accessory)  
or  
Viessmann 2-wire BUS communication module (accessory)
- F1 Fuse
- K1 - K3 Relays
- S1 System on/off switch

**230 V~ connectors**

- 20 Heating circuit pump (accessory)
- 40 Mains connection 230 V~ 50 Hz

**Low-voltage connectors**

- 1 X3 Outdoor temperature sensor/ radio clock receiver (accessory)
- 2 X6 Flow temperature sensor (VTS)  
or  
17 X6 Return temperature sensor (RTS)
- 143 X5 Connection of external equipment
- 145 X7 KM BUS user
- LON Connecting cable for data transfer between the control units (accessory)  
or  
Viessmann 2-wire BUS (accessory)

This wiring diagram is valid only in conjunction with the use of Viessmann products. Subject to technical modifications.

## Parts List

### Notes on ordering spare parts

Please state Part No. and Serial No. (see nameplate) as well as the Item No. of the part (as stated in this Parts List).  
Commercially available parts can be obtained from your local plumbers' merchant.

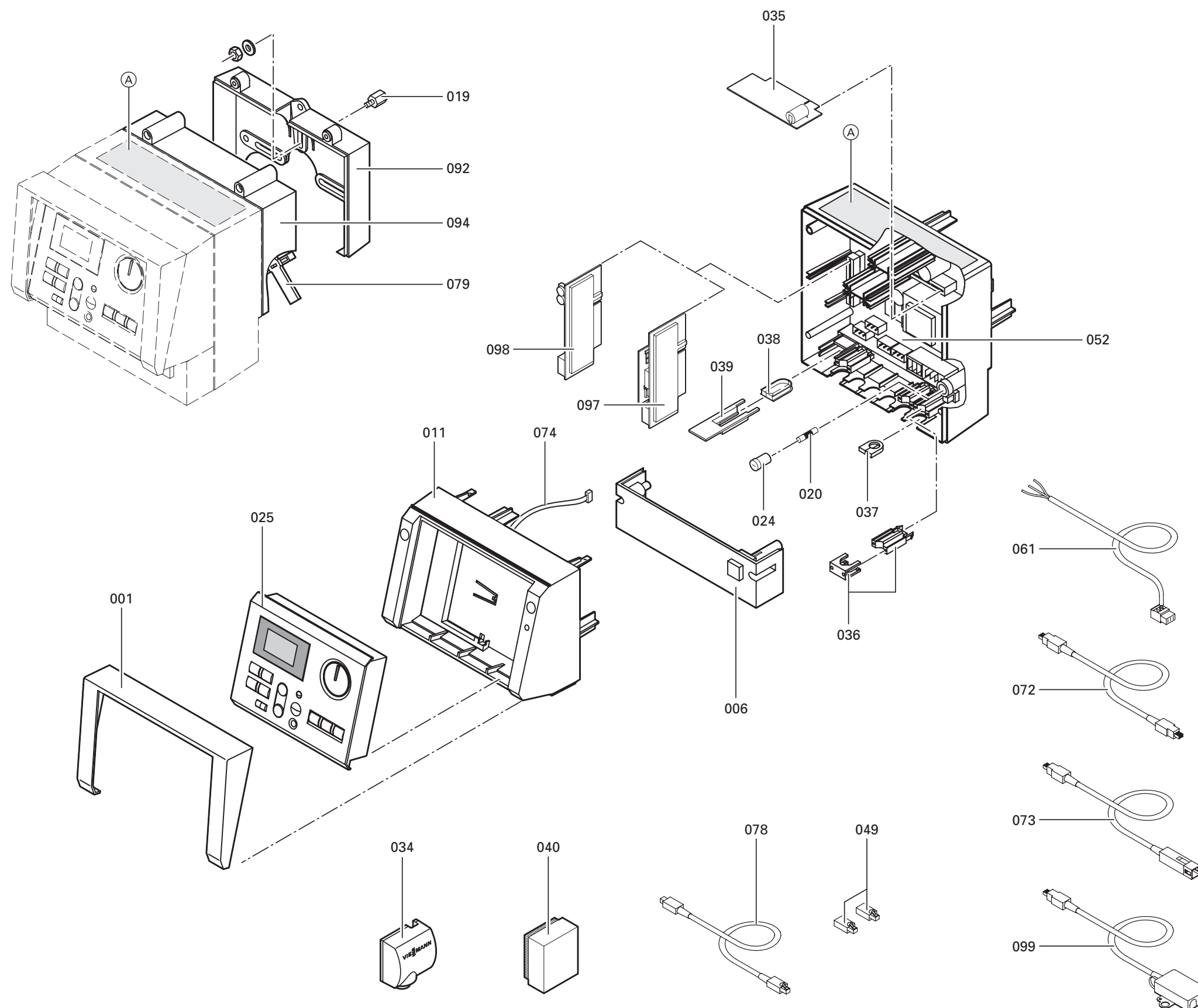
### Parts

- 001 Transparent cover
- 006 Cover for terminal compartment
- 011 Programming module
- 019 Fastening screw
- 020 Fuse T 4.0 A
- 024 Screw cap for fine-wire fuse
- 025 Programming unit
- 034 Contact temperature sensor
- 035 Electronics board
- 036 Strain relief clamp
- 037 Cable bushing
- 038 Cable entry for communication module
- 039 Strain relief clamp for communication module
- 040 Outdoor temperature sensor
- 049 Terminal resistor (2 units)
- 052 Mother board
- 061 Mains connection cable
- 072 Connecting cable for Viessmann 2-wire BUS
- 073 Extension cable for Viessmann 2-wire BUS
- 074 Connecting cable
- 078 LON connecting cable
- 079 Lever for mixing valve
- 092 Base plate
- 094 Drive module
- 097 LON communication module
- 098 Viessmann 2-wire BUS communication module
- 099 Viessmann 2-wire BUS connection cable

### Parts not illustrated

- 022 Fuse T 0.315 A
- 080 Installation and service instructions
- 081 Operating instructions

Ⓐ Nameplate





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Viessmann Werke GmbH & Co  
 D-35107 Allendorf  
 Tel: (06452) 70-0  
 Fax: (06452) 70-2780  
 Internet: www.viessmann.de

Viessmann Limited  
 Hortonwood 32  
 Telford, Shropshire TF1 4EU  
 Tel.: (01952) 670261  
 Fax: (01952) 670103

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