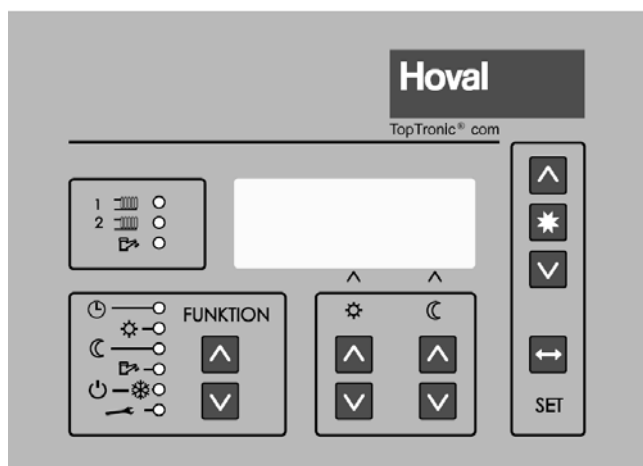


District heating regulator/buffer storage solution

**TopTronic® com V2.x**



### **Austria**

Hoval Gesellschaft mbH  
Hovalstrasse 11  
A-4614 Marchtrenk  
Tel.: 050 365 – 0  
Fax: 050 365 – 5005

### **Switzerland**

Hoval AG  
General Wille-Strasse 201  
CH-8706 Feldmeilen  
Tel.: 044 925 61 11  
Telefax: 044 923 11 39

### **Germany**

Hoval GmbH  
Humboldtstrasse 30  
D-85609 Aschheim-Dornach  
Tel.: 089 92 20 97-0  
Fax: 089 92 20 97-77

<b>IMPORTANT ADDRESSES AND TELEPHONE NUMBERS</b> .....	<b>3</b>
<b>1 NOTES ON DANGER</b> .....	<b>4</b>
1.1 KEY TO SYMBOLS USED .....	5
<b>2 GENERAL INFORMATION</b> .....	<b>5</b>
2.1 WARRANTY .....	6
2.2 ELECTROMAGNETIC COMPATIBILITY .....	6
2.3 LEGIONELLA PROTECTION.....	6
<b>3 VIEW OF THE OPERATING ELEMENTS</b> .....	<b>7</b>
<b>4 CONTROLLER PROGRAMS</b> .....	<b>9</b>
4.1 AUTOMATIC.....	9
4.2 HEATING .....	9
4.3 REDUCTION MODE .....	9
4.4 DHW .....	9
4.5 FROST PROTECTION/OFF.....	9
4.6 MAINTENANCE.....	10
<b>5 VALUE DISPLAY</b> .....	<b>10</b>
5.1 HEAT METER DISPLAY .....	11
5.2 DISTRICT HEATING TRANSFER STATION DISPLAY/BUFFER STORAGE SOLUTION.....	11
5.3 SOFTWARE VERSION DISPLAY .....	12
<b>6 SETTING VALUES</b> .....	<b>12</b>
6.1 ADJUSTMENT FUNCTION .....	12
6.1.1 Adjusting the clock settings .....	13
6.1.2 Heating Times .....	13
6.1.3 Holiday Period .....	15
<b>7 PARAMETERS</b> .....	<b>15</b>
7.1 SETTING THE GENERAL PARAMETERS.....	16
7.2 SETTING THE HEATING CIRCUIT SETTING VALUES.....	16
7.3 SETTING THE DHW SETTING VALUES.....	17
<b>8 REGULATION OF THE HEATING CIRCUITS</b> .....	<b>17</b>
8.1 STATUS MESSAGES .....	17
<b>9 DHW FUNCTIONS</b> .....	<b>18</b>
9.1 STATUS MESSAGES .....	18
9.2 PRIORITY OPERATION .....	18
9.3 PARALLEL OPERATION.....	18
9.4 DHW STORAGE TANK WITH CHARGING MODULE.....	18
9.5 DHW STORAGE TANK SECONDARY PRE-REGULATION/CHARGING MODULE .....	18
9.6 PRIMARY CHARGING THERMAL .....	18
9.7 PRIMARY CHARGING WITH PRE-REGULATION.....	19
<b>10 SPECIAL FUNCTIONS</b> .....	<b>19</b>
10.1 RETURN LIMITATION.....	19
10.2 OUTPUT LIMITATION.....	19
<b>11 TECHNICAL INFORMATION</b> .....	<b>19</b>

11.1	TEMPERATURE RANGE.....	19
11.2	TECHNICAL PROPERTIES.....	19
12	TERMINAL CONNECTIONS OF TOPTRONIC® COM (ONLY FOR THE SPECIALIST).....	20
12.1	RECOMMENDED CABLE CROSS-SECTIONS AND MAXIMUM PERMITTED CABLE LENGTHS.....	21
13	DISPOSAL OF THE UNIT AND ITS PACKAGING.....	21
	NOTES.....	21

---

**IMPORTANT ADDRESSES AND TELEPHONE NUMBERS**

**Heating engineer** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Electrician** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## 1 NOTES ON DANGER



### Danger of electric shock

Only trained specialist personnel are allowed to maintain and commission the unit.

Before the casing is opened, the unit must be disconnected from the electricity supply by means of a master switch which disconnects all poles, or by removing the fuse in the fuse box.

Protective earthing and line protection must be provided in accordance with local and national regulations.



### Frost hazard

No automatic frost protection check is performed in the "MAINTENANCE" function. If the outside temperatures are sufficiently cold, this means it is possible for the heating, the DHW storage tank or the corresponding supply pipes to freeze, thereby causing significant damage.

#### Permitted temperatures

As the outside temperature falls, the flow temperature into the heating system increases. Pay attention to the temperatures permitted for this (e.g. plastic underfloor heating) and make sure they are not exceeded.

#### danger of scalding

Temperatures in excess of 50°C can lead to scalding (EN563). You must ensure that even untrained persons cannot suffer burns or scalds.

Expressly inform the users about the fundamental **safety measures**:

Only trained specialist personnel are allowed to maintain and commission the unit.

The control unit uses mains voltage! Do not carry out any repairs yourself! If parts are loose, cables are damaged, if moisture gets into the controller housing, etc.: Do not touch anything! Instead, disconnect the system from the electricity supply if possible and take immediate measures to have it repaired by specialist personnel.

When changing settings, make sure that no-one can be scalded as a result due to high temperatures, and also that the heating system cannot be damaged either by excessive temperatures or lack of frost protection.

Every year, have your heating system serviced and checked for defects affecting safety by trained specialist personnel.

Even temperatures in excess of 50°C can injure the skin or cause burns. In particular, keep small children away from the heating system.

## 1.1 KEY TO SYMBOLS USED



Important note:

The following must be noted



Safety instruction:

Warning: dangerous electrical voltage



Tip or notice:

Additional information

## 2 GENERAL INFORMATION



Hoval products must be installed and commissioned by specialists. These instructions are intended for the specialist. Electrical installation must be performed by a licensed electrician.

Please ensure that the delivery is consistent with your order and check it for completeness. Also check for possible damage incurred during transport and inform the nearest Customer Service centre of any damage. For insurance reasons, it will not be possible to accept any subsequent claims.

This manual provides information about operating levels for users. Always comply with the following notes on safety prior to maintenance or repair:



For the correct installation and operation of your Hoval TopTronic® com, all applicable laws, regulations and standards must be complied with; in particular the regulations of the responsible energy supply company.

1. Disconnect all poles and all connections!
2. Secure to prevent switching back on!
3. Check that the equipment is not live!
4. Earthing and short-circuiting!
5. Protect from adjacent live components (cover, isolate)!

Please keep the operating instructions so you can refer to them later on.

## 2.1 WARRANTY

The warranty does not cover defects attributable to:

- Failure to comply with the operating instructions
- Incorrect installation
- Impermissible modifications
- Incorrect handling
- Damage caused by the application of force
- Corrosion by halogen compounds (e.g. paints, adhesives, solvents)

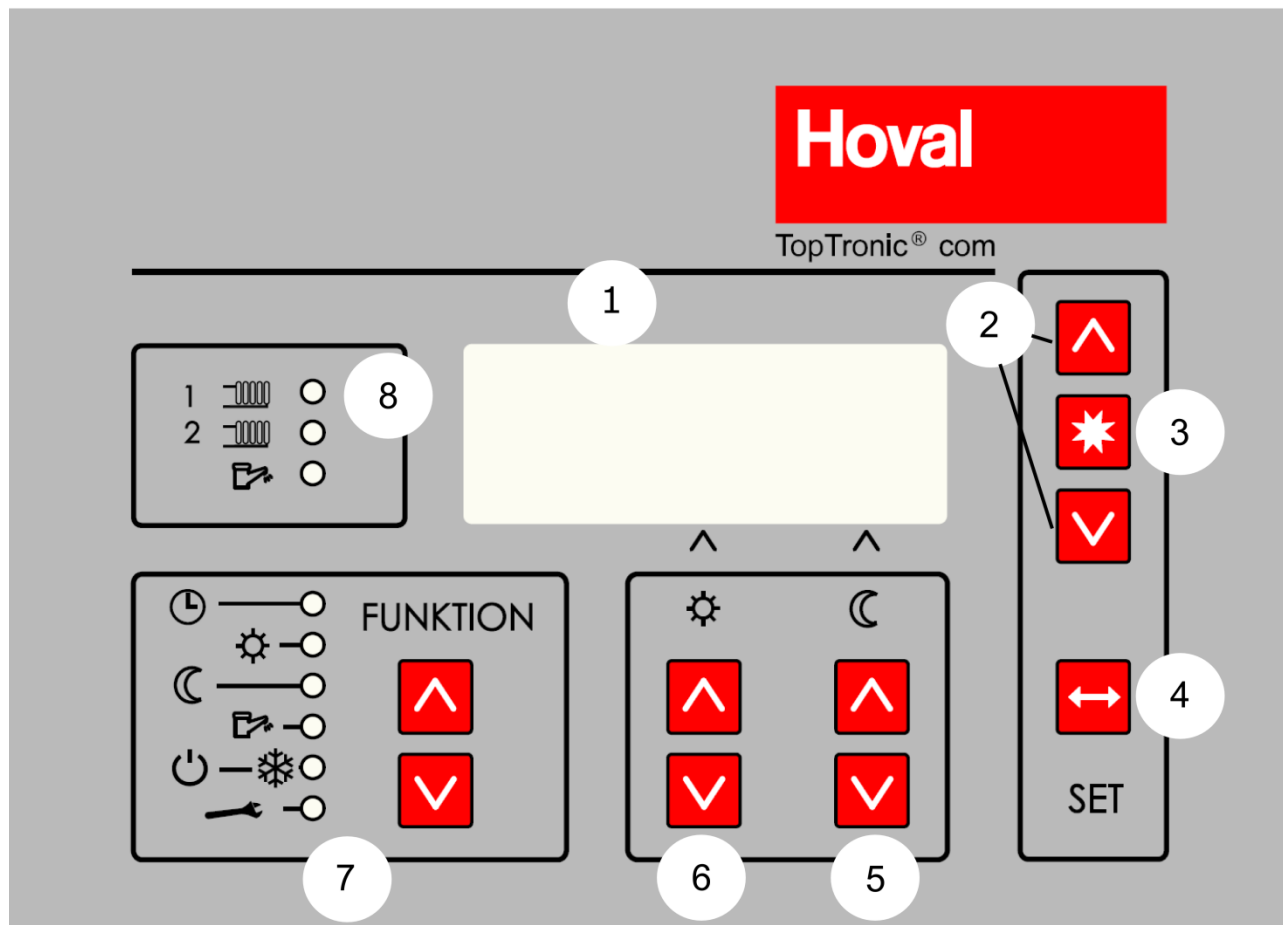
## 2.2 ELECTROMAGNETIC COMPATIBILITY

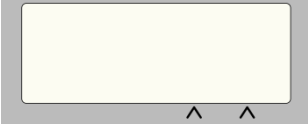



- **Interference emission requirement EN61000-6-3:2007**  
Interference voltage 230 V AC EN55022 CL B  
Interference voltage LON bus, across difference buildings EN55022 TA, CL B  
Electromagnetic field intensity EN55022 CL B
- **Immunity requirement EN61000-6-2:2005**  
Electromagnetic field EN61000-4-3  
Electrostatic discharge (ESD) EN61000-4-2  
Rapid transients (BURST) EN61000-4-4  
Conducted disturbances immunity EN61000-4-6  
Surge voltages on AC supply and signal cables EN61000-4-5  
Voltage dips/voltage interruption EN61000-4-11

## 2.3 LEGIONELLA PROTECTION




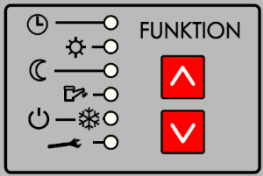
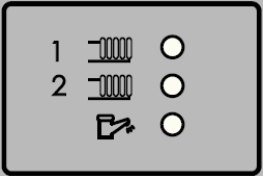
The TopTronic® com offers the possibility of heating the service water to more than 65°C every week, in order to kill bacteria. In this regard, please pay attention to the regulations in ÖNORM B5019 for Austria, or the equivalent standards that apply in your country.

### 3 VIEW OF THE OPERATING ELEMENTS



Element	Designation	Function
1 	LCD	Displays information about the heating circuits and DHW storage tank (value display), and functions as a display in setting mode.
2  	DISPLAY UP and DOWN keys	These are used for scrolling through the functions both in the value display and in setting mode, as well as for increasing or reducing selected values in setting mode.
3 	Key	Used for confirming an entry in setting mode.



<p>4</p> 	SET key	Used for changing over between the value display and setting mode. (The function automatically reverts to value display mode after 2 minutes in setting mode without any entry.) Also functions as a back key.
<p>5</p> 	Adjustment reduction	Used for reducing the heating temperature of the currently displayed heating circuit outside the heating times.
<p>6</p> 	Adjustment heating	Used for increasing or reducing the temperature of the currently displayed heating circuit during the heating time.
<p>7</p> 	Function selection	This switch can be used for selecting between the control programs. The current selection is indicated by a light.
<p>8</p> 	Pump LEDs	Displays whether a heating circuit or the buffer storage pump is switched on.

## 4 CONTROLLER PROGRAMS

Function selection (7) defines the control program of the transfer station. Pressing the up or down key of the function selection causes the illuminated indicator to move to the required program. For heating circuits that are equipped with a remote control, the switch settings on the particular remote control apply to the control programs "automatic, heating mode, reduction mode and FROST PROTECTION/OFF".

The following programs can be selected:

### 4.1 AUTOMATIC



In this function, the heating circuits are controlled without remote operation based on the heating or reduction temperature, depending on reduction times. The DHW is controlled according to the DHW settings.

### 4.2 HEATING



The reduction times are ignored in this function selection (e.g. for a party), and all heating circuits without a room station are permanently kept at the normal heating temperature. The calorifier is controlled according to the DHW settings.

### 4.3 REDUCTION MODE



In this function selection, all heating circuits without a room station are controlled at continuous reduction according to the setting values. The calorifier is controlled according to the DHW settings.

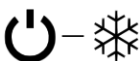
### 4.4 DHW



This function is intended for summer operation or for preparing service water when using additional heaters.

The heating circuits are switched off, the DHW storage tank is controlled according to the DHW settings.

### 4.5 FROST PROTECTION/OFF



This function has been optimised for empty houses. If the outside temperature drops below the set value (e.g. 0°C), the pumps of all heating circuits and of the DHW storage tank are switched on, and the system is controlled at the set secondary temperature (e.g. 25°C).

## 4.6 MAINTENANCE



This program switches the controller off entirely. Although all measured values are still recorded, no further control activities are carried out. As a result, the mixers are no longer activated and the pumps are switched off according to the preselection in the setting values (parameter A/14) (e.g. maintenance work) or are switched on (e.g. using an additional heat source).



**CAUTION:** No frost protection check is performed in this setting.

## 5 VALUE DISPLAY

The LCD (1) is used for showing the most important everyday information about the heating circuits, DHW storage tank and heat meter. It is possible to switch over between the displays using the DISPLAY UP and DISPLAY DOWN key (2). There is an ADDITIONAL DISPLAY for each circuit display, which can be switched to using the Enter key.

Main display:

Additional display level 1:

```
Circuit 1 On
Outside : -2.3°C
Flow: 45.8°C
14:26 0 -4
```

```
funct. 1 Auto
SecSet : 46.0°C
Outside Σ -2.0°C
14:26 0 -4
```

```
Circuit 2 On
Outside : -2.3°C
Flow: 27.4°C
14:26 0 0
```

```
funct. 2 Auto
SecSet : 28.0°C
Outside Σ -2.0°C
14:26 0 0
```

The first line of the display for the heating circuits shows the circuit number and the status of the heating circuit. For more information about possible statuses, see chapter 8.

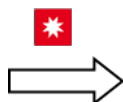
The second line shows the outside temperature (Outside) and the third line shows the temperature of the heating circuit (Flow).

The fourth line shows the current time on the left and the position of the heating curve in heating mode on the right (value range -4 to +4), as well as the position of the heating curve in reduction mode (value range -8 to 0) of the corresponding circuit.

If the system is in return or power limitation, this is also shown on the main display.

Main display DHW:

DHW 1
SF 1 : 52.7°C
SF 2 : 32.0°C
14:26



DHW additional display:

DHW 1
Parallel operation
Status OFF
14:26

The DHW display shows the temperatures of the tank (SF1/SF2). The additional display shows the configuration and status of the tank. For more information about possible statuses, see chapter 9.

The next displays show some additional information:

## 5.1 HEAT METER DISPLAY

Main display:

Mbus index: 1
Power : 7kW
Flow : 133 l/h
Energy : 37.214MWh

Additional display level 1:

Mbus index: 1
Flow : 68.1°C
Return : 23.0°C
Range : 45.1 K

Additional display level 2:

Mbus index : 1
Type: SHARK77x
SerNo: 41424989
Limiter : Yes

The values shown on the display are values read out from an M-bus unit (heat meter).

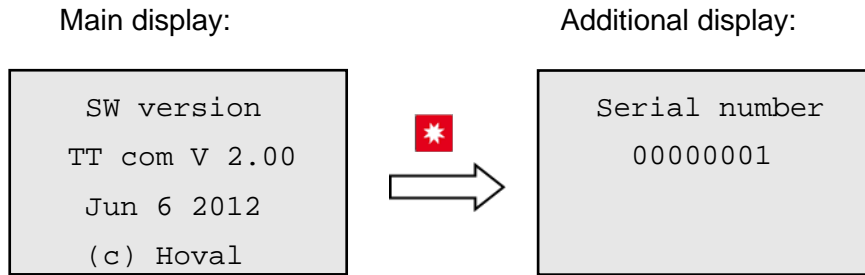
## 5.2 DISTRICT HEATING TRANSFER STATION DISPLAY/BUFFER STORAGE SOLUTION

Main display:


RetMax : 48.8°C
R Act : 23.0°C
SecSet : 46.0°C
SecAct : 45.8°C

This display shows the most important values for controlling the district heating transfer station. The measured return temperature ( $R_{Act}$ ) can be compared with the maximum permitted return temperature ( $R_{max}$ ). The highest requested set temperature ( $SecSet$ ) can be compared with the current secondary temperature ( $SecAct$ ).

### 5.3 SOFTWARE VERSION DISPLAY




The last display provides information about the software version of the control unit and the serial number of the installed hardware.

 Depending on the system configuration, there may be a different number of displays, and they may contain different information.

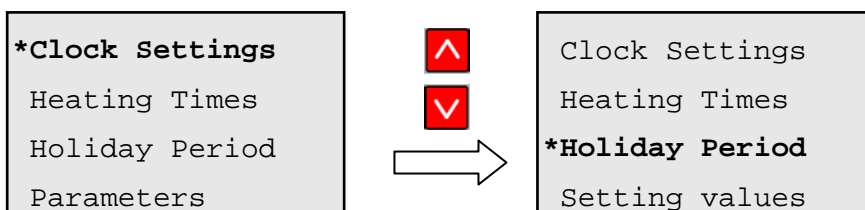
## 6 SETTING VALUES


Pressing the SET key calls up setting mode.


 Pressing the SET key again goes back one level from any position.


### 6.1 ADJUSTMENT FUNCTION


Pressing the DISPLAY UP or DISPLAY DOWN key (2) allows the "\*" symbol on the display to be moved to the required menu item.



Pressing the  key switches to the selected menu item. This system is used in the overall setting mode for switching between the menu items.

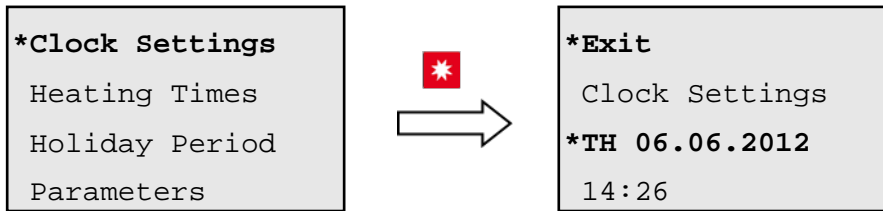
Once the value to be adjusted has been reached, it starts flashing after being selected with the  key, and can be adjusted using the DISPLAY UP and DISPLAY DOWN keys (2).





Pressing the  key again saves the new value. Pressing the SET key (4) allows the setting procedure to be cancelled at any time.

To go one level up in a submenu, move the "\*" symbol to the EXIT menu item and acknowledge with the  key.

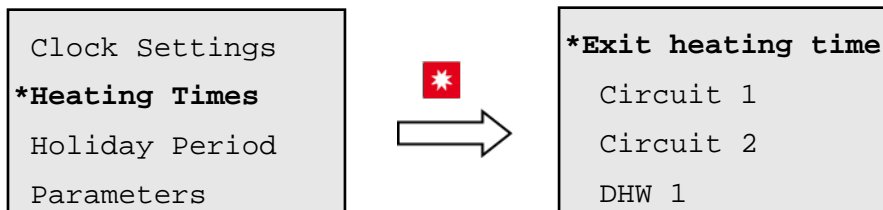
The following adjustment displays are available:


### 6.1.1 ADJUSTING THE CLOCK SETTINGS



To change the time, move the "\*" symbol to the "TH 06.06.2012" entry (example) and acknowledge with the  key. Now press the DISPLAY UP and DISPLAY DOWN keys to change the value for the day of the week. Pressing the  key again makes it possible to change the date. Every further press on the  key enables other data to be set in the same way. It is necessary to acknowledge with the  key to activate the change.

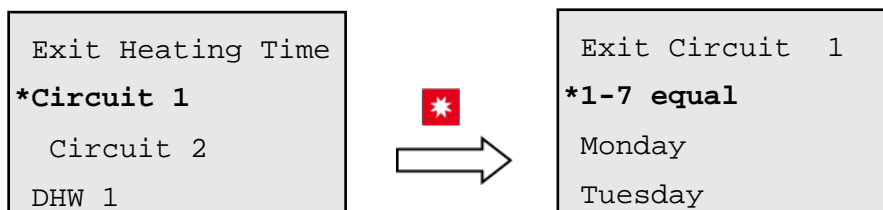
### 6.1.2 HEATING TIMES




 The display scrolls (moves) through all configured circuits as well as calorifiers and the circulation.

If the controller is in the "Automatic" controller program, the heating circuits are kept at the heating temperature during the heating times. It is possible to define three different heating time per day:

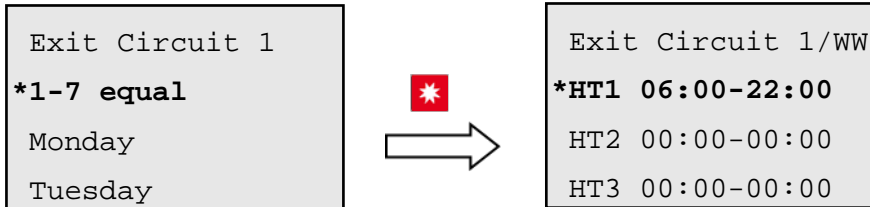
Selecting "Circuit 1" causes the following display to appear:



 The display scrolls (moves) through until "Sunday".

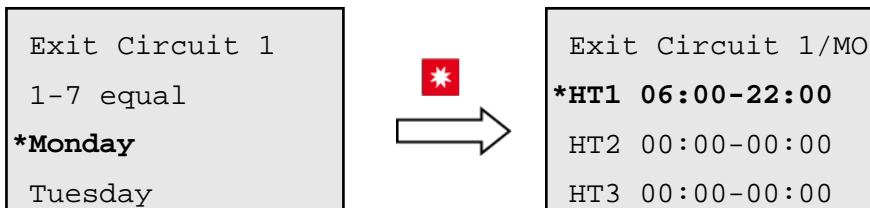
Selecting "1-7 equal" sets the entire week to the set times. Otherwise (or in addition) each day can be set separated.

- 1-7 (whole week)



Changing the times changes the times for the entire week.

- Monday

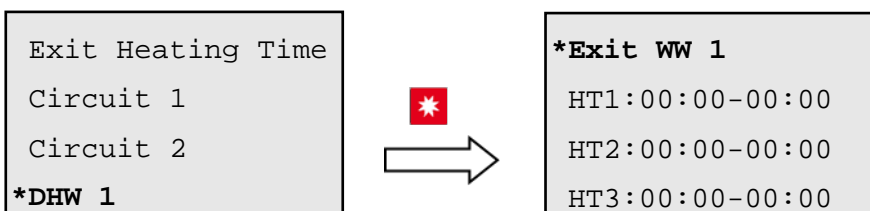





Changing the times sets the selected heating time for the selected day.

The other days of the week and other heating times must be called up accordingly.

- Calorifier

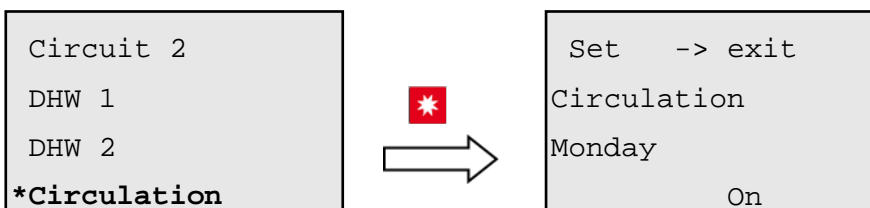
Three switching blocks can be set using a calorifier. These specify at what times the calorifier should be charged until reaching the nominal/switch-off temperature.



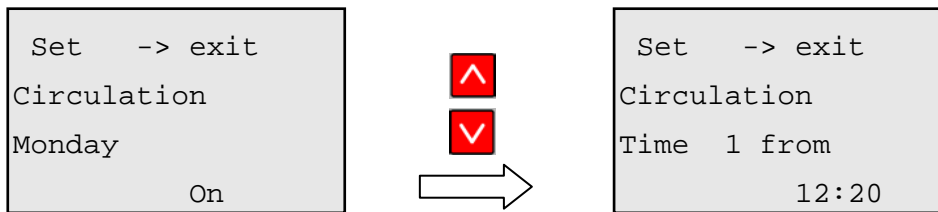
To change the heating time, move the "\*" symbol to the "HT1:00:00-00:00" entry (example) and confirm with the  key. Now press the DISPLAY UP and DISPLAY DOWN keys to change the value for the hour. Pressing the  key again makes it possible to change the minutes. To acknowledge the change, press the  key again.

- Circulation

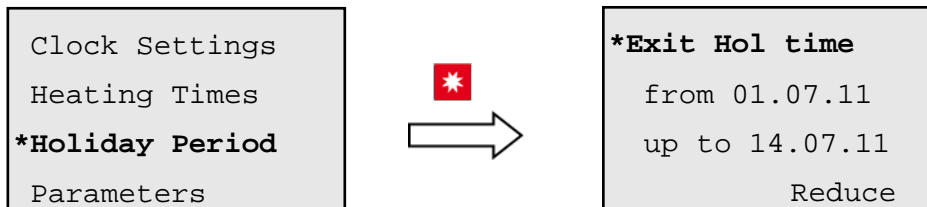
If the circulation has been activated in the parameters (parameter A/19), it is additionally possible to set the circulation times for each day. Circulation can be activated or deactivated for the selected day.



Press the DISPLAY UP and DISPLAY DOWN keys (2) to access the various days and the five circulation times. The required circulation period can be set here.



### 6.1.3 HOLIDAY PERIOD



The holiday period is a "primary" reduction time or frost protection function for longer time periods. The heating circuits are not brought up to heating temperature during this period. The holiday periods are changed in the same way as the heating times. However, a date must be set instead of a time.

## 7 PARAMETERS

Some of the setting parameters can be set by the user, whereas others are blocked and require a specialist in order to set them. There is password protection for adjusting the blocked values.

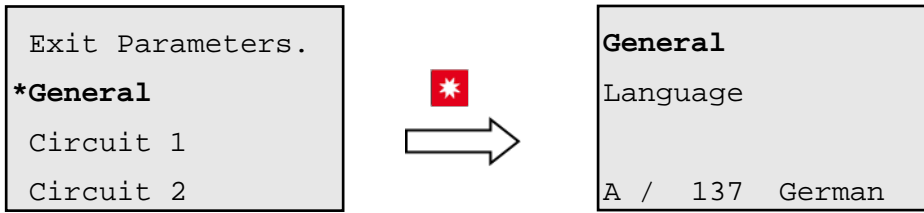
The setting parameters are normally set by the specialist; they are responsible for the fundamental behaviour of the controller. For further information, please contact your installer.



**WARNING:** Only change the parameters if you know what effects this will have on the behaviour of the controller.



## 7.1 SETTING THE GENERAL PARAMETERS

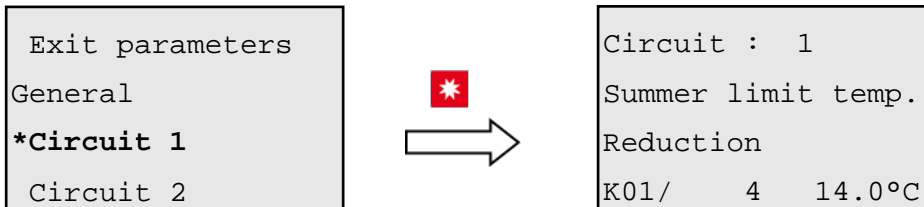


Press the SET key to switch back to the value display.

Below, all setting values for the general district function area are listed by value number, designation and their particular meaning.

Par.No.	Designation	Default value	Meaning
A/137	Language	German	Setting the language.

## 7.2 SETTING THE HEATING CIRCUIT SETTING VALUES

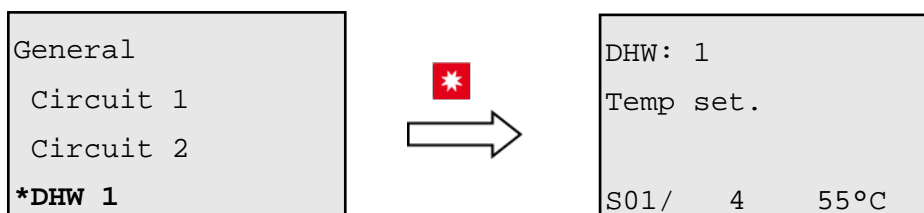


Press the SET key to switch back to the value display.

Below, all setting values for the general function area are listed by value number, designation and their particular meaning. The designation of the parameters is specified with Kxx/1 because each configured circuit has these parameters (K01, K02, ...).

Par.No.	Designation	Default value	Meaning
Kxx/4	Summer limit temperature Reduction	14.0°C	The heating circuit is switched on if the outside temperature drops below the set value outside the heating time. The summer limit temperature can be set for each heating circuit.
Kxx/5	Summer limit temperature Heating	18.0°C	The heating circuit is switched on if the outside temperature drops below this value during the heating time. The summer limit temperature can be set for each heating circuit.

### 7.3 SETTING THE DHW SETTING VALUES



Press the SET key to switch back to the value display.

Below, all setting values for the general function area are listed by value number, designation and their particular meaning.

Par.No.	Designation	Default value	Meaning
Sxx/4	Temp set.	55.0°C	Temperature to which the DHW tank is charged
Sxx/5	Min.temp.	45.0°C	If the DHW tank temperature drops below this value, charging takes place even outside the heating times.

## 8 REGULATION OF THE HEATING CIRCUITS

### 8.1 STATUS MESSAGES

The following status messages are shown on the main display of the heating circuits.

Message	Meaning
OFF	The heating circuit is out of operation based on pre-selection or due to the outside temperature.
ON	The heating circuit is regulated according to the settings (heating curve etc.) and the "Heating" setting.
Reduction	The heating circuit is regulated according to the set reduction functions and the "Reduction" setting.
Frost protection	The heating circuit is switched on for protection against freezing.

## 9 DHW FUNCTIONS

### 9.1 STATUS MESSAGES

The following status messages are possible in the additional display of the DHW storage tank:

Message	Meaning
OFF	The DHW temperatures correspond to the settings, no charging.
Minimum charging	DHW charging is carried out because the minimum temperature has been undershot.
Time charging	DHW charging is carried out because the charging time has been reached.
Block	DHW charging is interrupted for xx minutes because charging has already lasted too long.
Legionella charging	The DHW storage tank is charged to an increased value (65°C) so as to kill bacteria.
Frost protection	The pump operates to protect the DHW tank against frost.

### 9.2 PRIORITY OPERATION

The heating circuits are switched off during DHW charging.

Connection to the secondary circuit with a buffer storage pump SLP 1.

### 9.3 PARALLEL OPERATION

The heating circuit pumps remain in operation. It is necessary to take measures in the system to ensure that no damage can be caused by excessive temperatures.

### 9.4 DHW STORAGE TANK WITH CHARGING MODULE

When the buffer storage temperature is reached in the secondary flow, buffer storage pump 1 (service water pump) is switched on.

### 9.5 DHW STORAGE TANK SECONDARY PRE-REGULATION/CHARGING MODULE

Connection to secondary circuit,

SLP1 + SLP2 (service water pump)

heating circuit 2 as special circuit, sensor VL2 and mixer YK2 regulate the flow temperature,

Request set temperature to the primary valve.

### 9.6 PRIMARY CHARGING THERMAL

The secondary set value is not increased. The buffer storage pump 1 is authorised irrespective of the secondary flow temperature.

## 9.7 PRIMARY CHARGING WITH PRE-REGULATION

Connection to primary circuit.

SLP1 (if required) + SLP2 (service water pump),

heating circuit 2 as special circuit, sensor VL2 and mixer YK2 regulate the flow temperature, no influencing of the secondary circuit.

## 10 SPECIAL FUNCTIONS

### 10.1 RETURN LIMITATION

The limiting curve for the return temperature can be defined using the "return temperature at -20°C" and "return temperature at +20°C" set values (parameters A/05 and A/06).

If the current return temperature exceeds this curve, the set values of the heating circuits are reduced step-by-step according to the overshoot. If the return temperature drops back below this curve, the set values of the heating circuits are increased again slowly. For information, a "T" is displayed in the heating circuit display at the bottom right.

### 10.2 OUTPUT LIMITATION

In addition to the hydraulic limitation of the usage quantity, the controller performs a comparison between the current power and the maximum permitted power of the system. The regulation takes place as with the return limitation by lowering the set temperature. For information, a "P" is displayed in the heating circuit display at the bottom right.

## 11 TECHNICAL INFORMATION

### 11.1 TEMPERATURE RANGE

The controller is designed for a temperature range between 0°C and 45°C.

### 11.2 TECHNICAL PROPERTIES

- Supply voltage: 230V AC
- Mains frequency: 50Hz
- Output voltage motor and pump outputs: 230V AC
- Output current motor and pump outputs: 5 A

**12 TERMINAL CONNECTIONS OF TOPTRONIC® COM (ONLY FOR THE SPECIALIST)**

Fuse H5.0AF

PE conductor

Electrical power supply  
230V AC 50Hz

Electrical power supply  
heat meter  
230V AC 50Hz

Direct circuit pump

Primary valve

Pump 1

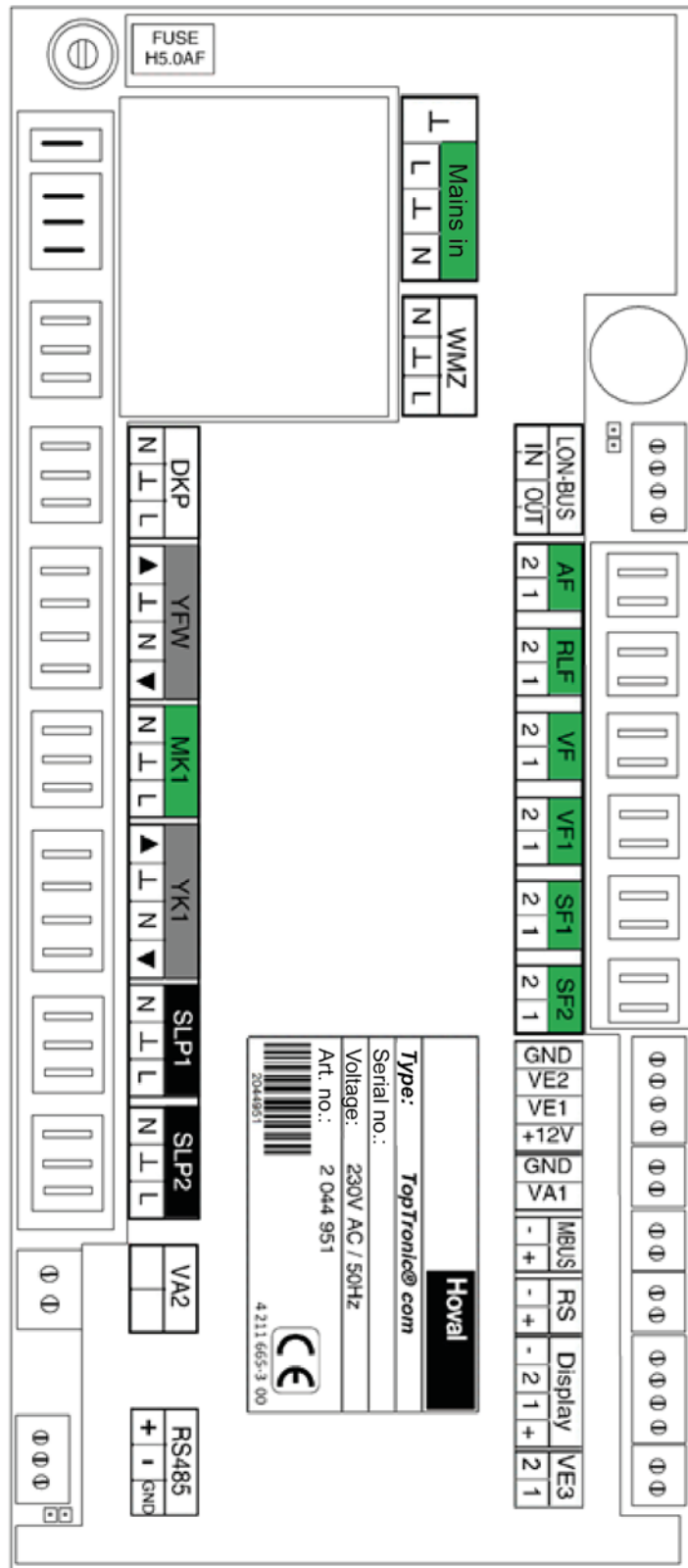
Mixer valve 1

Buffer storage pump 1

Buffer storage pump 2

Fault reporting output  
volt-free

MOD bus interface  
master/slave or  
gateway V1.0



LON bus IN

LON bus OUT

Outside sensor

Return sensor

Secondary flow sensor

Flow sensor 1

Tank sensor 1

Tank sensor 2

Analog inputs 1 and 2 /  
configurable

Analog output  
configurable

M-bus interface


Room station

Display

Variable input

**12.1 RECOMMENDED CABLE CROSS-SECTIONS AND MAXIMUM PERMITTED CABLE LENGTHS**

- All cables carrying mains voltage (mains connection, pumps, actuators, etc.)
  - Recommended cable cross sections: 1.5 mm<sup>2</sup>
  - Maximum permissible length: no restrictions, within the framework of the building's internal installations.
  
- All sensor cables
  - Recommended cable cross sections: At least 0.5 mm<sup>2</sup>
  - Maximum permissible length: 50m, shielded if 30m or longer, the shield is only allowed to be connected at one end.
  
- Analog signals (0-10V and 4-20mA)
  - Recommended cable cross sections: Cable with twisted-pair conductors, at least 0.5 mm<sup>2</sup>
  - Maximum permissible length: 30m, shielded if 3m or longer, the shield is only allowed to be connected at one end
  
- Communication lines (MOD-bus, LON-bus, M-bus)
  - Recommended cable cross sections: Cable with twisted-pair conductors, at least 0.5 mm<sup>2</sup>
  - Maximum permitted cable length: 50m, shielded if 3m or longer, the shield is only allowed to be connected at one end

 **CAUTION:** Avoid longer connecting lines because of the danger of radiated interference!

**13 DISPOSAL OF THE UNIT AND ITS PACKAGING**

This product contains electrical and electronic components and is not allowed to be disposed of as domestic waste.



Local and currently valid legislation must be complied with.

**NOTES**

---

---

---

---

---

---

---

---

---

---