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# Contents

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# 1 Document Revision

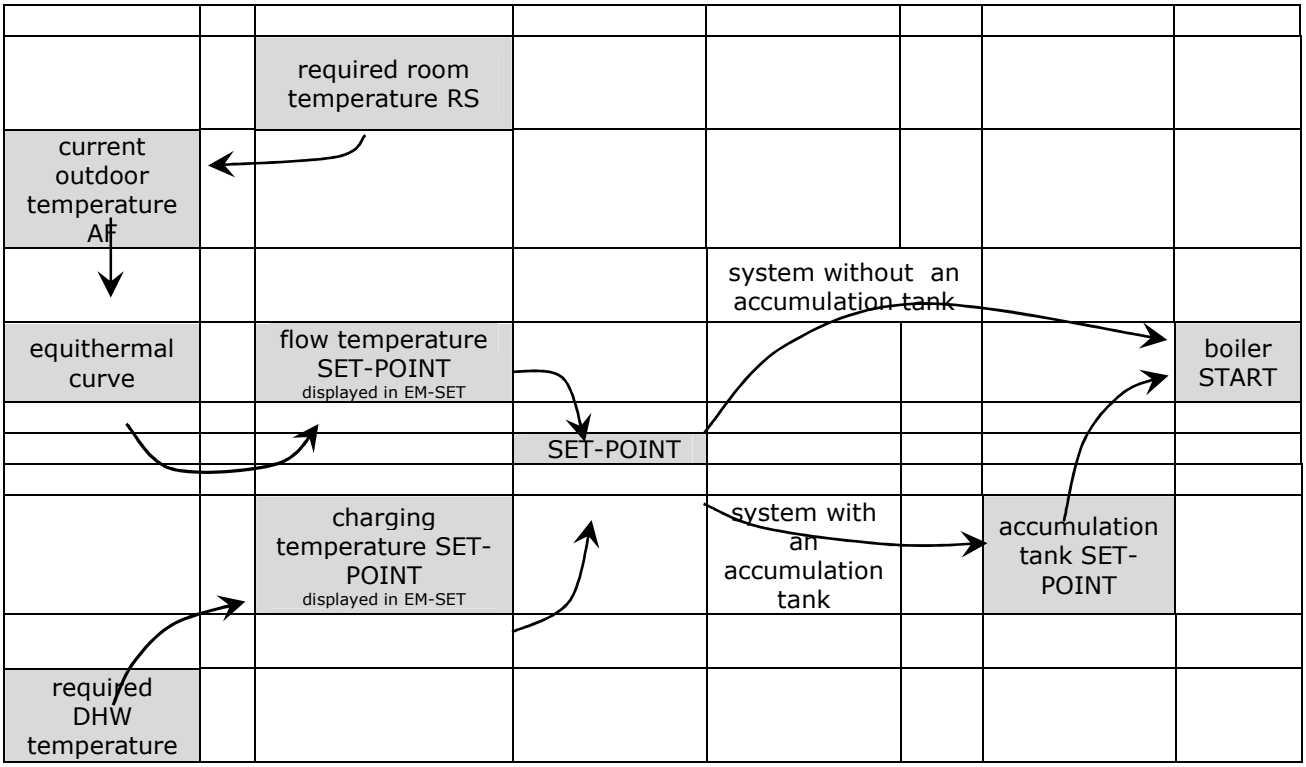
This Service Manual was updated on February 1, 2011.

# 2 Software Version

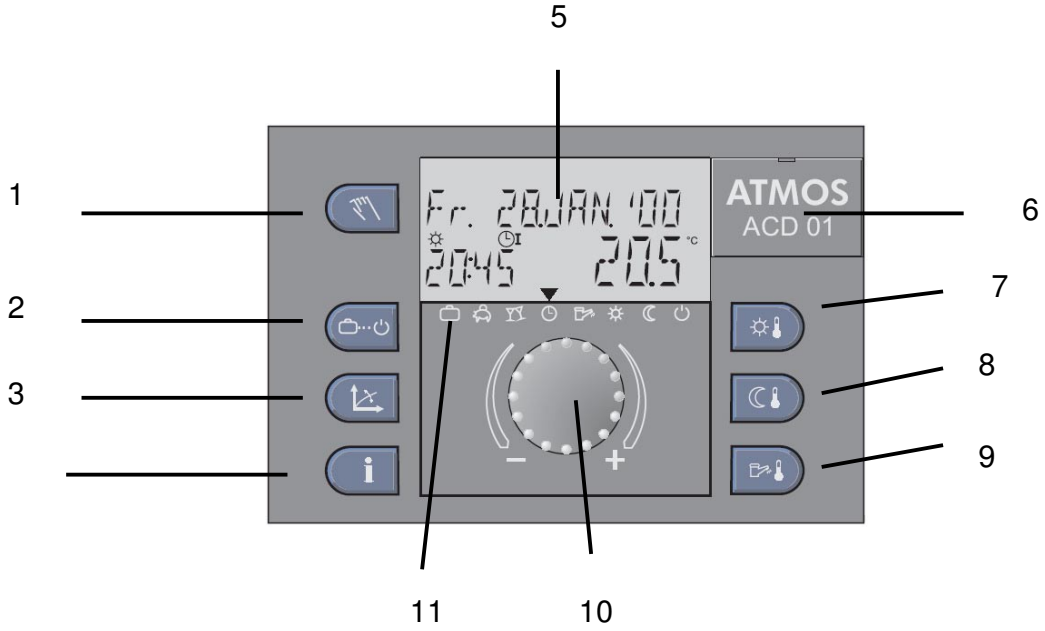
This Service Manual can only be used in conjunction with software version V3.3. The software version that is installed in your controller will be displayed for approx. 8 seconds after connection of the controller to the power supply.

# 3 Basic description

The ACD01 equithermal controller is programmed to control the boiler and system circuit in accordance with specific hydraulic diagrams. For proper functioning the controller must be set to the particular hydraulic diagram after the initial start-up; otherwise the controller cannot control the heating system properly. This Service Manual provides instructions for proper installation and setting of the controller.
The function of the controller consists in the calculation of SET-POINTS to cover the needs of the heating system and their gradual shifting and increasing towards the boiler - see diagram.



# 4 Control Elements




1 “Manual source selection / Fan control” key
2 “Operation mode” key (basic display)
3 “Heating characteristics” key
4 “Information” key
5 Display
6 Cover for the connection of the service programmer
7 “Daytime room temperature” key
8 “Night-time room temperature” key
9 “HDW temperature” key
10 Rotary button
11 Symbols of operation modes

## 4.1 Basic displays of the controller

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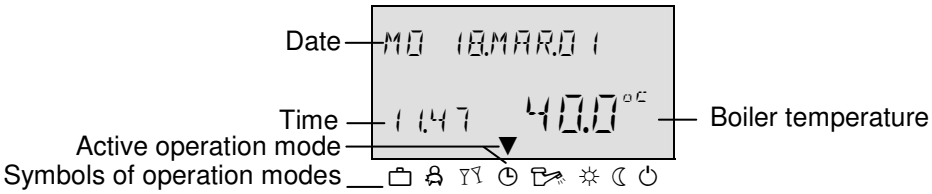
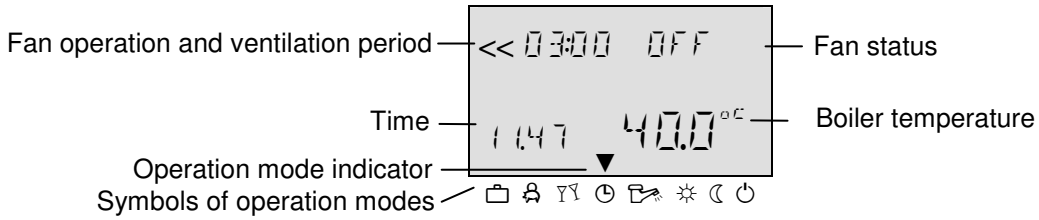
The display modes depend on the selected boiler type or hydraulic diagram.

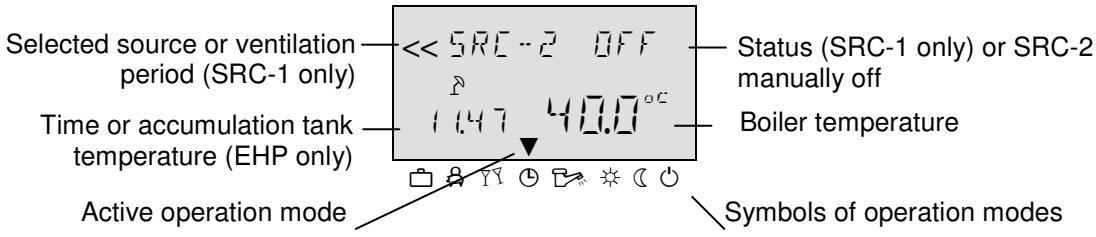
**Display 1 - hydraulic diagrams 1, 3, 4, 9, 10, 12 (boiler type 1, 2 and 3)**
The display shows the date, time and temperature of the heat source (boiler)




**Display 2 – hydraulic diagram 17, 19, 20 (boiler type 4)**
The display shows fan operation, fan ventilation period, fan status, the time and the temperature of the heat source (boiler).




**Display 3 – combined source - type no. 5 and 6**
The display shows the selected source, fan ventilation period and fan status (SRC-1 only), temperature of the source.

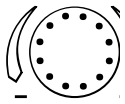



The **parasol** symbol indicates the summer mode of the controller.

The **snowflake** symbol indicates active anti-freeze protection.

## 4.2 Control keys

### 4.2.1 Rotary button (Press / Turn)



**By pressing the rotary button once, you can**:
- Confirm inputs/values
- Enter individual parameters
- Change the selection level in the menu

**By prolonged pressing (approx. 3 sec.) of the rotary button, you can**:
- Enter the menu

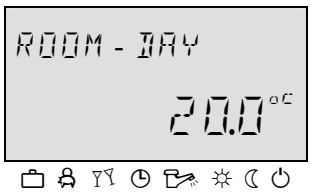
**By turning the rotary button, you can:**
- Change values (increase clockwise and decrease counter-clockwise)
- Browse in the menu/parameters

### 4.2.2 "Daytime room temperature" key

This key is used to set the room temperature in the automatic mode during the heating cycle as well as in the *PARTY* a *HEATING* operation modes. If in the SYSTEM menu value 1 of the MODE parameter is selected, the entered value is identical for all the heating circuits. If in the SYSTEM menu the MODE parameter is set to 2, you can enter values for each of the heating circuits individually.

**NOTE**

The value entered this way is the starting point for individual temperature settings during heating cycles in the time program menu. If this value differs from the set value, it is modified as necessary in case of a subsequent temperature change.




**Setting:**
- Press the "Daytime room temperature" key .
- Set the required room temperature value by turning the rotary button to the required value.
- Confirm the set value either by pressing the "Daytime room temperature" key or by pressing the rotary button.

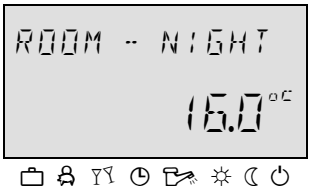
**Default setting** 20 °C
**Setting range** 5 ... 30 °C

#### 4.2.2.1 Function of quick switching to the "PARTY" mode

By keeping the "DAYTIME TEMP." key pressed for more than 3 sec. you will switch the controller to the PARTY mode - see the operation modes 4.2.5.3.

### 4.2.3 "Night-time room temperature" key

This key is used to set the reduced temperature value in the automatic program between heating cycles as well as during the *ABSENCE* and *REDUCED* operation modes. If in the SYSTEM menu value 1 of the MODE parameter is selected, the entered value is identical for all the heating circuits. If in the SYSTEM menu the MODE parameter is set to 2, you can enter values for each of the heating circuits individually.




**Setting:**

► Press the "Night-time room temperature" key .

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- ► Set the required reduced room temperature by turning the rotary button to the required value.
- ► Confirm the set value either by pressing the "Night-time room temperature" key or by pressing the rotary button.

**Default setting** 16 °C
**Setting range** 5 ... 30 °C

### 4.2.3.1 Function of quick switching to the "ABSENCE" mode

By keeping the "NIGHT-TIME TEMP. key depressed for more than 3 sec. you will switch the controller to the ABSENCE mode - see the operation modes 4.2.5.2.

## 4.2.4 "Daytime DHW temperature" key

This key is used to set the DHW temperature value in the daytime mode during the DHW operation times in the automatic program as well as during the *PARTY and HEATING* operation modes.
The value entered this way is also used for the domestic hot water only mode (manual summer mode).

**NOTE**

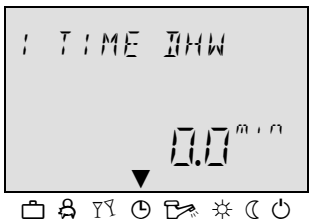
The value entered this way is the starting point for individual temperature settings during DHW cycles in the time program menu. If this value differs from the default setting, it is modified as necessary in case of a subsequent adjustment of the set value.


**Setting:**

- ► Press the "DHW temperature" key.
- ► Set the DHW buffer temperature by turning the rotary button to the required value.
- ► Confirm the set value either by pressing the "DHW temperature" key or by pressing the rotary button.

**Default setting** 50 °C
**Setting range** Economic hot water temperature ... maximum temperature of the source of heat (service setting)

### 4.2.4.1 One-off filling function in the daytime mode




By keeping the "DHW temperature" key pressed for more than 3 sec. you will activate the function of one-off filling (heating) of hot water in the daytime mode. This function suppresses the currently set time program.

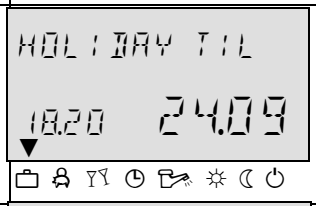
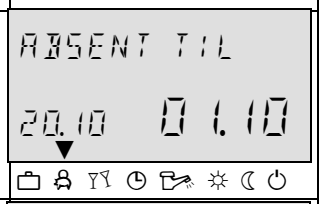
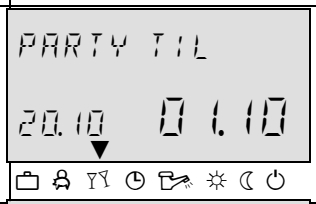
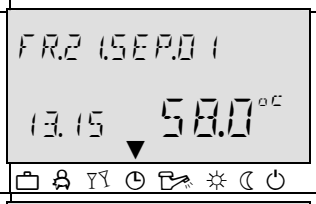
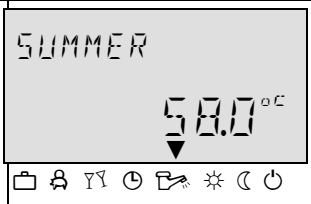
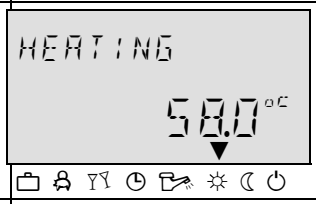
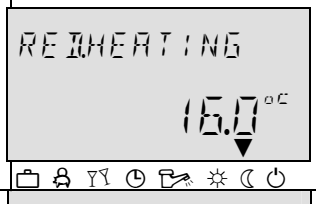
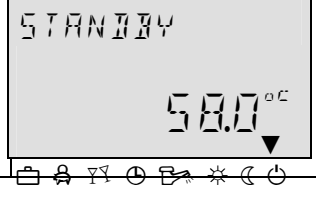
After pressing of this button the time value will be displayed with the following meaning:

0 s: The function of one-off filling will only be executed once until the DHW temperature value is achieved. When the set value is reached, this function will be switched off again.

>0 s: The hot water filling period will be executed for the time interval (0 to 240 minutes) set with the use of the rotary button. This means that the filling function will be switched off after the expiration of the set time interval independently of the subsequently set value.

### 4.2.5 „Operation Mode“ key (Basic display)

This key is used to set the required operation mode. The operation mode appears in plain text and at the same time the cursor at the bottom side of the display indicates the relevant operation mode symbol. If in the SYSTEM menu the MODE parameter = 1, the set value is identical for all the heating circuits; if in the SYSTEM menu the MODE parameter = 2 is selected, values are set separately for each individual circuit.

| Overview of the Operation Modes | | | |
|---|---|---|---|
| **Arrow on symbol** | **Program** | **Mode display** | **Setting** |
|  | Holiday |  | Day of return from holiday |
|  | Absence |  | Return time |
|  | Party |  | Party end time |
|  | Automatic |  | Time programs 1 (2, 3) |
|  | Summer |  | DHW temperature |
|  | Constant heating mode |  | Comfortable temperature |
|  | Constant reduced mode |  | Reduced temperature |
|  | Constant standby mode |  | |

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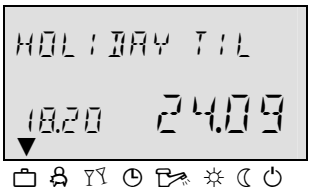
**Setting:**

- ► Press the “Operation Mode” key
- ► Set the arrow at the bottom side of the display by turning to the position of the desired operation mode.
- ► Confirm the setting by pressing the “Operation Mode” key or the rotary button.
- ► In the case of the short-term operation modes (Holiday, Absence, Party) set the required value by turning the rotary button and confirm the set value in the above mentioned way.

**Return to the basic display** Keep the key pressed for approx. 3 seconds.

### 4.2.5.1 Holiday Mode (Short-term Program)




By means of this mode you can switch off the heating and hot water heating for the household for the whole holiday period. **The frost protection remains activated.**

**Control in the Holiday mode** Long absence during the heating season.
If outdoor temperatures are lower than the frost protection temperature, the heating circuits **without the SDW wall modules** are controlled to the room temperature set point of 3 °C and the circuits **with SDW wall modules** are controlled to their set frost protection limit (see parameter 8 of the mixing circuit: room frost protection limit).

**Setting** See the “Operation Mode” key.

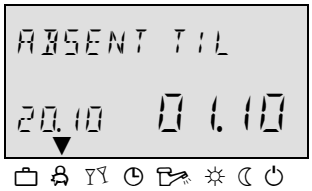
**Terminating the Holiday mode** The activated "Holiday“ mode may be terminated at an early return. Simply press the “Operation Mode” key and select the automatic mode.

**Default setting** Current date

**Setting range** Current date ... Current date + 250 days

**Display** An activated “Holiday” program appears on the basic display with the indication of the return date.

### 4.2.5.2 Absence Mode (Short-term Program)




By means of this mode you can temporarily switch off the heating for a short absence period. During the absence period all the heating circuits are controlled in accordance with the specified room temperature. After the expiration of the set time period the heating circuits automatically return to the operation mode that was active before setting of the "Absence” mode. The short-term programs as *Party* or *Holiday* are skipped in this mode.

**Application** Short-term absence during the heating season

**Setting** See the “Operation Mode” key.

**Terminating the Absence Mode** The activated "Absence“ mode may be terminated at an early return. Simply press the “Operation Mode” key and select the automatic mode.

**Setting range** 0,5 hours ... 24 hours, P1 (P2, P3)

**Display** An activated “Absence” program appears on the basic display with the indication of the return time.

### 4.2.5.3 Party Mode (Short-term Program)


This program offers one-off immediate heating of all the heating circuits until a preset time and completely or partly skips a coming or an already active reduced cycle. After the expiration of the preset time period the heating circuits automatically return to the operation mode that was active before setting of the *Party* mode. The short-term programs as *Absence* or *Holiday* are skipped in this mode.

**Application** One-off unscheduled extension of the heating period or immediate start of heating during the reduced mode.

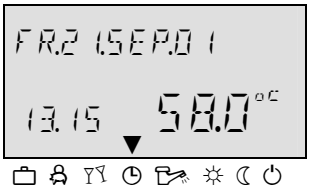
**Setting** See the “Operation Mode” key

**Terminating the Party mode** The activated "Party“ mode may be terminated earlier as necessary. Simply press the “Operation Mode” key and select the automatic mode.

**Setting range** 0,5 hours ... 24 hours, P1 (P2, P3)

**Display** An activated *Party* program appears on the basic display with the indication of the duration of the party.

### 4.2.5.4 Automatic Mode



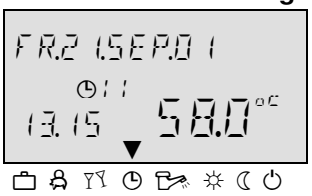

In the automatic mode automatic time programs with variable heating times are available. Standard default time programs can be overwritten as necessary with your own settings of switching times.

As necessary you can use up to three different switching programs.

All the three automatic programs contain for each weekday up to three heating cycles per circuit with their own switch-on time, switch-off time and cycle temperature.

**NOTE** Automatic programs P2 or P3 may only be selected if they have been enabled in the *System* menu *(Parameter 2 – Time Program = P1-P3*). If they are not enabled, program P1 is active only.

**Setting** See the “Operation Mode” key.

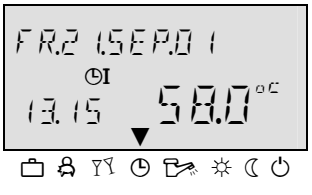



**Enabling programs P2 - P3 (extension for three weekly time programs)**
System menu . Time Program = P1-P3

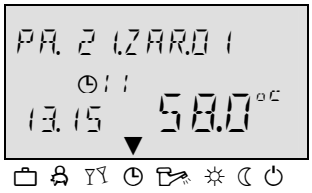
**Display** The active automatic program appears in the basic display with the current time and date. If automatic programs P2 and P3 have been enabled, depending on the selected program the corresponding symbol ◷I, ◷II, or ◷III is inserted.

**Disable/enable P2-P3**

**Disabling programs P2 – P3 (only one weekly time program is active)**
*System* menu - *Time Program = P1*




#### 4.2.5.4.1 Extension for three weekly time programs P1-3




See the System - Time Menu Program = P1-P3
**Display** The active automatic program appears in the basic display with the current time and date. If the P2 and P3 automatic programs have been enabled the

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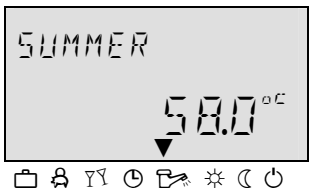
corresponding symbol ◷I , ◷II , or ◷III is inserted. After the extension you can program 3 cycles separated that can be switched e.g. in a transitional period or for shift work. etc.

**Disable/enable P2-P3** See the System - Time Menu.. Program = P1

### 4.2.5.5 Manual Summer Mode (DHW heating only)

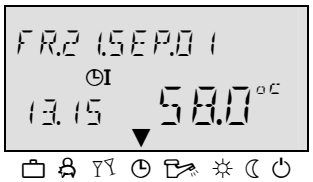



In this program just the DHW heating circuit remains active and the temperature is controlled on the basis of the set temperature value for hot water and the DHW heating program. The heating system has frost protection.
The manual *Summer* mode can only be selected in control mode 1 as it influences the overall function of the controller (heating + DHW).

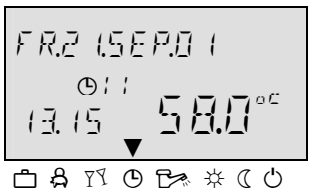
**Setting** See the "Operation Mode" key.

**Terminating the manual Summer mode** The active manual Summer mode may be terminated at an early return. Simply press the "Operation Mode" key and select the automatic mode.

**Disable/Enable P2-P3**



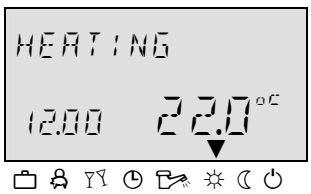

**Disabling programs P2 – P3 (only one weekly time program is active)**
*System* menu - *Time Program = P1*
The selected automatic program is activated by pressing of the rotary button. All the heating circuits and the DHW circuit exclusively work in accordance with the standard or adapted programmed switching times in automatic program P1.
The P1 program does not appear on the display.




**Enabling programs P2 - P3 (extension for three weekly time programs)**
*System* menu - *Time Program = P1-P3*
*If the automatic program has been confirmed by pressing of the rotary button, the P1 program will start flashing. You can select the P2 … P3 programs by means of the rotary button.*

**Display** A manual "Summer" program appears on the basic display with the *SUMMER* indication, the current time and date. If automatic programs P2 and P3 have been enabled, the corresponding symbol ◷1, ◷2, or ◷3 also appears depending on the selected program. It corresponds to the valid program for DHW heating.

### 4.2.5.6 Constant Heating Mode




This program offers uninterrupted heating according to the set daytime temperature in the room. DHW heating works continuously on the basis of the value set for DHW heating.

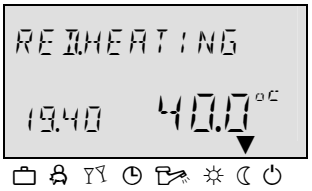
**Setting** See the "Operation Mode" key.

**Terminating the Constant Heating Mode** The active *Constant Heating Mode* may be terminated any time. Simply press the "Operation Mode" key and select the automatic mode.

**NOTE** The *Constant Heating* mode remains active until another mode is selected.

**Display** An active *Constant Heating* program appears on the display with the HEATING indication.

### 4.2.5.7 Constant Reduced Mode




This mode provides constant reduced heating according to the set reduced temperature in the room within the corresponding ECO (frost protection off mode) or RED (reduced mode) mode set in the heating circuit in compliance with the low limit of the corresponding heating circuit.
See the options of the menu *Unmixed Circuit, Mixing Circuit 1* or *Mixing Circuit 2*) *Parameter 1 = ECO*. DHW heating works continuously according to the set reduced temperature for hot water heating (see the *DHW* menu / *Parameter 1- Reduced DHW temperature).*

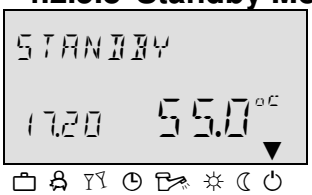
NOTE The operation reduction remains active until another mode is selected.

**Setting** See the "Operation Mode" key.

**Terminating the Constant Reduced Mode** The active *Constant Heating Mode* may be terminated any time. Simply press the "Operation Mode" key and select the automatic mode.

**Display** An active *Reduced* program appears on the display with the RED. HEATING indication.

### 4.2.5.8 Standby Mode




In this mode the whole system is off and only the frost protection is active (all the functions of the frost protection are active). DHW heating is off and just the frost protection is active. At tank temperatures below 5°C water is heated to 8°C.

**Application** Complete switch-off of heating and DHW heating with complete frost protection.

**Setting** See the "Operation Mode" key.

**Terminating the Standby Mode** The active *Standby* mode may be terminated any time. Simply press the "Operation mode" key and set the automatic mode.

**NOTE** Heating and heating of hot water are activated by an external demand or demand of the other heating circuit connected via the bus. Pumps of the heating system are activated for a short time every day (protection from pump blocking).

**Display** An active *Standby* program appears on the display with the STANDBY indication.

### 4.2.6 General RESET – in the basic display

If necessary, the controller can be reset in the basic display by simultaneous pressing of the , , a keys > 3 sec. (until the controller is started again. This reset affects all the parameters of all the menus on the corresponding access level.

⚠ NOTE! The reset will set all the parameters to the default value depending on the access level.

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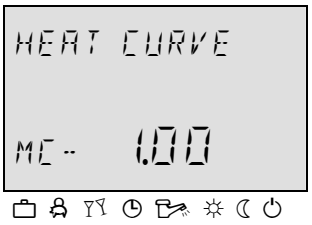
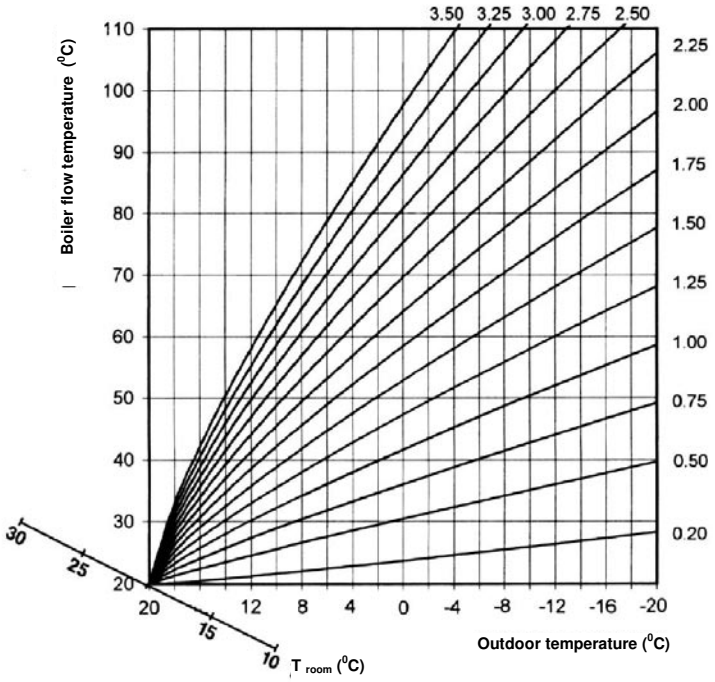
### 4.2.7 “Heating Curve” key

This key allows you to set the heating characteristics for the heating circuits in the system by setting the heating curve on the basis of the character of the building (rough setting). Setting the shape of the curve:

The inclination of the heating characteristic describes the relationship between a change of the system temperature and a change of the outdoor temperature. In the case of large heating surfaces, e.g. a floor heating system the heating curve is less steep as compared to small heating surfaces (e.g. heating elements). The set value is related to the lowest outdoor temperature on the basis of the heat demand calculation.




**⚠ NOTE** **As the curve defines the flow temperature into the system on the basis of the outdoor temperature, which continuously changes during the heating period, the curve is not likely to be set precisely correctly at the first try, i.e. the value of the curve must be additionally adapted. The value of the curve should be adapted after longer time periods and by small values and the development of temperatures should be exactly observed.**

**Setting:**

- ► Press the “Heating curve” key.
- ► By turning the rotary button select the required heating circuits (if there are more than one).
- ► Confirm your selection by pressing the rotary button.
- ► Change the flashing value and confirm it by pressing the button.
- ► To return to the basic display press the “Heating curve" key.

**Setting range** 0,20 ... 3,5

**Default settings**

| | | |
|---|---|---|
| Mixing heating circuit 1 | (MC-1): | = 1.00 |
| Mixing heating circuit 2 | (MC-2): | = 1.00 |

## 4.2.8 "System Information" key

Press the "Information" key and turn the rotary button to find out all information about the system - the current and calculated values of individual sensors, statuses of controlled components and control modes of individual controlled heating circuits.

This key allows you to return from a certain menu level by one order back.

**NOTE** The information displayed depends on the installed components and control cycles.

**Manual exit from the display:** You can return to the basic display any time by pressing the i or key.
**Automatic exit from the display:** The controller will automatically return to the basic display after expiration of the set return time.

Turn the rotary button to display values - navigate in the information.
- The left value (small numerals) on the display indicates the required or calculated value – SET-POINT (by pressing )
- The right value (large numerals) on the display indicates the current value.

| Information | Display | Display condition | Remarks |
|---|---|---|---|
| Outdoor temp. (1) | OUTDOOR TEMP.<br>14 °C | Outdoor sensor connected | Mean temperature / current temperature |
| Outdoor temp. (1) | OUT. TEMP MIN. /MAX.<br>-20 °C 14 °C | Outdoor sensor connected<br>No error indication | Min./max. for the last 24 hours |
| Setpoints (requirements) | EM - SET<br>75 °C 45 °C | INSTALLER level | There is a requirement either for the boiler (the automatic boilers switched on) or for the accumulation tank (hydraulic diagram with an accum. tank) from DHW and from MIXES |
| Boiler temp. | HEAT SOURCE<br>PEVN. 81 °C | WF/KF sensor connected | Set value / current value |
| Tank temperature, bottom | TANK<br>FIXED °C 44 | Bottom sensor of the accumulation tank | If boiler type 3, 5, 6 or e.g. solar is defined |
| External blocking of boiler burner | BURNER BLOCK<br>VV - 1 VYP | External contact connected to VI-1, VI-2 or VI-3 | Only boiler with a burner and if the corresponding parameter is set. |
| Flue gas temp. | FLUE_GAS_T<br>105 °C | Var. input set as AGF – boiler type no. 4, 5 or 6 only | Connection only to the Variable input in VI-1 |
| DHW temp. | DHW - 1<br>32 °C | DHW sensor connected | Required value / current value |
| DHW-2 temp. | DHW - 2<br>32 °C | DHW-2 sensor connected | Required value / current value |
| Heat demand via switch contact (VI-1) | EXT. CONTACT<br>VV - 1 VYP | VI 1 set | ON/OFF |
| Heat demand via switch contact (VI-2 | EXT. CONTACT<br>VV - 2 VYP | VI 2 set | ON/OFF |
| Heat demand via switch contact (VI-3) | EXT. CONTACT<br>VV - 3 VYP | VI 3 set | ON/OFF |
| Water temp VF1 (MIX1) | WATER_T<br>MIX - 1 45 °C | If mixing circuit 1 is used | Calculated value / current value |
| Water temp. VF2 (MIX2) | WATER_T<br>MIX - 2 45 °C | If mixing circuit 2 is used | Calculated value / current value |
| Room temp MIX1 | ROOM_T<br>MIX - 1 23 °C | If room temp. sensor is connected and released for MIX1 | Calculated value / current value |
| Room temp. MIX2 | ROOM_T<br>MIX - 2 23 °C | If room temp. sensor is connected and released for MIX2 | Calculated value / current value |

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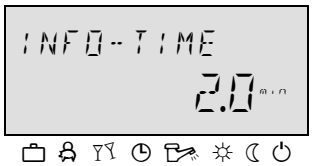
| Information | Display | Display condition | Remarks |
|---|---|---|---|
| Thermostatic function MIX1 | THERMOSTAT<br>MIX-1 VYP | If there is the thermostatic function of the corresponding mixed circuit | ON/OFF |
| Thermostatic function MIX2 | THERMOSTAT<br>MIX-2 VYP | If there is the thermostatic function of the corresponding mixed circuit | ON/OFF |
| Tank temperature, top | ZASOBNIK<br>80°C | PF sensor connected | Calculated value / current value |
| Info temperature | T_INFO<br>51°C | Sensor connected and VI configured | Independent info temperature connected to the variable input VI-1, VI-2 or VI-3 |
| Operation mode External switching modem | MODEM<br>VE-X AUTO | VI configured as an external switching modem | Operation modes depending on the setting of the modem: AUTO (automatic) STBY (standby), HEAT (heating), RED (reduced). |
| Solar collector temperature | SOLAR<br>105°C | VO1/2 set as the solar panel pump | Current temperature of the solar collector |
| Solar buffer temperature | SOLAR<br>SBUFF 40°C | VO1/2 set as the solar panel pump | Current temperature of the buffer (accumulation tank) charged by the solar system |
| Solar buffer 2 temperature | SOLAR<br>SLVF 40°C | VO1/2 set as the pump of the solar panel and solar switch | Current temperature of the buffer 2 charged by the solar system |
| Heat output of solar heating | HEAT OUTPUT<br>4.12 KW SOL | VO1/2 set as the solar panel pump and a sensor of return temperature of the solar circuit is used | Current gain of the solar system in kW |
| Solar heating gain | CONSUMPTION<br>246 KWh SOL | VO1/2 set as the solar panel pump and a sensor of return temperature of the solar circuit is used | Total heat capacity of the solar system in kWh |
| Number of starts of the solar panel pump | STARTS<br>296 SOL | VO1/2 set as the solar panel pump | Information about the number of starts of the charging pump of the solar system |
| Operation hours of the solar panel pump | OPER. HOURS<br>478 h SOL | VO1/2 set as the solar panel pump | Information about the number of starts of the charging pump of the solar system |
| Operation hours of the boiler pump | OPER. HOURS<br>246 h | | Information about the operation hours of the solid fuel boiler –with regard to the number of starts the lengths of heating cycles of the boiler can be estimated. |
| Number of starts of the boiler pump | STARTY<br>105 | | Information about the number of starts of the boiler pump |
| Function and status of the optional output 1 | OPT. OUTPUT 1<br>0 PUMP OFF | Defined variable output VA1 | Information about the status of VA1 (ZKP, ELH, etc.) |
| Function and status of the optional output 2 | OPT. OUTPUT 2<br>ELH OFF | Defined variable output VA2 | Information about the status of VA2 (ZKP, ELH, etc.) |
| Operation status of the boiler pump | BOILER PUMP<br>BCP OFF | | ON/OFF |
| Operation status of the GSE boiler servo flap | SERVO FLAP<br>SOLID 0<br>PEN | Boiler no. 4 only | OPENING / CLOSING |
| Operation status of the controlled boiler | SOLID BOILER<br>CONN. OF<br>F | Controlled boiler only | ON / OFF |
| Operation status of DHW | AUTO DAY<br>DHW ON | If a DHW sensor is connected | AUTO – operation mode<br>DAY – day/night demand<br>DHW – corresponding circuit<br>ON - status of the SLP pump |
| Operation status of the MIX2 servo drive | SERVO DRIVE<br>MIX-2 STOP | If mixing circuit 2 is connected | Mixing valve 2 opens / closes or is at standstill |

| Information | Display | Display condition | Remarks |
|---|---|---|---|
| Operation status of mixing circuit 2 | AUTO DAY<br>MIX-2 ON | If mixing circuit 2 is connected | AUTO – operation mode<br>DEN – Day/night demand<br>MIX-2 – corresponding circuit<br>ON - status of the MCP2 pump |
| Operation status of the MIX1 servo drive | SERVO DRIVE<br>MIX-1 STOP | If mixing circuit 1 is connected | Mixing valve 1 opens / closes or is at standstill |
| Operation status of mixing circuit 1 | AUTO DAY<br>MIX-1 ON | If mixing circuit 1 is connected 1 | AUTO – selected operation mode<br>DAY – day / ECO - reduced temperature<br>MIX-1 – corresponding circuit<br>ON - status of the MKP1 pump |
| Date and current time | FR. 6. AUG. '10<br>18:44 | | Day, date, year, time |

### 4.2.8.1 Setting the time for automatic return




If the "Information" key ⓘ is pressed for more than 3 sec.,
the INFO TIME parameter appears.
This parameter determines the time for automatic return to the basic display.

**Setting range** OFF, 1 ... 60 min
OFF The last displayed information remains on the display.
1 ... 60 min Automatic exit from the information level after the specified time, adjustable with the step of 0.5 min

**Default setting** OFF

### 4.2.9 Fan / Source selection key

The “Fan mode - Ventilation period” key is used to control the boiler fan if the boiler type 4, 5 or 6 has been defined (in the case of the combined types 5 and 6 it is only valid for SOURCE-1)

The fan controls the operation of the boiler with regard to the water and flue gas temperature. The way of control differs depending on the fan type (pressure or exhaust), i.e. the exhaust fan is left on during the opening of the boiler door while the pressure fan must be switched off by pressing of the key before the opening of the door. The fan type, switch-off temperature, differential, etc. is set by the INSTALLER within the definition of parameters; the default fan type is exhaust.
In the case of an exhaust fan manual operation is only used during the start-up or cleaning of the boiler; during normal boiler operation the fan is switched off when the operation temperature is achieved, i.e. its operation is completely automatic and is controlled by the controller. If it is necessary to start the fan in case the operation temperature has been achieved, by pressing the key you will activate the ventilation period, which is indicated on the display by counting down of the configured period to 00:00; if the boiler achieves the critical temperature, the fan will be switched off in a forced way.
The operation of a pressure fan only differs from the exhaust one in that it must be switched off before the opening of the door (by pressing the key). Again, the display will show the count-down of the ventilation period and after its expiration the display will return to the normal automatic mode.
During the start-up of the boiler, i.e. when the flue gas temperature is below the minimum value, after the expiration of the ventilation period a 60-minut switched-on fan period is automatically activated to support burning up of the boiler.

Priorities for the fan running time:

- Priority 1: Safety function - the fan is always switched off at the critical temperature of the boiler
- Priority 2: Manual fan control - during the start-up, operation or cleaning of the boiler
- Priority 3: Automatic mode - during boiler operation

#### 4.2.9.1 Function 1 - boiler fan control (boiler type 4, 5 and 6)

**Boiler out**


[TWO arrows flash on the display]

- Waiting for pressing of the key
- The flue gas temperature is below the minimum value (boiler out)

**Boiler start** … press the  key.


[TWO arrows on the display are permanently displayed]

- Count-down of the ventilation period Ta
- Press the key to stop the timer and the fan.

**Normal boiler operation** … (if necessary, press the key to switch off the pressure fan).


[ONE arrow - Tb= 60min for burning up, active after the start,
TWO arrows = normal operation]

- Waiting for pressing of the key
- The flue gas temperature is above the minimum value (boiler on)

Note: If you inadvertently press the key, you may reactivate the operation of the fan by pressing the key once again.

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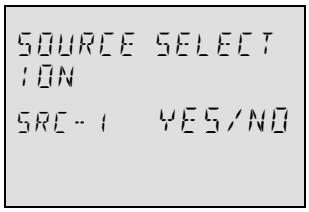
### 4.2.10 Function 2 – manual switching of SRC-1 and SRC-2 sources (boiler type 5 and 6 only)

By keeping the key pressed for more than 3 seconds you will activate the menu for SOURCE selection in accordance with the pre-defined boiler type 5 or 6. Turn the button to select between the SRC-1 and SRC-2 sources (you can assign your own names to the sources in the SOURCES menu). Press to confirm your selection by YES/NO (protection from wrong selection).

#### 4.2.10.1 Indications on the display



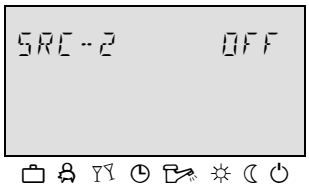

When the key is kept pressed for > 3 sec., the source selection, i.e. the boiler type selection menu will appear. Select the source by turning and confirm your selection by pressing .

Boiler type no. 5 – you can make your selection between SRC-1 (controlled solid fuel boiler no. 4) and SRC-2 (controlled automatic boiler without an accumulation tank - type no. 2).

Boiler type no. 6 – you can make your selection between SRC-1 (controlled solid fuel boiler no. 4) and SRC-2 (controlled automatic boiler with an accumulation tank - type no. 3).

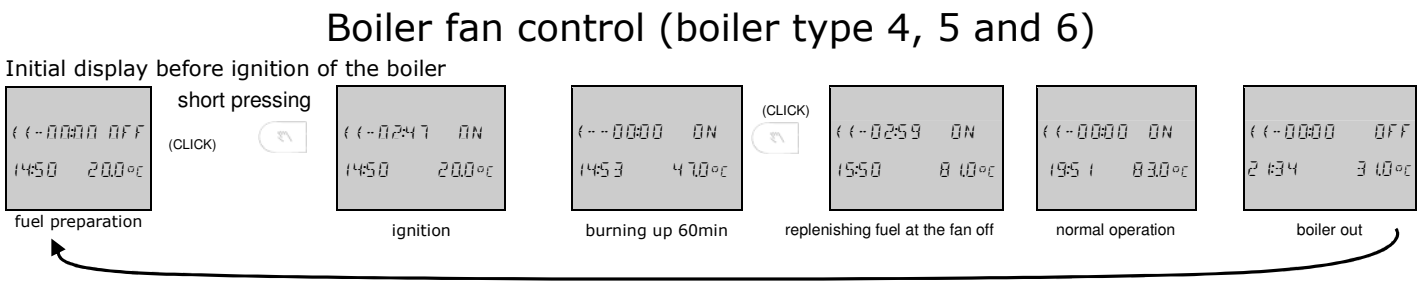
Switching between the SRC-1 and SRC-2 sources is subject to the current status of the boiler, i.e. whether it is on or not, which is monitored through the flue gas temperature (AGF), i.e. you can only switch over to the selected source after burning out (drop below AGFmin). If the flue gas temperature is still high, the boiler type is indicated by the flashing text of the selected source. After switching over to the selected source the display will correspond to the particular boiler type.

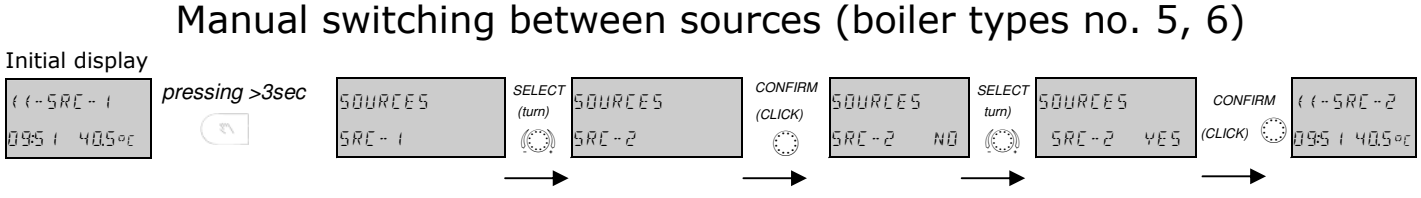
#### 4.2.10.2 Manual stopping of the automatic heat source (SRC-2)

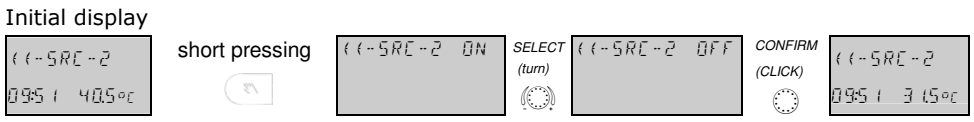



When the automatic source (SRC-2) is selected, after short pressing of the selection of release (ON) or prohibition (OFF) of its operation will be displayed. You can make your selection by turning and confirm it by pressing .

### 4.2.11 Example of navigation in the menu



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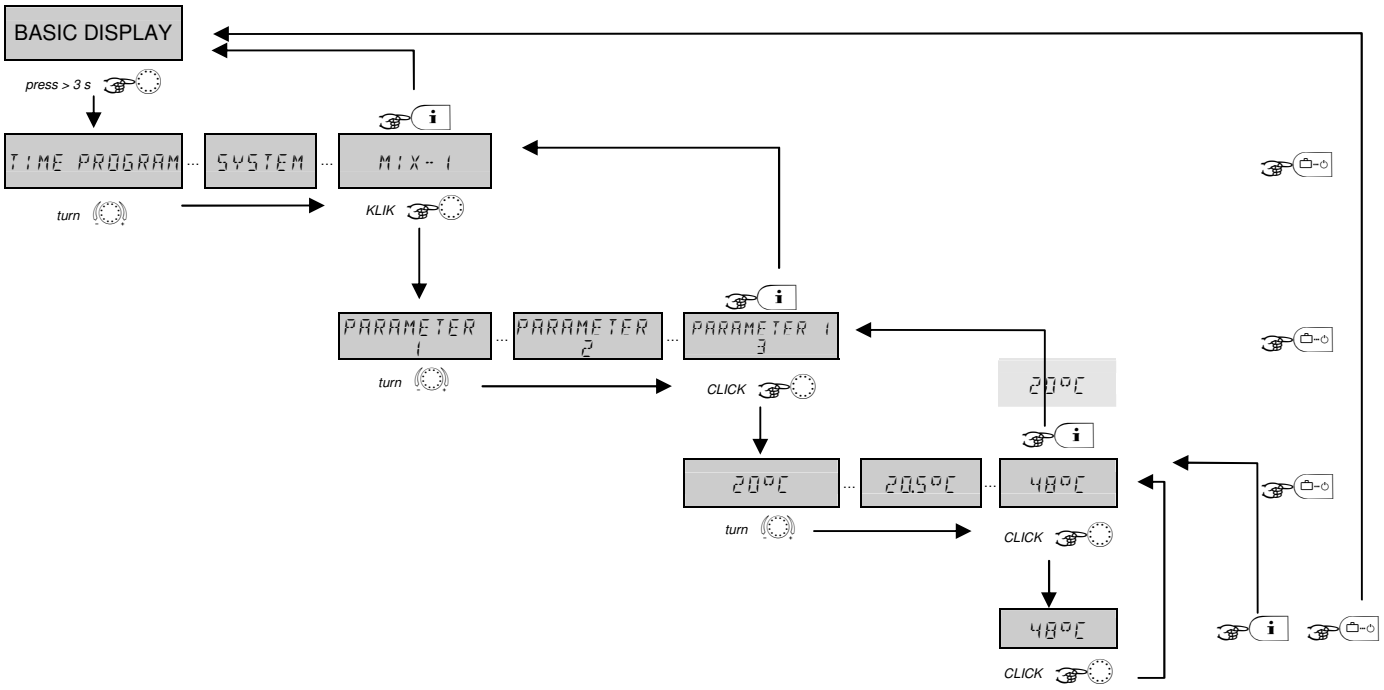
# 5 Controller Parameters Menu

The ATMOS ACD01 equithermal controller features menus that contain values of parameters for setting and functions of the controller. The parameters are defined in different units or expressions belonging to specific functions. As protection from wrong setting some parameters or menus are hidden and are only displayed for the higher access level.

## 5.1 Entering the menu

- To enter the menu you must keep the rotary button pressed for > 3 s.
- The first parameter menu that is displayed is the menu of time programs; you can select all the other menus by turning the button
- To enter the required menu, to enter parameter editing and to confirm the parameter value press the rotary button.
- To move in the opposite direction, i.e. one level back, press the info key. Similarly, in case of inadvertent entering of a parameter or an incorrect value after pressing of the info key the parameter value will remain in the original condition.
- **The current position in the menu is indicated by flashing**, i.e. if the menu name flashes = the current position is menu selection, if the parameter number flashes = the current position is parameter selection, if the parameter value flashes, the current position is editing the parameter value.
- You can return from the menu to the basic display by pressing the key.

### 5.1.1 Example of navigation in the menu




## 5.2 Entering the coded menu access level (TECHNICIAN/OEM)

By entering the access code you will unlock parameters or information of the corresponding level.

**Code input:** Simultaneously press the and keys for more than 3 sec. to display the request for the four-digit code.

ACCESS CODE 0000

Use the rotary button to gradually set the digits from the first to the last flashing digit to the required value (the first digit will start flashing first, then, after confirmation the second digit will flash, etc.)

## 5.3 Overview of menus of the ACD01 controller

| | Programs | | Configuration | | Parameter setting | | | | | | | | | Service functions | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Para-meter | Date | Time programs | Hydraulic | System | DHW | MIX.VALVE 1 | MIX.VALVE 2 | Solar | Solid fuel | Sources | Return control | Buffer | BUS | Relay test | Alarms | Sensor calibration |
| 1 | Time | MC1 | Hydraulic diagram | Language | DHW night | RED / LIMITED MODE | RED / LIMITED MODE | Switch on differential | Boiler type | Automatic switch-over from SRC-1 | Temperatur e | Min. temperature | Controller address | Boiler | Alarm 1 | Outdoor sensor |
| 2 | Year | MC 2 | DHW | P1 / P1-P3 | Legionella protection | Heat. system exponent | Heat. system exponent | Switch off differential | Operation temp. | | RLP diff. | Max. temperature | Access level SDW20 MC1 | Boiler exhaust flap | Alarm 2 | Boiler sensor |
| 3 | Day-month | DHW | Output MC 1 | Control MODE | Time for leg. protection | SDW mode | SDW mode | Min. solar pump running time | Critical temp. | | RLP extended running time | Increase of SET-POINT of the source | Access level SDW20 MC2 | Boiler pump | Alarm 3 | DHW sensor |
| 4 | Time change | Default time | Output MC 2 | Summer | Temp. for leg. protection | SDW room factor | SDW room factor | | Boiler pump ON | | | Res. switching differential | | Pump MC 1 | Alarm 4 | MC 1 sensor |
| 5 | | Copy circuit | Boiler pump (FIX) | Frost protection temperature | DHW measurement type | Curve adaptation | Curve adaptation | Max. tank temp. | Boiler pump differential | | | Forced losses | | Drive MC 1 | Alarm 5 | MC 2 sensor |
| 6 | | | Variable output 1 | Contact for VI1 | DHW max. temperature limit | Optimization time | Optimization time | Solar operation mode | Burner differential | | | Switch-on differential | | Pump MC 2 | Alarm 6 | SOLAR sensor |
| 7 | | | Variable output 2 | Contact for VI2 | DHW operation mode | Heating limit | Heating limit | Heater switch off | Fan differential | | | Switch-off differential | | Drive MC 2 | Alarm 7 | Buffer sensor |
| 8 | | | Variable input 1 | Contact for VI3 | Tank discharge protection | Room frost protection temp. | Room frost protection temp. | Priority / parallel difference | Fan type | Summer heating of DHW | | Filling protection | | DHW pump | Alarm 8 | Input sensor 1 (VI1) |
| 9 | | | Variable input 2 | Climatic zone | Source SET-POINT increase | Room thermostat function | Room thermostat function | Heat balance | Fan period | Daytime/ST BY EHP | | Draining protection | | Variable output VO1 | Alarm 9 | Input sensor 2 (VI2) |
| 10 | | | Variable input 3 | Building type | DHW pump switching difference | AF2 assignment | AF2 assignment | Balance restoration | Critical flue gas temp. | Summer EHP | | Operation mode | | Variable output VO2 | Alarm 10 | Input sensor 3 (VI3) |
| 11 | | | Indirect return control | Automatic return time | Extended pump running time | Constant temp. value | Constant temp. value | Volume flow | Exhaust flap temp. | EHP start delay | | Res. pump running time | | | Alarm 10 | |
| 12 | | | | Anti-blocking protection | DHW circulation time programs | Min. circuit temp. | Min. circuit temp. | Fluid density | Exhaust flap differential | Name of SRC-1 | | | | | Alarm 12 | |
| 13 | | | | Logical alarms | Circulation pump pulse length | Max. circuit temp. | Max. circuit temp. | Heat capacity of fluid | | Name of SRC-2 | | | | | Alarm 13 | |
| 14 | | | | Automatic setting functions | Circulation period | Source SET-POINT increase | Source SET-POINT increase | | Heating circuit ON | | | Res. loading temp. | | | Alarm 14 | |
| 15 | | | | Installer password | | Extended pump running time | Extended pump running time | Test rinse | Circuit switching differential | | | Boiler pump switch-off differential | | | Alarm 15 | |
| 16 | | | | | | Drying function | Drying function | Switching temp. | Forced losses | | | Boiler pump switch-on differential | | | Alarm 16 | |
| 17 | | | | | | Max. RL1 temperature | Max. RL2 temperature | | Boiler pump control type | | | | | | Alarm 17 | |
| 18 | | | | Enabling temperature cycles | | Proportional band | Proportional band | | Min. flue gas temp. | | | | | | Alarm 18 | |
| 19 | | | | Frost protection | | | | | Boiler switch-off type | | | | | | Alarm 19 | |
| 20 | | | | | | Integral time | Integral time | | Boiler pump start protection | | | | | | Alarm 20 | |
| 21 | | | | Time correction | | Servo time | Servo time | | Fan with burner | | | | | | RESET | |
| 22 | | | | | | Servo end position | Servo end position | | Summer heating of DHW | | | | | | | |

## 5.3 Overview of menus of the ACD01 controller

| | Programs | | Configuration | | Parameter setting | | | | | | | | | Service functions | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Para-meter | Date | Time programs | Hydraulic | System | DHW | MIX.VALVE 1 | MIX.VALVE 2 | Solar | Solid fuel | Sources | Return control | Buffer | BUS | Relay test | Alarms | Sensor calibration |
| 23 | | | | End user password | | P-band of SDW20 | P-band of SDW20 | | RESET of operation hours | | | | | | | |
| 24 | | | | | | I-band of SDW20 | I-band of SDW20 | | | | | | | | | |
| 25 | | | | | Switch-off diff. of par. 8 | Holiday mode | Holiday mode | | | | | | | | | |
| 26 | | | | | Switch-on diff. of par. 8 | Dynamic VF protection | Dynamic VF protection | | | | | | | | | |
| 29 | | | | Curve without AF | | | | | | | | | | | | |
| 50 | | | | | | AT cooling activation | AT cooling activation | | | | | | | | | |
| 51 | | | | | | Max. AT temp. | Max. AT temp. | | | | | | | | | |
| 52 | | | | | | Required VL temp. at par. 50 | Required VL temp. at par. 50 | | | | | | | | | |
| 53 | | | | | | Required VL temp. at par. 51 | Required VL temp. at par. 51 | | | | | | | | | |
| 54 | | | | | | Required RT temp. at par. 50 | Required RT temp. at par. 50 | | | | | | | | | |
| 55 | | | | | | Required RT temp. at par. 51 | Required RT temp. at par. 51 | | | | | | | | End user | |
| 56 | | | | | | min. cooling limitation | min. cooling limitation | | | | | | | | Installer | |
| | | | | Parameter reset | | Name of MIX-1 | Name of MIX-2 | | | | | | | | OEM | |

### 5.3.1 DATE Menu

In the Date menu you can select the following parameters:

#### 5.3.1.1 DATE Menu / par. 1 – Time

- Setting the current time

#### 5.3.1.2 DATE Menu / par. 2 - Calendar year

- Setting the current year

#### 5.3.1.3 DATE Menu / par. 3 - Day / Month

- Setting the current day in the month

#### 5.3.1.4 DATE Menu / par. 4 - Time changeover mode

- Automatic switching between the summer / winter time

All the above mentioned values are pre-set in the factory and they do not need to be changed. The internal pre-programmed calendar enables automatic changeover from the summer to winter time and vice versa. This function can be deactivated if necessary.
The current weekday from Mon to Sun is automatically derived from the calendar date.

**Change**

- ► Select the menu by pressing the rotary button ◌.
- ► In the Date menu select the required parameter (time, year, day-month) by turning the button ◌.
- ► Press the rotary button ◌ and change the value by turning the button ◌.
- ► Confirm the value by pressing the rotary button ◌.
- ► If desired, change and confirm the other calendar parameters as described above by turning the button ◌.

**Exit** To exit the menu and return to the basic display press the “Operation Mode” key.

### 5.3.2 TIME PROGRAMS Menu

In this menu you can set individual time programs for the heating and preparation of hot water for the household. The standard default program P1 (as well as P2 and P3 if they are enabled) for each heating circuit can be overwritten with your own values of switching times and temperature values. This is particularly useful if you need to create specific, periodically recurring personal heating programs (e.g. in case of work in shifts, etc.).
For the programming of switching times max. 3 heating cycles (P1-P3) with their own switch-on and switch-off times are available for each weekday . Each heating cycle can also be combined with a freely selectable temperature value.

**IMPORTANT!** **If you overwrite standard programs with your own settings, the standard programs are not lost. After reloading of the standard programs your personalized programs will be deleted.**

**Exit** To exit the menu and return to the basic display press the “Operation Mode” key.

#### 5.3.2.1 TIME PROGRAMS Menu / par. 1,2,3 – Selection of the MC 1,2 and DHW circuits

After entering the switching menu you can use the rotary button o select the desired parameter - heating circuit - in the following order:

- Mixing heating circuit 1 (MC-1)
- Mixing heating circuit 2 (MC-2)
- Domestic hot water circuit (DHW)

You can access the selected circuit by pressing the rotary button.

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#### 5.3.2.1.1 Program Selection

If time programs **P1** and **P3** are enabled (see the *System menu / Time Program* = P1 – P3); the program selection menu will appear.
If time switching programs P2 and P3 are not enabled (see the *System menu / Parameter 2 - Time Program* = P1 – P3), the program selection menu is automatically skipped.

#### 5.3.2.1.2 Weekday and cycle selection

After the selection of the program the first cycle of the first weekday (MO-1) will appear and the corresponding section will start to flash in the upper time bar. You can select other cycles by turning the button clockwise in the sequence of the cycles and weekdays (e.g. Mo-1, Mo-2, Mo-3, Tue-1, Tue-2, Tue-3 while after setting these cycles should be selected by turning of the button counter-clockwise and confirmed by pressing of the rotary button.

#### 5.3.2.1.3 Programming switching times and cycle temperatures

##### 5.3.2.1.3.1 Switch-on time

Start of heating, or with enabled optimization: start of maintenance.
After the selection of the weekday and corresponding cycle the relevant switch-on time will start flashing on the display and you can set it directly with the rotary button. The time column in the upper part of the display provides an overview of all the programmed cycles between 00:00 and 24:00 of the selected weekday.

**IMPORTANT NOTE**

-The switch-on time cannot be set earlier than the switch-off time of the previous cycle (if it is set) and not earlier than 0:00 of the selected weekday.
- When you set a switch-on time, the corresponding time item in the column on the left will change.
- If the switch-on time coincides with the switch-off time, the cycle will be deleted. The deleted cycle will be replaced with the following cycle (if available).
- If you subsequently set an earlier cycle, the corresponding weekday will have to be reprogrammed.
- You can display flashing switch-on time by pressing the rotary button.

##### 5.3.2.1.3.2 Switch-off time

End of heating, or with enabled optimization: end of maintenance.
After setting of the switch-on time the corresponding switch-off time will start flashing on the display and you will be able to set it directly with the rotary button. The time column in the upper part of the display provides an overview of all the programmed cycles between 00:00 and 24:00 of the selected weekday.

**IMPORTANT NOTE**

- You cannot set the switch-off time later than the switch-on time of the next cycle (if set).
- When you set a switch-off time, the corresponding time item in the column on the right will change.
- If the switch-off time coincides with the switch-on time, the cycle will be deleted. The deleted cycle will be replaced with the following cycle (if available).
- If you subsequently set an earlier cycle, the corresponding weekday will have to be reprogrammed.
- You can display flashing switch-off time by pressing the rotary button.

##### 5.3.2.1.3.3 Cycle temperature

After setting of the switch off time the corresponding cycle temperature will start flashing on the display and you can set it directly with the rotary button. In the case of heating circuits the displayed temperature always refers to the desired room temperature while in the case of DHW heating it refers to the desired normal DHW temperature in the selected cycle.
- You can display flashing cycle temperature by pressing the rotary button.

At the same time the last cycle to be called will start flashing on the display and it can be checked. Then you can directly select further cycles in the following sequence: SWITCH-ON TIME - SWITCH-OFF TIME - CYCLE TEMPERATURE.

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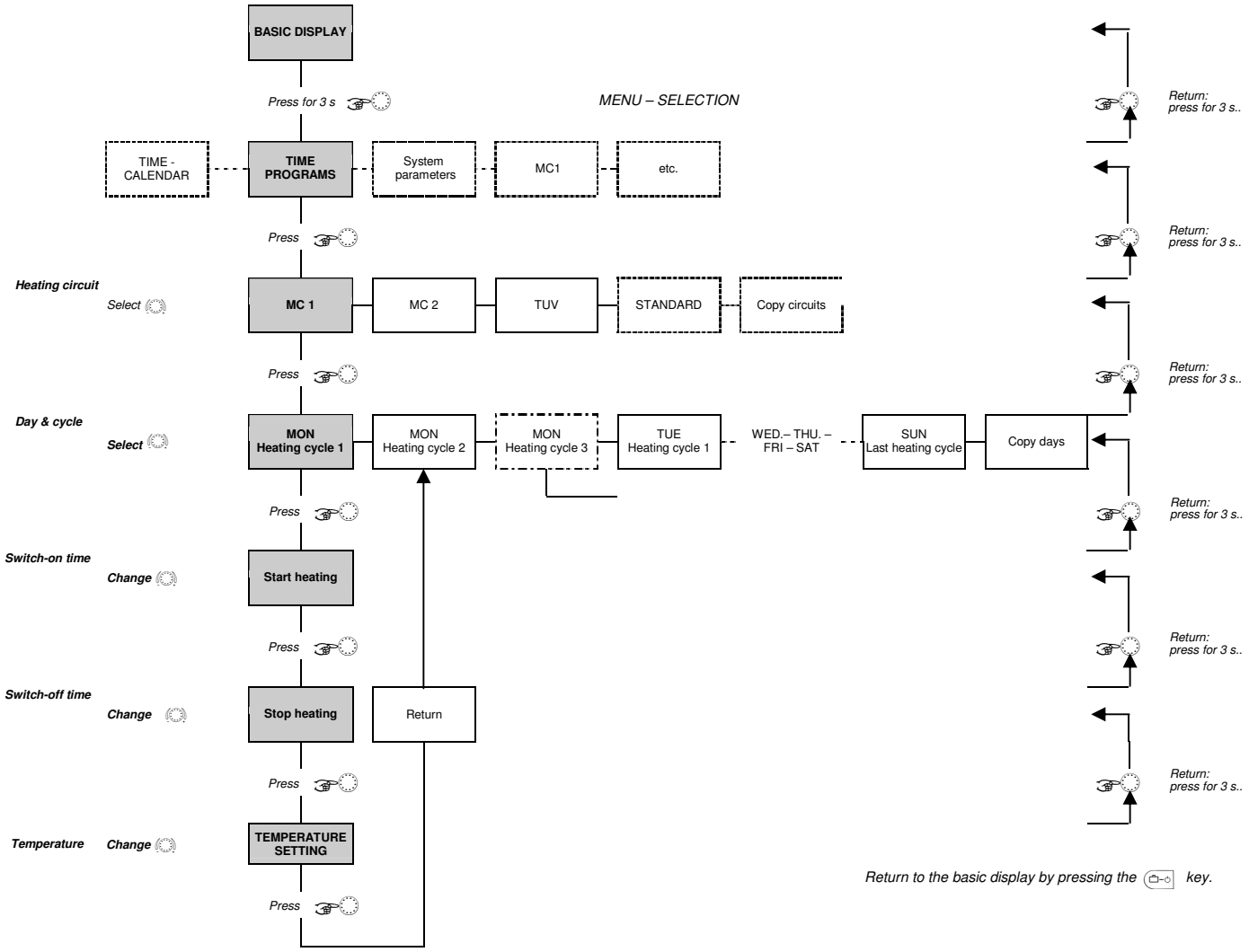
### 5.3.2.1.3.4 Programming switching times (Programs P2 and P3 disabled)

After selection of the menu on the parameter level the time programming function will appear.




| Standard time program P1 | | |
|---|---|---|
| **Heating circuit** | **Day** | **Heating mode** from to |
| DHW heating circuit | Mo – Su | 5:00 – 22:00 |
| Mixing circuit 1/2 | Mo – Su | 6:00 – 22:00 |

**Standard time program (P1) for heating and DHW**

Automatic heating and DHW preparation function for each weekday

If programs P1-P3 are enabled, the time program may be configured in accordance with the following tables.

| Standard program P1 | | |
|---|---|---|
| **Heating circuit** | **Day** | **Heating mode** from to |
| DHW heating circuit | Mo – Su | 5:00 – 22:00 |
| Mixing circuit ½ | Mo. – Su | 6:00 – 22:00 |
| | | |

| Standard program P2 | | |
|---|---|---|
| **Heating circuit** | **Day** | **Heating mode** from to |
| DHW heating circuit | Mo – Th<br>Fr<br>Sa – Su | 5:00-8:00 15:30-22:00<br>5:00-8:00 12:30-22:00<br>6:00-23:00 |
| Mixing circuit 1/2 | Mo – Th<br>Fr<br>Sa – Su | 6:00-8:00 16:00-22:00<br>6:00-8:00 13:00-22:00<br>7:00-23:00 |
| | | |

| Standard Program P3 | | |
|---|---|---|
| **Heating circuit** | **Day** | **Heating mode** from to |
| DHW heating circuit | Mo – Fr<br>Sa – Su | 6:00 – 18:00<br>reduced |
| Mixing circuit 1/2 | Mo – Fr<br>Sa – Su | 7:00 – 18:00<br>reduced |
| | | |

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### 5.3.2.2 TIME PROGRAMS Menu / par. 4 - Reloading standard programs

Personalized time programs P1, P2 or P3 can be overwritten by standard time switching programs P1, P2 or P3 if necessary.

After entering the menu of switching programs you must select the *STANDARD TIME* function in the heating cycle.

After confirmation with the rotary button the circuit the setting of which should be overwritten by a standard program (MC-1, MC-2, ALL) will start flashing on the display.

If automatic programs P1, P2 and P3 are enabled (see the *System menu - Time Program = P1-3)*, you can select the desired switching program P1, P2 or P3 of the circuit the setting of which should be overwritten by a standard program. If they are not enabled, the program selection is skipped.

**Reset**

Restoration of the original values occurs together with pressing of the rotary button for approx. 5 seconds until the confirmation information appears on the display.
The reset is confirmed by the “COPY OK” message.
The STANDARD TIME function can be invoked as necessary if you need to replace the settings of the other circuits with their corresponding standard programs.

**⚠ NOTE**

**If you select ALL, the settings of all the heating circuits and DHW circuits assigned to the selected program will be overwritten by their standard switching times.**
**After the overwriting all the personalized time programs are irreversibly lost and they must be created again.**

To return to the basic display press the program selection key .

### 5.3.2.3 TIME PROGRAMS Menu / par. 5 - Copying Time Programs (Blocks)

#### 5.3.2.3.1 Copying the Switching Time Programs (Days)

Block programming offers copying of switching times and cycle temperatures of the selected weekday:
1 – Specific weekday (Mo, Tu, We, … Su)
2 – All the working days (Mo to Fr)
3 – Weekend (Sa to Su)
4 – All the week (Mo to Su)

##### 5.3.2.3.1.1 Calling the Copy function (Days)

**Source day**

After selection of the copy function you can select the source day that you want to copy (Mo to Fr) by pressing the rotary button. The corresponding automatic program P1 (P2, P3) of the source day will appear on the display together with the clock symbol and program index.

**Target day**

When you have confirmed the source day by pressing the rotary button, the target day following after the source day will start flashing on the display. By means of the rotary button you can select:
- individual following source days (Mo - Fr);
- all the days of the week (1-7) as a weekly block;
- all the working days (1-5) as a working day block;
- the weekend (6-7) as a weekend block;

and confirm by pressing the rotary button.

The copy function is accomplished by the confirming message ”COPY OK”.

After the confirmation once you press the rotary button, the next target days will gradually appear on the display. You can select or skip these days as necessary. You can return to the basic display by pressing the program selection key .

**NOTE**

Only complete days with the settings of cycles, temperatures and corresponding programs can be copied.

#### 5.3.2.3.2 Copying switching time programs (heating circuits)

- par.5 - Block copying allows you to copy switching times and temperature settings from a heating cycle to another one.

##### 5.3.2.3.2.1 Calling the Copy function (heating circuits)

**Source circuit**

After selection of the copy function you can select the source mixing circuit that you want to copy (MC-1, MC-2, WW) by pressing the rotary button.

If automatic programs P1, P2 and P3 are enabled (see the *System menu - Parameter - Time Program = P1-3)*, you can select the desired switching program P1, P2 or P3 of the source circuit. If they are not enabled, the program selection is skipped.

**Target circuit**

After confirming the source circuit by pressing the rotary button you can select the target circuit in the same way and confirm the required program if it is enabled.

The copy function is confirmed by the "**COPY OK**" message. The copy function can be invoked again for copying other circuits if necessary.

IMPORTANT NOTE

Heating circuits cannot be copied to hot water heating circuits and vice versa due to different temperature settings. If a heating circuit (MC-1, MC-2) is set as the source circuit, the hot water circuit (DHW) is excluded from the list of possible target circuits.
A source hot water circuit may be a target and a source circuit **at the same time**. In this case only switching programs P1 - P3 can be copied between each other.

You can return to the basic display by pressing the program selection key  .

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### 5.3.3 HYDRAULIC Menu

The Hydraulic menu defines which components are connected to the controller.

#### 5.3.3.1 HYDRAULIC Menu - overview of parameters

| Par. | Description | Setting range / Setting values | Default setting | Setting |
|---|---|---|---|---|
| 01 | Hydraulic diagram | 0001 - 0020 | 0019 | |
| 02 | DHW pump output | OFF No function<br>1 SLP - DHW loading pump<br>4 ZKP - DHW circulation pump<br>5 ELH - DHW electric heating element<br>46 ETUV - Controlled electric heating of the DHW tank | 1 | |
| 03 | Output of mixing circuit 1 (MC1) | OFF No function<br>2 DK - Direct circuit (pump output only)<br>3 MK - Mixing circuit 1 (OTC)<br>6 KR -Mixing circuit 1 (as a constant controller)<br>7 FR - Mixing circuit 1 (as a fixed value controller)<br>8 RLA - Mixing circuit 1 (as a boiler return controller)<br>40 KRK - Mixing circuit 1 (constant cooling temperature)<br>45 EHP - Electric heating of the accumulation tank | 3 | |
| 04 | Output of mixing circuit 2 (MC2) | Setting scope and assignment as parameter 03 | 3 | |
| 05 | Output of heating circuit pump (HC) | Fixed settings | KKPF | KKPF |
| 06 | Variable output 1 (zone valve) - VO1 | OFF No function<br>4 ZKP - DHW circulation pump<br>5 ELH - DHW electric heating element<br>9 RLP- Boiler pump<br>10 ZUP - Charging pump<br>11 KP1 -Pump of boiler circuit 1<br>12 KP2 -Pump of boiler circuit 2<br>13 SMA - General alarm output<br>15 SOP - Solar heating charging pump<br>16 PLP - Zone valve of the boiler circuit<br>19 SLV - Solar charging switch<br>20 SZW - Forced solar system losses<br>21 PWF - Parallel heating enabled<br>26 PP - Main pump<br>27 HPE - Hydraulic buffer support<br>41 UHK - Heating/cooling switch<br>45 EHP - Electric heating of the accumulation tank<br>46 ETUV - Controlled electric heating of the DHW tank | OFF | |
| 07 | Variable output 2 - VO2 | Setting scope and assignment as parameter 06 | OFF | |
| 8 | Variable input 1 – VI1 | OFF No function<br>1 AF2 - Outdoor sensor 2<br>2 KF2 - Boiler sensor 2<br>3 SF2 - DHW tank sensor 2<br>4 PF2 - Tank buffer sensor 2<br>5 ANF- Switching contact<br>6 SME - External alarm input<br>7 RL1 - Return sensor for mixing circuit 1<br>8 RL2 - Return sensor for mixing circuit 2<br>9 RLF - Return sensor for bypass pump<br>10 BLSP - External heating disconnection<br>11 MODEM - External modem switching<br>12 INFO - External information<br>13 SVLF - Common flow sensor<br>14 KRLF - Solar panel return sensor<br>16 AGF - Flue gas sensor<br>18 FPF - Solid fuel tank buffer sensor<br>19 PF1 - Tank buffer sensor 1 | 16 | |
| 09 | Variable input 2 – VI2 | Setting scope and assignment as par. 08 | OFF | |
| 10 | Variable input 3 – VI3 | Setting scope and assignment as par. 08 | 19 | |
| 11 | Indirect return check via mixing circuit | OFF, ON | OFF | |

* Not supported in ATMOS hydraulic systems

### 5.3.3.2 HYDRAULIC Menu / par.1 – Hydraulic diagram

**Function** A pre-defined hydraulic diagram is a set of pre-defined parameters (profile) that automatically sets the corresponding parameters to the default values. If a particular application differs from the given hydraulic diagram, the corresponding parameters must be set manually.
After entering of the hydraulic diagram no. the controller is automatically set for the entered boiler type and system type. Hydraulic diagrams differ in the boiler type, way of control and connection of the boiler circuit. The number and type (floor, radiator, etc.) of mixed circuits is defined in the parameters of mixed circuits. A mixed circuit consists of a three-way mixer with a servo motor and circuit pump; a non-mixed (direct) circuit does not contain a three-way mixer and it is only controlled by the circuit pump..

⚠ EXAMPLE E.g. hydraulic circuit no. 12 is entered as value 00 12

⚠ NOTE The default setting is hydraulic diagram no. 19, but if the value has not been changed, the display will show 0000

#### 5.3.3.2.1 Basic overview of hydraulic diagrams

| | Without an accum. tank | With an accum tank. | With an accum. tank and zone valve |
|---|---|---|---|
| Uncontrolled boiler (type 1) | **Hydraulic example 1**<br>- Boiler pump controlled by boiler water temperature (WF)<br>- Heating circuits controlled by boiler water temperature (WF) | **Hydraulic example 3**<br>- Boiler pump controlled by boiler (WF) and tank water temperature (PF)<br>- Heating circuits controlled by tank temperature (PF) | **Hydraulic example 4**<br>- Boiler pump and zone valve controlled by boiler (WF) and tank temperatures PF)<br>- Heating circuits controlled by tank temperature (PF) |
| Controlled automatic boiler (type 2 and 3) | **Hydraulic example 9**<br>- Burner controlled by boiler water temperature (WF) on the basis of system demand<br>- Boiler pump controlled by boiler water temperature (WF)<br>- Heating circuits controlled by boiler water temperature (WF) | **Hydraulic example 10**<br>- Burner controlled by boiler temperatures (WF) and tank top (PF) and bottom (KSPF) temperatures<br>- Boiler pump controlled by boiler (WF) and tank water temperature (PF)<br>- Heating circuits controlled by tank temperature (PF) | **Hydraulic example 12**<br>- Burner controlled by boiler temperatures (WF) and tank top (PF) and bottom (KSPF) temperatures<br>- Boiler pump and zone valve controlled by boiler (WF) and tank temperatures PF)<br>- Heating circuits controlled by tank temperature (PF) |
| Controlled solid fuel boiler with a flue gas temperature sensor (AGF) (type 4) | **Hydraulic example 17**<br>- Boiler pump controlled by boiler water (WF) and flue gas temperature (AGF)<br>- Heating circuits controlled by boiler water temperature (WF) | **Hydraulic example 19**<br>- Boiler pump controlled by boiler water (WF), flue gas (AGF) and tank temperature (PF)<br>- Heating circuits controlled by tank temperature (PF)<br>- Fan controlled manually by boiler water (WF) and flue gas temperature (AGF) | **Hydraulic example 20**<br>- Boiler pump and zone valve controlled by boiler water (WF), flue gas (AGF) and tank temperature (PF)<br>- Heating circuits controlled by tank temperature (PF)<br>- Fan controlled manually by boiler water (WF) and flue gas temperature (AGF) |
| Controlled combined solid fuel boiler with a burner and a flue gas temperature sensor (AGF) (type 5 and 6) | **Hydraulic example 31**<br>- Combination of boiler 2 and 4<br>- boiler pump and heating circuits controlled by water (WF) and flue gas temperature (AGF) | **Hydraulic example 32**<br>- Combination of boiler 3 and 4<br>- Boiler pump controlled by boiler water (WF), flue gas (AGF) and tank temperature (PF)<br>- Heating circuits controlled by tank temperature (PF) | **Hydraulic example 33**<br>- Combination of boiler 3 and 4<br>- Boiler pump and zone valve controlled by boiler water (WF), flue gas (AGF) and tank temperature (PF)<br>- Heating circuits controlled by tank temperature (PF) |

Note – The variable output VO configured as the zone valve may be used to control any periphery with the same function and control logic (e.g. indication of boiler switch-off, switching another source, etc.).

⚠ **CAUTION** **The hydraulic example number is entered as par. no. 1 in the HYDRAULIC menu by the installation technician. If the hydraulic diagram number and the heating system does not correspond to the boiler, the controller cannot control the components properly.**

⚠ NOTE Solar heating can be connected to any hydraulic diagram by defining of Variable Output VO as a solar pump. The manual shows application examples with solar heating. There is no specific hydraulic diagram for solar heating.

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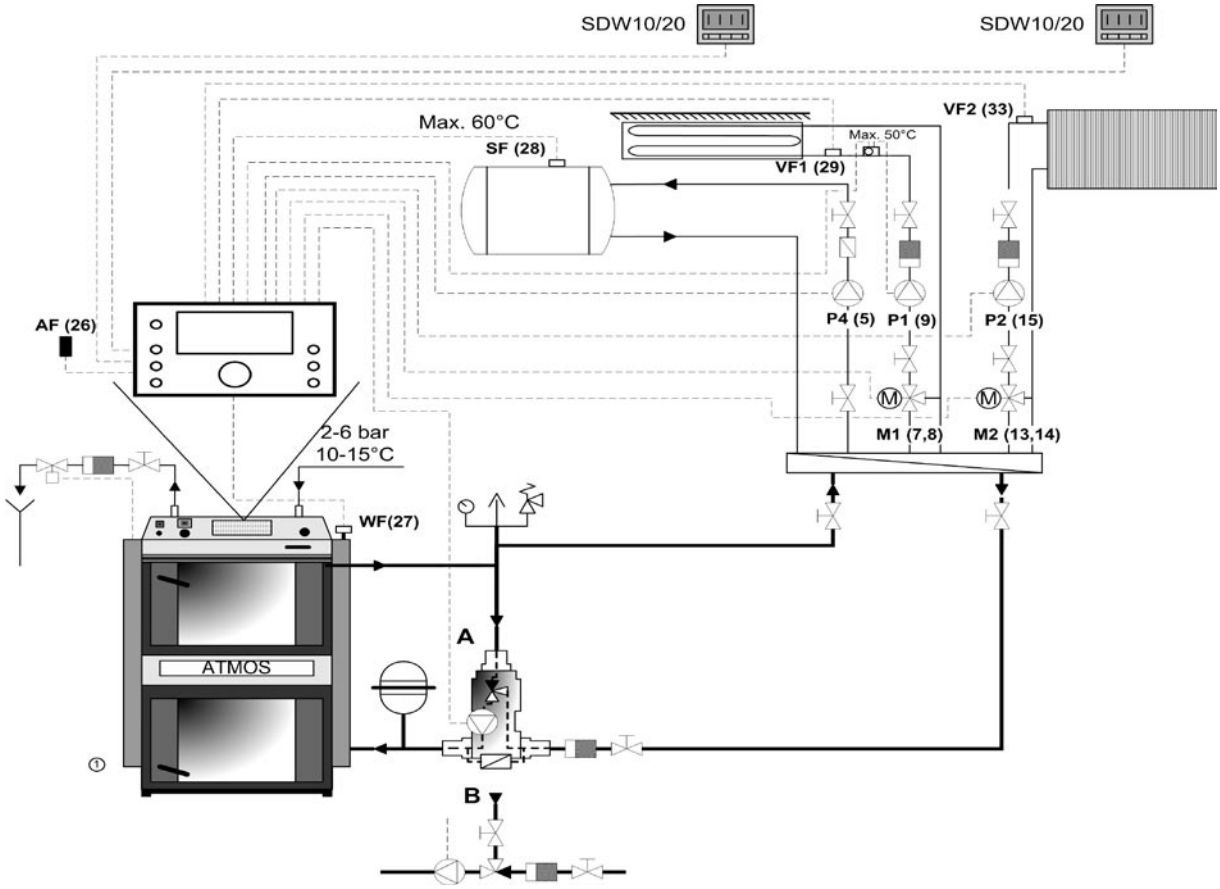
### 5.3.3.2.2 Drawings of hydraulic diagrams

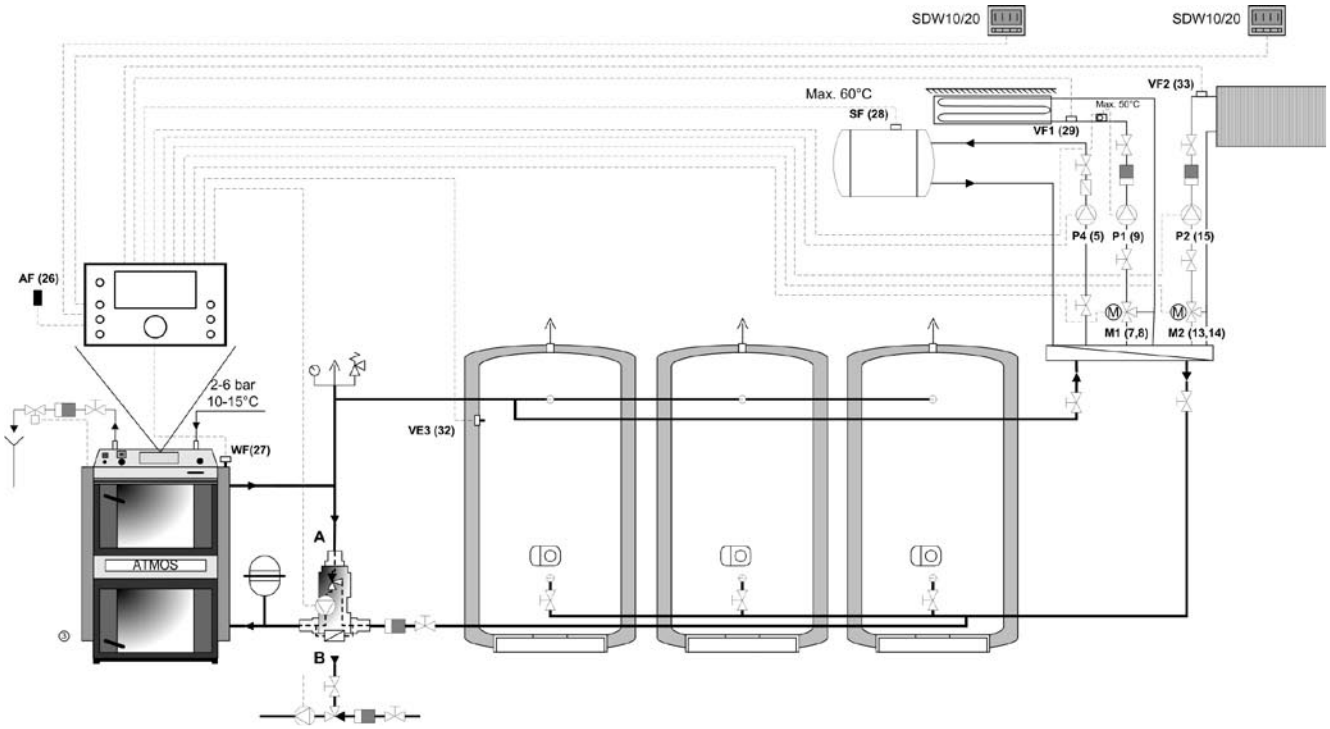
**5.3.3.2.2.1 Hydraulic example no. 1 –** uncontrolled boiler connected without an accumulation tank




**5.3.3.2.2.2 Principle and description of hydraulic diagram no. 0001**

| | |
|---|---|
| Heat source: | Boiler type no. 1 - boiler not controlled by the controller (the boiler has its own control); the controller is only able to protect the boiler from overheating after defining of the parameter (see - Forced boiler losses) in accordance with KTmax. |
| Boiler pump: | The boiler pump (DKP) is switched on the basis of the boiler temperature measured by a WF sensor (see – Starting the boiler pump). |
| System: | With increasing temperature of WF the other connected peripheries (DHW and MIX 1, 2) are further released (see – Release of heating circuits). |

**5.3.3.2.2.3 Hydraulic example no. 3 –** uncontrolled boiler connected with an accumulation tank




**5.3.3.2.2.4 Principle and description of hydraulic diagram no. 0003**

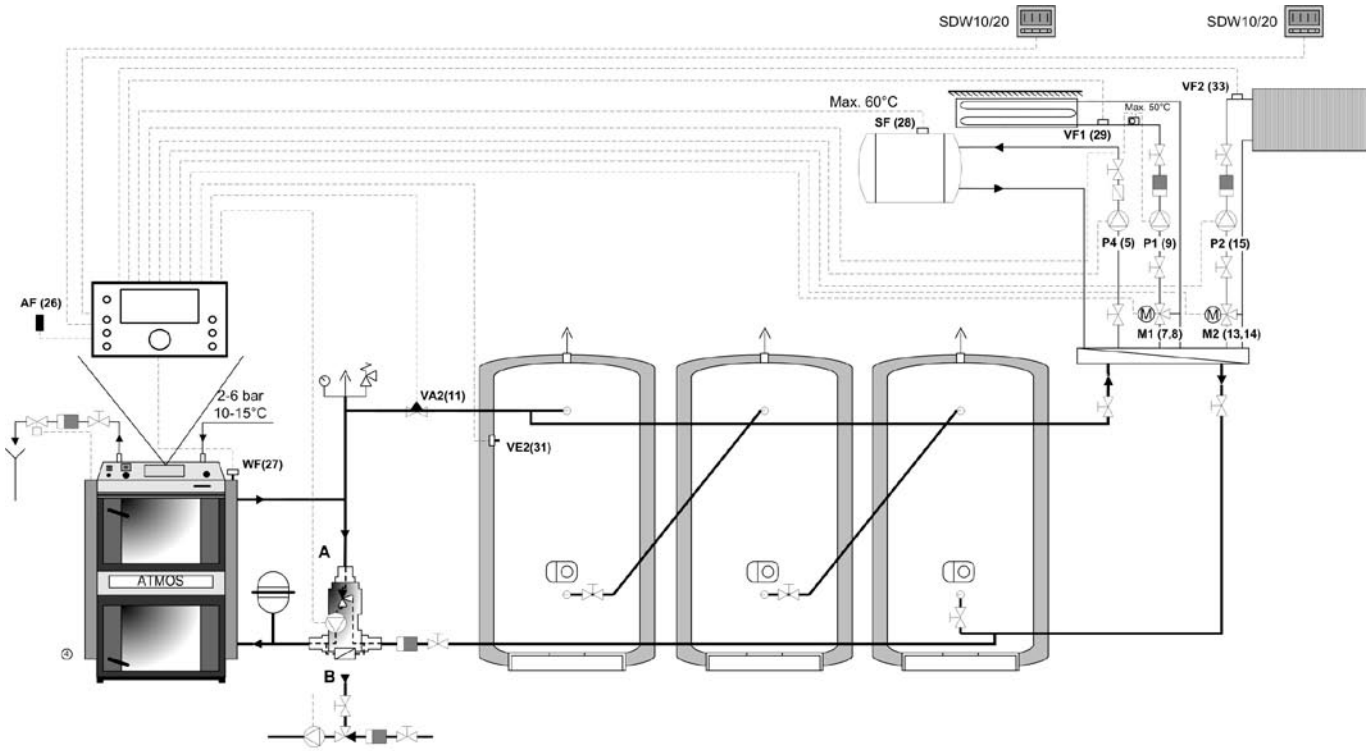
Heat source: Boiler type no. 1 - boiler not controlled by the controller (the boiler has its own control); the controller is only able to protect the boiler from overheating after defining of the parameter (see - Forced boiler losses) in accordance with KTmax.

Boiler pump: If the boiler temperature (WF) is higher than the accumulation tank temperature (PF), the boiler pump (DKP) is started (see – Starting the boiler pump).

System: If the top temperature of the accumulation tank (PF) is higher than PFmin the other connected peripheries (DHW and MIX 1, 2) are further released.

NOTE In the case of manual heating with the use of a boiler of type 1 you are recommended to monitor and maintain sufficient temperature in the accumulation tank by charging. The required temperature of the accumulation tank (SET-POINT) is displayed in the Information ⓘ after pressing of the rotary button on the top temperature of the accumulation tank item.

**5.3.3.2.2.5 Hydraulic example no. 4 –** uncontrolled boiler connected with an accum. tank via a zone valve




**5.3.3.2.2.6 Principle and description of hydraulic diagram no. 0004**

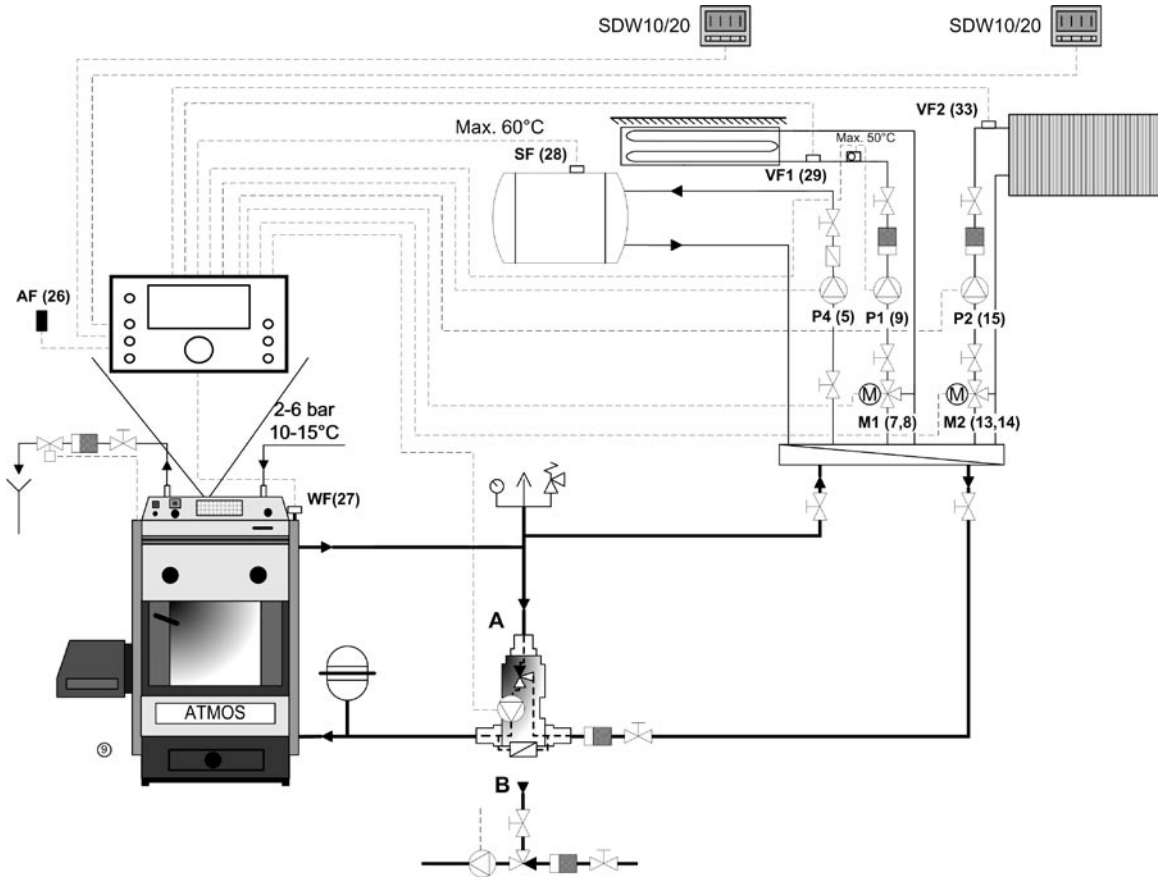
Heat source: Boiler type no. 1 - boiler not controlled by the controller (the boiler has its own control); the controller is only able to protect the boiler from overheating after defining of the parameter (see - Forced boiler losses) in accordance with KTmax.

Boiler pump: If the boiler temperature (WF) is higher than the accumulation tank temperature (PF), the boiler pump (DKP) is started (see – Starting the boiler pump) and the zone valve connected to VO2 is opened.

System: If the top temperature of the accumulation tank (PF) is higher than PFmin, the other connected peripheries (DHW and MIX 1, 2) are further released.

NOTE In the case of manual heating with the use of a boiler of type 1 you are recommended to monitor and maintain sufficient temperature in the accumulation tank. The required temperature of the accumulation tank (SET-POINT) is displayed in the Information ⓘ after pressing of the rotary button on the top temperature of the accumulation tank item.

**5.3.3.2.2.7 Hydraulic example no. 0009 –** automatic (pellet) boiler connected without an accumulation tank



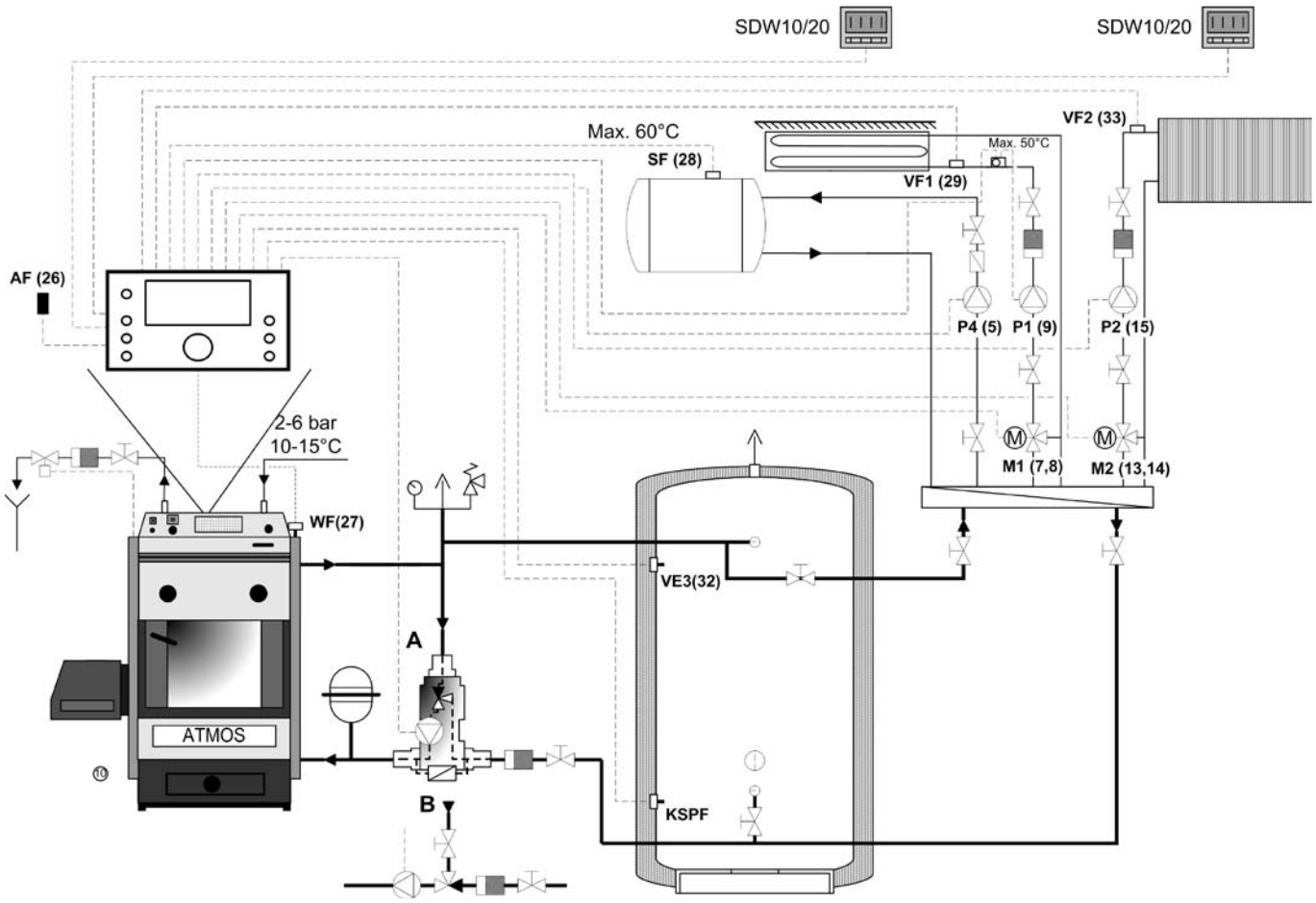

**5.3.3.2.2.8 Principle and description of hydraulic diagram no. 0009**

Heat source: Boiler type no. 2 - boiler controlled by the controller – the boiler is controlled completely automatically on the basis of the system demand (DHW and MIX 1, 2). When the demand is met, the boiler is switched off.

Boiler pump: The boiler pump (DKP) is started in accordance with the boiler temperature measured by the WF sensor (see – Starting the boiler pump).

System: With increasing temperature of WF the other connected peripheries (DHW and MIX 1, 2) are further released (see – Release of heating circuits).

**5.3.3.2.2.9 Hydraulic example no. 10 –** automatic **(**pellet) boiler connected with an accumulation tank



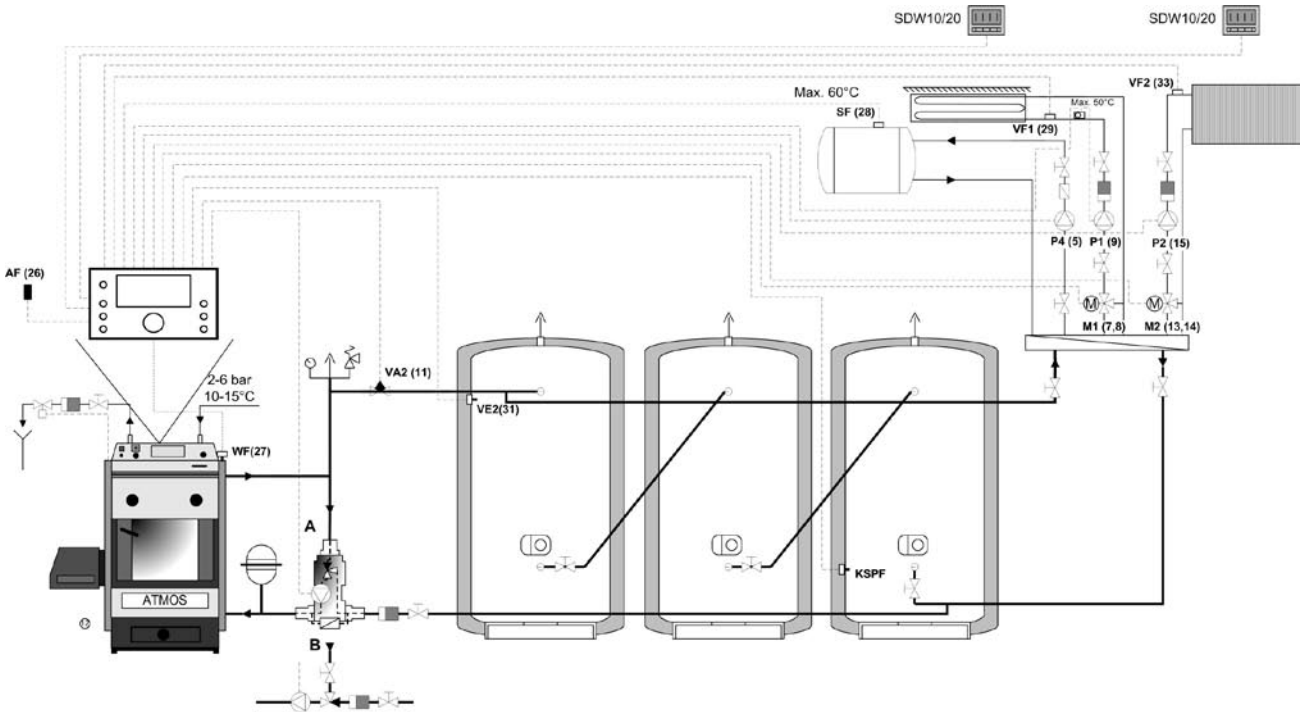

**5.3.3.2.2.10 Principle and description of hydraulic diagram no. 0010**

Heat source: Boiler type no. 3 - automatic boiler controlled by the controller – the boiler is controlled completely automatically on the basis of the SET-POINT of the top sensor of the tank (PF) (if the current temperature is lower than the SET-POINT, the boiler is started). When the demand is met as measured by the KSPF sensor, the boiler is switched off.

Boiler pump: If the boiler temperature (WF) is higher than the top temperature of the accumulation tank (PF), the boiler pump (DKP) is started (see – Starting the boiler pump).

System: If the top temperature of the accumulation tank (PF) is higher than PFmin , the other connected peripheries (HDW and MIX 1, 2) are further released. With its demands the system creates SET-POINT temperatures of the top sensor of the tank (PF). The SET-POINT is displayed in the Information ⓘ after pressing of the rotary button on the top temperature of the accumulation tank (PF) item - the source for the system is the accumulation tank.

**5.3.3.2.2.11 Hydraulic example no. 0012 –** automatic (pellet) boiler connected with an accum. tank via a zone valve




**5.3.3.2.2.12 Principle and description of hydraulic diagram no. 0012**

Heat source: Boiler type no. 3 - automatic boiler controlled by the controller – the boiler is controlled completely automatically on the basis of the SET-POINT of the top sensor of the tank (PF) (if the current temperature is lower than the SET-POINT, the boiler is started). When the demand is met as measured by the KSPF sensor, the boiler is switched off.

Boiler pump: If the boiler temperature (WF) is higher than the top temperature of the accumulation tank (PF), the boiler pump (DKP) is started (see – Starting the boiler pump) and the zone valve connected to the variable output VO2 is opened.

System: If the top temperature of the accumulation tank (PF) is higher than PFmin, the other connected peripheries (HDW and MIX 1, 2) are further released. With its demands the system creates SET-POINT temperatures of the top sensor of the tank (PF).
The SET-POINT is displayed in the Information ⓘ after pressing of the rotary button on the top temperature of the accumulation tank (PF) item - the source for the system is the accumulation tank.

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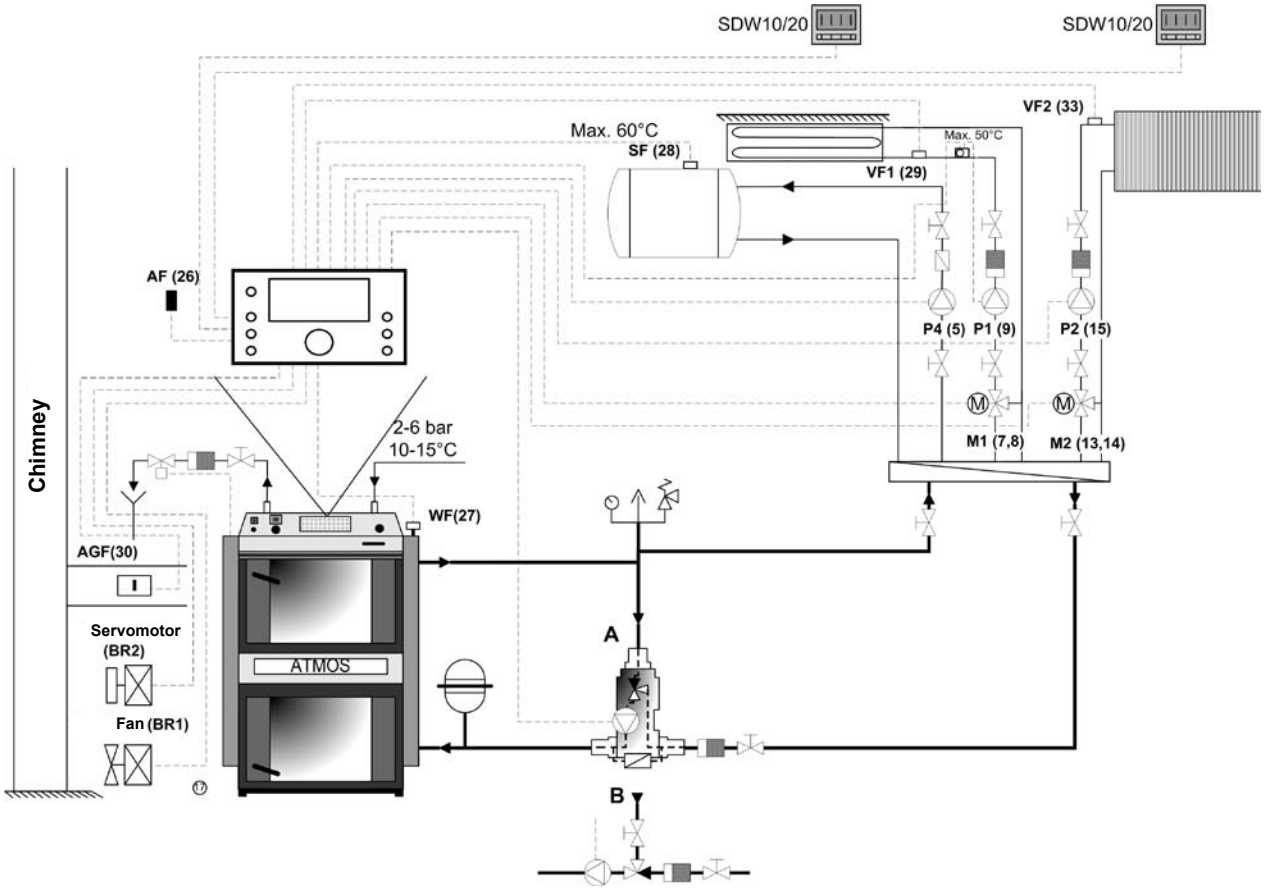
**5.3.3.2.2.13 Hydraulic example no. 0017 –** boiler with a fan, flue gas sensor without an accumulation tank



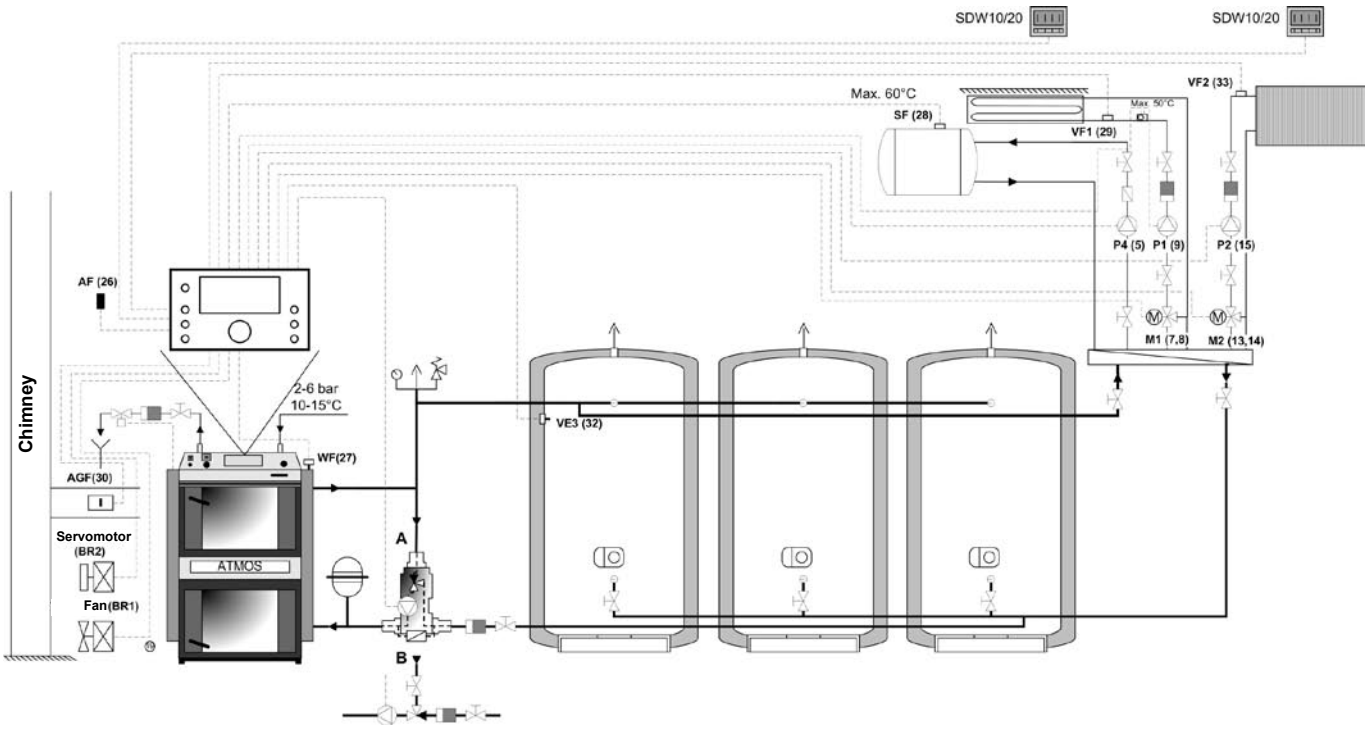

**5.3.3.2.2.14 Principle and description of hydraulic diagram no. 0017**

Heat source: Boiler type no. 4 - boiler controlled by the controller on the basis of the boiler temperature (WF) and flue gas temperature (AGF) connected to the variable input VI1. Further, the controller is able to protect the boiler from overheating on the basis of definition of the parameter (see - Forced boiler losses) in accordance with KTmax.

Boiler pump: The boiler pump (DKP) is started on the basis of the boiler temperature measured by the WF sensor and the flue gas temperature (AGF) (see – Starting the boiler pump).

System: With increasing temperature of WF the other connected peripheries (DHW and MIX 1, 2) are further released (see – Release of heating circuits).

**5.3.3.2.2.15 Hydraulic example no. 0019 –** boiler with a fan, flue gas sensor, with an accumulation tank




**5.3.3.2.2.16 Principle and description of hydraulic diagram no. 0019**

| | |
|---|---|
| Heat source: | Boiler type no. 4 - boiler controlled by the controller on the basis of the boiler temperature (WF) and flue gas temperature (AGF) connected to the variable input VI1. Further, the controller is able to protect the boiler from overheating on the basis of definition of the parameter (see - Forced boiler losses) in accordance with KTmax. |
| Boiler pump: | If the boiler temperature (WF) is higher than the top temperature of the accumulation tank (PF) and at the same time AGF is higher than AGFmin, the boiler pump (DKP) is started (see – Starting the boiler pump). |
| System: | If the top temperature of the accumulation tank (PF) is higher than PFmin, the other connected peripheries (HDW and MIX 1, 2) are further released. With its demands the system creates SET-POINT temperatures of the top sensor of the tank (PF) - the source for the system is the accumulation tank. |
| NOTE | In the case of manual heating with the use of a boiler of type 4 you are recommended to monitor and maintain sufficient temperature in the accumulation tank. The required temperature of the accumulation tank (SET-POINT) is displayed in the Information ⓘ after pressing of the rotary button on the top temperature of the accumulation tank item. |

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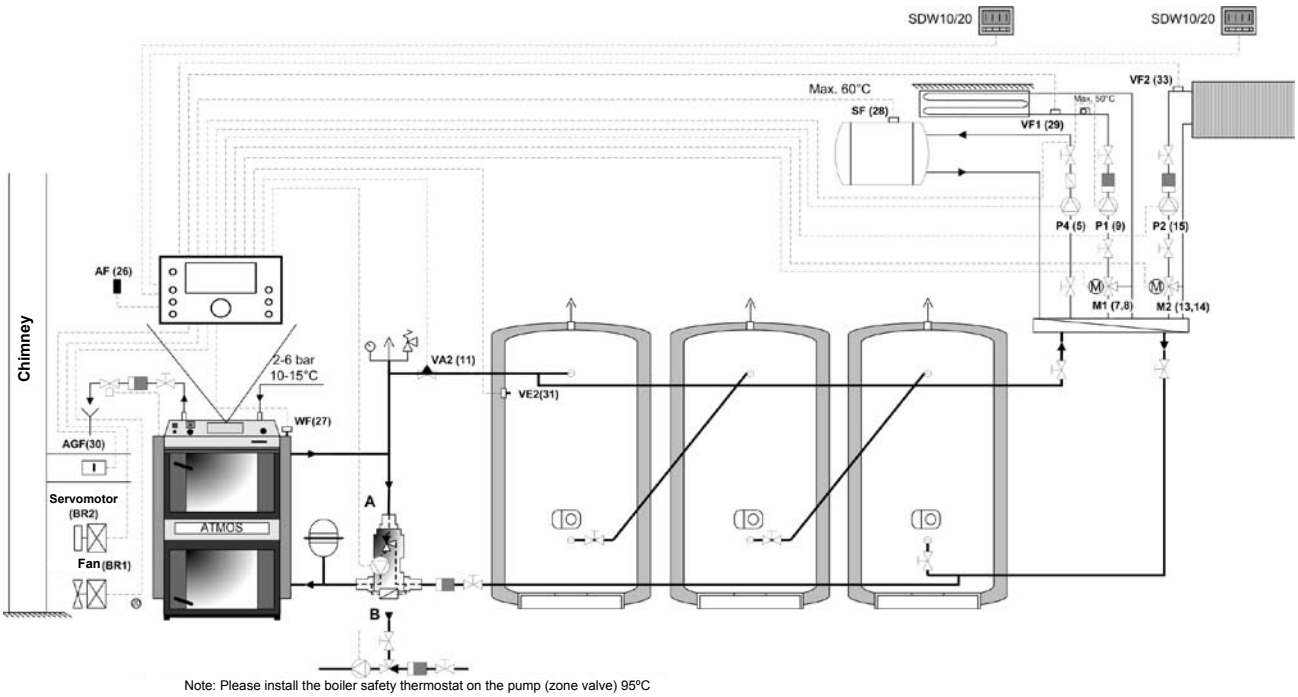
**5.3.3.2.2.17 Hydraulic example no. 0020 –** boiler with a fan, flue gas sensor, zone valve and accum. tank

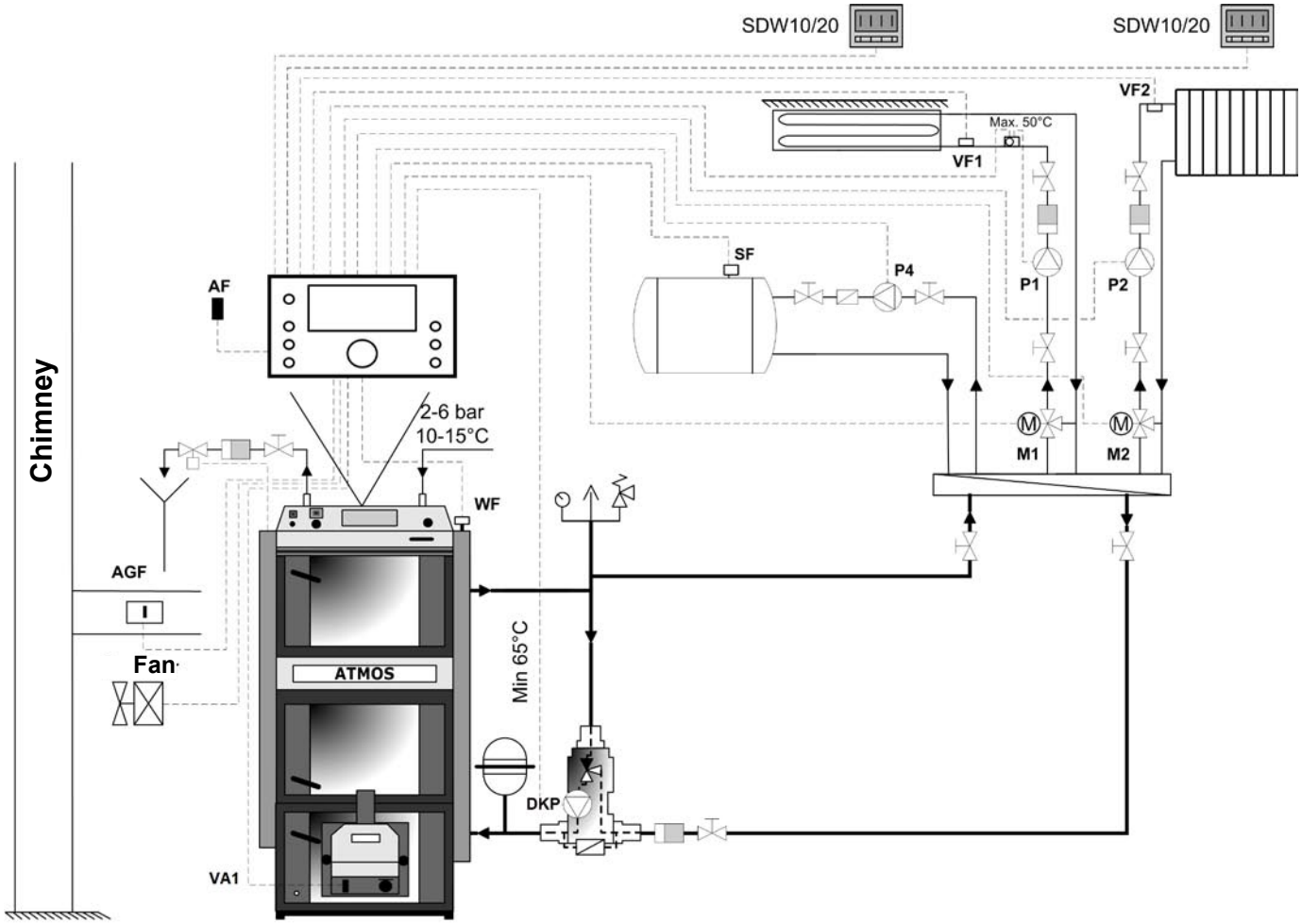



Note: Please install the boiler safety thermostat on the pump (zone valve) 95ºC

**5.3.3.2.2.18 Principle and description of hydraulic diagram no. 0020**

| | |
|---|---|
| Heat source: | Boiler type no. 4 - boiler controlled by the controller on the basis of the boiler temperature (WF) and flue gas temperature (AGF) connected to the variable input VI1. Further, the controller is able to protect the boiler from overheating on the basis of definition of the parameter (see - Forced boiler losses) in accordance with KTmax. |
| Boiler pump: | If the boiler temperature (WF) is higher than the top temperature of the accumulation tank (PF) and at the same time AGF is higher than AGFmin, the boiler pump (DKP) is started (see – Starting the boiler pump) and the zone valve connected to the variable output VO2 is opened. |
| System: | If the top temperature of the accumulation tank (PF) is higher than PFmin, the other connected peripheries (HDW and MIX 1, 2) are further released. With its demands the system creates SET-POINT temperatures of the top sensor of the tank (PF) - the source for the system is the accumulation tank. |
| NOTE | In the case of manual heating with the use of a boiler of type 4 you are recommended to monitor and maintain sufficient temperature in the accumulation tank. The required temperature of the accumulation tank (SET-POINT) is displayed in the Information ⓘ after pressing of the rotary button on the top temperature of the accumulation tank item. |

#### 5.3.3.2.2.19 Hydraulic diagram no. 0031 – combined boiler without an accumulation tank



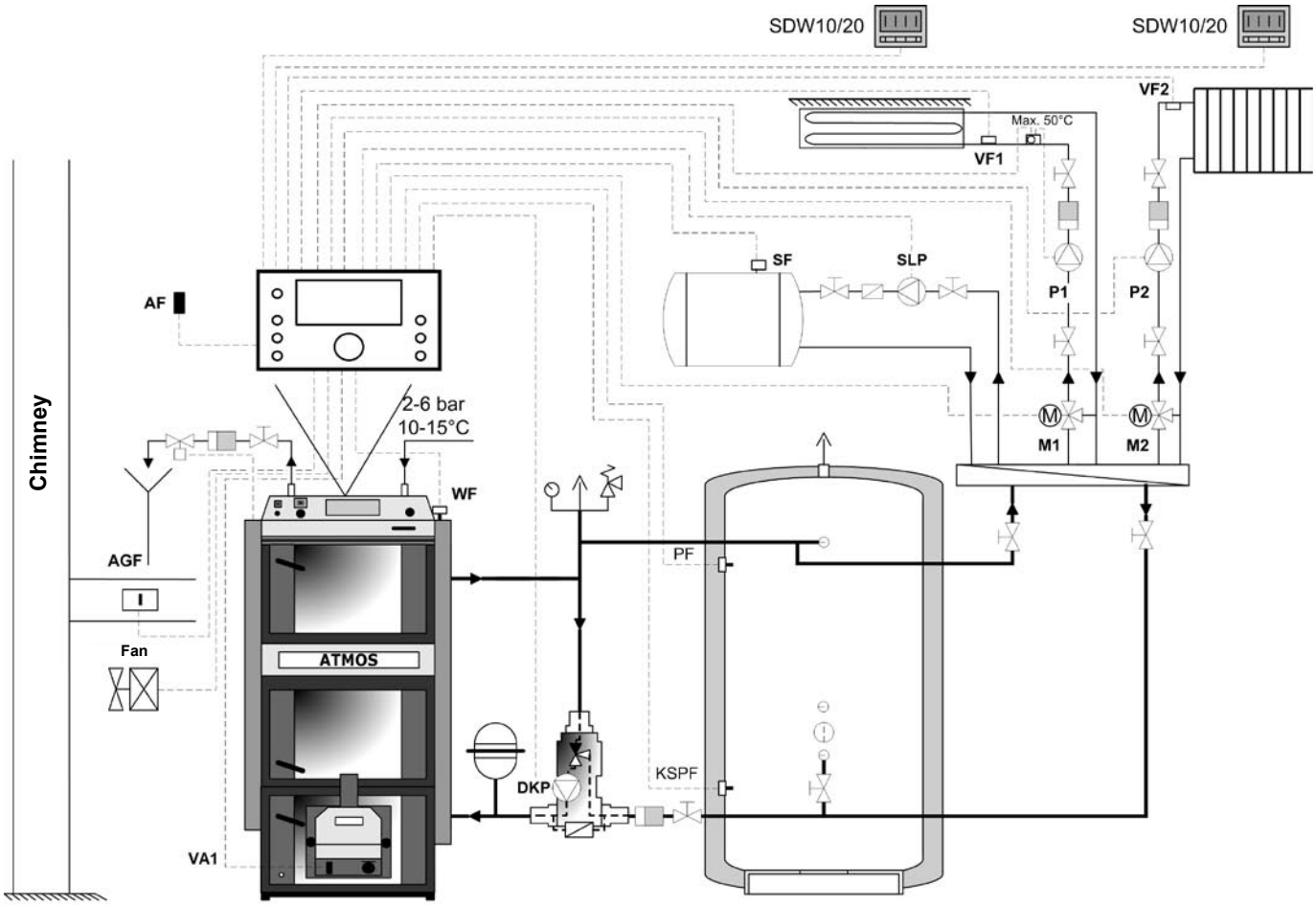

#### 5.3.3.2.2.20 Principle and description of hydraulic diagram no. 0031

Heat source: Combined boiler (as the type no. 2 and no. 4) - boiler controlled by the controller on the basis of the boiler temperature (WF) and flue gas temperature (AGF).
The boiler burner (similarly to the type no. 2) is a boiler that is completely automatically controlled in accordance with demands of the system (DHW and MIX circuits).
The solid fuel boiler (similarly to the type no. 4) is a boiler that is operated through manual intervention of the user. In the other parameters you can set automatic switching after burning out from one type to the other one, see par. 1 of the SOURCES menu.
Further, the controller is able to protect the boiler from overheating on the basis of definition of the parameter (see - Forced boiler losses) in accordance with KTmax.

Boiler pump: The boiler pump (DKP) is started on the basis of the boiler temperature measured by the WF sensor and the flue gas temperature (AGF) (see – Starting the boiler pump).

System: With increasing temperature of WF the other connected peripheries (DHW and MIX 1, 2) are further released (see – Release of heating circuits). The source for the SET-POINTS of the system is the boiler.

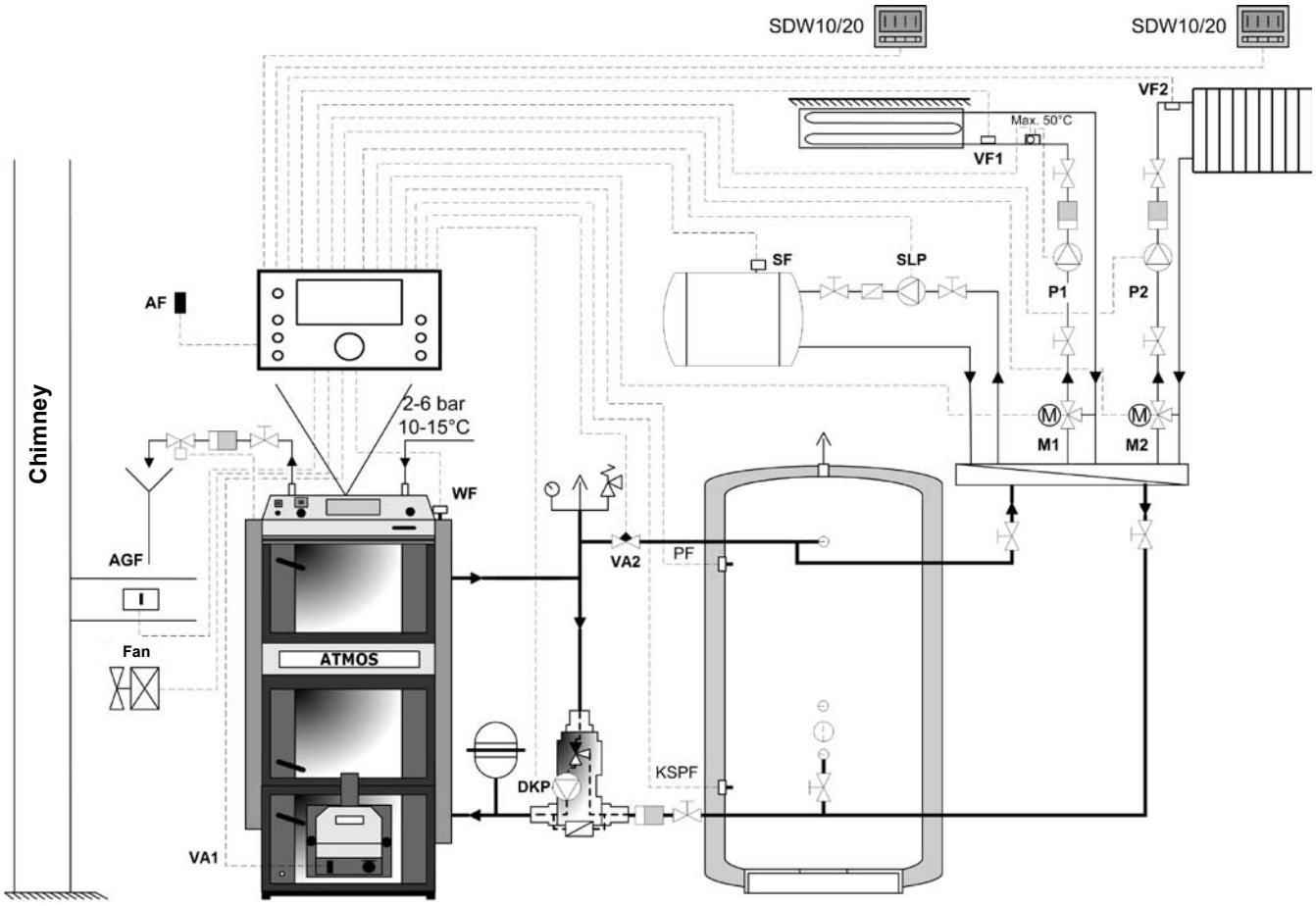
### 5.3.3.2.2.21 Hydraulic diagram no. 0032 – combined boiler connected with an accumulation tank




### 5.3.3.2.2.22 Principle and description of hydraulic diagram no. 0032

| | |
|---|---|
| Heat source: | Combined boiler (as the type no. 3 and no. 4) - boiler controlled by the controller on the basis of the boiler temperature (WF) and flue gas temperature (AGF).<br>Boiler burner (similarly to the boiler type no. 3) - an automatic boiler controlled by the controller – the boiler is controlled completely automatically on the basis of the SET-POINT of the top sensor of the tank (PF) (if the current temperature is lower than the SET-POINT, the boiler is started). When the demand is met as measured by the KSPF sensor, the boiler is switched off.<br>Solid fuel boiler (similarly to the type no. 4) - a boiler operated through manual intervention of the user. In the other parameters you can set automatic switching after burning out from one type to the other one, see par. 1 of the SOURCES menu.<br>Further, the controller is able to protect the boiler from overheating on the basis of definition of the parameter (see - Forced boiler losses) in accordance with KTmax. |
| Boiler pump: | If the boiler temperature (WF) is higher than the top temperature of the accumulation tank (PF) and at the same time AGF is higher than AGFmin, the boiler pump (DKP) is started (see – Starting the boiler pump). |
| System: | If the top temperature of the accumulation tank (PF) is higher than PFmin, the other connected peripheries (HDW and MIX 1, 2) are further released. With its demands the system creates SET-POINT temperatures of the top sensor of the tank (PF) - the source for the system is the accumulation tank. |
| NOTE | In the case of manual heating with the use of a boiler of type 4 you are recommended to monitor and maintain sufficient temperature in the accumulation tank. The required temperature of the accumulation tank (SET-POINT) is displayed in the Information ⓘ after pressing of the rotary button on the top temperature of the accumulation tank item. |

#### 5.3.3.2.2.23 Hydraulic diagram no. 0033 – combined boiler connected with an accumulation tank via a zone valve




#### 5.3.3.2.2.24 Principle and description of hydraulic diagram no. 0033

Heat source: Combined boiler (as the type no. 3 and no. 4) - boiler controlled by the controller on the basis of the boiler temperature (WF) and flue gas temperature (AGF).
Boiler burner (similarly to the boiler type no. 3) - an automatic boiler controlled by the controller – the boiler is controlled completely automatically on the basis of the SET-POINT of the top sensor of the tank (PF) (if the current temperature is lower than the SET-POINT, the boiler is started). When the demand is met as measured by the KSPF sensor, the boiler is switched off.
Solid fuel boiler (similarly to the type no. 4) - a boiler operated through manual intervention of the user. In the other parameters you can set automatic switching after burning out from one type to the other one, see par. 1 of the SOURCES menu.
Further, the controller is able to protect the boiler from overheating on the basis of definition of the parameter (see - Forced boiler losses) in accordance with KTmax.

Boiler pump: If the boiler temperature (WF) is higher than the top temperature of the accumulation tank (PF) and at the same time AGF is higher than AGFmin, the boiler pump (DKP) is started (see – Starting the boiler pump) and the zone valve connected to the variable output VO2 is opened.

System: If the top temperature of the accumulation tank (PF) is higher than PFmin, the other connected peripheries (HDW and MIX 1, 2) are further released. With its demands the system creates SET-POINT temperatures of the top sensor of the tank (PF) - the source for the system is the accumulation tank.

NOTE In the case of manual heating with the use of a boiler of type 4 you are recommended to monitor and maintain sufficient temperature in the accumulation tank. The required temperature of the accumulation tank (SET-POINT) is displayed in the Information ⓘ after pressing of the rotary button on the top temperature of the accumulation tank item.

### 5.3.3.3 HYDRAULIC Menu / par.2 – DHW pump output

Function This parameter defines which system will be used by the controller to control DHW heating.

Values **OFF** – The controller does not control DHW heating, the DHW item will not be displayed in the controller and no demand for the source of heat will be created.

**1** – **SLP** - Charging pump to DHW tank - the output controls the DHW charging pump on request at corresponding operation times

**4** – **ZKP** - Circulation pump of the DHW distribution circuit - the output controls the circulation pump of the DHW distribution system of the building in accordance with the period specified in the DHW menu

**5** – **ELH** - Electric heating of the DHW accumulation tank in the summer mode - the output is connected on transition to the summer mode and disconnected at the end of the summer mode. The electric heating has its own control (e.g. an integrated thermostat).

**46** – **ETUV** -Controlled electric heating of the DHW accumulation tank - the output is activated if the demand for DHW is not met and at the same time the source (boiler or accumulation) is not active. The activity of the boiler is characterized by the water temperature (SOLID FUEL, par. 4) or flue gas temperature (SOLID FUEL, par. 18); while in the case of the accumulation tank the tank must be warmer than the DHW tank. If low-tariff charging is used (night electricity rate), the DHW time program for charging to the comfortable temperature must be adapted to charging during this low-tariff period.

Default setting 1

⚠ NOTE In hydraulic examples without an accumulation tank the DHW tank may be charged by the boiler pump, i.e. this output may only control an electric valve in accordance with the same logic as the charging pump, which means that this parameter remains set to 1.

⚠ RECOMMENDATION If DHW heating is designed as a floating heater in the accumulation tank and the source of heat is an automatic boiler of type 3, 5 or 6, you should set this parameter =1 even though the heater is not directly charged as this will cause demand for the boiler, which will subsequently charge the accumulation tank. Naturally, the DHW sensor must be placed in the floating heater.

### 5.3.3.4 HYDRAULIC Menu / par.3 – Output of Mixing Circuit 1 (MC1)

Function This parameter defines the type of the connected heating circuit.

Values **OFF** – The controller does not control circuit 1, the MC-1 item will not be displayed in the controller and no demand for the source of heat will be created

**2** – **DK** - Direct unmixed circuit – in case of a heating request just the circuit pump is switched on (the circuit may be controlled e.g. by a contact connected as an empty variable input and configured in the HYDRAULIC menu, par. 8,9 or 10 and logged in to the circuit in the MC1/2 menu, par.6,7 or 8)

**3** – **MK** - Standard mixed circuit (e.g. radiator or floor heating), controlled on the basis of OTC (outdoor sensor) and the equithermal curve in accordance with control and time modes

**6** – **KR** - Constant temperature circuit – the circuit maintains a constant temperature, it is controlled by control modes (daytime mode = heating request, reduced mode = no heating request) - the demand of the circuit is transmitted to the heat source )

**7** – **FR** - Fixed value circuit - the same as the “constant temperature circuit”, but the demand is not transmitted to the heat source

**8** – **RLA** -Control of mixed return water to the boiler - the MIX menu is replaced by the RETURN CONTROL menu, where the temperature of return water to the boiler is specified. The OPEN and CLOSED outputs control the servo drive of the mixing valve in such a way to exactly achieve the required temperature. This design is the most suitable one for protection from low-temperature corrosion and completely solves hydraulic problems of commonly used thermo-regulation fittings. The difference of this circuit type from the previous ones is that a circuit defined this way does not place any demand for the heat source and is not controlled by any time control modes.

**40** – **KRK** - Mix. circuit 1 - constant cooling temperature – mixing circuit designed for cooling to a constant temperature. A precondition for this function is connection and definition of the heating/cooling switch to the variable input. Cooling function - see the MIX menu.

**45** - **EHP** -Electric heating of the accumulation tank (EHP) – if the required temperature is not achieved at the top sensor of the accumulation tank after expiration of the set time period (see the SOURCES menu, par. 11 - EHP switching delay), the output will be switched on.
You can also define for this electric heating whether it should only be used as a backup source with the antifreeze function, or whether it should act as a full source (see the SOURCES menu, par. 9 – daytime operation of EHP). If it is only selected as a backup source with the antifreeze function, all the required temperatures are set to reduced values (room temperature = , HDW = HDW menu, par.1) regardless of the selected control mode.
If the DHW heater is integrated in the accumulation tank (floating heater), you can set summer heating via EHP (see the SOURCES menu, par. 10 – summer heating of DHW).

⚠ NOTE The minimum SETPOINT of the accumulation tank must be defined (see the TANK menu, par. 14) OFF.

Default setting 3

### 5.3.3.5 HYDRAULIC Menu / par. 4 – Output of Mixing Circuit 2 (MC2)

Function Similar setting as in par. 3 - MC1

### 5.3.3.6 HYDRAULIC Menu / par.6 – Variable Output 1 (VO1)

Function This parameter defines the device connected to Variable Output 1

***NOTE*** If a boiler of the type no. 5, 6 is used, the output VO1 is automatically used for the control of the boiler burner.

Values **OFF** – The controller does not control VO1

**4** – **ZKP** -Circulation pump of DHW distribution circuit - the same principle as in par. 2 = 4 (see point 5.3.3.3)

**5** – **ELH** - Electric heating of DHW accumulation tank in the summer mode - the same principle as in par. 2=5 (see point 5.3.3.3)

**9** – **RLP** - Return temperature pump – the pump helps to achieve the required temperature.

Function - the output is only switched on if an automatic boiler is connected and activated (type 2, 3, 5) and the measured temperature is lower than the required value. The measured temperature is automatically assigned to the corresponding var. input with the same number as the var. output (e.g. VO1->VI1=return temperature sensor. When the function is activated, the RETURN CONTROL menu is displayed with the temperature, difference and switch-off setting parameters – not used in ATMOS hydr. diagrams.

**10** –**ZUP** - Feed pump – the output is activated on the basis of a heating or DHW request. The output connected to the controlled with the BUS address 10 is also activated by all the circuits of the other connected controller. The outputs of the other controllers with the same function are only activated on the basis of a request of the circuits of the corresponding controller. The output is disconnected with a delay – not used in ATMOS hydraulic diagrams.

**13** – **SMA** -Alarm output – as soon as an alarm is released, this contact is activated (e.g. input of a safety device, acoustic, optic signalling, or. e.g. an output for a modem)

**15** – **SOL** - Solar circuit charging pump - The solar heating function allows you to combine solar panels with DHW and heating circuits and contributes to economic operation of the system. The charging pump of the solar system is activated on achievement of the set difference (see the SOLAR menu) between the KVLF sensor (solar collector sensor) and KSPF sensor (bottom sensor of the charged tank). If the SOL pump is in operation, no. request for DHW is sent from the boiler, i.e. the DHW charging pump will not start (if connected) to avoid unnecessary removal of heat from the source.

**16** – **PLP** -Zone valve of the accumulation tank - controlled in the same way as the boiler pump (entered in a fixed way as a VO2 value in hydraulic diagrams no. 4,12, 20 and 30)

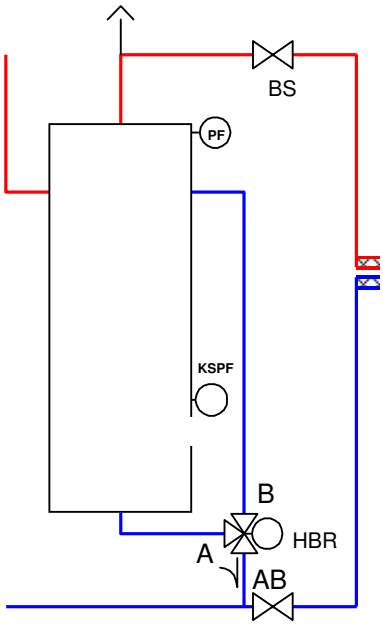
**19** – **SLV** - Solar filling switch - the output controls the servo drive of a three-way valve and switches between the filling of 2 tanks (DHW and accumulation tank).

- When defined, in the HYDRAULIC menu par. 9 (VI2) is automatically defined – SLVF sensor – bottom sensor of the DHW tank (the bottom sensor of the accumulation tank is KSPF).
- Condition for SLV setting: VA1=SOL and VI2 is free for SVLF.
- Of the demand is met at the SLVF sensor, the output of the SLV valve is activated and the valve switches filling over to the KSPF sensor (see the Tank operation mode of the SOLAR menu).

**20** – **SZV** - Valve of forced losses of the solar system - the valve is opened when the critical temperature of KVLF (solar panel) is exceeded and the SOL pump switched off. The function is only available if SOL is defined.

**21** – **PWF** - Parallel heating enabled - the output is only activated when the contact for the boiler is switched on, the output is disconnected after the expiration of the delay time – not used in ATMOS hydraulic diagrams..

**26** – **PP** - Main pump - the same as ZUP - the contact is activated as soon as a heating request arrives with the difference that a DHW request is disregarded – not used in ATMOS hydraulic diagrams.




**27** – **HPE** - Hydraulic support of the accumulation tank (HBR)

**Function** Hydraulic support of the buffer tank (HBR) uses a three-way valve to temporarily supply the upper part of the buffer rank if this part has not achieved its nominal values, so the connected heating or DHW circuits are preferentially supplied with energy.
If the buffer temperature exceeds the set limit by 2.5 K, the three-way valve will be automatically connected to the bottom part of the buffer tank, so the whole buffer tank can be filled. A new switch-over to the upper part of the tank will occur as soon as the buffer temperature drops by 2.5 K below the nominal temperature of the buffer.

**Application** Partial filling of the buffer with priority supply of the heating circuits and DHW circuits for all the types of filling control modes (see the buffer operation modes 1, 2 and 5)

*Hydraulic function* If the output is inactive (disconnected), the buffer is completely filled (valve position A–AB, the support is off).
If the output is active (connected), just the upper part of the buffer tank is filled (valve position B–AB, support on).

**Switching difference** $SD_{HBR}$: 5 K (fixed setting)
Switch-on**:** Buffer setting + ½ $SD_{HBR}$
**Switch-off: Buffer setting** - ½ $SD_{HBR}$

**41** – **UHK** -Heating/cooling switch – If a heat pump with a cooling function is used in the circuit, the output will activate the cooling switch on activation of the cooling function. Cooling function - see the MIX menu.

**45** - **EHP** - Electric heating of the accumulation tank - the same principle as in par. 3 or 4=45 (see chapter 5.3.3.4). If the required temperature is not achieved at the top sensor of the accumulation tank after expiration of the set time (see the SOURCES menu, par. 11 – EHP switching delay), the output will be activated.
You can set for this electric heating whether it should only be used as a backup source with the antifreeze function, or whether it should act as a full source (see the SOURCES menu, par. 9 – daytime operation of EHP). If it is only selected as a backup source with the antifreeze function, all the required temperatures are set to reduced values (room temperature = , HDW = HDW menu, par.1) regardless of the selected control mode.
If the DHW heater is integrated in the heating system, you can set the summer heating via EHP (see the SOURCES menu, par. 10 – summer DHW heating).

⚠ NOTE The minimum SETPOINT of the accumulation tank must be defined (see the TANK menu, par. 14) > OFF.

**46** - **ETUV** - Controlled electric heating of the DHW tank TUV – the same principle as in par. 2=46. – the output is activated if the demand for DHW is not met and at the same time the source (boiler or accumulation) is not active. The activity of the boiler is characterized by the water temperature (SOLID FUEL, par. 4) or flue gas temperature (SOLID FUEL, par. 18); while in the case of the accumulation tank the tank must be warmer than the DHW tank. If low-tariff charging is used (night electricity rate), the DHW time program for charging to the comfortable temperature must be adapted to charging during this low-tariff period.

Default setting 1

⚠ NOTE Some values that are not described above contain functions that are not directly supported in ATMOS hydraulic diagrams; therefore, you are not recommended to set them.

### 5.3.3.7 HYDRAULIC Menu / par.7 – Variable Output 2 (VO2)

Function Similar settings to par.6 - VO1

### 5.3.3.8 HYDRAULIC Menu / par.8 – Variable Input 1 (VI1)

Function This parameter defines use of Variable Input 1

Value **OFF** – Input empty

**1** – **AF2**- Outdoor sensor 2 – possibility to monitor the outdoor temperature in 2 places

**2** – **WF2** - Boiler sensor 2 (not used)

**3** – **SF2** - Sensor 2 of DHW tank – For complete filling of the hot water tank by means of automatic change of the measurement point between sensors 1 and 2 of the tank (level filling). For the activation of the filling pump the higher of the measured values of the sensors (SF1 or SF2) is used. Filling is stopped on the basis of evaluation of the measured value of the sensor with the lower temperature. The set value of water temperature and specified switching difference are still valid.

**4** - **PF2** - Sensor 2 of buffer – similar to 3, but valid for the accumulation buffer

**5** – **ANF** - Switching contact – If the variable contact has been defined as a switching contact, the corresponding parameter for assignment of the contract to the corresponding heating circuit (i.e. heating circuit that will be addressed by the request contact) is shown in the "System" menu in par. 6,7 and 8. The setting range comprises all the control circuits in the controller (direct circuit, MC-1, MC-2, TUV, ALL), so the switching contact may be assigned to each individual heating circuit or DHW circuit or to all circuits as necessary. The operation modes and settings of switching times are not effective if a switching contact is connected. The corresponding heating circuit only responds to requests from the switching contact. The Manual mode, Outflow Measurement with STB Control and Drying function have a higher priority. Open switching contact is indicated by the “inhibit” chain in the status display; short-circuiting of the contact is identified by the “request” chain.

**Function** The Variable Input VI, which has been defined as a switching contact has the following effects on the heating circuit:

*• Variable input open: no request*

The heating circuit is switched off unconditionally (without frost protection, without the standby mode).

• *Variable input short-circuited: request*
The heating circuit is in the CONSTANT HEATING mode and works on the basis of the settings of this parameter.

**NOTE** **The customer must ensure an adequate level of frost protection for the corresponding control circuit.**

**6** – **SME** - External alarm input – E.g. a safety element may be used; after the activation of the contact the controller will indicate an alarm and an error messages will be saved in the error register.

**7** – **MC** 1 return sensor - It may be used for monitoring return water from the circuits as “Indirect Return Control”; it is implemented with the use of mixing valves in the heating circuits. It only works in heating systems without a bypass pump and without controlled flow mixing. If this function is active, for the control of each of the mixing circuits two values are independently calculated. The first value is the check variable for the set value of the heater flow, the other value is the check variable for the set return value. The check variable used for the control of the mixer (mixer control variable) is obtained by composition of both the values. Then, adaptation of the return temperature is processed preferentially. The indirect return check is only active with the mixing circuit that are also found in the heating mode. A heating circuit in a limited mode is not affected. To avoid an excessive impact mode it is recommended to switch on the connected appliances (heating circuits and DHW circuits) gradually. This function does not have any impact on direct heating circuits.

**8** – **MC** 2 return sensor - similar to value 7

**9** – **RLF** - Return sensor for the bypass pump (RBP) - The simplest way of controlling the flow return temperature consists in using a bypass pump. If the return temperature in the heater drops below the set minimum boiler temperature, flow mixing is activated by starting of the bypass pump connected in parallel to the heater. When the temperature rises above the minimum return temperature of the boiler plus the return switching different, the bypass valve will be switched off with a certain time delay (extended running time of the bypass pump). As the mixing itself is not controlled, the bypass section must be taken into account in the design. As soon as the switch-off conditions are met, the bypass pump is switched off with a certain time delay corresponding to the current setting. .

⚠ **NOTE** **To limit intermittent operation of the bypass pump the return sensor must always be installed after the mixing point for this return temperature control mode.**

**10** – **BrSP** -External switch-off of the boiler – Possibility to disconnect the boiler externally (only valid for automatic boiler - pellet type). If the contact is short-circuited, the boiler is switched off.

*Example:* Switching off by a modem, monitoring sensor (e.g. smoke leak), a safety device, etc.

**11** – **MODEM** - Control via a modem - This arrangement allows you to switch over between the operation modems by phone through a switching modem that will be delivered to the user (for holiday homes, etc.).

**Assignment** The switching modem can be assigned to any of the three variable inputs (VI1...VI3). If a variable input has been assigned to this function, the corresponding parameter switches over the

assignment to the respective heating circuit (the same assignment parameter and area as for the request contact, i.e. the modem either controls the direct heating circuit (DK), circuit 1 (MC-1), circuit 2 (MC-2), DHW heating circuit, or the whole system (ALL), i.e. all the controllers and central units on the data bus.

The operation mode depends on the connection and corresponding input as follows:

**Input VI1(2,3) open**:
normal control (auto, reduced mode, heating, standby mode)

**Input VI1(2,3) short-circuited:**
controller in the standby mode, frost protection of heating and DHW active

**Input VI1(2,3) 2.2 kΩ:**
constant heating

**Input VI1(2,3) 3.0 kΩ:**
constant reduced heating

NOTE You can only assign one mode to one variable input (VI1, VI2 or VI3) of the controller.

⚠ **CAUTION** **Only short-circuit or load the contact with a resistor against the earth potential of the controller!**

**12** - **INFO** - External information - This function may be used to display the value of a sensor that is independent of the controller - a value that is not used by the controller for the control

**13** – **SVLF** - Common flow sensor - This function may be used for the control of another source of heat connected in a cascade (not supported).

**14** – **KRLF** - Return sensor of the solar circuit - This function may be used to measure the heat energy of the solar circuit.

**16** – **AGF** - Flue gas sensor – Only for boiler type 4. This value is assigned to VI1 in a fixed way if you define hydraulic example no. 17,19 or 20.

**18** – **FPF** - Bottom sensor of the accumulation tank – used in case when e.g. the KSPF sensor is used for solar charging of another tank (usually solar heating of a bivalent DHW tank) than that charged by the automatic (pellet) boiler – it is connected to the accumulation tank.

**19** – **PF** - Top sensor of the buffer - This value is fixed for hydraulic diagrams with an accumulation tank.

### 5.3.3.9 HYDRAULIC Menu / par.9 – Variable Input 2 (VI2)

Function This parameter defines Variable Input 2.
Note Value 19 (top sensor of the accumulation tank) is automatically assigned if you use hydraulic diagrams 4,12 and 20

### 5.3.3.10 HYDRAULIC Menu / par.10 – Variable Input 3 (VI3)

Function This parameter defines Variable Input 1
Note Value 19 (top sensor of the accumulation tank) is automatically assigned if you use hydraulic diagrams 3,10 and 19

### 5.3.3.11 HYDRAULIC Menu / par.11 – Indirect return control

Function See the HYDRAULIC menu / par. 8,9,10 = value 7 or 8

Value OFF, ON

### 5.3.4 SYSTEM Menu

Parameters in this menu refer to the general limit parameters and preset values of the heating system, building character and basic control of the controller.

#### 5.3.4.1 SYSTEM Menu - overview of parameters

| Parameter | Description | Setting range / Setting values | Default setting | Setting |
|---|---|---|---|---|
| Language | Language selection | D German<br>GB English<br>F French<br>I Italian<br>NL Dutch<br>CZ Czech<br>H Hungarian<br>PL Polish<br>RO Rumanian<br>E Spanish<br>S Swedish<br>N Norwegian<br>TR Turkish<br>RUS Russian<br>P Portuguese | CZ | |
| TIME PROGRAM | Number of enabled time program | P1 Only one time program enable<br>P1-P3 Three switching time programs enable | P1 | |
| MODE | Enabling the setting of separate control modes | 1 Common setting for all the heating circuits<br>2 Separate setting for individual heating circuits | 1 | |
| SUMMER | Limit temperature for summer switch-off | OFF No function<br>10 ... 30 °C | 20 °C | |
| 05 | Frost protection temperature | OFF No function<br>-20 ... +10 °C | 3 °C | |
| 06 | Switching contact module for VI1 | 2 Mixing circuit 1 (MC1)<br>3 Mixing circuit 2 (MC2)<br>4 Hot water for the household<br>ALL Complete controller | 2 | |
| 07 | Switching contact module for VI2 | Settings - see parameter 06 | 1 | |
| 08 | Switching contact module for VI3 | Settings - see parameter 06 | 1 | |
| 09 | Climate zone | -20 ... 0 °C | -12 °C | |
| 10 | Building type | 1 Light structure<br>2 Medium structure<br>3 Heavy structure | 2 | |
| 11 | Automatic return time (return to the basic display) | OFF No automatic return<br>0.5 ... 10 min Automatic return to the basic display after the set time | OFF | |
| 12 | Anti-blocking protection | ON Active<br>OFF Inactive | ON | |
| 13 | Display of logical alarms | OFF, ON | OFF | |
| 14 | Automatic setting function | OFF, ON | OFF | |
| 15* | Password for the technician | OFF Password disabled<br>0001 … 9999 | 1234 | |
| 18 | Enabling the cycle temperature | OFF Cycle temperature disabled<br>ON Cycle temperature enabled | ON | |
| 19 | Frost protection mode | OFF Permanent frost protection as per parameter 5<br>0.5…60 min. Cyclic operation | OFF | |
| 21* | RTC adjustment | -10 … 10 sec. | 0 sec. | |
| 23 | End user password | 0000, …., 9999 | OFF | |
| 29 | | | | |
| PARA RESET | Parameter reset | | | |

*OEM

### 5.3.4.2 SYSTEM Menu / par. 1 - Language selection

**Function** For the display of all information on the screen you can select several world languages.

**Default setting** Czech

**Setting range**

| No. | Abbrev. | Language | No. | Abbrev. | Language |
|---|---|---|---|---|---|
| 1 | DE | German | 9 | CZ | Czech |
| 2 | GB | English | 10 | PL | Polish |
| 3 | FR | French | 11 | RO | Rumanian |
| 4 | IT | Italian | 12 | RU | Russian |
| 5 | NL | Dutch | 13 | TR | Turkish |
| 6 | ES | Spanish | 14 | S | Swedish |
| 7 | PT | Portuguese | 15 | N | Norwegian |
| 8 | HU | Hungarian | | | |

### 5.3.4.3 SYSTEM Menu / par. 2 - Time Programs

**Function** This parameter determines the possibility of setting program blocks for weeks.
**Default setting** P1

**Setting range** P1 – one-week time program
P1-P3 – three-week time program

**Settings** P1: Program 1 enabled, programs 2 and 3 = disabled
P1-P3: All 3 programs enabled

**Effect** Besides the above mentioned setting enabling of programs P1 to P3 provides the following possibilities of setting different operation modes for individual time programs"

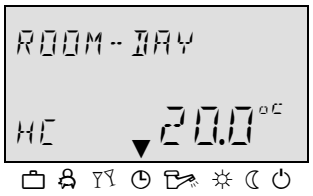
### 5.3.4.4 SYSTEM Menu / par. 2 - Operation Mode

**Function** The Operation Mode determines common or separate setting of values of the mixing circuits and DHW.
**Default setting** 1
**Setting range** 1,2
**Setting values**
1 The selected setting (operation mode, daytime temperature, night time temperature) is common for all the heating circuits .
2 You can assign a separate setting (operation mode, daytime temperature, night time temperature) to each heating circuit.

This parameter determines the control mode and influences:
- The operation mode selected with the “Operation Mode” key
- They daytime temperature selected with the “Daytime Temperature” key
- The night time temperature selected with the “Night Time Temperature” key"
with regard to the effect on different heating circuits.

### 5.3.4.4.1 Different daytime temperature of individual heating circuits

**Function**




If the operation mode is set to 2, the respective set value only refers to the selected HC (non-mixing circuit), MC 1 (= mixing circuit 1), or MC 2 (= mixing circuit 2).

**Setting:**

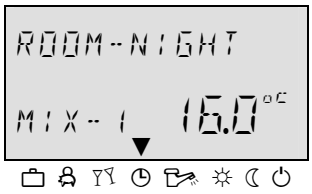
- Press the “Daytime Temperature” key.
- Select the desired heating circuit HC, MC-1 or MC-2 with the use of the rotary button.
- Confirm the selected circuit by pressing the rotary button.
- Set the flashing value of room temperature by turning the rotary button to the required value.
- Confirm the set value by pressing the “Daytime Temperature” key or the rotary button).

.

**Default setting** 20 °C
**Setting range** 5 ... 30 °C

### 5.3.4.4.2 Different night-time temperature of individual heating circuits

**Function**




If the operation mode is set to 2, the respective set value only refers to the selected HC (non-mixing circuit), MC 1 (= mixing circuit 1), or MC 2 (= mixing circuit 2).

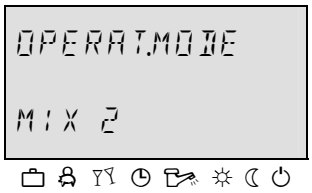
**Setting:**

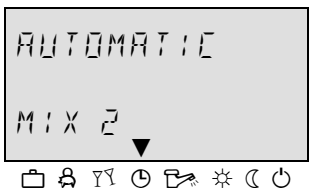
- Press the “Night Time Temperature” key.
- Select the desired heating circuit HC, MC-1 or MC-2 with the use of the rotary button.
- Confirm the selected circuit by pressing the rotary button.
- Set the flashing value of room temperature by turning the rotary button to the required value.
- Confirm the set value by pressing the “Night Time Temperature” key or the rotary button.

**Default setting** 16 °C
**Setting range** 5 ... 30 °C

### 5.3.4.4.3 Separate operation mode of the heating circuits

**Function**




If the operation mode is set to 2, the respective operation mode only refers to the selected HC (non-mixing circuit), MC 1 (= mixing circuit 1), or MC 2 (= mixing circuit 2).

**Setting:**

- Press the “Operation Mode” key.
- Select the desired heating circuit, i.e. MC-1 or MC-2, with the use of the rotary button.
- Confirm the selected circuit by pressing the rotary button.
- Set the flashing operation mode value by turning the rotary button to the desired value.
- Confirm the set value by pressing the “Operation Mode” key or the rotary button.
- In the case of short-term operation modes (Holiday, Absence, Party) set the required target value by pressing the rotary button and confirm the set value as described above.

### 5.3.4.5 SYSTEM Menu / par. 4 - Summer - Summer switch-off

**Function** This parameter determines automatic ending of the heating season on the basis of the outdoor temperature in accordance with the following criteria:

**Indication on the display** PARASOL

**Abrupt increase of outdoor temperature**

If the average value of outdoor temperature is below the set limit and the current outdoor temperature is 2 K higher than the set limit, the heating is off.

**Slow increase of outdoor temperature**

Heating switch-off is enabled if the average and current outdoor temperature exceed the set limit value.

**Switching off the heating limit**

Heating switch-off is disabled if the average and current outdoor temperature drop below the set limit value plus 1 K.
The summer heating switch-off function is also disabled:

- In case of failure of the outdoor sensor
- If the frost protection is active

NOTE If parameter no 12 of the SYSTEM MENU = ON (ANTI-BLOCKING function), in case heating is switched off for more than 24 hours (Standby mode, Manual summer mode, Summer Switch-off), all the pumps are activated for 20 s to be protected from getting stuck due to corrosion. The mixing valves are open temporarily for this period.

In connection with another outdoor temperature sensor the heating switch-off function uses the average outdoor temperature measured by both the outdoor sensors.

**Default setting** 20 °C

**Setting range** OFF, 0,5 ... 40 °C

### 5.3.4.6 SYSTEM Menu / par. 5 – Frost protection of the system

**Function** To prevent freezing of the system in the reduced mode the controller is equipped with electronic frost protection.

**Indication on the display** SNOWFLAKE ❄

#### 5.3.4.6.1 Operation without temperature indication in the room

If the outdoor temperature (current value) drops below the set limit, the heating is switched on again. Heating is stopped in the outdoor temperature exceeds the set limit by 1 K.

#### 5.3.4.6.2 Operation with temperature indication in the room – see the MC1 / 2 menu, par.8

As long as the temperature in the room is higher than the set limit, the heating circuit pumps work if the outdoor temperatures remain below the set limit.

If the room temperature drops below the set room limit, the heating is renewed.

Heating is switched off if the temperature in the room exceeds the set room limit by 1 K. If at this moment the outdoor temperature is still below the frost protection limit, the pumps of the heating circuit remain active.

NOTE If not all the heating circuits are operated with temperature indication in the room, each heating circuit can be assigned a different frost protection function. If e.g. a mixing circuit is operated with temperature indication in the room and the direct heating circuit is not, the heating curve of the direct circuit and the temperature value in the room must be set as low as possible.

In connection with another outdoor sensor the frost protection is activated when the reading of one of the sensors drops below the frost protection limit.

In case of a failure of an outdoor sensor the frost protection is permanently active.

⚠ **NOTE** **In connection with the room sensor and active frost protection the thermostat function is not enable - see the MC1 / 2 menu, par 9.**

### 5.3.4.7 SYSTEM Menu / par. 6,7 and 8 – External contact at a variable input

NOTE Parameter 6 refers to VI 1
Parameter 7 refers to VI 2
Parameter 8 refers to VI 3

**Function** If an external control contact designed for the control of circuits is connected to variable input VI1,2 or VI3, this parameter defines what the contact will control.

**Default setting** OFF

**Setting range** OFF, 1…..ALL

**Setting values** 1 – Non-mixed circuit
2 – Mixing circuit 1 (MC 1)
3 – Mixing circuit 2 (MC 2)
ALL – Complete controller

NOTE See the Hydraulic menu, par 8,9 and 10

### 5.3.4.8 SYSTEM Menu / par. 9 – Climate zone

**Function** The climate zone is the lowest outdoor temperature value that can be expected.

For the heat coverage demand this value is taken over as the base for the design of the heating system.

This parameter defines the corresponding steepness of the heating characteristic of the heating system with regard to the climate zone.

**Setting range** -20°C…0°C

**Default setting** -12°C

### 5.3.4.9 SYSTEM Menu / par. 10 – Building type

**Function** This parameter takes into account the corresponding building type within various calculation methods for determination of the average value of outdoor temperature depending on the setting.

*Light structure* The average value is obtained during 2 hours.

**Use:** Wooden houses, light brick houses

*Medium structure* The average value is obtained during 8 hours.

**Use:** Medium masonry or brick

*Heavy structure* The average value is obtained during 24 hours.

**Use:** Heavy masonry or natural stone

**Setting values**
1 – Light structure
2 – Medium structure
3 – Heavy structure

### 5.3.4.10 SYSTEM Menu / par. 11 – Automatic return time

**Function** After the end of work the control unit automatically returns to the basic display after a preset time period. The return time is also applied to the keys, operations in the selection level and entering the code.

**Setting range** OFF, 0.5 min … 5 min

### 5.3.4.11 SYSTEM Menu / par. 12 – Anti-blocking protection

**Function** If this function is active, all the pumps are started daily for the period of approx. 20 seconds to be protected from blocking due to corrosion during longer periods of inactivity (> 24h). During these activation periods all the mixing valves are temporarily open.

**Setting range** OFF, ON

### 5.3.4.12 SYSTEM Menu / par. 13 – Display of logical alarms

Note This parameter defines displaying of logical alarms.
See the ALARMS menu.

**⚠ NOTE** **If an alarm input is connected to the contact of a variable output (e.g. a modem, safety device, etc. - see also the Hydraulic menu, par. 6/7, value 13, this message will be sent by the modem as defined.**

### 5.3.4.13 SYSTÉM Menu / par. 14 – AUTO SET

**Function** The controller with a defined hydraulic diagram looks for sensors that are preset from the production; if these sensors and inputs are not connected, they are indicated as alarms. This parameter is used to deactivate the corresponding sensors.

Note The AUTO SET function is only active during the start-up of the unit.

#### 5.3.4.13.1 Possibility of calling the AUTO SET function

##### 5.3.4.13.1.1 Automatic calling

If the start-up date has not been saved yet, the connected or disconnected sensors are automatically registered as soon as the unit is switched on. Error messages of sensors (e.g. a short-circuit) are suppressed at this stage. After saving of the start-

up date changes of sensor settings are only possible with the Manual Set function. The AUTO SET may be enabled any time by the parameter.

#### 5.3.4.13.1.2 Manual calling

Manual calling of the AUTO SET function is possible any time. Calling is activated by pressing of the rotary button during the display of the version until the AUTO SET function appears on the display. The unit is only switched over to the basic display after the execution of the function.

#### 5.3.4.13.1.3 Overview of inputs

A change of the assignment of functions with the AUTO SET function can only be performed with reference to the following inputs and selected configuration:

| Input | | Started only if | |
|---|---|---|---|
| Outdoor sensor | (AF) | | |
| Flow sensor 1 | (VF1) | MC1: | OFF / Mixing circuit valve |
| Flow sensor 2 | (VF2) | MC2: | OFF / Mixing circuit valve |
| DHW sensor | (SF) | SLP: | OFF / Tank filling valve |

Currently set values are checked in advance, so the possibility of setting a wrong configuration with the AUTO SET function is prevented. A change is only executed if one of the above mentioned settings is feasible.

⚠ **NOTE** **If this function is active and e.g. a sensor gets damaged, the function and control of the corresponding circuit will be switched off.**

### 5.3.4.14 SYSTÉM Menu / par. 15 – Installer Code

**Function** Possibility to set a password for the installer – entering the higher level, see 5.2

**Setting range** 0000 – the level is permanently unlocked and accessible
001 1... 9999 – the level only becomes accessible after entering of the code (entering the code - see the rotary button)

**NOTE** OEM only

### 5.3.4.15 SYSTEM Menu / par. 18 – Disabling the cycle temperature on the time program level

Within the programming of switching times the technician may set a system parameter for disabling the corresponding room or water temperature in the cycle.

**Function** The “ON” setting will cause that the control of the respective circuit will be based on the cycle temperatures saved in the switching cycles.

“OFF” setting:

- During programming of switching times all cycle temperatures are disabled.
- The nominal room and DHW temperatures exclusively depend on the daytime room temperature or the DHW heating temperature.

⚠ **NOTE** **All the connected room units respond identically to the parameter change in the central unit.**

### 5.3.4.16 SYSTEM Menu / par. 19 – Cyclic frost protection

**Function** Possibility of cyclic protection with the active parameter 5 of the SYSTEM menu.

**Setting range** OFF – with the frost protection active the system is constantly protected (ON)
0.5 min … 60 min – the system works in the set cycle

### 5.3.4.17 SYSTÉM Menu / par. 21 – Time correction

**Function** If a time shift occurs in the controller, you can set time correction, when at 01:01:10 the set value is added to correct the controller time

**NOTE** OEM only

### 5.3.4.18 SYSTEM Menu / par. 23 – User lock

**Function** Possibility to lock the keypad of the controller; the unit can only be controlled after entering the code, see 5.2

**Setting range** 0000 – all the keys are active
001 … 9999 – the keys are only unlocked after entering of the code (password)

### 5.3.4.19 SYSTEM Menu / par. 29 – Curve without an outdoor sensor

**Function** If the outdoor sensor gets damaged, the controller will automatically enter the winter mode. In case of heating demand the heating curve is determined on the basis of the set temperature and the frost protection is active (see 5.3.4.6).

**Setting range** OFF – with the frost protection active the system is constantly protected (ON)
0.5 min … 60 min – the system works in the set cycle

### 5.3.4.20 Parameter reset

With the use of the Parameter Reset function you can restore the default setting in case of a wrong entry in the parameter menu.

⚠ **CAUTION** **After the reset all the parameters will return to the default values.**

**Setting:**

- When the “PARAM-RESET” indication flashes on the display, press the rotary button.
- The indication of readiness for the reset (SET) will appear.
- Press the rotary button for approx. 5 seconds.

If the reset is successful, “RESET OK” will appear immediately.

### 5.3.5 Domestic Hot Water (DHW) Menu

This menu contains all parameters necessary for DHW heating with the exception of the time program.

NOTE This menu can only be invoked if a charging or circulation pump for DHW heating is defined.

#### 5.3.5.1 DHW Menu - overview of parameters

| Par. | Description | Setting range / Setting values | Default setting | Setting |
|---|---|---|---|---|
| DHW NIGHT | Reduced DHW temperature | 10 °C ... Normal DHW temperature | 40 °C | |
| LEGION. PROT. | Day of legionella protection | OFF No legionella protection<br>Mo ... Su Legionella protection on the specified day<br>ALL Everyday legionella protection | OFF | |
| 03 | Time of legionella protection | 0 ... 23 h | 02:00 | |
| 04 | Temperature for legionella protection | 10 °C ... max. DHW temperature | 65 °C | |
| 05 | Type of DHW temperature measurement | 1 DHW temperature sensor<br>2 DHW temperature controller (thermostat) | 1 | |
| 06 | Max. DHW temperature limit | 20 °C ... max. DHW temperature | 65 °C | |
| 07 | DHW operation mode | 1 Parallel mode<br>2 Priority mode<br>3 Conditioned priority<br>4 Weather-responding parallel mode<br>5 Priority mode with auxiliary heating<br>6 Priority OFF<br>7 External operation | 1 | |
| 08 | Tank discharge protection | OFF Without discharge protection<br>ON Discharge protection active | ON | |
| 09 | Parallel operation of the heater during DHW loading | 0 ... 50 K;<br>Difference between the loading and set DHW temperature | 15 K | |
| 10 | Switching difference of DHW heating | 0 ... 20 K; | 5 K | |
| 11 | Extended operation time of DHW pump | 0 ... 60 min | 5 min | |
| 12 | Time program of the circulation pump | AUTO Active DHW time program<br>1 P1, Direct heating circuit<br>2 P2, Direct heating circuit<br>3 P3, Direct heating circuit<br>4 P1, Mixing circuit 1<br>5 P2, Mixing circuit 1<br>6 P3, Mixing circuit 1<br>7 P1, Mixing circuit 2<br>8 P2, Mixing circuit 2<br>9 P3, Mixing circuit 2<br>10 P1, DHW circuit<br>11 P2, DHW circuit<br>12 P3, DHW circuit | AUTO | |
| 13 | Reduced circulation pump interval | 0 min ... Parameter 14 setting 14; the operation time of the circulation pump lies in the reduced interval | 5 min | |
| 14 | Reduced interval (duration period) | 10 ... 60 min | 20 min | |
| 17 | Boiler operation during the extended running time of the pump | AUTO / OFF | AUTO | |

#### 5.3.5.2 DHW Menu / par. 1 - Reduced DHW temperature

**Function** This parameter determines the reduced temperature in the DHW buffer in the reduced mode.

**Default setting** 40 °C

**Setting range** 10 °C ... comfortable DHW temperature

NOTE If a thermostat is used to measure DHW temperature, this parameter is skipped.

### 5.3.5.3 DHW Menu / par. 2 - Day of DHW protection from legionella

**Default setting** OFF

**Setting range** OFF, MO to SU, ALL

**Setting values**
OFF: The legionella protection function is not active.
MO – SU Legionella protection is activated on the selected weekday at the time that is set by the installation technician together with various parameters.

ALL: Legionella protection is activated every day at the selected time.

NOTE If a hot water thermostat is used to measure the heater temperature, this parameter is skipped.

### 5.3.5.4 DHW Menu / par. 3 - Time of DHW protection from legionella

**Default setting** 02:00

**Setting range** 00:00…23:00

NOTE If the starting temperature for heating is achieved, one-off heating of the buffer will be performed.

### 5.3.5.5 DHW Menu / par. 4 - Temperature of legionella protection

**Default setting** 65°C

**Setting range** 10°C…maximum DHW temperature, see par. 6

NOTE If the starting temperature for heating is achieved, one-off heating of the buffer to the set temperature, which should be higher than 50°C to destroy legionella, will be performed.

### 5.3.5.6 DHW Menu / par. 5 – DHW temperature measurement type

Function This function defines the type of temperature measurement in the hot water tank.

Usually, an electronic temperature sensor (submersible sensor in the tank) that uses variable resistance of the sensor at different temperatures is used for this purpose.

Another possibility consists in using a mechanical thermometer (thermostatic switching contact). The thermostat is connected to the SF input of the tank and is set to the required nominal temperature. If the contact is controlled by the signal from a sensor in the tank (connected contact), the tank is filled with water with the set maximum temperature until the contact is disconnected again.

NOTE By the water temperature control with the use of a thermostat current water temperature cannot be measured and registered and therefore it will not be displayed as a port of system information. Nominal water temperatures cannot be set either.

**Default setting** 1

**Setting range**
1 – DHW temperature sensor
2 – Thermostat

### 5.3.5.7 DHW Menu / par. 6 – Maximum DHW temperature

**Default setting** 65°C

**Setting range** 20°C…maximum DHW temperature - see par. 6

NOTE If the starting temperature for heating is achieved, one-off heating of the buffer to the set temperature, which should be higher than 50°C to destroy legionella, will be performed

### 5.3.5.8 DHW Menu / par. 7 – DHW operation mode

Function This function defines how the heating system will respond to heating demand from the DHW tank. There are 5 possible settings.

**Default setting** 1

**Setting range** 1…7

**Values**

**1 - Parallel mode**
During tank loading the heating circuit remains active.

**2 - Priority mode**
During loading of the tank the heating circuits are put out of operation and they are activated again after the expiration of the extended running time of the loading pump.

**3 - Conditional priority**
During tank loading the heating circuits remain off until the temperature in the heater achieves the current DHW value minus half the switching difference of the burner. The heating circuits will be enabled on the basis of the following criteria:

*Enabling the heating circuits:*
Current heating circuit temperature > DHW setting + switching difference of DHW/2 + 10K

*Disabling the heating circuit:*
Current heating circuit temperature < DHW setting + switching difference of DHW/2 + 5K

NOTE In this operation mode loading of the filling temperature of the tank must be set in such a way that the heater should not be switched off before enabling of the heating circuits. For proper execution of this function the parallel shift must be set to at least 10K.

**4 - Parallel weather-responding mode**
Above the set frost protection limit DHW is operated in the priority mode; in the case of active frost protection a switch to the parallel mode is available.

**5 - Priority mode with auxiliary heating**
With this setting the DHW loading time is limited to 20 minutes to allow 10-minute auxiliary heating. The loading process continues after the end of the auxiliary heating. DHW loading and auxiliary heating are carried out in turns until the DHW tank is full.

**6 - Valve switching priority**
The tank is filled with the use of a three-way switching valve; the heating circuit pump serves as the DHW loading pump at the same time. After the termination of DHW loading and the

expiration of the extended running period the three-way valve is switched back to the heating mode.

The heating circuit pump is connected to the DKP output and the three-way valve to the SLP output in this case.

**7 - External operation (the demand does not influence the heater and heating circuit)**
In the external operation mode hot water loading is only switched on the basis of the set switching difference. There is no heating demand for the heater or priority mode of the tank for heating circuits. The Parallel Boiler Operation, Tank Discharge Protection, Extended Pump Running Time and Boiler Switch-on Protection parameters do not have any impact on the DHW loading pump.

**8 - Conditional parallel operation for the mixing circuits**
This function is only used for municipal heating controller.

**Function** The function is the same as for the DHW priority operation (setting 2) with the difference that the hybrid heating circuits (mixing circuit control, constant control, fixed value control) can still be reset to their nominal values. In the course of hot water filling the heating circuits send the nominal values to the energy control system. The mixing circuits must operate on the temperature set by the demand. Direct heating circuits remain off.

Hot water loading with priority operation takes priority in the system. In this case the mixer must be switched off.

⚠ **NOTE** **If the water temperature is set above 60°C, this function should not be activated to prevent safety swinging off (mainly in case of heaters with a low water capacity).**
In case of filling from buffer tanks the discharge protection of the tank must be set adequately.

**Default setting** 1

**Setting range** 1…8

NOTE If the starting temperature for heating is achieved, one-off heating of the buffer to the set temperature, which should be higher than 50°C to destroy legionella, will be performed.

NOTE If the set DHW value is not achieved after 4 hours, the display indicates an alarm.

## 5.3.5.9 DHW Menu / par. 8 - Tank discharge protection

Function With the discharge protection activated and received demand from the DHW circuit the loading pump is only on of the temperature in the heater rises by more than 5 K above the current temperature in the hot water tank.
This measure prevents any secondary discharging of the tank via the heater. As soon as the temperature difference between the heater and the DHW tank drops below 2 K, the loading pump is switched off again.

NOTE The minimum temperature limit of the heater is constantly active to protect the heater and to block the water loading pump in cases the temperature drops below the set value.

**Default setting** ON

**Setting range** OFF / ON

### 5.3.5.10 DHW Menu / par. 9 – Parallel heater operation during DHW loading

Function — This function defines the difference between the loading and demanded DHW temperature.

If there are several control units connected via a bus and several DHW circuits whose tanks are filled simultaneously, the tank filling temperature depends on the highest of the set values.

**Default setting** — 15 K

**Setting range** — 0…50K

### 5.3.5.11 DHW Menu / par. 10 – DHW switching difference

Function — This function defines the amount of the switching difference of DHW. The switching difference then symmetrically influences the set DHW value.

**Default setting** — 5 K

**Setting range** — 0…20K

### 5.3.5.12 DHW Menu / par. 11 – Extended operation time of the DHW pump

Function — The loading pump of the tank is stopped after the switch-off of the heater with a certain time delay to prevent safety deactivation of the heater due to an increased temperature. The setting can be adjusted with regard to the DHW tank capacity.

**Default setting** — 5 min

**Setting range** — 0…60min

### 5.3.5.13 DHW Menu / par. 12 – Time program assigned to the circulation pump

Function — In this function the DHW circulation pump may be associated with an existing automatic program of the control circuit with regard to the switch-off and switch-on times. During the heating or DHW cycles of the selected circuit and program the DHW pump is in operation.

**Default setting** — AUTO

**Setting range**

| | |
|---|---|
| AUTO | - Active time program of DHW |
| 1 | P1, Direct heating circuit |
| 2 | P2, Direct heating circuit |
| 3 | P3, Direct heating circuit |
| 4 | P1, Mixing circuit 1 |
| 5 | P2, Mixing circuit 1 |
| 6 | P3, Mixing circuit 1 |
| 7 | P1, Mixing circuit 2 |
| 8 | P2, Mixing circuit 2 |
| 9 | P3, Mixing circuit 2 |
| 10 | P1, DHW circuit |
| 11 | P2, DHW circuit |
| 12 | P3, DHW circuit |

### 5.3.5.14 DHW Menu / par. 13 – Reduced mode interval (Pulse)

Function The use of the reduced mode interval minimizes usual circulation losses thanks to adjustable switching intervals during operation and determines the running time of the DHW circulation time during the adjustable period (reduced mode interval).

**Default setting** 5 min

**Setting range** 0…par.14 – the operation time of the pump lies in the reduced mode interval

### 5.3.5.15 DHW Menu / par. 14 – Reduced mode interval (Period)

Function This parameter defines the period length and thus the pause duration in the impulse mode of the circulation pump.

Reduced mode interval $_{Pause}$ = Reduced mode interval $_{Period\ duration}$ – Reduced mode interval $_{Pulse}$ –

The switching interval is calculated from the following equation:
n = Impulse time / Period duration x 100 (%)

**Example:** With the reduce mode pause of 15 min and period of 10 min the circulation pump will run 5 minutes before the subsequent 15-min pause.

The utilization coefficient *n* is calculated as: *n* = 5 / 20 = 25 %

**Default setting** 20 min

**Setting range** 10 min…60 min

### 5.3.5.16 DHW Menu / par. 17 – Boiler operation during the run of the DHW circulation pump

Function This parameter defines whether the heater will be on during operation of the circulation pump.

**Default setting** AUTO

**Setting range** AUTO / OFF

### 5.3.5.17 DHW Menu / par. 26 – Switch-off charging differential

**Function** The value of the parameter determines the difference between the charging temperature from the source and the charged temperature in the DHW heater. If the difference is lower than the set value, the SLP charging pump is switched off.

Default setting 2 K

Setting range 1…..par.27

**NOTE** The parameter is only valid if par.8=ON

### 5.3.5.18 DHW Menu / par. 27 – Switch-on charging differential

**Function** The value of the parameter determines the difference between the charging temperature from the source and the charged temperature in the DHW heater. If the difference is higher than the set value, the SLP charging pump is switched on.

Default setting 5 K

Setting range 26…..10K

**NOTE** The parameter is only valid if par.8=ON

### 5.3.6 MIX.VALVE - 1 Menu

This menu is displayed after activation of the corresponding parameter, see the HYDRAULIC menu and contains all parameters necessary for programming of the heating circuits. Max. 2 mixing circuits per controller (mixing circuit 1 and mixing circuit 2) are available as heating circuits.
The heating circuit parameters described below are available for each heating circuit and are set separately.

#### 5.3.6.1 MIX 1 Menu - overview of parameters

| Parameter | Description | Setting range / Setting values | Default setting | Setting |
|---|---|---|---|---|
| MOD | Reduced heating mode | ECO Switch-off mode<br>RED Reduced mode | ECO | |
| HEAT SYSTEM | Heating system (exponent) | 1.00 ... 10.00 | 1.10 | |
| 03 | Room unit function | OFF Heating temperature display, room sensor OFF, operation active<br>1 Room temperature display, room sensor active, operation active<br>2 Room temperature display, room sensor active, operation OFF<br>3 Room temperature display, room sensor OFF, operation active | OFF | |
| 04 | Room factor | OFF ... 500 %<br>RC Room controller active | OFF | |
| 05 | Heating curve adaptation | OFF, ON | OFF | |
| 06 | Optimization activation | OFF, 1 ... 8 h | OFF | |
| 07 | Heating limit | OFF, 0.5 … 40 K | OFF | |
| 08 | Frost protection limit | 5 ... 30 °C | 10 °C | |
| 09 | Room thermostat function | OFF, 1 ... 5 K | OFF | |
| 10 | Outdoor temperature assignment | 0 Control by mean value of outdoor sensors 1 + 2<br>1 Control by outdoor sensor 1<br>2 Control by outdoor sensor 2 | 0 | |
| 11 | Set constant temperature value | 10 ... 95 °C; | 20 °C | |
| 12 | Minimum temperature limit | 10 °C ...<br>Maximum temperature limit (parameter 13) | 20 °C | |
| 13 | Maximum temperature limit | Min. temperature limit setting (parameter 12 ...<br>WEZ parameter 30 | 75 °C | |
| 14 | Increasing the source SET-POINT | 0 ... 20 °C | 8 °C | |
| 15 | Extended pump running time | 0 ... 60 min. | 5 min | |
| 16 | Compensation (drying) heating function | OFF, 1, 2, 3 | OFF | |
| 17 | Return temperature limit | 10 ... 90 °C | 90 °C | |
| 18 | Proportional band $X_P$ | 1 ... 50 %/K | 5.0 %/K | |
| 20 | Integral action time Tn | 1 ... 600 sec. | 180 sec. | |
| 21 | Drive running time | 10 ... 600 sec. | 120 sec. | |
| 22* | Drive function in the end position | 1 Constant control signal in the end position<br>2 Control signal suppressed in the end position (drive without current) | 2 | |
| 23 | only SDW20 | 1 … 50%/K | 8 %/K | |
| 24 | only SDW20 | 5…240 min | 35 min | |
| 25 | Holiday Mode | STBY, REDU | STBY | |
| 26 | Dynamic protection (VF) | OFF, 1-by WF, 2-by PF | OFF | |
| 50 | Cooling starting point | OFF, 15…45 | OFF | |
| 51 | Max. cooling temperature | 15…..45 | 35°C | |
| 52 | Required flow temp. at par. 50 | 7…..30 | 18°C | |
| 53 | Required flow temp. at par. 51 | 7…..30 | 24°C | |
| 54 | Required room temp. at par. 50 | 15…30 | 23°C | |
| 55 | Required room temp. at par. 51 | 15…30 | 28°C | |
| 56* | Cooling limitation | 7……24 | 18°C | |
| Heating circuit name | | | | |

*OEM

### 5.3.6.2 MIX.VALVE - 1 Menu / par. 1 - Reduced mode type

**Function** In the reduced mode you can choose from two reduced mode types:

**Default setting** ECO

**Setting range** ECO, RED

**Setting values** RED (reduced mode)

In the reduced mode the heating circuit pump remains active. The flow temperature is determined on the basis of the corresponding reduced heating characteristic in accordance with a reduce temperature in the room. The temperature will not drop below the set lower limit.

**Use:** Buildings with low insulation values and high heat losses.

ECO (switch-off mode)

In the reduced mode the direct heating circuit is completely off if the outdoor temperatures are higher than the set frost protection. The heating circuit pump is switched off with a short delay to avoid overheating of the boiler due to heat inertia (extended running time of the pump).

**Use:** Buildings with high insulation values

**NOTE** The above mentioned mode also applies to these operation modes: *Absence* and *Constant reduced mode*.

### 5.3.6.3 MIX.VALVE - 1 Menu / par. 2 - Heating exponent (heating curve inclination)

**Function** This parameter refers to the heating system type (floor heating, heating elements, hot air circulation).

Depending on the heating system type the following settings are recommended:

| | |
|---|---|
| 1,10 | Slowly rising heating curve for floor or other systems of area heating. |
| 1,30 | Normally rising heating curve for systems with heating elements with *m*-values between 1.25 and 1.35. |
| 2,00 | Rising heating curve for systems with hot air circulation and panel heating. |
| >3,00 | Very fast growing heating curve for the use of ventilation with a high initial temperature. |

**Default setting** 1.10 (floor heating) for mixing circuits

**Setting range** 1.00 ... 10.00

### 5.3.6.4 MIX.VALVE - 1 Menu / par. 3 - Influence of a room with a room unit

**Function** Depending on the application this function defines enabling of a room sensor in the room unit or enabling of a room sensor connected to the direct heating circuit and all parameters concerning room temperature measurement.

**Default setting** OFF…3

**Setting range** **1 -** *Room sensor active*
With the room sensor ON the heating circuit is controlled in the mode responding to the weather with regard to the current room temperature. The room temperature

deviation is considered in accordance with the setting of the “Room factor” parameter.

- If an SDW 20 room unit is connected, in the basic display the screen shows the current room temperature instead of the heater temperature.
- If the current temperature in the room drops below the nominal room temperature + 1K, the Summer Switch-off function is deactivated (unless the Automatic Mode has been selected).

**2 -** *Room sensor active, operation off:*
This setting allows work with the room temperature functions of operation through the room unit is disabled.

**Use** Public buildings (government, schools, public institutions, etc.), where just room temperature recording is required.

**3 -** *Room sensor off, operation active:*
In this setting the room sensor is only used to measure the current temperature in the room and does not have any impact on the functions influencing the room temperature. The room unit can be operated without any limitation.

**Use** All system configurations that exclude room influence while displaying of the current room temperature is still required (in contradiction to the OFF setting).

GB

### 5.3.6.5 MIX.VALVE - 1 Menu / par. 4 – Room factor of the heating circuit

**Function** This function defines the range in which the difference between the room temperature and the set value influences control of the boiler flow temperature.

If there is no difference between the target and actual room temperature, the flow temperature of the direct heating circuit is controlled in accordance with the set heating characteristic.

If there is a difference between the room temperature and target temperature, the course of the heating characteristic is shifted in parallel with the room temperature axis to compensate the difference. The amount of the shift depends on the room factor setting.

The following relationship applies:

$$\text{Corrected value} = \text{adapted value} - \frac{\text{difference} \times \text{room factor}}{100}$$

**Example**

Adapted room value = 21 °C
Actual room value = 20 °C
Difference = – 1 K
For 100% room influence:

$$\text{Corrected value} = 21\ °C - \frac{-1K \cdot 100}{100} = 22\ °C.$$

The boiler temperature is controlled in accordance with the heating characteristic that corresponds to the set room temperature value of 22 °C.

High setting values cause faster adaptation of the deviation while they reduce the stability of the control circuit and too high values may even lead to oscillation of the control value (= room temperature).

In this setting the respective heating circuit can be controlled through a room unit. This requires a SDW room unit with the room temperature control function. The room unit directly determines the required flow value and transmits this information to the central unit.

**"RC" value** - In this setting the corresponding heating circuit is fully controlled by the room unit. Responding to the weather is switched off, but the parameters for weather response (setting the heating characteristic curve) can still be entered.

**Default setting** OFF

**Setting range** OFF, 10…500%, RC

#### 5.3.6.5.1 MIX.VALVE - 1 Menu / par. 4 – Correction - PR value

In this setting the corresponding heating circuit is fully controlled by the room unit. The weather dependence is off, but the parameters for weather response (setting of the heating curve) can still be entered. Freezing protection and the summer mode continue to be active.

**Default setting** OFF
**Setting range** OFF, 10…500%, PR

### 5.3.6.6 MIX.VALVE - 1 Menu / par. 5 – Heating circuit heating curve adaptation

**Function** Adaptation means automatic adjustment of the heating curve inclination to the building characteristic with permanent measurement of the outdoor, flow and room temperature. Determination of the optimum heating curve requires longer heating periods to ensure balance between the supply and reduction of heat. Adaptation causes targeted adjustment of the heating curve depending on the control deviation.

Values determined by the adaptation are not saved. The higher is the deviation, the bigger are the correction steps and vice versa. At any later change of parameter setting the heating curve is newly adapted.

Currently running adaptation is indicated by the flashing symbol in the user menu.

Adaptation is a useful tool for determining the correct characteristic curve of the building. After the completion of the adaptation we recommend you to switch off this parameter and to set the inclination values found during the adaptation manually in the user menu.

NOTE Adaptation is enabled under the following conditions:
- Room sensor ON (room influence = ON)
- Heating curve adaptation ON
- Heating is running in the automatic mode
- Constant heating
- Average outdoor temperature lower than 16 °C
- Differences between the room and target temperature > ±1K.

Adaptation will not be started under the following conditions:
- The heating circuit is OFF
- During the optimization stage
- If heating curve adaptation is OFF
- If the room sensor is off (room influence = OFF)
- If the outdoor sensor is defective or OFF
- During the reduced mode in any automatic program
- During the constant reduced mode
- If the maximum boiler temperature has been achieved

**Default setting** OFF

**Setting range** OFF, ON

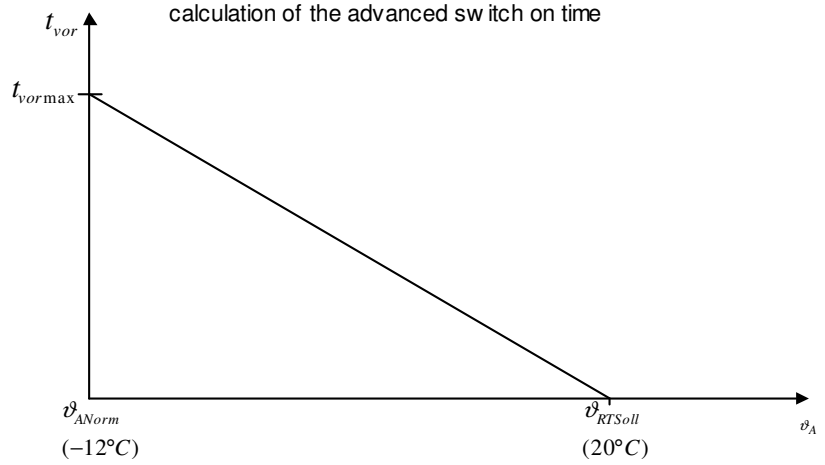
### 5.3.6.7 MIX.VALVE - 1 Menu / par. 6 – Heating circuit activation optimization

**Function** This function is used to calculate the duration of the last activation of the heating with regard to the outdoor and room temperature (heat loss) to ensure the desired room temperature, which is set as the time necessary for the room to be “habitable”.

The activation times saved in the switching programs of the corresponding heating circuits no longer refer to the activation period of the heating, but to the time required to ensure the desired temperature in the room.

Switching time calculation

GB




| | | |
|---|---|---|
| $\vartheta_{RTSoll}$ | = | Room setting at the switch-on time (modified switch-on time) |
| $t_{vor\max}$ | = | Max. optimization period (parameter 06) |
| $\vartheta_{ANorm}$ | = | Outdoor temperature |
| $t_{vor}$ | = | Current optimization time |
| $\vartheta_A$ | = | Current outdoor temperature |

### 5.3.6.7.1 MIX.VALVE - 1 Menu / par. 6 – Optimization start with an SDW20 room unit = (RC)

For the operation of the room unit the adaptation function is used to establish the supporting period. For this function an SDW 20 room units must be connected the parameters of which must be set in the heating circuit menu (parameter 4 = RC). The function will not be active in connection with an SDW 10 room unit.

**Function**

With optimization switched off a certain time expires during the change-over from the reduced mode to the heating mode until the temperature in the room achieves the nominal daytime temperature (daytime set point).
This time period is measured to determine the supporting factor, which defines the amount of time necessary for the heating process to increase the temperature by 1 K. The supporting factor is measured from the time measured for x previous cycle of heating activation, where x serves as the reduction factor.

The maximum supporting time is derived from the setting of the activation optimization parameter (parameter 06 of the direct circuit or mixing circuit 1, 2).

Adaptation of the sliding set point starting from the supporting time is not performed as the entire control algorithm is designed for significant leaps of the set value.

**Boundary conditions**

Optimization of activation is only performed if:

- The unit is in the automatic mode
- The limit is in the reduced mode, i.e. there is no supporting activation between two consecutive heating cycle with a different value of the room temperature setting
- The new set room value is higher than the temperature for the reduced mode.

**Default setting** OFF

**Setting range** OFF, ON

### 5.3.6.8 MIX.VALVE - 1 Menu / par. 7 – Heating limit function

This parameter replaces the Summer Switch-off function. It switches off the corresponding heating circuit as soon as the calculated flow temperature value achieves the currently set room temperature values.

The heating limit parameter can be activated separately for each heating circuit.

**Function**

Switching off: Flow setting < (room setting + heating limit setting)
Switching on: Flow setting > (room setting + heating limit setting + 2K)

**Example:**

Room setting = 22 °C, heating limit setting = 2 K
Switching off at the set flow temperature value of 24 °C (22°C + 2K)
Switching on at the set flow temperature value of 26°C (22°C + 2K + 2K)

**Boundary conditions**

The Summer Switch-off function (System menu - parameter 04) takes priority over the Heating Limit function.
The Frost Protection function (System menu - parameter 05) takes priority over the Heating Limit function.

### 5.3.6.9 MIX.VALVE - 1 Menu / par. 8 – Room frost protection limit

**Function**

This function defines the room set point of the corresponding heating circuit during the switch-off mode with the frost protection active:

- During the Holiday mode
- In the automatic mode between heating cycles with the ECO function active
- In the Constant Reduced mode with the ECO function active.

In connection with the room unit the heating circuit is controlled in accordance with the set temperature of frost protection.

Without a room unit is serves as the starting value for the reduced room temperature and is controlled on the basis of other settings (parameter 08)

NOTE

If sensitive items are found in the building as e.g. antiquities, flowers, etc.) and the frost protection is active, the set value should be adapted accordingly.

**Default setting**

10°C

**Setting range**

5…30°C

### 5.3.6.10 MIX.VALVE - 1 Menu / par. 9 – Room thermostat function (max. room temperature)

**Function**

This function defines a temperature-dependent room limit with an adjustable switching difference. If the room temperature of the corresponding heating circuit exceeds the current setting of the room or limited room temperature by the switching difference value, the heating mode is temporarily stopped (heating circuit pump off).

The heating mode is restored as soon as the room temperature of the corresponding heating circuit drops by 0.5 K below the switch-off temperature.

**Example:**
Daytime room temperature setting = 22 °C
Thermostat function setting = 4 K
Heating mode stopped: $T_{Room}$ > (22 °C + 4 K) > 26.0 °C
Heating mode restored: $T_{Room}$ < (26 °C – 0.5 K) < 25.5 °C

The OFF setting switches off the thermostat function.

NOTE The thermostat function is effective in the Heating mode and Reduced mode.

**Default setting** OFF

**Setting range** OFF,1…5K

### 5.3.6.11 MIX.VALVE - 1 Menu / par. 10 – Outdoor temperature assignment

NOTE The function is only active if the second outdoor sensor is used, see VI1-3=2

**Function** If to the variable input of the central unit another sensor (AF2) is connected, the heating circuit may be either assigned to outdoor sensor 1, 2, or to the mean value of both the sensors.

The following holds good for each of the outdoor sensors:
In case of a failure of one of the sensors, the automatic system will switch over to the other sensor and at the same time an error message will appear. In case of a failure of both the sensors the heating circuit is controlled on the basis of the set heating characteristic and the heating program corresponding to the imaginary outdoor temperature of 0 °C with regard to the minimum temperature setting.

**Default setting** OFF

**Setting range** 0 – Control by the mean value of both the sensors
1 – Control by sensor 1
2 – Control by sensor 2

### 5.3.6.12 MIX.VALVE - 1 Menu / par. 11 – Constant heating circuit temperature

NOTE This function must be activated in the “Hydraulic” menu for the corresponding heating circuit (direct heating circuit, mixing circuit 1, mixing circuit 2) and set to value 6.

**Function** The flow temperature in the controlled circuit is maintained on a constant value. The demand value is transmitted to the heater.

The constant temperature value is set with the use of the corresponding “Set constant temperature value” parameter.

**Default setting** 20°C

**Setting range** 10…95°C

### 5.3.6.13 MIX.VALVE - 1 Menu / par. 12 – Minimum circuit temperature

NOTE This function is not active if the control of the heating circuit is set as a constant one (CC).

**Function** This function limits the flow temperature of the respective heating circuit. The minimum temperatures set in the corresponding parameters of the heating circuit must not exceed or drop below the set limits.

**Default setting** 20°C

**Setting range** 10…par.13

NOTE The limitation of the minimum temperature is not active:
- In case of switching off in the standby mode above the frost protection limit
- In case of switching off in the reduced automatic mode with the ECO function activated above the frost protection limit
- In case of switching off in the constant reduced mode with the ECO function activated
- In case of automatic summer switch-off

**Use**
- Minimum limit for floor heating
- Ventilation presetting (warm air screen)
- Air circulation heating

### 5.3.6.14 MIX.VALVE - 1 Menu / par. 13 – Maximum circuit temperature

NOTE This function is not active if the control of the heating circuit is set as a constant one (CC).

**Function** This function limits the flow temperature of the respective heating circuit. The maximum temperatures set in the corresponding parameters of the heating circuit must not exceed or drop below the set limits.

**Default setting** 75°C

**Setting range** par.12…75°C

NOTE The limitation of the maximum temperature is not active:
- In case of switching off in the standby mode above the frost protection limit
- In case of switching off in the reduced automatic mode with the ECO function activated above the frost protection limit
- In case of switching off in the constant reduced mode with the ECO function activated
- In case of automatic summer switch-off.

⚠ **CAUTION** **For the protection of floor heating systems from accidental overheating (failure - manual mode) there must be a maximum temperature limit that is independent of the controller. In this case a contact thermostat is recommended. The control stage of the corresponding heating circuit pump is cycled with the use of its switching contact. The thermostat must be set to the maximum permitted temperature value in the system.**

### 5.3.6.15 MIX.VALVE - 1 Menu / par. 14 – Parallel heating circuit shift

**Function** This function offers for special purposes enabling of the heating curve of the direct circuit with a constant shift value. The demand value plus the shifted value are transmitted to the heater. The heating curve shift function serves the purpose of heating enhancement under unfavourable weather conditions.

The heating characteristic is shifted in parallel with the flow temperature.

**Use** Basic correction of the heating characteristic for adjustment to the required temperature in the room without the necessity to change the set temperature value in the room.

**Default setting** 4 K

**Setting range** 0…20 K

### 5.3.6.16 MIX.VALVE - 1 Menu / par. 15 – Extended running time of the circuit pump

**Function** If no demand comes from the heating circuit, the heating circuit pump is only switched off after a certain set time to prevent safety switch-off of the heater at high temperatures.

**Default setting** 0 min

**Setting range** 0…60 min

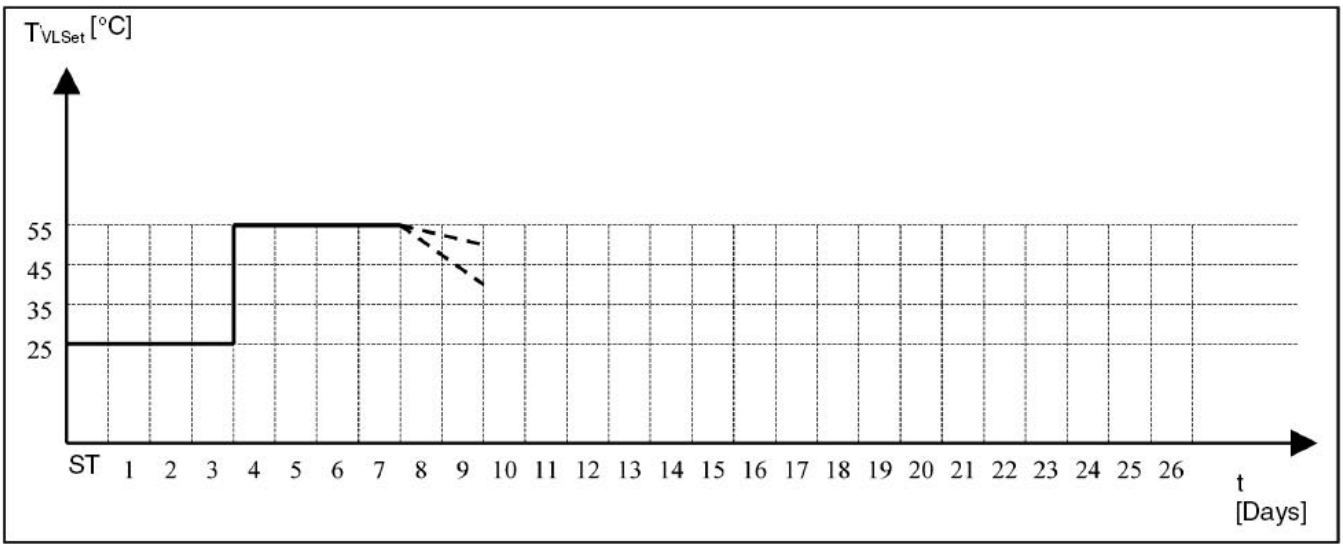
### 5.3.6.17 MIX.VALVE - 1 Menu / par. 16 – Drying function

NOTE This function is not active if the circuit is set as a constant one.

**Function** The drying function is suitable for new constructions. This function is based on specifications of the German Federal Association for Surface Heating.
This function cannot be used in the manual and measurement mode. Drying can be set both for direct and mixed circuits. When the function is active, external influences are disregarded and the circuits work independently of all modes as constant temperature modes. The function can be disabled any time by changing the parameter value to OFF.

*The drying functions work in 2 steps:*

**Step 1:** **Functional heating in accordance with DIN 4725, par. 4 (value 1)**
- Constant temperature 25 °C during 3 days.
- Heating to the maximum value, the limit is 55 °C.

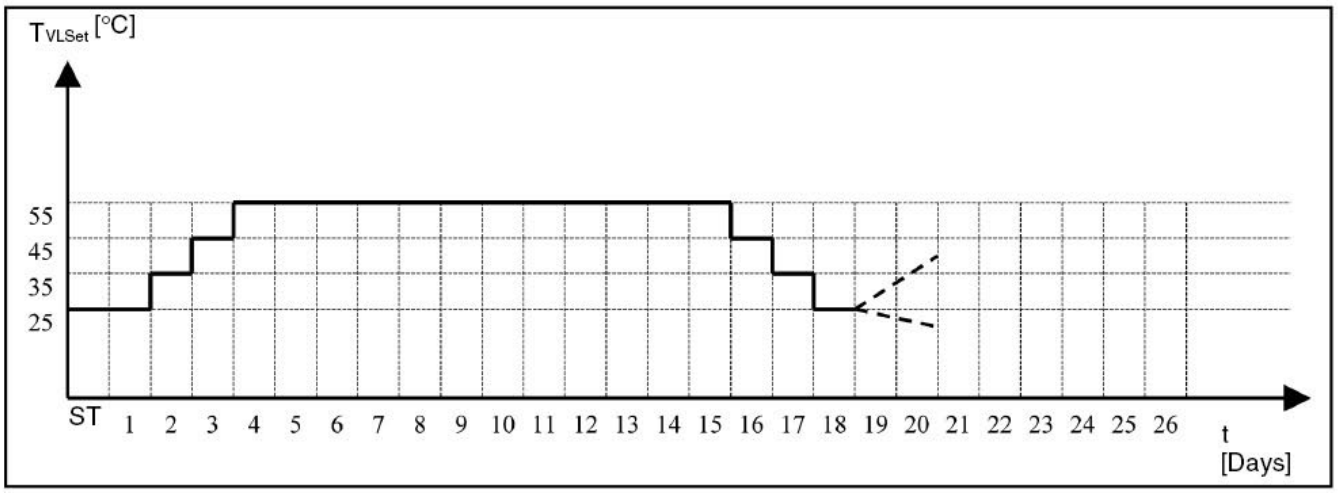



Time profile for drying

**Step 2:** **Heating function for floor setting (value 2)**
On the first day the heating function starts at the temperature of 25°C and it gradually rises by 5°C every day; before the end of the cycle the temperature is decreased by 5°C again.

**Example:**

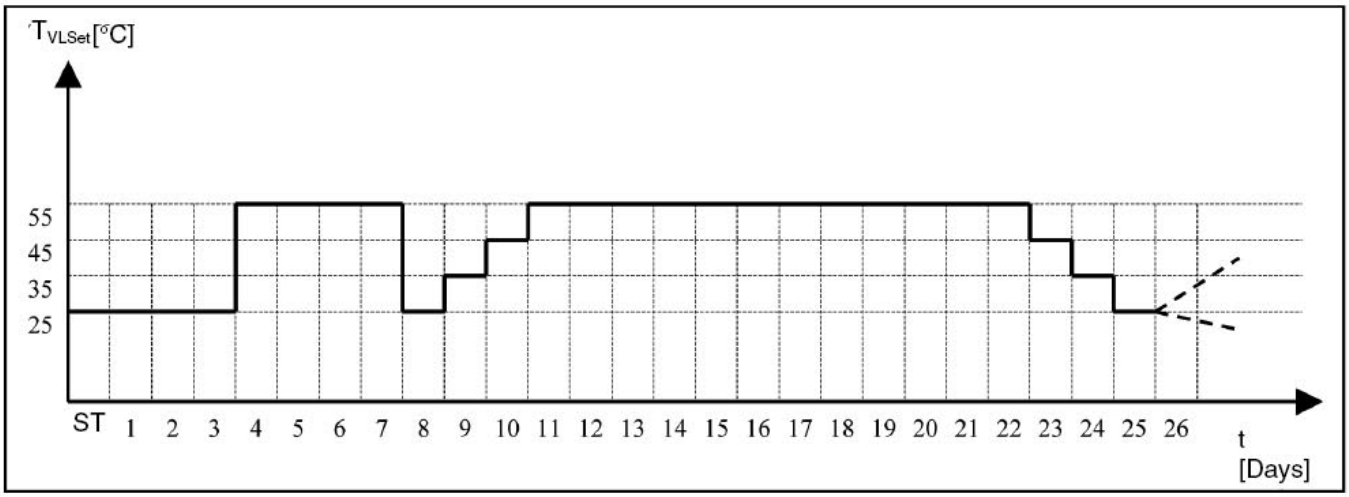
Maximum temperature for the circuit = 40 °C
Day 1: constant temperature of 25 °C
Day 2: constant temperature of 30 °C
Day 3: constant temperature of 35 °C
Day 4: constant temperature of 40 °C
Day 5-15: constant temperature at the maximum level
Day 16: reduced to 35 °C
Day 17: reduced to 30 °C
Day 18: reduced to 25 °C
On the first day the heating maintains 25°C until midnight, then the values change at 00:00 for the following day.




Time profile for floor setting

**Step 1+2: combination of step 1 and 2 (value 3)**

Both the steps are used alternately, first 1, then 2. The drying time is 21 days altogether.
There are 7 days of drying and then 21 days of setting of a cement-concrete floor.
After the end the control returns to the standard heating and it can always be invoked. The drying function can be set for each circuit - but if the function is set for the direct circuit, the heater will be controlled in accordance with the course of temperatures. If the controller is switched off during the cycle, after its re-start the cycle will continue from the place of interruption.




Time profile for step 1+2

**Default setting** OFF

**Setting range** OFF,1…3

### 5.3.6.18 MIX.VALVE - 1 Menu / par. 17 – Maximum temperature of return water of the circuit

With the use of an additional return sensor for a mixing circuit you can activate control of the upper limit of the return temperature of this mixing circuit.

In some application a too high return temperature may cause technical problems (municipal heating, condensation boiler). Such a situation may occur in case the heating system does not consume the supplied heat energy (e.g. valves of heating elements are closed).

If the return temperature exceeds the maximum value, the controller switches over from the flow control to return control to avoid occurrence of too high temperatures.

NOTE See point 5.3.3.8 (VI1-3 = 7,8 - sensor of return temperature of the circuit)

**Default setting** 90°C

**Setting range** 10…90°C

### 5.3.6.19 MIX.VALVE - 1 Menu / par. 18 – Proportional band Xp

Function The proportional band Xp defines the magnitude of the change of the corresponding actuator (mixer) cause by a leap change of the set value.

**Example:**
Let us assume an actuator (mixer) turning by the angle of 90° during the action period of 2 minutes. If the set value of the flow temperature is changed by 10 K (e.g. if the system is

switched over from the reduced to the daytime mode) and the P band setting is 5%/K, the actuator must open by 50 % (= 5%/K x 10K). Consequently, the duration of the action impulse is 1 minute (= 50 % of the action time of the actuator).

**Default setting** 2%K℃

**Setting range** 1…50%K

## 5.3.6.20 MIX.VALVE - 1 Menu / par. 20 – Integral action time Tn

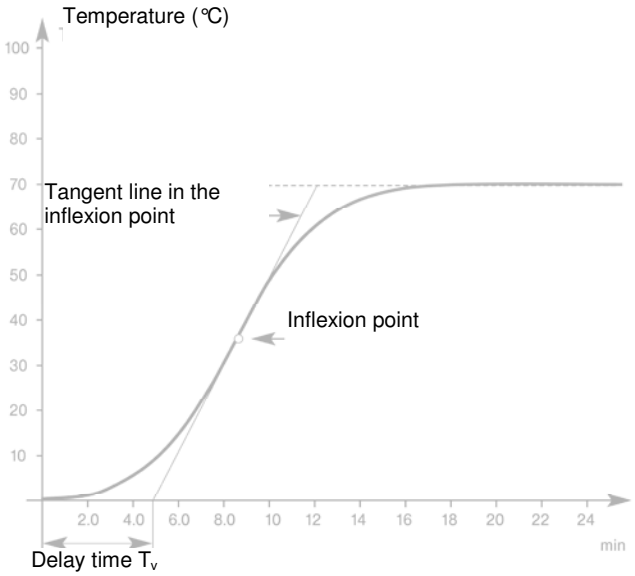
The integral time (= adjustment time) defines dynamic behaviour of the controller and thus the time necessary for adaptation to the current control change. The integral action time depends on the size of the change.

**Example:** On a sudden occurrence of a control change of the flow temperature by 10 K (e.g. if the system is switched over from the reduced to the daytime setting) and the $T_n$ setting of 7 minutes the controller will adapt the flow temperature to the new value (10 K higher) after the set time.

NOTE The adaptation time can be determined with the Ziegler-Nichols method. The mixer is first closed and the heater is operated at the maximum temperature of the corresponding heating circuit. As soon as half of the appliances in the measure circuit are open, the mixer is fully opened from the cold condition (= room temperature) with the use of the relay test function. The characteristic heating start curve, i.e. the curve of temperature development in time, manifests an inflexion point. The intersection of the tangent line of the curve and the time axis determines the delay time. This value multiplied by 3.3 corresponds to the optimum integral action time for this heating circuit.

**Example:** Leap response function (area heating)
In the example on the right the mixing circuit temperature achieves the heater temperature level approx. after 17 minutes with the mixer fully opened. The tangent line of the curve in the inflexion point shows the delay time of 5 minutes.
The resulting optimum adaptation time ($T_v$ x 3.3) is approx. 16.5 minutes (setting: 17).

| Application | $T_n$ |
|---|---|
| Floor heating and other static heating areas | 10 - 30 min |
| Heating elements | 6 -10 min |
| Air circulation heating | 3 - 6 min |




Recommended basic settings of the integral action time for various heating systems:

## 5.3.6.21 MIX.VALVE - 1 Menu / par. 21 – Servo motor running time

This function makes it possible to adapt an actuator to the control characteristic with regard to its limited run time. This means that actuators with different run times (e.g. 1 min, 2 min, 4 min) respond to the same change by adaptation by the same value with the use of run time adaptation. The integral action time remains unchanged, but it must be longer than the run time of the corresponding actuator.

GB

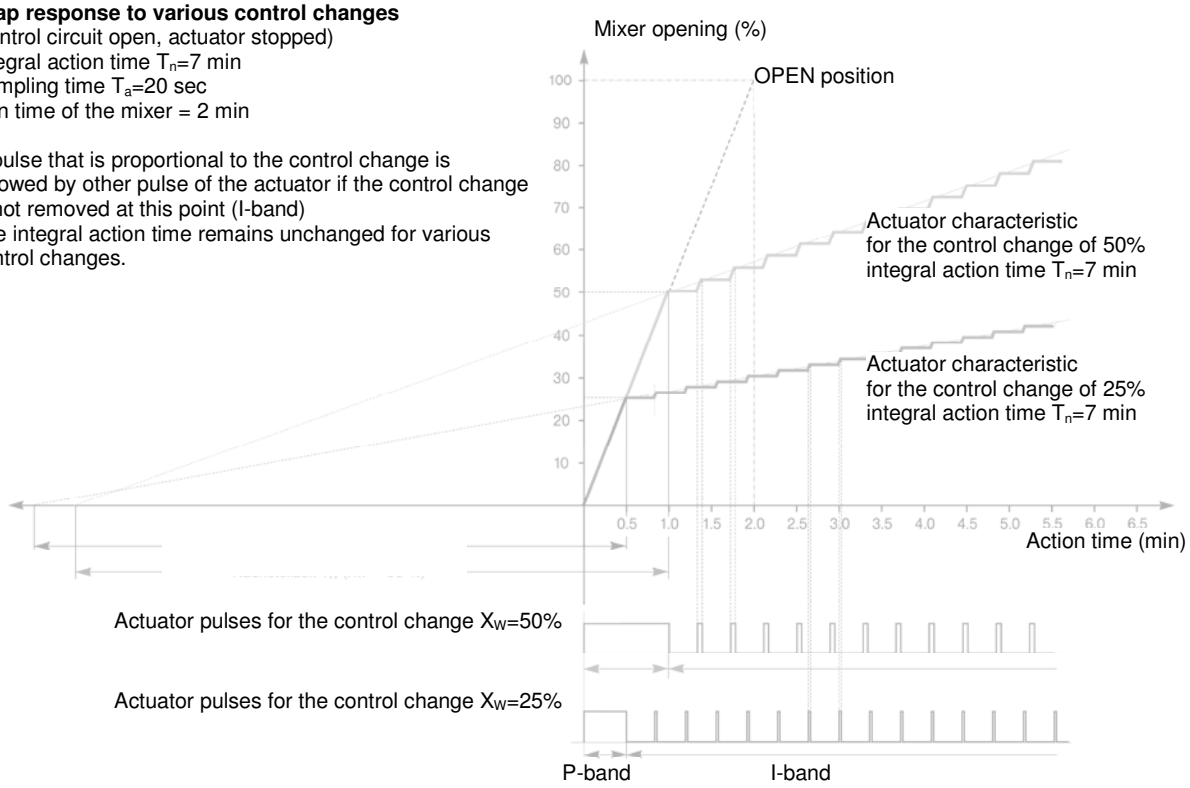
**Default setting** 180 sec

**Setting range** 10…600 sec.

### 5.3.6.22 Example of common application of P-band, I-band, adaptation time and sampling time

**Leap response to various control changes**
(control circuit open, actuator stopped)
Integral action time $T_n$=7 min
Sampling time $T_a$=20 sec
Run time of the mixer = 2 min

P-pulse that is proportional to the control change is followed by other pulse of the actuator if the control change is not removed at this point (I-band)
The integral action time remains unchanged for various control changes.




### 5.3.6.23 MIX.VALVE - 1 Menu / par. 22 – Function of the end position of an actuator

This function defines the control signal type in the OPEN and CLOSED end positions of each actuator.
1 = Continuous voltage signal at the OPEN or CLOSED connector in the corresponding end position
2 = Without excitation in the OPEN or CLOSED position.

### 5.3.6.24 MIX.VALVE - 1 Menu / par. 23 – P-band of the SDW20 room unit

NOTE P-band value of SDW20

**Default setting** 8%K

**Setting range** 1…100%K

### 5.3.6.25 MIX.VALVE - 1 Menu / par. 24 – I-band of the SDW20 room unit

NOTE I-band value of SDW20

**Default setting** 35 min

**Setting range** 5…240 min

### 5.3.6.26 MIX.VALVE - 1 Menu / par. 25 – Reduction of the HOLIDAY Mode

Function Possibility to select a reduction type in the HOLIDY mode

**Default setting** STBY

**Setting range** STBY / RED

### 5.3.6.27 MIX.VALVE - 1 Menu / par. 26 – Dynamic VF flow temperature protection

**Function** Dynamic protection of the VF flow value serves as protection against the occurrence of hydraulic overpressure from the heating circuit to the heat source and in conjunction with an accumulation tank it then serves as protection against unwanted aspiration of cold water from the accumulation tank and hot water from the boiler, which would decelerate the increase of the flow temperature value and the accumulation tank temperature.
The flow temperature value is dynamically adjusted in such a way that its maximum value can be 2K lower than the heat source (heater or accumulation tank) temperature.
If the calculated VF temperature is not achieved within 60 minutes, a logical alarm of a failure to achieve the required temperature will be displayed, which may serve e.g. as information for charging of the accumulation tank or lighting the fire in the solid fuel boiler.

**Example** The flow temperature value has been calculated in accordance with the current outdoor temperature and requirement as 75°C,the current temperature in the accumulation tank is only 53°C. The automatic heat source immediately starts to cover the required temperature of the accumulation tank and as protection from mixing of a high temperature of the boiler and low temperature of the accumulation tank the flow temperature value is automatically adjusted to a 2K lower temperature than the accumulation tank, i.e. to the resulting temperature of 51°C. At simultaneous charging from the source and increasing temperature of the tank the VF value is shifted towards the calculated required value.

Default setting OFF
Setting range OFF
1 – adjustment by WF – hydraulic diagrams without an accumulation tank
2 – adjustment by PF – hydraulic diagrams with an accumulation tank

### 5.3.6.28 MIX.VALVE - 1 Menu / par. 50 – Outdoor temperature for COOLING activation

The cooling function may be defined in the mixing circuit and it is the inversion function of heating. The parameter value determines the initial point of the cooling curve and at the same time releases the cooling function. For proper functioning of the cooling function a cooling source must be connected (e.g. a heat pump with the heating/cooling function) with the heating/cooling switching contact connected to a variable output (see the HYDRAULIC Menu, par. 6 or 7=41)

**Function** Cooling works as follows:

- If the outdoor temperature AF > switching temperature, the function is activated (the switching temperature value can be the same or higher that the transition temperature to the summer mode)
- If the outdoor temperature AF < switching temperature-1K, the function is deactivated.
- The cooling function has a higher priority than a possible parallel shift of heating (e.g. cooling supersedes transition to the summer mode).
- Cooling uses the same outdoor temperature sensor as heating.
- If the sensor of the VF mixing circuit is damaged, the function will be deactivated, the mixing valve closed and the circuit pump switched off.
- The cooling function is suppressed when drying is activated.
- If the thermostat function is set, the activation and deactivation of the cooling function is shifted with the development of the room temperature.

The cooling curve is controlled according to the outdoor sensor, depending on the outdoor temperature the cooling temperature changes; therefore, the cooling curve must be set:

- The course of the curve is always limited by the minimum cooling temperature (par. 56).
- The cooling curve starts at the outdoor switch-on temperature OT-ON (par. 50), at which the initial temperature FT-ON is determined (par.52)
- The cooling curve ends at the outdoor switch-off temperature OT-OFF (par.51), at which the max. temperature FT-OFF is determined (par.53)

- The room temperature develops similarly to the outdoor temperature, following a linear curve. It is recommended that it have parallel orientation with the outdoor temperature to avoid a big difference between the indoor and outdoor temperature with regard to the user's health. If a room unit (room temperature sensor) is connected and the room factor is set, the development of the cooling curve is corrected similarly to the heating curve. To enhance comfort, the user can set exact requirements (required daytime and night-time temperature - see the DAY and NIGHT control buttons).

**WARNING** For the cooling function you must consider whether the heating circuit can work as a cooler. The control elements as the thermal heads of radiators must be remove from the system if the cooling function is used as the heating system will be operated at higher room temperatures than are achieved in the winter mode and the control heads would close the radiators, which would make the cooling function impossible.

Default setting OFF
Setting range OFF……45℃

### 5.3.6.29 MIX.VALVE - 1 Menu / par. 51 – Outdoor temperature for cooling limitation

End point for the cooling curve – generally max. summer outdoor temperature.

Default setting 35℃
Setting range 15…45℃

### 5.3.6.30 MIX.VALVE - 1 Menu / par. 52 – Flow temperature on activation of COOLING

Flow temperature on activation of the cooling function - it defines the initial point of the cooling curve together with par. 50. The temperature is usually set 4-6℃ lower than the outdoor switch-on temperature for the cooling function (par.50)

Default setting 18℃
Setting range 7…30℃

### 5.3.6.31 MIX.VALVE - 1 Menu / par. 53 – Flow temperature for limitation of COOLING

Flow temperature for limitation of the cooling function - it defines the end point of the cooling curve and thus its development together with par. 51. The temperature is determined with regard to the character of the heating (cooling) circuit:

- For fan-coil heating – contactless, small-area – the temperature is set as low as possible to achieve the highest possible exchange of energy, generally the same as the bottom limit of the cooling temperature (par.56)
- For floor heating – contact, large-area design – a higher temperature is set with regard to the contact and high energy exchange capacity (generally 4-8℃ lower than par. 51) .

Default setting 24℃
Setting range 7…30℃

### 5.3.6.32 MIX.VALVE - 1 Menu / par. 54 – Room temperature on activation of COOLING

Room temperature on activation of the cooling function - it defines the initial point of the room temperature curve. It value is generally the same or 1℃ lower than the activation temperature of cooling.

Default setting 24℃
Setting range 15…30℃

### 5.3.6.33 MIX.VALVE - 1 Menu / par. 55 – Room temperature on limitation of COOLING

Room temperature on limitation of the cooling function - it defines the end point of the room temperature CURVE. With regard to the user's health the value should be set max. 5℃ lower that the limiting outdoor cooling temperature to avoid a high difference between the outdoor and room temperature.

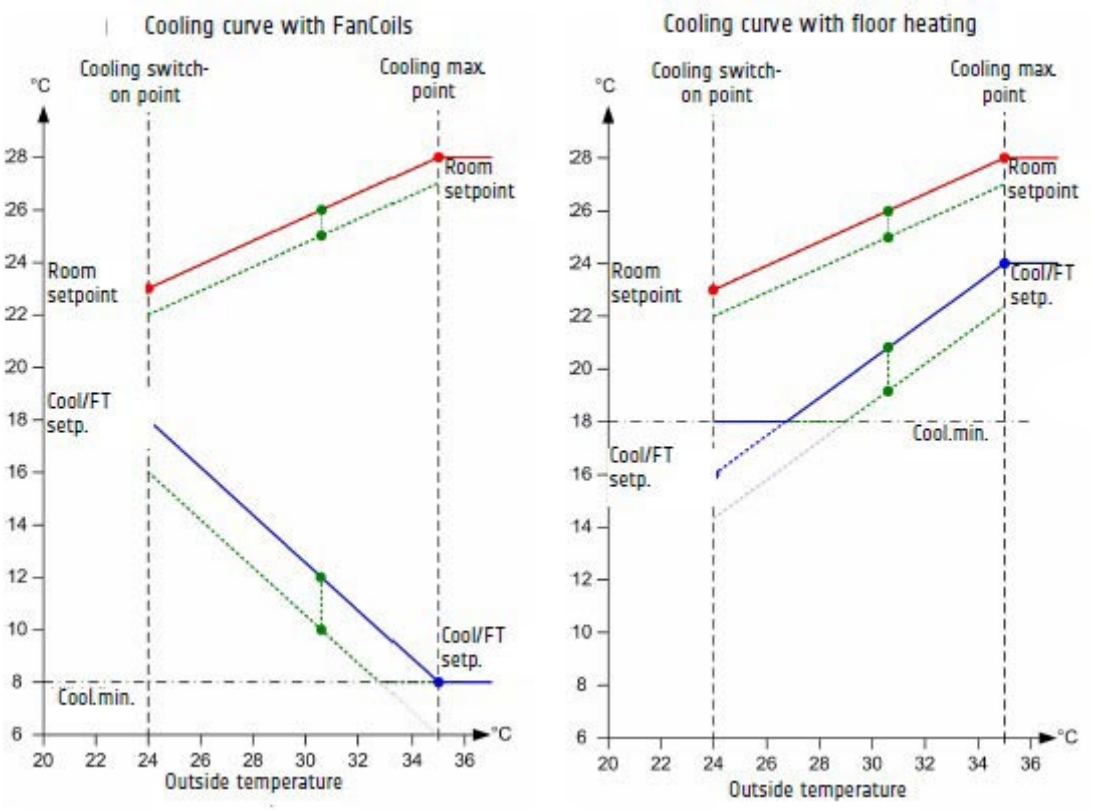
Default setting 28℃
Setting range 15…30℃

### 5.3.6.34 MIX.VALVE - 1 Menu / par. 56 – Minimum flow temperature

The minimum flow temperature is set with regard to the cooling source to avoid calculation of two low source temperatures (freezing point, minimum operation temperatures of the heating system, etc.)

Default setting 18℃
Setting range 7…24℃

#### 5.3.6.34.1 Diagram of temperatures of the cooling function




### 5.3.6.35 MIX.VALVE - 1 Menu / par. 26 – Circuit name

**Function** Naming a heating circuit for better orientation

## 5.3.7 MIX.VALVE - 2 Menu

NOTE The same settings as in the MIX.VALVE - 1 menu

GB

## 5.3.8 RETURN CONTROL Menu

This menu is designed to design return water parameters. The menu is displayed if parameter no. 3 or 4 = 8 in the HYDRAULIC MENU is defined, see 5.3.3.4

### 5.3.8.1 RETURN CONTROL Menu - overview of parameters

| Parameter | Description | Setting range | Default setting | Setting |
|---|---|---|---|---|
| 01 | Set return temperature value | 10 ... 95 °C | 70 °C | |
| 02 | Switching difference | 2 ... 20 K | 2 K | |
| 03 | Extended operation time of the pump | 0 ... 60 min | 1 min | |

### 5.3.8.2 RETURN CONTROL Menu / par. 1 – Return water temperature

Function Setting the return water temperature

**Default setting** 70°C

**Setting range** 10…95°C

### 5.3.8.3 RETURN CONTROL Menu / par. 2 – Switching difference

Function Setting the switching difference

NOTE This parameter is only active if a return water sensor defined as VI1-3 is configured in the HYDRAULIC menu, par.8-10 = 7,8 and 9.

**Default setting** 2 K

**Setting range** 2…20 K

### 5.3.8.4 RETURN CONTROL Menu / par. 3 – Extended running time of the pump

Function Setting an extended running time of the pump to avoid overheating of the heater.

NOTE This parameter is only active if a return water sensor defined as VI1-3 is configured in the HYDRAULIC menu, par.8-10 = 7,8 and 9.

**Default setting** 1 min

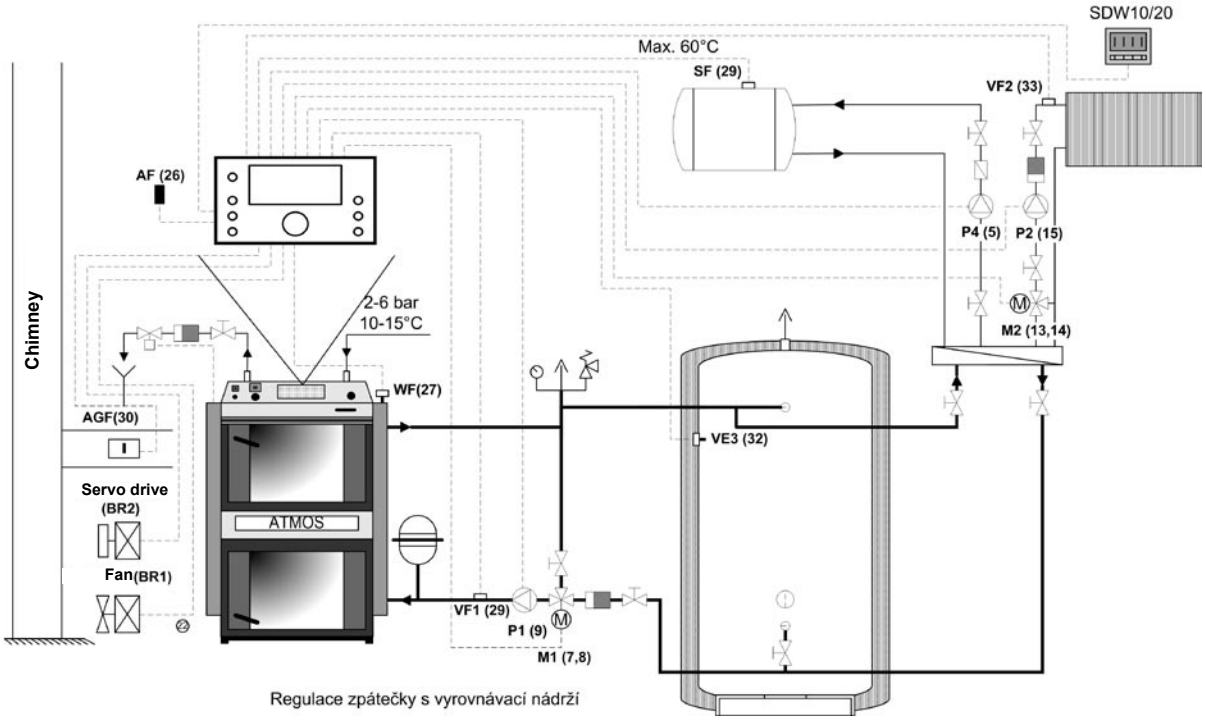
**Setting range** 0…60 min

GB

## 5.3.8.5 RETURN CONTROL Menu - Example of RETURN CONTROL connection with parameter settings

### 5.3.8.5.1 Example of return control settings with the use of hydraulic example no. 0019

The connection of mixed return control is illustrated with the use of hydraulic example no. 19. Return control can be naturally configured for any application with a free mixing circuit. .




### 5.3.8.5.2 Example of settings of some parameters

Hydraulic Menu

| Parameter | Description | Setting |
|---|---|---|
| 1 | Hydraulic diagram | 0019 |
| 2 | DHW pump output (DHW loading pump) | 1 (DHW loading pump) |
| 3 | MC-1 output (mixing valve 1, valve + pump) | **8** (return control) |
| 4 | MC 2 output (mixing valve 2, valve + pump) | 3 (mixing circuit) |
| 6 | Variable output 1 | OFF |
| 7 | Variable output 2 | OFF |
| 8 | Variable input 1 | 16 (AGF) |
| 9 | Variable input 2 | OFF |
| 10 | Variable input 3 | 19 (PF) |
| 11 | Indirect return control | OFF |

MIX.VALVE - 1 Menu

| | | |
|---|---|---|
| 18 | P-band | 2%K℃ |
| 20 | I-band | 60 |
| 21 | Servo drive speed | 120 sec. |

RETURN CONTROL Menu

| | | |
|---|---|---|
| 01 | Return temperature set point | **70 ℃** |

Solid Fuel Menu

| | | |
|---|---|---|
| 1 | Boiler type | 4 |

MIX.VALVE 2 Menu

| | | |
|---|---|---|
| 3 | Room influence (with a room unit) | 1 – if it is used |

.

.

.The other parameters correspond to the individual application.

GB

### 5.3.9 SOLAR Menu

This menu is designed to define parameters of the solar circuit.

NOTE These functions are accessible after defining of the Solar Heating pump as VO1,2 in the HYDRAULIC menu, par.6,7

#### 5.3.9.1 SOLAR Menu - overview of parameters

| Parameter | Description | Setting range / Setting values | Default setting | Setting |
|---|---|---|---|---|
| 01 | Switch-on differential | (Switch-off differential + 3 K) ... 30 K | 10 K | |
| 02 | Switch-off differential | 2 K ... (Switch-on difference - 3 K) | 5 K | |
| 03 | Min. running time of the solar panel pump | 0 ... 60 min | 3 min | |
| 04 | Max. solar panel limit | 100 ... 210 °C | 210 °C | |
| 05 | Max. buffer limit | 50 ... 110 °C | 75 °C | |
| 06 | Solar system operation mode | 1 Priority mode<br>2 Parallel mode<br>3 Priority HDW filling mode<br>4 Parallel accum. tank filling mode | 2 | |
| 07 | Temporary interruption of heater (only if PAR 06=1) | OFF, 0.5 … 24 h | OFF | |
| 08 | Solar priority / parallel switch | OFF, 1 … 30 K | OFF | |
| 09 | Heat balance | OFF No heat balance<br>1 Heat balance with fixed volume flow<br>2 Heat balance with pulse input | OFF | |
| 10 | Heat balance reset | SET by pressing the rotary button | | |
| 11 | Volume flow | 0.0 ... 30 l/min. or l/pulse | 0.0 | |
| 12 | Fluid density | 0.8 ... 1.2 kg/l | 1.05 kg/l | |
| 13 | Fluid heat capacity | 3,0 ... 5,0 kJ/kg K | 3.6 kJ/kg K | |
| 14* | Switch-off temperature | OFF, 90 ... 210 °C | 210 °C | |
| 15 | Solar switch-over check cycle | 1 ... 60 min | 10 min | |
| 16 | Switch-over temperature | 50 ... 110 °C | 75 °C | |

*OEM only

#### 5.3.9.2 SOLAR Menu / par. 1 – Switch-on differential of the solar pump

Function With a sufficient quantity of solar energy the temperature difference between the panel flow and the solar buffer increases over the set value and the solar panel pump with be switched off to fill the buffer tank.

**Minimum value** min 3K above the switch-off differential value

**Default setting** 10K

**Setting range** par.2+3K…30K

#### 5.3.9.3 SOLAR Menu / par. 2 – Switch-off differential of the solar pump

Function If the temperature difference between the panel flow and the buffer tank drops below the set differential, the pump is switched off and the filling is stopped.

**Maximum value** min 3 K below the switch-on differential value.

**Default setting** 5K

**Setting range** 2K…par.1-3K

#### 5.3.9.4 SOLAR Menu / par. 3 – Min. running time of the solar pump

Function The solar pump continues running for this set time. The minimum running time takes priority over the switch-off difference.

**Default setting** 3 min

**Setting range** 0…60 min



### 5.3.9.5 SOLAR Menu / par. 4 – Max. solar panel limit

Function This limit provides protection of solar panel. If the set temperature is exceeded, the panel pump will be started. When the panel temperature decreases below the set limit again, all the functions and settings of the solar system will be activated again.

**Default setting** 210°C

**Setting range** 100…210°C

### 5.3.9.6 SOLAR Menu / par. 5 – Max. solar buffer limit

Function If the temperature in the buffer tank exceeds the set limit, the function of the maximum limit of the solar panel is deactivated as well, so the pump is switched off. This function can be activated again as soon as the temperature in the buffer tank drops by more than 10 K below its set maximum limit.

**Default setting** 75°C

**Setting range** 50…110°C

### 5.3.9.7 SOLAR Menu / par. 6 – Operation mode of the solar circuit

Function This function defines the loading mode:

**1 - Solar system priority mode**
During loading of the solar system no heating demand is sent to the heater unless it is active. If the heater is active, it continues working until the next switch-off cycle.

**2 - Solar system parallel mode**
During loading of the solar system heating demands for the heater are enabled.

**3 - Priority charging of the DHW tank by the solar system**

**4 - Priority charging of the accumulation tank by the solar system**

**Default setting** 2

**Setting range** 1…4

### 5.3.9.8 SOLAR Menu / par. 7 - Temporary heater interruption

NOTE Only if par. 6=1

Function Temporary interruption prevents frequent switching between the solar loading and heater loading. After the switch-off of the solar system pump the set time period must expire before the tank of the solar buffer can be filled by the heater (boiler).

**Default setting** OFF

**Setting range** OFF, 0,5…24 h

### 5.3.9.9 SOLAR Menu / par. 8 – Solar priority / parallel switch

NOTE Only if par. 6=1

Function If the temperature in the solar system tank drops below the nominal loading value in the priority mode, the system will be immediately switched over to the parallel mode (temporary interruption disabled, heater enabled). The priority mode is activated again as soon as the temperature in the tank rises above the current set value plus the switch-on differential of water heating.

**Default setting** OFF

**Setting range** OFF, 1…30 K

### 5.3.9.10 SOLAR Menu / par. 9 – Heat balance

NOTE Only if there is an pulse input at IMP

Function This parameter is used to activate heat balancing. The user may select either flow calculation from the running time of the pump or determination of the flow quantity with the use of the pulse signal input of the unit if such an input is available. You can connect any commercial flow meter to the pulse input.

**Default setting** OFF

**Setting range** OFF
1 – Fixed volume flow
2 – Pulse input

### 5.3.9.11 SOLAR Menu / par. 10 – Heat balance reset

NOTE Only if par.9 = ON

Function If heat balancing is active, you can use this parameter to reset the counter.

**Setting range** SET – by pressing the rotary button

### 5.3.9.12 SOLAR Menu / par. 11 – Volume flow

NOTE Only if there is a pulse input at IMP

Function This setting allows you to select between the volume flow calculated in:

- litres / min
- litres / pulse if you use a pulse input corresponding to the respective pumping capacity of the loading pump of the solar system.

NOTE If the setting is 0, heat balancing is not active.

**Default setting** 0.0

**Setting range** 0.0…30 l/min or l/pulse

### 5.3.9.13 SOLAR Menu / par. 12 – Fluid density

NOTE Only if par.9 = ON

Function This parameter defines fluid density in accordance with the manufacturer's data.

**Default setting** 1.05kg/l

**Setting range** 0.8…1.2 kg/l

### 5.3.9.14 SOLAR Menu / par. 13 – Fluid heat capacity

NOTE Only if par. 9 = ON

Function This parameter defines fluid heat capacity in accordance with the manufacturer's data

NOTE The physical quantities volume flow, density and specific capacity for the basis for the heat output calculation.

$W = (V / t) \cdot \rho \cdot c_W \cdot \Delta\delta \cdot t_{SOP}$

The results can be viewed on the information level - see the "i" key.
W = heat capacity
V/t = volume flow of the heat-carrying media
ρ = density of the heat-carrying media
$c_W$ = specific heat capacity of the heat-carrying media
Δδ = temperature difference (solar panel supply / return flow)

**Default setting** 3.6 kJ/kgK

**Setting range** 3.0…5.0 kJ/kgK

### 5.3.9.15 SOLAR Menu / par. 15 – Check cycle

Function This parameter defines the check cycle for rinsing of the solar circuit

**Default setting** 10 min

**Setting range** 1…60 min

### 5.3.9.16 SOLAR Menu / par. 16 – Switch-over temperature

Function This parameter defines the switch-over temperature.

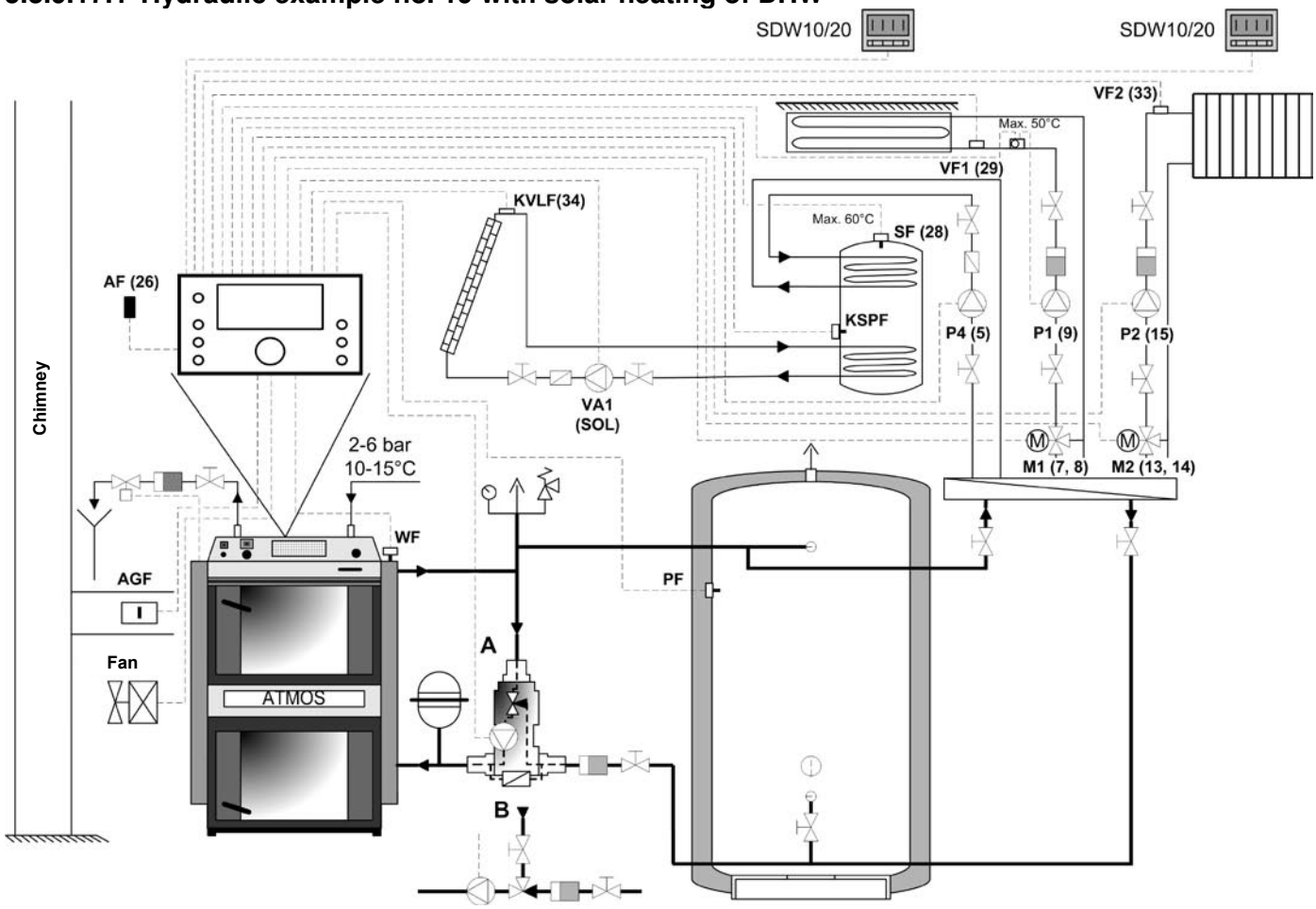
**Default setting** 75°C

**Setting range** 50…110°C

GB

## 5.3.9.17 SOLAR Menu – Examples of solar circuit connection with the definition of parameters

### 5.3.9.17.1 Hydraulic example no. 19 with solar heating of DHW




### 5.3.9.17.2 Example of settings of some parameters

HYDRAULIC Menu

| Parameter | Description | Default setting |
|---|---|---|
| 1 | Hydraulic diagram | 0019 |
| 2 | DHW pump output | 1 (DHW loading pump) |
| 3 | Output of mixing circuit 1 | 3 (mixing circuit) |
| 4 | Output of mixing circuit 2 | 3 (mixing circuit) |
| 6 | Variable output 1 | 15 (solar loading pump) |
| 7 | Variable output 2 | OFF |
| 8 | Variable input 1 | 16 (flue gas sensor) |
| 9 | Variable input 2 | OFF |
| 10 | Variable input 3 | 19 (PF) |

SOLAR Menu

| | | |
|---|---|---|
| 05 | Max. buffer limit | 60 °C |
| | … | |
| | … | |

SOLID FUEL Menu

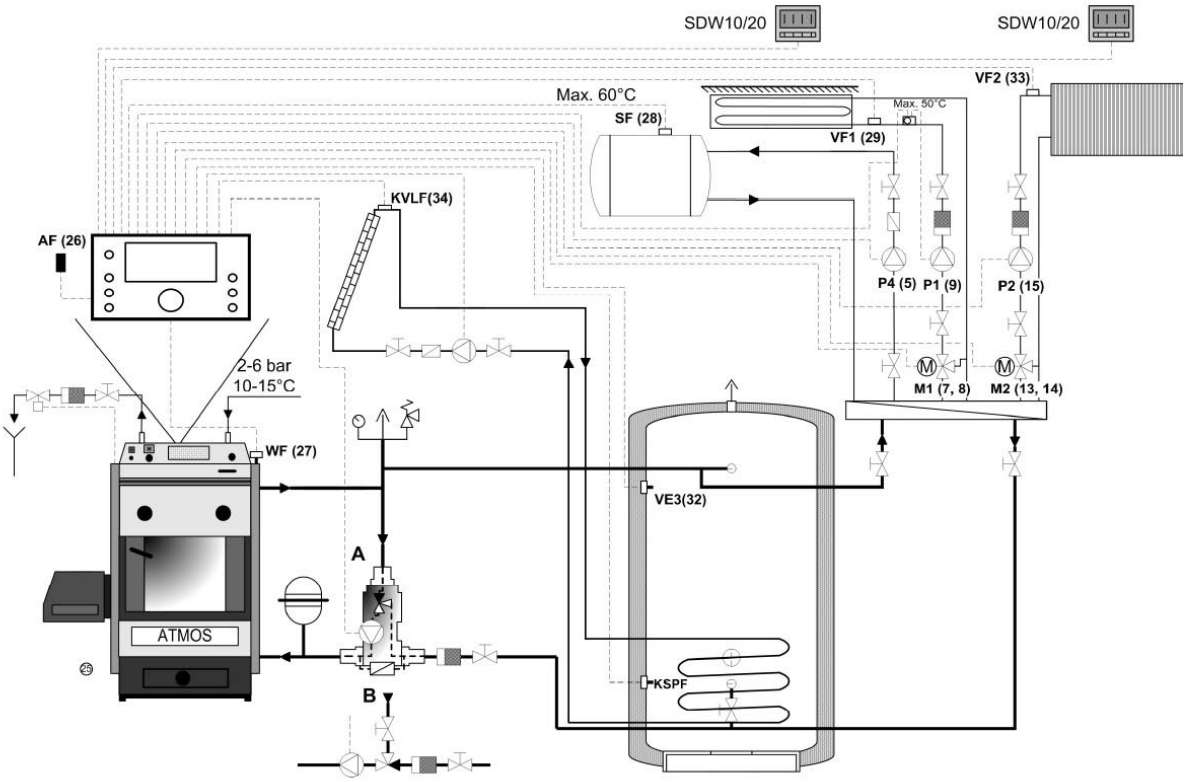
| | | |
|---|---|---|
| 1 | Boiler type | 4 |
| | … | |
| | … | |

BUFFER Menu

| | | |
|---|---|---|
| 2 | Maximum temperature | 105°C |
| | | |
| | | |
| 14 | Buffer temperature | OFF |

NOTE As the bottom sensor of the accumulation tank is not necessary for the control of a solid fuel boiler, the bottom sensor of the accumulation tank for solar loading (KSPF) is placed as the bottom sensor in the DHW tank for the control of the solar system.

### 5.3.9.17.3 Hydraulic example 10 with solar heating of the accum. tank




### 5.3.9.17.4 Example of settings of some parameters

HYDRAULIC Menu

| Parameter | Description | Default setting |
|---|---|---|
| 1 | Hydraulic diagram | 0010 |
| 2 | DHW pump output | 1 (DHW loading pump) |
| 3 | Output of mixing circuit 1 | 3 (mixing circuit) |
| 4 | Output of mixing circuit 2 | 3 (mixing circuit) |
| 6 | Variable output 1 | 15 (solar loading pump) |
| 7 | Variable output 2 | OFF |
| 8 | Variable input 1 | OFF |
| 9 | Variable input 2 | OFF |
| 10 | Variable input 3 | 19 (PF) |

SOLAR Menu

| | | |
|---|---|---|
| 03 | Min. running time of the solar panel pump | 3 min. |
| 05 | Max. buffer limit | 85 °C |
| 09 | Heat balance | OFF |
| | … | |

SOLID FUEL Menu

| | | |
|---|---|---|
| 1 | Boiler type | 3 |
| | … | |
| | … | |
| | … | |

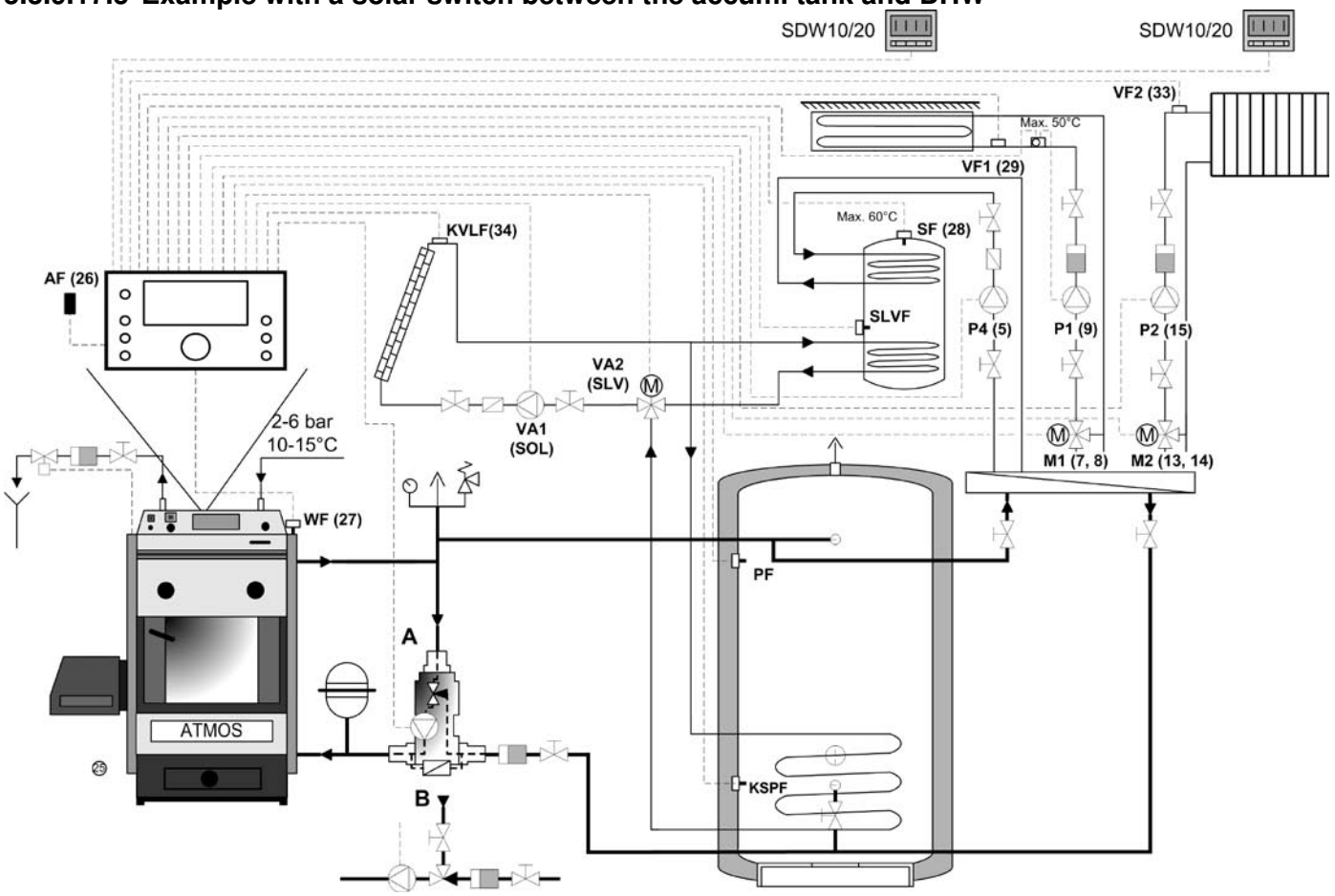
BUFFER Menu

| | | |
|---|---|---|
| 2 | Maximum temperature | 105°C |
| | | |
| 14 | Buffer temperature | 60°C |

NOTE As solar heating is connected to the same accumulation tank as the boiler, the bottom sensor (KSPF) is used to control both the automatic boiler and the solar system. If you need to separate the control sensor for the boiler and for the solar system (the boiler sensor must be located in a different place from the location of the KSPF sensor for the solar system), the sensor (FPF) must be connected to the free var. input VEX with definition (HYDRAULIC Menu, par.8-10=18) for the boiler burner control.

GB

### 5.3.9.17.5 Example with a solar switch between the accum. tank and DHW




### 5.3.9.17.6 Example of settings of some parameters

HYDRAULIC Menu

| Parameter | Description | Default setting |
|---|---|---|
| 1 | Hydraulic diagram | 0010 |
| 2 | DHW pump output | 1 (DHW loading pump) |
| 3 | Output of mixing circuit 1 | 3 (mixing circuit) |
| 4 | Output of mixing circuit 2 | 3 (mixing circuit) |
| 6 | Variable output 1 | 15 (solar loading pump) |
| 7 | Variable output 2 | 19 (solar switch) |
| 8 | Variable input 1 | OFF |
| 9 | Variable input 2 - defined automatically according to VO2 | SLVF (FIX)* |
| 10 | Variable input 3 | 19 (PF) |

* NOTE: The SLVF sensor is automatically defined and assigned to VI2 after assignment of the solar switch to VO2.

SOLAR Menu

| | | |
|---|---|---|
| 03 | Min. running time of the solar panel pump | 3 min. |
| 05 | Max. limit of the KSPF tank | 85°C (at KSPF) |
| | … | |
| | … | |
| 15 | Check cycle | 10 min |
| 16 | SLVF switching temperature | 55°C (at SLVF) |

SOLID FUEL Menu

| | | |
|---|---|---|
| 1 | Boiler type | 3 |
| | … | |
| | … | |

BUFFER Menu

| | | |
|---|---|---|
| 2 | Maximum temperature | 105°C |
| … | | |
| 14 | Buffer temperature | 60°C |

NOTE As solar heating is connected to the same accumulation tank as the boiler, the bottom sensor (KSPF) is used to control both the automatic boiler and the solar system. If you need to separate the control sensor for the boiler and for the solar system (the boiler sensor must be located in a different place from the location of the KSPF sensor for the solar system), the sensor (FPF) must be connected to the free var. input VEX with definition (HYDRAULIC Menu, par.8-10=18) for the boiler burner control.

## 5.3.10 SOLID FUEL Menu

This menu is used to define parameters for the boiler - boiler type, differential, boiler pump control, etc.



### 5.3.10.1 SOLID FUEL Menu - overview of parameters

| Parameter | Description | Setting range / Setting values | Default setting | Setting |
|---|---|---|---|---|
| 1 | Boiler type | OFF<br>1 Uncontrolled boiler<br>2 Pellet boiler without a buffer<br>3 Pellet boiler / buffer operation<br>4 Solid fuel boiler with a flue gas sensor<br>5 Combined boiler (4+2)<br>6 Combined boiler (4+3) | 4 | |
| 2 | Minimum temperature $KT_{min}$ | 20….80 | 80°C | |
| 3 | Maximum temperature $KT_{max}$ | 30…110 | 95°C | |
| 4 | Boiler pump ON | 30…80°C | 30°C | |
| 5 | Boiler pump switching differential | 2…40K | 5K | |
| 6 | Pellet burner switching differential | 2…40K | 6K | |
| 7 | Fan switching differential | 2…30 | 3K | |
| 8 | Fan type | 1 – Exhaust fan<br>2 – Pressure fan | 1 | |
| 9 | Fuel loading time | 1…10 | 3 min. | |
| 10 | Max. exhaust fan flue gas temperature | 50…500 | 500°C | |
| 11 | Max. flue gas temperature for the exhaust flap | 50…500 | 180°C | |
| 12 | Exhaust flap switching differential | 2…50 | 5K | |
| 13 | Buffer switching differential | 2…40°C | 5K | |
| 14 | Start-up protection of the heater - heating circuit deactivation | 5…KTmin | 36°C | |
| 15 | SET-POINT increase | 2…20 | 4K | |
| 16 | Forced heater losses | OFF, 1 – to MIX, 2 – to DHW ,3 – to MIX and DHW | 3 | |
| 17 | Boiler circulation pump switch-over to WF/AGF | 1 WF<br>2 AGF | 2 | |
| 18 | Minimum flue gas temperature | 50°C…500°C | 80°C | |
| 19 | Boiler switch-off type | 1 WF<br>2 AGF | 1 | |
| 20 | Protection at start-up of the boiler circulation pump | ON, OFF | OFF | |
| 21 | Operation of exhaust fan together with the pellet burner | ON, OFF | OFF | |
| 22 | Summer heating of DHW with a boiler of type 5, 6 | ON, OFF | OFF | |
| RESET | | | | |

### 5.3.10.2 SOLID FUEL Menu / par. 1 – Boiler type

Function — This parameter defines the boiler type. The parameter is set automatically after selection of the hydraulic diagram no.

**Setting range** — **OFF** – No boiler is connected to the controller.

Function — The controller is only used to control heating circuits (e.g. combination of several controllers in large systems (see BUS connection of more controllers to control more eating circuits)), solar heating, DHW heating, etc.

**1** – Uncontrolled boiler – not controller by the controller

Function — It is a boiler type that the controller either cannot control (the boiler does not have any el. control element, e.g. fan) or the boiler has its own control. Only the water temperature (WF) is measure in the boiler for the purpose of control of the boiler pump.
This value is automatically defined in hydraulic examples 1, 3 and 4

**2** – Pellet boiler – without a buffer (accumulation tank)

Function — This is a controlled automatic boiler type activated automatically on the basis of demand of the heating system. The boiler is not connected to an accumulation tank and is controlled in such a way that on achieving the operation temperature (KTmin+dif) it is switched off and after cooling down by the differential it is switched on.

With this boiler the fan and burner are connected to the same terminal - see INSTALLATION.
This value is automatically set in hydraulic example 9.

**3** – Pellet boiler – with an accumulation tank

Function This is a controlled automatic boiler type. The boiler is connected to the accumulation tank and is controlled on the basis of the operation temperature and temperatures in the accumulation tank.
With this boiler the fan and burner are connected to the same terminal - see INSTALLATION.
This value is automatically set in hydraulic examples 10 and 12.

**4** – Controlled solid fuel boiler (with flue gas temperature monitoring).

Function This is a solid fuel boiler type that is controlled through fan control in accordance with the boiler water and flue gas temperature.
This value is automatically set in hydraulic examples 17, 19 and 20

**5** – Combination of boilers 4 + 2

Function A combined boiler can be operated as an automatic, e.g. pellet boiler or as a boiler with manual fuel loading. Generally, this is the case of boilers DC15EP(L), DC18SP(L), DC25SP(L), DC32SP(L), or a solid fuel boiler with a burner in the top door. The boiler is connected without an accumulation tank, i.e. the heat circuit is released on the basis of its water and flue gas temperature.
During the installation the fan and the burner are connected separately to different terminals – see INSTALLATION
This value is automatically set in hydraulic example 31

**6** – Combination of boilers 4 + 3

Function A combined boiler can be operated as an automatic, e.g. pellet boiler or as a boiler with manual fuel loading. Generally, this is the case of boilers DC15EP(L), DC18SP(L), DC25SP(L), DC32SP(L), or a solid fuel boiler with a burner in the top door. The boiler is connected with an accumulation tank, i.e. the heating circuit is released on the basis of the temperature of the PF sensor.
During the installation the fan and the burner are connected separately to different terminals – see INSTALLATION
This value is automatically set in hydraulic examples from no. 32 on.

**Default setting** 4

### 5.3.10.3 SOLID FUEL Menu / par. 2 – Minimum operation temperature (KTmin)

Function This parameter defines the minimum operation temperature of a controlled boiler. If the temperature drops below the set value, the controlled contact is activated.

**Default setting** 80°C

**Setting range** **20…95°C**

NOTE The function of this parameter refers to par.6 – burner differential or to par. 7 – fan differential

NOTE To be able to fully connect the boiler to the circuit during operation, you must set the KTmin temperature in accordance with the return water temperature (it depends on the used valve on the return pipeline to the boiler).

The **value** must be set **according to** the following **example**:

*Return water temperature* is secured with the Laddomat 21 thermal fitting with a 72°C thermal valve.

*Temperature gradient of the system* is 12°C (difference between the input and output temperature of the system - water cooling by passage through the circuit).

Calculated KTmin value n 72°C + 12°C = 84°C



### 5.3.10.4 SOLID FUEL Menu / par. 3 – Maximum operation temperature (KTmax)

Function This parameter defines the critical operation temperature of the boiler. If this value is achieved, the controller will switch over to the emergency status and if forced losses are enabled (see par.16), temperature will be released from the boiler to assigned circuits in accordance with the set maximum temperatures.

**Default setting** 95°C

**Setting range** **20…95°C**

**NOTE** The set value must be higher than KTmin + par.5 (boiler type 2,3) or par.6 (boiler type 4).

GB

### 5.3.10.5 SOLID FUEL Menu / par. 4 – Boiler pump switching on

Function — This parameter defines switching-on of the boiler pump.

**NOTE** — Switching-on of the boiler pump is bound to other conditions depending on the selected hydraulic diagram:

Hydraulic example 1,9 — ON …WF boiler temperature is equal to or higher than the set value

Hydraulic example 3,4 — ON…Current WF boiler temperature > = par.4
and at the same time
Current WF boiler temperature is > = current PF tank temperature + switching difference (par. 15 of the BUFFER menu)

Hydraulic example 17 — ON…Current WF boiler temperature > = par.4
and at the same time
Current AGF boiler temperature is > = min. flue gas temperature AGFmin (par.18)

Hydraulic example 19,20 — ON…Current WF boiler temperature > = par.4
and at the same time
Current WF boiler temperature is > = current PF tank temperature + switching difference (par. 15 of the BUFFER menu)
and at the same time
Current AGF boiler temperature is > = min. flue gas temperature AGFmin (par.18)

**Default setting** — depending on the hydraulic example

**Setting range** — 3**0…80°C**

**NOTE** — The set value must be lower than KTmin + par.5 (boiler type 2,3) or par.6 (boiler type 4) for the boiler to be able to achieve the switch-off temperature, the pump would be started at KTmax and cycling would occur.

**Recommendation** — To avoid unwanted impacts due to abrupt opening of the valve on the return pipeline of the boiler, the following rule should be applied:
*Set switch-on temperature < temperature of return water to the boiler.*

*Example* — Switch-on temperature 65°C < used thermal valve 72°C in Laddomat 21

**NOTE** — In some applications gravity circulation may cause undesired rinsing via the return water valve bypass to the boiler; then, the switch-on temperature of the boiler pump should be reduced (the pressure of the boiler pump will close the bypass).

### 5.3.10.6 SOLID FUEL Menu / par. 5 – Boiler pump switch-on differential

Function — This parameter defines that boiler pump switch-on differential, i.e. how much the WF boiler temperature will drop below the switching temperature of the boiler pump.

**Default setting** — 5 K

**Setting range** — 2…40 K

### 5.3.10.7 SOLID FUEL Menu / par. 6 – Pellet burner switching differential

Function — This parameter defines the switching differential of the pellet burner, i.e. how much the WF boiler temperature will rise above KTmin to switch off the burner.

**Default setting** — 6 K

**Setting range** — 2…40 K

### 5.3.10.8 SOLID FUEL Menu / par. 7 – Fan switching difference

Function — This parameter defines the switching differential of the fan, i.e. how much the WF boiler temperature will rise above KTmin to switch off the fan.

**Default setting** — 3 K

**Setting range** — 2…30 K

**Recommendation** — The differential values should be set together with KTmin with regard to the boiler inertia to avoid boiler overheating.

### 5.3.10.9 SOLID FUEL Menu / par. 8 – Fan type

Function — This parameter defines the fan type.

*Exhaust* — An exhaust fan continues running on opening of the door to support flue gas exhaust.

*Pressure* — A pressure fan must be switched off before opening of the door to avoid releasing flue gas or open fire from the boiler.

**Default setting** — 1

**Setting range** — 1 – Exhaust
2 - Pressure

### 5.3.10.10 SOLID FUEL Menu / par. 9 – Fan period

Function — This parameter defines the time of a manual change of fan status during boiler operation.

*Exhaust* — If the fan is OFF, the period determines the running time after pressing of the key.

*Pressure* — If the fan is on, the period determines the running time after pressing of the key.

**Default setting** — 3 min

**Setting range** — 1…10 min

### 5.3.10.11 SOLID FUEL Menu / par. 10 – Maximum flue gas temperature

Function — This parameter defines the maximum flue gas temperature that could damage parts of the boiler (e.g. the exhaust fan)

**Default setting** — 500 °C

**Setting range** — 50…500°C

**Recommendation** — The value should be set with regard to the maximum temperature for all concerned components, incl. the flue gas sensor.

### 5.3.10.12 SOLID FUEL Menu / par. 11 – Flue gas temperature for the boiler exhaust flap

Function — This parameter defines the flue gas temperature at which the exhaust flap of the boiler is closed.

**Default setting** — 180 °C

**Setting range** — 50…500°C

GB

### 5.3.10.13 SOLID FUEL Menu / par. 12 – Boiler exhaust flap switching differential

| | |
|---|---|
| Function | This parameter defines the switching differential of the exhaust flap, i.e. how much the AFG flue gas temperature will drop below par.11 to open the exhaust flap. |
| **Default setting** | 5 K |
| **Setting range** | 2…50 K |
| **Recommendation** | The differential values should be set together with KTmin with regard to the boiler inertia to avoid boiler overheating. |

### 5.3.10.14 SOLID FUEL Menu / par. 13 – Buffer switching differential

| | |
|---|---|
| Function | This parameter defines the switching differential of the buffer. |
| **Default setting** | 5 K |
| **Setting range** | 2…40 K |

### 5.3.10.15 SOLID FUEL Menu / par. 14 – Boiler start-up protection

| | |
|---|---|
| Function | This parameter defines the minimum boiler temperature at which it is necessary to close the connection of the boiler with a heat consuming appliance (heating circuits, buffer, etc.) |
| **Default setting** | depending on the hydraulic diagram |
| **Setting range** | 2…KTmin |

### 5.3.10.16 SOLID FUEL Menu / par. 15 – Switching differential of par. 14

| | |
|---|---|
| Function | This parameter defines the sufficient temperature of the boiler at which the boiler can be interconnected with another circuit. |
| Function | Sufficient temperature = par.14 + set differential value |
| **Default setting** | 4 K |
| **Setting range** | 2…20 K |

### 5.3.10.17 SOLID FUEL Menu / par. 16 – Forced boiler losses

| | |
|---|---|
| Function | This parameter defines where excessive heat from the boiler may be released at the achievement of KTmax |
| **Default setting** | depending on the hydraulic diagram |
| **Setting range** | OFF – Not enabled (the boiler must be protected in another way)<br>**1 –** DHW circuit<br>**2 –** Heating circuits<br>**3 –** Accumulation tank |

### 5.3.10.18 SOLID FUEL Menu / par. 17 – Boiler pump control (DKP)

Function This parameter defines on the basis of which the boiler pump (DKP) is controlled.

**Default setting** Hydraulic diagram

**Setting range** **1 –** WF boiler water temperature
**2 -** AGF boiler flue gas temperature

### 5.3.10.19 SOLID FUEL Menu / par. 18 – Minimum flue gas temperature

Function In a boiler with the AGF sensor this parameter defines the minimum flue gas temperature necessary to switch off the boiler.

**Default setting** 80°C

**Setting range** 50…AGFmax

NOTE This temperature controls the switch-off of the fan and pump as follows:

If the current $AGF_{actual}$ boiler flue gas temperature is lower than the set value, the boiler pump (DKP) is switched off and the fan may only be switched on by pressing of the Fan key for the fan period.

If the $AGF_{actual}$ boiler flue gas temperature is higher than the set value, switching of the other components is controlled by the WF boiler water temperature.

RECOMMENDATION Be careful about proper positioning of the flue gas sensor. If the sensor does not read the temperature correctly, the controller functions will not work properly. In case of a sensor failure (WF/KF or AGF ) safety switch off will occur (KKPF ON, FAN OFF).

### 5.3.10.20 SOLID FUEL Menu / par. 19 – Boiler switch-off type

Function This parameter defines the boiler control type

**Default setting** 1

**Setting range** 1 – by the WF boiler sensor
2 – external control

**NOTE** To maintain proper functions of the controller leave the setting on value 1.

### 5.3.10.21 SOLID FUEL Menu / par. 20 – Enabling boiler protection

Function This parameter defines boiler protection in accordance with par.14 from rinsing by activated circuit pumps

**Default setting** OFF

**Setting range** ON – Arrangement without an accumulation tank
**OFF** – With an accumulation tank

### 5.3.10.22 SOLID FUEL Menu / par. 21 – Operation of fan together with burner

Function With combined boiler of the type no. 5, 6 you can select whether the fan will be in operation together with the pellet boiler. The DCxxEP(L) and DCxxSP(L) boilers are designed for burner operation without an exhaust fan, with boilers with a burner in the top door (e.g. DC18S with an adjustment, etc.) the fan must run together with the burner.

**Default setting** OFF
**Setting range** OFF – operation without a fan
ON – operation with a fan

**WARNING** The fan used in combined boilers must always be of the exhaust type; a pressure fan must never be used together with a burner.

GB

### 5.3.10.23 SOLID FUEL Menu / par. 22 – Summer heating of DHW by a boiler of type 5,6

Function This parameter defines charging of DHW with the burner of a combined boiler 2, 3 in the active summer mode.

**Default setting** OFF
**Setting range** ON – heating allowed – DHW will be heated by the burner throughout the year
OFF – heating in the heating season only

## 5.3.11 SOURCES Menu

This menu is used to define parameters of combined boilers, EHP, etc.

### 5.3.11.1 SOURCES Menu - overview of parameters

| Parameter | Description | Setting range / Setting values | Default setting | Setting |
|---|---|---|---|---|
| 1 | Automatic switch over from SRC-1 | OFF<br>1 Switch over to SRC-2 | OFF | |
| 2 | Automatic return to SRC-1 | VYP, ZAP | OFF | |
| 3 | Parallel operation of 2 sources - CASCADE | VYP, ZAP | OFF | |
| 4 | KTzero2 | 10…90°C | 30°C | |
| 5 | KTmin2 | 10…90°C | 80°C | |
| 6 | Differential of KTmin2 | 0…10°C | 5°C | |
| 7 | KTmax2 | 10…90°C | 95°C | |
| 8 | Summer heating of DHW with automatic return to SRC-1 | OFF, ON | OFF | |
| 9 | Comfortable EHP heating | OFF, ON | OFF | |
| 10 | DHW heating with EHP in the summer mode | OFF, ON | OFF | |
| 11 | EHP switch-on delay | 0 – 250 min | 0 min | |
| 12 | Name of SRC-1 | | SRC-1 | |
| 13 | Name of SRC-2 | | SRC-2 | |
| 14 | Name of SRC-3 (EHP) | | SRC-3 (EHP) | |

### 5.3.11.2 SOURCES Menu / par. 1 – Automatic switch-over after burning out of SRC-1

Function Some types of combined boilers – DcxxEP(L), DCxxSP(L) – enable operation of both sources of heat without the necessity of any installation or removal of a burner, etc. This parameter enables automatic switch-over after burning out of the solid fuel boiler to the automatic source - burner, which may then automatically continue operating.

Default setting OFF - 1

**Setting range**

**OFF** – The boiler (source) type can only be changed by manual selection and activation, see control buttons. This is usually a boiler type where a burner must be additionally installed or removed to enable solid fuel operation, i.e. an automatic change is not possible.

**1** – automatic switch-over to source 2 (SRC-2)

Function Automatic switch-over to SRC-2 (generally a burner) is controlled on the basis of the flue gas temperature, i.e. the switch-over is controlled by the setting of parameter no. 18 in the SOLID FUEL menu. If the flue gas temperature drops below the set value, the system will switch over to source 2, which may then automatically supply the heating system on the basis of the same rules that are valid for boiler types 2 or 3.

NOTE Only if the boiler type is 5 or 6.

### 5.3.11.3 SOURCES Menu / par. 2 – Auto return to SRC-1

Function If 2 separate heat sources are used (SRC-1 – solid fuel with a flue gas sensor and SRC-2 – automatic boiler), the operation of SRC2 is stopped after ignition of SRC-1.

Setting range OFF – SRC-2 must be stopped automatically ON – SRC-2 is stopped automatically

NOTE Hydraulic diagrams >no.41

WARNING Not supported

### 5.3.11.4 SOURCES Menu / par. 3 – Simultaneous operation of 2 sources - cascade

Function: If an external automatic boiler is connected and the heating system is designed for simultaneous operation of two sources of heat, by activation of the parameter you can control a simple cascade of 2 boilers, where both the boilers are operated within the operation temperatures only.

Default setting: OFF
Setting range: OFF, ON

NOTE: Hydraulic diagrams >no.41

WARNING: Not supported

### 5.3.11.5 SOURCES Menu / par. 4 – Zero temperature of the external source KT2zero

Function: If the WF2 temperature (external boiler water temperature) is lower than the set value, the controller considers the boiler as burnt our - cold - for subsequent functions.

Default setting: 40°C
Setting range: 20…95°C

NOTE: Hydraulic diagrams >no.41

WARNING: Not supported

### 5.3.11.6 SOURCES Menu / par. 5 – Minimum temperature of the external source KT2min

Function: This parameter defines the minimum operation temperature of the controlled boiler. If the temperature drops below the set value, the controlled contact of the burner or boiler fan is switched on.

Default setting: 80°C
Setting range: 20…95°C

NOTE: Hydraulic diagrams >no. 41

WARNING: Not supported

### 5.3.11.7 SOURCES Menu / par. 6 – External source differential

Function: This parameter defines the minimum operation temperature of the controlled boiler. If the temperature drops below the set value, the controlled contact of the burner or boiler fan is switched on.

Default setting: 80°C
Setting range: 20…95°C

NOTE: Hydraulic diagrams >no. 41

WARNING: Not supported

### 5.3.11.8 SOURCES Menu / par. 7 – Maximum temperature of the external source KT2max

Function: This parameter defines the minimum operation temperature of the controlled boiler. If the temperature drops below the set value, the controlled contact of the burner or boiler fan is switched on.

Default setting: 80°C
Setting range: 20…95°C

NOTE: Hydraulic diagrams >no. 41

WARNING: Not supported

### 5.3.11.9 SOURCES Menu / par. 8 – Summer heating of DHW with SRC-3

Function: Heating of DHW in the summer period (the outdoor temperature is higher than the SUMMER par. or the SUMMER control mode) can be done with the use of the SRC-3 automatic source.

Default setting: OFF

Setting range: **OFF** – the SRC-3 automatic source is only started in the winter period
**ON** – the SRC-3 automatic source is also used for summer heating of DHW

NOTE: Hydraulic diagrams >no. 41

WARNING: Not supported

### 5.3.11.10 SOURCES Menu / par. 9 – Comfortable EHP operation

Function: This parameter defines whether EHP (electric heating coil of the accumulation tank) should be a full source or only operate in the antifreeze mode.

Setting range:

**OFF** – If EHP is activated, values for antifreeze room temperature are calculated regardless of the control mode. If the boiler is on, EHP is disconnected and the room temperature is maintained on the basis of the selected control mode.

**ON** – EHP is a full source covering all demands.

NOTE: Only if EHP is selected

### 5.3.11.11 SOURCES Menu / par. 10 – Summer heating of DHW with EHP

Function: This parameter defines activation of EHP for summer heating of DHW from the accumulation tank. This function is generally use in an application with a heater inserted in the accumulation tank.

Setting range:

**OFF** – EHP operation in the winter period only (the outdoor temperature is lower than the SUMMER par. or SUMMER control mode)
**ON** – Operation of EHP in the summer season as well

NOTE: Only if EHP is selected

### 5.3.11.12 SOURCES Menu / par. 11 – Delayed switch-on of EHP

Function: Activation of EHP can be delayed by the set value for possible ignition of the boiler.

Setting range: 0…250min

NOTE: Only if EHP is selected

### 5.3.11.13 SOURCES Menu – Naming of SRC-1

For better identification of the source you can select your own name for the SRC-1 source in the length of 5 characters (e.g. WOOD)

NOTE Boiler type 5 or 6 must be selected

### 5.3.11.14 SOURCES Menu – Naming of SRC-2

For better identification of the source you can select your own name for the SRC-2 source in the length of 5 characters (e.g. PELET)

NOTE Boiler type 5 or 6 must be selected

## 5.3.12 BUFFER Menu

This menu is displayed after activation, see the HYDRAULIC Menu, and is used to define parameters of the accumulation tank.

### 5.3.12.1 BUFFER Menu - overview of parameters

| Parameter | Description | Setting range / Setting values | Default setting | Setting |
|---|---|---|---|---|
| 01 | Minimum temperature | 5 °C ... Maximum temperature | 40 °C | |
| 02 | Maximum temperature | Minimum temperature ... 95 °C | 105 °C | |
| 03 | Parallel boiler shift | -10 ... 50 K | 8 K | |
| 04 | Buffer switching differential | 1 ... 20 K | 2 K | |
| 05 | Forced losses | OFF<br>1 To the DHW tank<br>2 To the heating circuits | OFF | |
| 06 | Extended switch-on differential time | (Switch-off differential + 2 K) ... 30 K | 0 K | |
| 07 | Extended switch-off differential time | X K ... (Switch-on differential – 2 K) | -3 K | |
| 08 | Buffer start-up protection | OFF No start-up protection<br>ON Active start-up protection | ON | |
| 09 | Buffer discharge protection | OFF No discharge protection<br>ON Active discharge protection | ON | |
| 10 | Buffer tank operation mode | 1 MC1,2 and DHW charging control<br>2 MC1,2 charging control without DHW<br>3 MC1,2 and DHW discharging control<br>4 MC1,2 discharging control without DHW<br>5 Charging control with DHW switching<br>6 Discharging control to the heater | 1 | |
| 11 | Extended buffer running time | 3…60 | 3 min | |
| 14 | Buffer temperature setting | OFF, 5…100 °C | OFF | |
| 15 | WF < VE differential (DKP OFF) | (Switch-off differential + 2 K) ... 30 K | -3 K | |
| 16 | WF > VE differential (DKP ON) | X K ... (Switch-on differential – 2 K) | 0 K | |

### 5.3.12.2 BUFFER Menu / par. 1 – Minimum buffer temperature

Function: This parameter defines the lowest buffer temperature = circuit switching temperature

**Default setting**: 40°C

**Setting range**: 5°C…par.2

WARNING: The setting of minimum temperature of the rank influences the operation of the heating circuits, i.e. in case of a drop below the set value the heating circuits are off = do not heat any more; however, an important factor is whether it is sensible to discharge the accumulation tanks to too low temperatures that are not usually sufficient to cover requirements of the heating circuits and at the same time you should remember that the lower temperature at the start of the charging cycle, the longer the re-charging will take. There is a general rule: timely intervention = ignition of the boiler and recharging. This problem does not occur with automatic boilers as they are always activated at a drop of the accumulation tank temperature below the calculated value for the current required SET-POINT of the accumulation tank. This value is displayed in the Information in the BUFFER item after pressing of the rotary button ´left value = transmitted request and right value = current temperature. With boilers with manual ignition and loading this is the best information for timely ignition, i.e. if the current temperature drops below the requested temperature = ignition is necessary. The quicker and timelier intervention, the better the operation and quicker the charging of the accumulation tank will be.

### 5.3.12.3 BUFFER Menu / par. 2 – Maximum buffer temperature

Function: This parameter defines the critical temperature of the buffer.

**Default setting** 105°C

**Setting range** par.1…105°C

NOTE The maximum temperature is suppressed if forced losses of the boiler are enable (SOLID FUEL menu, par.16 = 3 )

### 5.3.12.4 BUFFER Menu / par. 3 – Increasing the SET-POINT of the source

Function This parameter increases the SET-POINT (requirement) for the boiler, i.e. how much higher the boiler temperature must be for the requirement to be achieved in the tank.

**Default setting** 8 K

**Setting range** -10…50 K

### 5.3.12.5 BUFFER Menu / par. 4 – Buffer switching differential

Function This parameter defines the switching differential of the buffer - used in the buffer charging and discharging functions.

**Default setting** 2 K

**Setting range** 1…20 K

### 5.3.12.6 BUFFER Menu / par. 5 – Forced buffer losses

Function This parameter defines where energy will be released if he max. temperature (par. 2) is the buffer is achieved.

**Default setting** OFF

**Setting range** OFF
**1 –** DHW
**2 –** Heating circuits

### 5.3.12.7 BUFFER Menu / par. 6 – Extended switch-on differential time

Function This parameter increases par.4

**Default setting** 0 K

**RECOMMENDATION** DO NOT CHANGE THE SET VALUE

### 5.3.12.8 BUFFER Menu / par. 7 – Extended switch-off differential time

Function This parameter defines the switch-off differential of buffer charging

**Default setting** -3 K

**RECOMMENDATION** DO NOT CHANGE THE SET VALUE

### 5.3.12.9 BUFFER Menu / par. 8 – Buffer charging protection

Function: If the buffer start-up protection function is enabled and the minimum buffer temperature ("Buffer" menu, par. 01) is lower by 2K, all the pumps of the heating circuits (mixing and DHW circuits) will be stopped (OFF). The buffer start-up protection will be deactivated (all the pumps ON) as soon as the buffer temperature exceeds the minimum buffer temperature plus 1/2 the switching differential value. If the buffer start-up protection is disabled, all heating circuits are active.

**Default setting**: ON

**Setting range**: OFF / ON

### 5.3.12.10 BUFFER Menu / par. 9 – Buffer charging protection

**Function**: This parameter defines protection of the buffer from being cooled by colder water from the source (boiler) due to operation of the DKP pump.

**Default setting**: **ON**

**Setting range**:

**OFF** – The boiler pump is switched on on the basis of the boiler temperature and can charge the buffer with colder water = cool the buffer. The, par. 15 and 16 do not have any influence. Subsequently, the boiler pump will not be switched off on the basis of the temperature difference between the source (boiler) and buffer, but on the basis of par. 4 of the SOLID FUEL Menu only, which may cause cooling of the buffer after burning out of the boiler, its unnecessary rinse and loss of accumulated energy. This setting is generally recommended for the test operation of the heating system.

**ON** – The boiler pump is switched on by the boiler temperatures and at the same time the boiler temperature must be higher than the buffer temperature, see par. 16. The pump is switched off by the difference of the source (boiler) and buffer temperatures set in par. 15.

NOTE: You should only activate the protection after a check that the temperature of the source (boiler) and the buffer correspond to the actual situation. If the boiler temperature is measured wrongly and it exhibits a difference from the actual temperature (generally to a lower value), the boiler pump may not be in operation, which causes overheating of the boiler.

### 5.3.12.11 BUFFER Menu / par. 10 – Buffer tank operation mode

The parameter is fixed to 1 - buffer connection in accordance with recommended ATMOS diagrams.

### 5.3.12.12 BUFFER Menu / par. 11 – Extended pump running time

Function: This parameter defines extended operation of the charging pump.

**Default setting**: 3 min

**Setting range**: 3…60 min

### 5.3.12.13 BUFFER Menu / par. 14 – Minimum tank SET-POINT in operation

Function: The entered value determines the minimum requirement (SET-POINT) for the tank at which charging with the automatic boiler (burner) or electric heating (EHF ) is activated. Charging is then deactivated when this value is met at both the sensors of the accumulation tank - PF(top) and KSPF, or FPF (bottom).
If during operation the set value is overridden by a higher requirement (SET-POINT) from the MC or DHW circuits, the higher value is naturally considered.

If the tank is not in operation (there is no SET-POINT for the tank from the heating circuits), the SET-POINT of the tank will be equal to the value of par. 1 - PFmin, or the antifreeze temperature of 5°C).
In a hydraulic system with a solid fuel boiler (with manual loading) the setting of this parameter only makes sense in combination with electric heating with EHP, or from the information point of view of maintaining the minimum temperature.

Function example

minimum tank temperature (par.1) = 40°C
minimum SET-POINT (par.14) = **60°C**
SET-POINT of MIX ½ = current flow temperature to the MC is 30°C + MIXpar.14 = 34°C
SET-POINT of DHW = required temperature of the DHW tank 60°C + DHWpar.9 = 65°C

Condition 1: Only the heating circuits are in operation, DHW is charged: **the tank is in operation**
The highest SET-POINT value is 34°C, the burner is activated at the drop of the top sensor of the accumulation tank (PF) below 60°C and the burner is switched off when this temperature is exceeded at the bottom sensor of the accumulation tank (KSPF or FPF)

Condition 2: The heating circuits and DHW tank are in operation: **the tank is in operation**
The highest SET-POINT value is 65°C, the burner is activated at the drop of the top sensor of the accumulation tank (PF) below 65°C and the burner is switched off when this temperature is exceeded at the bottom sensor of the accumulation tank (KSPF or FPF)

Condition 3: The heating circuits are off, the DHW tank is charged: **the tank is not in operation**
As there is **no requirement** for the tank = **the tank is not in operation,** the minimum SET-POINT need not be met and the tank temperature will be maintained on a value s as not to drop below par.1 = 40°C (at the moment of the charging cycle of the boiler), or below the antifreeze temperature of 5°C (after the end of the charging cycle of the boiler).If the temperature at the top sensor of the tank (PF) is lower, the burner will be switched on and when this value is achieved at the bottom sensor of the tank - KSPF (FPF), the burner will be switched off.

**Default setting** depending on the hydraulic example

Setting range

OFF – the required temperature in the tank is dynamic - it is automatically calculated from the current requirement of the system (DHW and MC). This value is usually used with solid fuel boilers with manual ignition where no set value has any influence.

5…100°C – the minimum entered value activates the automatic source at a drop by 3K. It is used e.g. in an application with an inserted DHW heater (floating heater or exchanger), where a minimum temperature must be maintained, or the minimum initial temperature is maintained in the tank to accelerated the subsequent startup of the heating system, and also in combination with electric heating using EHP.
BUFFER Menu / par. 15 – Boiler pump (DKP) switch-off differential

Function This parameter defines the differential of buffer charging switch-off (difference between the temperature of the source of heat - e.g. boiler and the tank temperature), i.e. if the source temperature is lower by the set value thank the tank temperature, the charging pump is switched off.

**Default setting** -3 K

**RECOMMENDATION** DO NOT CHANGE THE SET VALUE

### 5.3.12.14 BUFFER Menu / par. 15 – Protection switch-off differential during charging

Function If par.9=ON as protection from buffer discharge by a lower temperature the boiler pump is switched off if the temperature WF = PF minus the set value.

NOTE If low values are set, colder water may be supplied to the buffer and cool the accumulated energy. If there is not a sufficient difference between both the sensor, the boiler pump may permanently flush the buffer via the cold boiler and discharge it completely.

Default setting **-3 K**

**RECOMMENDATION** DO NOT CHANGE THE SET VALUE - the value 3K is set with regard to possible oscillation of the boiler temperature.

### 5.3.12.15 BUFFER Menu / par. 16 – Protection switch-on differential during charging

| | |
|---|---|
| Function | If par.9=ON, this parameter defines the temperature differential for switching on the boiler pump (DKP) (difference between the boiler and buffer temperature). |
| Example | If the source (boiler) temperature is higher by min. 1 °C (par.4+par.15+par.16) than the buffer temperature, the charging pump can be switched on. |
| Default setting | **0 K** |

GB

## 5.3.13 DATA BUS Menu

This menu is designed for defining parameters of the DATA BUS.

### 5.3.13.1 DATA BUS Menu - overview of parameters

| Parameter | Description | Setting range / Setting values | Default setting | Setting |
|---|---|---|---|---|
| 01 | Controller bus address | 10, 20, 30, 40, 50 | 10 | |
| 03 | Bus access level of SDW 20 Mixing circuit 1 | 1 Basic access level<br>2 Extended access level | 1 | |
| 04 | Bus access level of SDW 20 Mixing circuit 2 | 1 Basic access level<br>2 Extended access level | 1 | |

### 5.3.13.2 DATA BUS Menu / par. 1 – Controller bus address

Function This parameter defines the address of the corresponding controller.

**Default setting** 10

**Setting range** 10,20,30,40,50

### 5.3.13.3 DATA BUS Menu / par. 2 – Access level of the SDW20 unit of the direct circuit

Function This parameter defines the access level from the SDW20 unit

**Default setting** 1

**Setting range** **1** – Extended access level - possibility to set values for all the connected circuits - e.g. the landlord

**2** – Basic access level - possibility to set values for the connected circuit only - e.g. a tenant

### 5.3.13.4 DATA BUS Menu / par. 3 – Access level of the SDW20 unit - MC1

Function The same setting as in par. 2

### 5.3.13.5 DATA BUS Menu / par. 4 – Access level of the SDW20 unit - MC 2

Function The same setting as in par. 2

## 5.3.14 RELAY TEST Menu

This menu is used to test all the controlled components after the installation of the controller.

### 5.3.14.1 RELAY TEST Menu - overview of parameters

| Parameter | Description | Setting range / Setting values | Default setting |
|---|---|---|---|
| 01 | SOLID FUEL | Variable relay switching sequence depending on the heater settings | OFF |
| 02 | EXHAUST FLAP SOLID | OFF-ON-OFF- | OFF |
| 03 | OUTPUT HC-P | OFF-ON-OFF- | OFF |
| 04 | OUTPUT MC1-P | OFF-ON-OFF- | STOP |
| 05 | ACTUATOR MC1 | STOP-OPEN-STOP-CLOSE- | STOP |
| 06 | OUTPUT MC2-P | OFF-ON-OFF- | OFF |
| 07 | ACTUATOR MC2 | STOP-OPEN-STOP-CLOSE- | STOP |
| 08 | OUTPUT DHW-P | OFF-ON-OFF- | OFF |
| 09 | Variable output 1, VO1 | OFF-ON-OFF- | OFF |
| 10 | Variable output 2, VO2 | OFF-ON-OFF- | OFF |

## 5.3.15 ALARMS Menu

**Function** The control unit contains a log of alarm messages where max. 5 malfunction messages may be stored. Malfunction messages are displayed with the date, time and malfunction type (malfunction number).

The last (= latest) malfunction message is shown in the first position, previous malfunction messages are shifted by the corresponding number of positions down. If a new malfunction occurs, the data of the last (fifth) malfunction message are deleted.

There are 4 different types of malfunction messages:

**Sensor alarm messages** Values of a sensor that do not lie within its measurement range are caused either by interruption or short-circuiting of the sensor. Depending on the sensor type the indication will be between 10 and 20 with index 0 for short circuit and 1 for interruption.

**BOILER alarm messages** These messages depend on current set conditions and their indication will be between 30 and 40 with index 0, 1 or 2.

**Logical alarm messages** These messages respond to the current check result. They may manifest values between 50 and 60 with index 0,1 or 2.
The display is enabled in the SYSTEM menu in par.13.

**Bus alarm messages** These messages indicate problems of the double address or failure to recognize the address type. Their values are in the order of 70 with index 0 or 1.

The alarm messages will be displayed:

- in the control unit display
- in the INFO menu
- in the malfunction message log
- via the assigned output (if available)

*Malfunction message register* The control unit is equipped with a register of malfunction messages where up to 5 messages may be stored. The messages are stored with the date, time and malfunction type (alarm code). Saved malfunction messages may be invoked in the reverse time order in the “Malfunction messages” menu.

The last (= latest) malfunction message is shown in the first position, previous malfunction messages are shifted by the corresponding number of positions down. If a new malfunction occurs, the data of the last (fifth) malfunction message are deleted.

In case of a heater malfunction (codes 30-1 or 31-3) with the frost protection active the boiler start-up protection is switched off and the heating circuit pumps are switched on to reduce the risk of system freezing.

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### 5.3.15.1 List of ALARMS

| Type | Element | Abbrev. | Alarm reason | Code | Notes |
|---|---|---|---|---|---|
| System | Outdoor sensor | AF | Interruption | 10-0 | |
| System | Outdoor sensor | AF | Short-circuit | 10-1 | |
| System | Boiler sensor | WF | Interruption | 11-0 | |
| System | Boiler sensor | WF | Short-circuit | 11-1 | |
| System | Flow sensor 1 | VF1 | Interruption | 12-0 | MIX=OFF, pump=OFF |
| System | Flow sensor 1 | VF1 | Short-circuit | 12-1 | MIX=OFF, pump=OFF |
| System | DHW sensor | SF | Interruption | 13-0 | |
| System | DHW sensor | SF | Short-circuit | 13-1 | |
| System | VARIABILE INPUT 2 | VI2 | Interruption | 14-0 | |
| System | VARIABILE INPUT 2 | VI2 | Short-circuit | 14-1 | |
| System | VARIABILE INPUT 2 | VI2 | Alarm | 14-7 | |
| System | VARIABILE INPUT 3 | VI3 | Interruption | 15-0 | |
| System | VARIABILE INPUT 3 | VI3 | Short-circuit | 15-1 | |
| System | VARIABILE INPUT 3 | VI3 | Alarm | 15-7 | |
| System | VARIABILE INPUT 1 | VI1 | Interruption | 16-0 | |
| System | VARIABILE INPUT 1 | VI1 | Short-circuit | 16-1 | |
| System | VARIABILE INPUT 1 | VI1 | Alarm | 16-7 | |
| System | Bottom tank sensor | KSPF | Interruption | 17-0 | |
| System | Bottom tank sensor | KSPF | Short-circuit | 17-1 | |
| System | Flow sensor 2 | VF2 | Interruption | 18-0 | MIX=OFF, pump=OFF |
| System | flow sensor 2 | VF2 | Short-circuit | 18-1 | MIX=OFF, pump=OFF |
| System | Solar panel sensor | KVLF | Interruption | 19-0 | |
| System | Solar panel sensor | KVLF | Short-circuit | 19-1 | |
| System | Room sensor (RSC/RS) | SDW | Interruption | 20-0 | |
| System | (RSC/RS) | SDW | Short-circuit | 20-1 | |
| Logical | Burner 1 | Br1 | Failure to switch off | 30-2 | |
| Logical | Burner 1 | Br1 | Failure to switch on | 30-3 | |
| System | Flue gas temperature | AGF | Exceeded | 33-5 | |
| System | Flue gas temperature | AGF | SLT activation | 33-8 | |
| System | EHP tank sensor | PF | OF sensor not defined | 35-1 | |
| logical | Boiler temperature | WF | Insufficient | 50-4 | after 90 min |
| System | Boiler temperature | WF | Exceeded | 50-5 | |
| Logical | DHW temperature | SF | Insufficient | 51-4 | after 4 hours |
| Logical | Flow temperature of MC1 | VF1 | Insufficient | 52-4 | after 1 hour |
| Logical | Flow temperature of MC2 | VF2 | Insufficient | 53-4 | after 1 hour |
| Logical | Room temperature of MC1 | SDW | Insufficient | 55-4 | after 3 hours |
| Logical | Room temperature of MC2 | SDW | Insufficient | 56-4 | after 3 hours |
| System | Address | BUS | Address collision | 70-0 | |
| System | Activity | | No bus signal | 70-1 | |
| System | EEPROM | | | 71-0 | |
| System | EEPROM defect | | | 71-1 | |

## 5.3.16 CALIBRATION Menu



**Function** If measured values of connected sensors do not correspond to actual values, sensor values may be modified. In this menu all the sensors connected to the control unit may be adjusted by ± 5 K as compared to the default setting.

The display will show the current value plus minus the specified correction as well as the new temperature value. The values may be corrected with the step of 0.5 K.

⚠ **NOTE** **The internal circuits of sensors are set in the production with the use of accurate measurement devices. The adjustment may only be performed if the deviation is constant throughout the measurement range.**

**In case of calibration of a sensor the corresponding value must always be recorded as the default setting is no longer valid and the reference value is lost.**

**The default setting cannot be even restored by a reset.**

**Use**
- Compensation of very long connection lines to a sensor
- Influence of a constant external temperature on a sensor
- Sensor out of tolerance (>1%)

### 5.3.16.1 CALIBRATION Menu - overview of parameters

| Parameter | Description | Designation | Setting range / setting values | SET |
|---|---|---|---|---|
| 01 | Outdoor sensor | AF | -5 ... +5 K | 0 K |
| 02 | Heater sensor | WF | -5 ... +5 K | 0 K |
| 03 | DHW sensor | SF | -5 ... +5 K | 0 K |
| 04 | Flow sensor - mixing circuit 1 | VF1 | -5 ... +5 K | 0 K |
| 05 | Flow sensor - mixing circuit 2 | VF2 | -5 ... +5 K | 0 K |
| 06 | Solar panel sensor | KVLF | -5 ... +5 K | 0 K |
| 07 | Buffer sensor | KSPF | -5 ... +5 K | 0 K |
| 08 | Variable input 1 | VI1 | -5 ... +5 K | 0 K |
| 09 | Variable input 2 | VI2 | -5 ... +5 K | 0 K |
| 10 | Variable input 3 | VI3 | -5 ... +5 K | 0 K |

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## 5.3.17 Bus communication

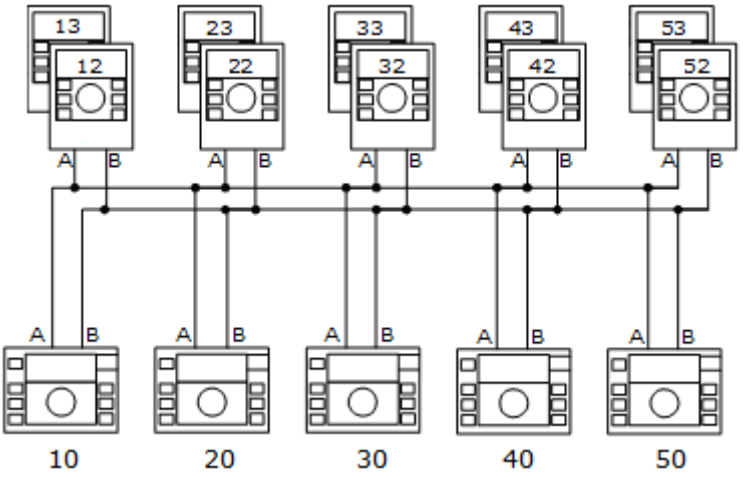
### 5.3.17.1 BUS address of the control unit

**Function**

The ADC01 control system makes it possible to extend one control unit with another four units to cover various heating circuits and DHW circuits.

This system architecture also comprises sensors and room units.

The figure below shows the maximum extension of the bus system.




These units are recognized by their corresponding addresses on the BUS that ensures selective communication between the basic unit ZG1 and interactive subunits via the bidirectional BUS. Each subunit may transmit data of max. 2 room units (wall units) via the addresses shown in the table.

| Address | Unity type | Assignment |
|---|---|---|
| 10 | SDC12-31 ACD01 | ACD01 Controller no. 1 as the "central unit" (ZG1) |
| 20 | SDC12-31 ACD01 | ACD01 Added controller no. 2 (ZG2) |
| 30 | SDC12-31 ACD01 | ACD01 Added controller no. 3 (ZG3) |
| 40 | SDC12-31 ACD01 | ACD01 Added controller no. 4 (ZG4) |
| 50 | SDC12-31 ACD01 | ACD01 Added controller no. 5 (ZG5) |

NOTE Make sure that address 10 is assigned to the central unit.

BUS addresses may only be assigned once!!!.

### 5.3.17.2 Control functions via BUS

#### 5.3.17.2.1 Boiler control

In the system of interconnected controller the function of boiler control from more interconnected controllers is not supported, i.e. the system of interconnected controller may only be connected to one heat source (boiler) via the central controller (ZG1 – controller with address 10). If there are more sources of heat in the system – pellet boiler, solid fuel boiler with their own boiler circuits, their control is not possible.

#### 5.3.17.2.2 Boiler corrosion temperature

if the heater works with corrosion protection of the boiler, this status is sent to all the mixing circuits, they close the circuits then (valves closed and pumps off).

#### 5.3.17.2.3 Indirect return temperature control

The heater in the "basic unit" sends current data of its boiler to each mixing circuit in the system that may activate indirect return temperature control after that. Not used in the pre-defined hydraulic diagrams of ATMOS.

#### 5.3.17.2.4 DHW priority

Each unit can control DHW charging priority. The priority status of every DHW charging process is sent via the bus to all the mixing circuits within the system. If e.g. the charging is in the parallel mode, all the mixing circuits remain functional.

NOTE DHW is of course controlled and set from the unit to which DHW heating is connected only.

#### 5.3.17.2.5 Heating requirement

Each requirement for heating will be fulfilled by the "central unit". The value of the highest requirement sent via the bus is decisive for the heater – the EM-SET item in INFO is changed by the highest requirement.

#### 5.3.17.2.6 Clock synchronization

Current time data (from the “central unit”) are synchronized with all the units in the system.

#### 5.3.17.2.7 Information about the room temperature

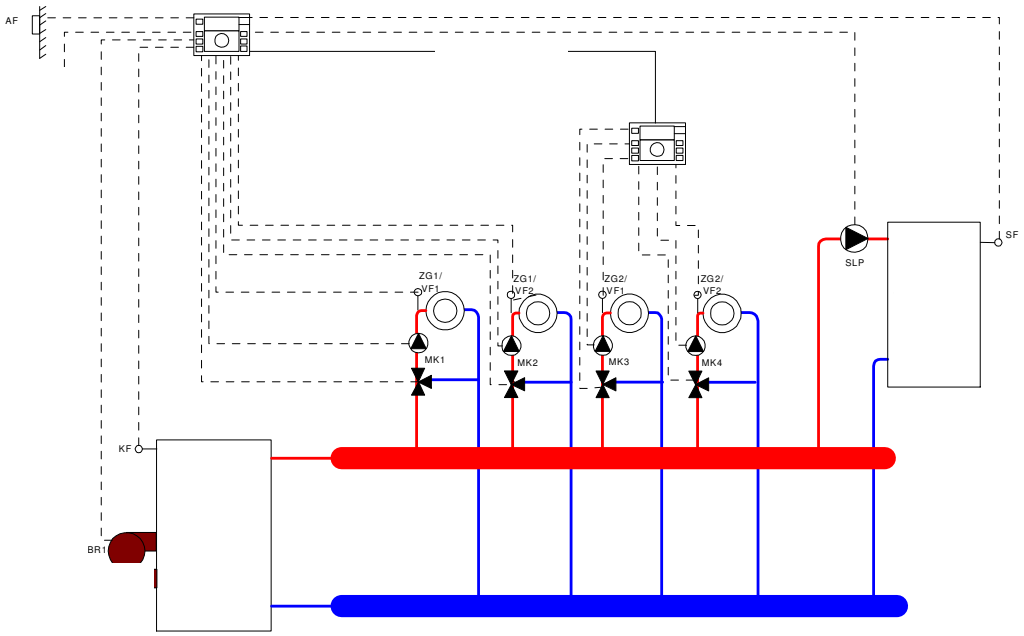
All the wall-mounted units send the assigned room temperature to the corresponding heating circuits.

#### 5.3.17.2.8 Error / status indication

Error and status indication is sent from the control units to the wall-mounted modules for display.

### 5.3.17.3 Connection examples with multiple control units

**Example 1** Heating system with one boiler, DHW control and 4 mixing circuits.




The following devices will be connected to the controller with the address 10 (ZG1):

- Outdoor sensor
- Boiler
- WF boiler sensor (or AGF)
- DHW sensor
- DHW charging pump
- Mixing circuit 1 (VF sensor, pump, servo drive)
- Mixing circuit 2 (VF sensor, pump, servo drive)

The following devices will be connected to the controller with the address 20 (ZG2):

- Mixing circuit 3 (VF sensor, pump, servo drive)
- Mixing circuit 4 (VF sensor, pump, servo drive)

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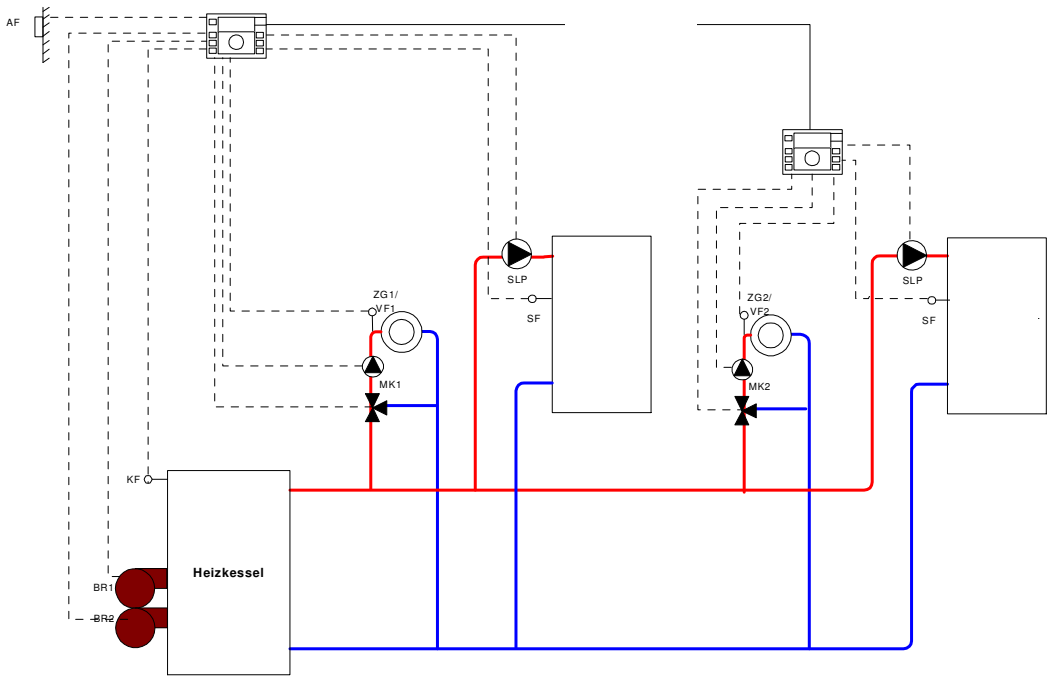
**Example 2**

Heating system with 2 mixing circuits and 2 DHW circuits (e.g. for partly separated houses with one common boiler).




Boiler DHW heater DHW heater

The following devices will be connected to the controller with the address 10 (ZG1):

- Outdoor sensor
- Boiler
- WF boiler sensor (or AGF)
- DHW sensor
- DHW charging pump
- Mixing circuit (VF sensor, pump, servo drive)

The following devices will be connected to the controller with the address 20 (ZG2):

- Mixing circuit (VF sensor, pump, servo drive)
- DHW sensor
- DHW charging pump

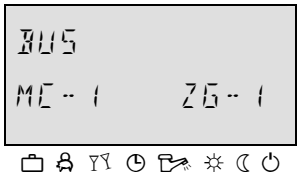
## Setting another controller connected to the BUS

If another controller is connected (BUS address 20 and higher), in the first stage the BUS address must be set. Controller addresses cannot be duplicated, i.e. each controller has its own address.
Only physically connected sensors must be set in the controller, i.e. if the PF temperature sensor is not connected, the value of the corresponding var. input will be OFF. The easiest way of removing sensors that are not connected consists in using the AUTOSET function (pressing the rotary button after switching on, see **Chyba! Nenalezen zdroj odkazů.**.
You should realize that the settings of the added controller may not exactly correspond to the above mentioned hydraulic diagrams, e.g. if an accumulation tank is used (which is the source for the heating circuits), the PF sensor will not be connected to the PF controller, but its value is transmitted in the BUS protocol even though its value is not display in the INFO of the added controller. The same holds good e.g. for an outdoor sensor, boiler temperature sensor, etc. However, the associated functions are still fulfilled.
The values in the INFO are always displayed for the corresponding BUS addresses only, i.e. values of the controller with the bus address 10 (room unit - address 12, 13) will not be shown on the controller with the address 20 and higher (room unit - address 22, 23), etc.

# 6 SDW10/20 wall units

## 6.1 Operation with SDW 20 wall units

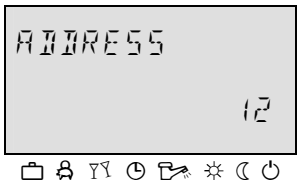
**Function**




Besides monitoring the room temperature with a digital wall unit you can also remotely control the central unit (e.g. from the living room) to set operation modes, time programs, etc. You can make settings for all the existing heating circuits.

Room units communicate with the controller in a data way, i.e. they must be connected with a data cable. The BUS address of each unit must be set so that the controller will recognize which heating circuit the unit is assigned to.

If a SDW 20 is connected to the bus system for the first time, the bus address of the heating circuit that SDW 20 should be assigned to (bus address) must be selected. .




After the confirmation of the setting a response is returned with the information which heating circuit (HC, **MC**-1, **MC**-2) and which central unit (ZG) the wall unit has been assigned to.

The assignment is performed on the basis of the following table:

| Address | Central unit address | Assignment to a heating circuit |
|---|---|---|
| 12 | 10 | ZG 1 – Mixing circuit 1 |
| 13 | 10 | ZG 1 – Mixing circuit 2 |
| 22 | 20 | ZG 2 – Mixing circuit 1 |
| 23 | 20 | ZG 2 – Mixing circuit 2 |
| 32 | …etc. | … |
| … | … | … |

**⚠ NOTE** **Duplicate assignment of addresses is not permitted and leads to transmission errors and subsequently to communication failure of the whole heating system.**

**Bus address change**
The bus address may be modified later as follows:

- Disconnect all the wall units from the data bus (disconnect the connector in the bottom part of the unit)
- Reconnect the unit and keep the rotary selector pressed until the address setting appears on the display.
- Set and confirm the new bus address.

## 6.2 Operation with SDW 10 wall units - unit without a display

**Function** A SDW 10 wall unit can be connected to the control unit and control the operation of the corresponding heating circuit.

With a SDW 10 unit you can monitor the room temperature, remotely set the temperature value and change the operation mode of the heating circuit. The settings are only valid for the corresponding heating circuit.

The bus address of the wall unit is used to determine which heating circuit the room sensor and operation mode setting should be applied to.

The connection is accomplished with the use of a data bus.

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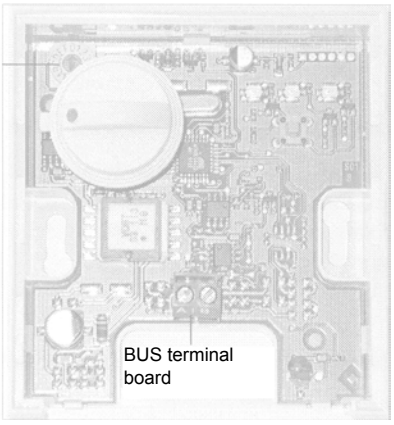
**Bus address setting**




The address of SDW 10 is set by turning of the code switch inside the room unit in accordance with the following table:

| SDW10 address | ZG address | Assignment | SDW10 address | ZG address | Assignment |
|---|---|---|---|---|---|
| 2 | 10 | ZG 1 – MIX1 | 9 | 30 | ZG 3 – MIX2 |
| 3 | 10 | ZG 1 – MIX2 | B | 40 | ZG 4 – MIX1 |
| 5 | 20 | ZG 2 – MIX1 | C | 40 | ZG 4 – MIX2 |
| 6 | 20 | ZG 2 – MIX2 | E | 50 | ZG 5 – MIX1 |
| 8 | 30 | ZG 3 – MIX1 | F | 50 | ZG 5 – MIX2 |

**Monitoring the current room temperature**

The integrated room sensor (RS) evaluates the current room temperature for all the functions that are bound to the room temperature setting and transmits it to the central unit every 20 sec.

**Operation mode setting**

The required operation mode is selected with the respective key (press for approx. 2–3 seconds) and indicated by the corresponding LED. After pressing of the key the operation mode is set in the following order:

AUTOMATIC MODE – HEATING – REDUCED – AUTOMATIC MODE – ...

After setting of an operation mode this information is transmitted to the central unit. The change is only reflected in the heating circuit the SDW 10 is assigned to.

**Automatic Mode**

The heating circuit is controlled constantly in accordance with the specifications of the automatic program P1 - P3 set in the central unit with addition or deduction of the room setting correction entered with the rotary button.

**Heating**

The heating circuit is controlled constantly in accordance with the required daytime temperature in the room with addition or deduction of the room setting correction entered with the rotary button.

**Reduced Mode**

The heating circuit is controlled constantly in accordance with the required daytime temperature in the room with addition or deduction of the room setting correction entered with the rotary button.

**Value correction**

The rotary button allows you to change the room temperature set in the central unit by ± 6 K with regard to the central position.

Turning to the right: temperature increase (max +3K)
Turning to the left: temperature reduction (max. -3K)

**Operation indication**

The operation is indicated with the use of three LED's. Possible statuses are summarized in the following table:

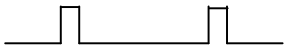
| Operation mode / Function | "Moon" LED | "Clock" LED | "Sun" LED |
|---|---|---|---|
| Automatic | OFF | ON | OFF |
| Constant heating | OFF | OFF | ON |
| Constant reduced | ON | OFF | OFF |

| Operation mode / Function | "Moon" LED | "Clock" LED | "Sun" LED |
|---|---|---|---|
| Start-up stage | Quick flashing | Quick flashing | Quick flashing |
| Address setting error | Flashing | ON | ON |
| Bus failure and parameter blocking indication | ON | Flashing | ON |
| Party (can be set on ZG) | OFF | OFF | Flashing |
| Absence (can be set on ZG) | Flashing | OFF | OFF |
| Holiday (can be set on ZG) | OFF | Flashes | OFF |

Definitions:

Flashing  0.8 sec ON and 0.8 sec OFF

Quick flashing  0.08 sec ON and 0.7 sec OFF

Flashes  0.08 sec ON and 1.4 sec OFF

In case of setting on SDC 10 the operation indication is updated immediately and within 20 seconds in case of setting on the central unit.

NOTE In all the other operation modes that are defined in the above mentioned table all the three LED's are permanently ON (SUMMER mode, STBY).

# 7 INSTALLATION

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## 7.1 BASIC DESCRIPTION

The ATMOS ACD01 equithermal controller is installed in several ways:

*To an SCS12U terminal board* With this type of installation the terminal board is expected to be inserted to the boiler panel. All ATMOS boilers from model 2008 on are prepared for installation of the controller in the upper panel of the boiler. The opening is conveniently hidden under the panel label and the electric installation is built-in under the panel. With this installation type always observe the rules of the particular boiler type and its electric array. Under the panel there is an electric diagram describing how to handle the electric installation of the boiler.

*To an SWSS12 terminal board* With this type of installation the terminal board is expected to be mounted on the wall near the boiler, especially if the boiler will also be controlled. Under the panel there is an electric diagram describing how to handle the electric installation of the boiler.

## 7.2 Safety instructions

### 7.2.1 Use

The SDC12-31ACD01 equithermal controller is exclusively designed for the control of solid fuel boilers made by the ATMOS Company in accordance with the recommended hydraulic diagrams. These systems should not exceed the maximum temperature of 120 °C.

### 7.2.2 Commissioning conditions

#### 7.2.2.1 Do not disconnect the control unit from the power supply

⚠ **CAUTION** **To prevent damage of any parts of the system, the heating system must be properly connected and filled with water.**
**The controller must be installed in accordance with the assembly instructions specified in this document. All the electric connections (power supply, fan, burner, valve drive, pumps and sensors) must comply with local regulations and standards and must correspond to the attached connection diagrams.**
**If the system comprises a floor heating system, this circuit must contain a safety thermostat for switching off the pump as protection against exceeding the maximum temperature.**
**Before the controller is put in operation, the whole installation must be inspected by a specialized technician.**

IMPORTANT! On the start-up of the controller the current date and time is preset by the manufacturer and backed up with a batter. In the controller the basic time program is already activated and the controller is preset to control the hydraulic diagram no. 19

#### 7.2.2.2 Electric installation

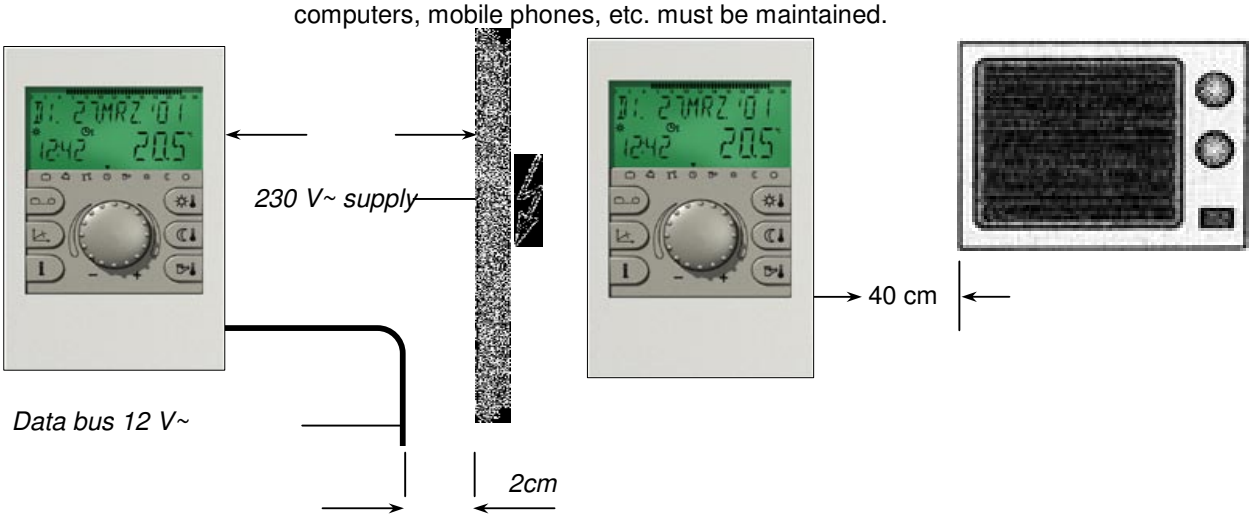
All the electric connections must be installed by a qualified person.

#### 7.2.2.3 Safety regulations for electromagnetic compatibility (EMC)

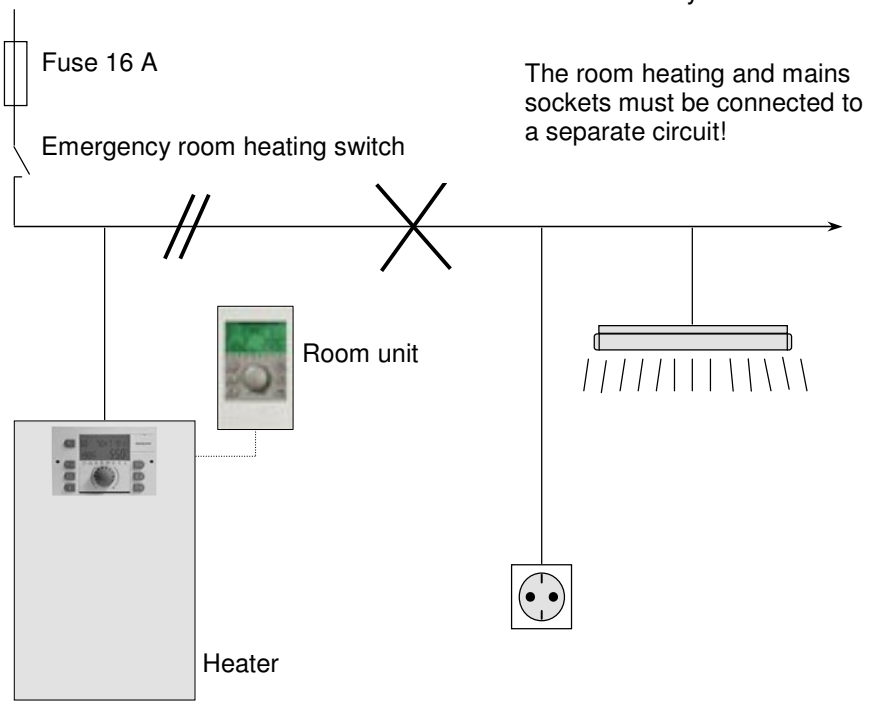
The power supply cables must always be routed separately from the cables of sensors and data buses with the minimum spacing of 2 com between cables. Crossing of cables is permitted.

For controllers with a separate power supply the minimum distance between the power supply cables and cables of sensors or buses must be maintained under any circumstances. If cable channels are used, they must be equipped with separating nets.

Within the installation of controllers or room units the minimum distance of 40 cm between the unit and other electric devices producing electromagnetic radiation as contactor switches, motors, transformers, microwave ovens, TV sets, speakers, computers, mobile phones, etc. must be maintained.

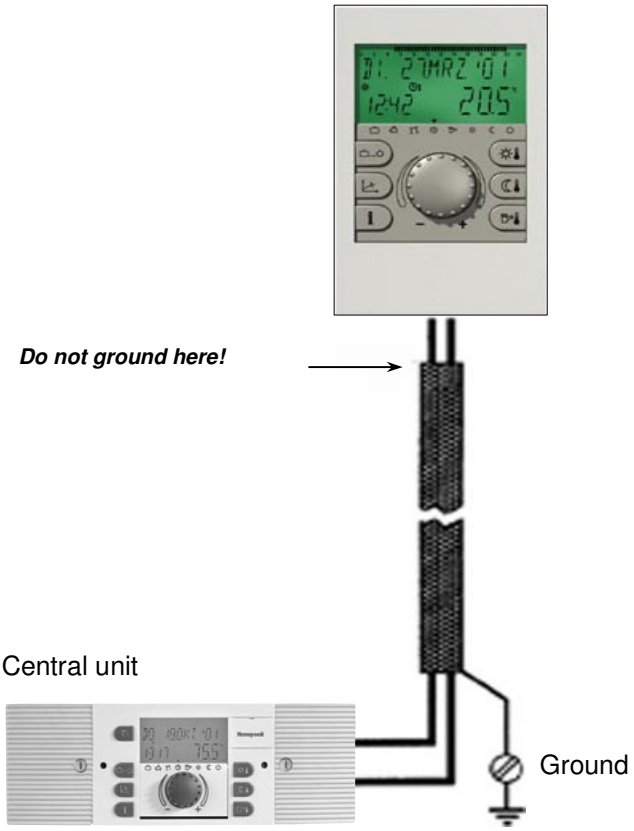



Room and central units must be separated with the distance of at least 40 cm. More central units connected to a data bus can be installed directly next to each other.

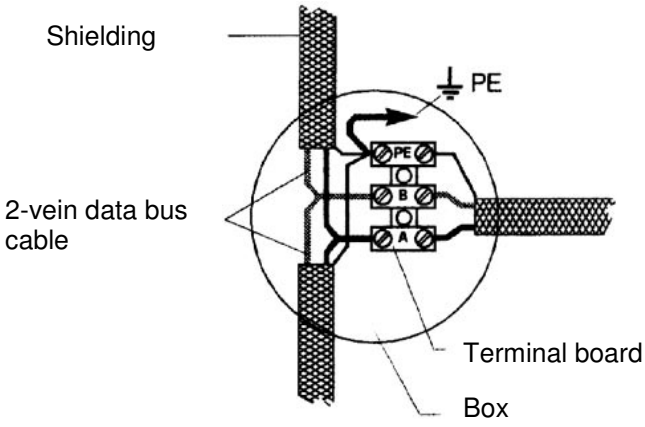



The mains connection of the heating system (boiler - control panel - control unit) must be arranged as an independent circuit that no sources of interference may be connected to. For data cables and buses shielded conductors must be used. Recommended design: see Technical specifications, page 139.

Cable shielding must only be grounded at one side at the grounding connector, e.g. on the metallic housing of the heater, grounding terminal, etc. Multiple grounding of individual cables is not permitted (generation of noise in the grounding loop).




In star structures of data buses double grounding is not permissible. The grounding connection must be established at one side only, in a neutral point!




The outdoor sensor must not be installed near transmitters or receivers (e.g. on garage walls near a remote control receiver, near antennas of personal radio stations or in a direct vicinity of large transmitters, etc.).

### 7.2.3 Minimum cable cross-sections

These are the recommended minimum cable cross-sections:
1.5 mm² for all 230 V cables (power supply, burner, pumps, drives).
0.5 mm² for sensors, keys, bus and analog inputs and outputs.

### 7.2.4 Maximum cable length

**Sensors, keys and analog inputs**
The maximum recommended cable length is 200 m. Longer cables are possible, but there is a higher risk of interference.

**Relay outputs**
Any cable length.

**Bus connection**
The maximum recommended cable length is 100 m.

### 7.2.5 Cable installation

Cables for 230 V must be installed separately from low-voltage cables (sensors, selector, bus).

### 7.2.6 Grounding in switching boxes

Install control units in accordance with local regulations and standards!

## 7.3 Connection accessories

⚠ **CAUTION**

**In accordance with the VDE 0730 standards the power supply for the controller must have a separate main switch for the live as well as neutral conductor. During the installation observe local regulations and standards for grounding of boxes!**

**As soon as there is power supply on terminals 21, 22, 2, 6, 12 and 18, 230 V will also appear on terminal rows X3 and X4!**

**If the manual switch-off function is required for the pumps, external switches must be installed. All the accessories (sensors, buttons, etc.) must be interconnected in accordance with the attached diagram.**

## 7.4 Maintenance and cleaning

The controller does not require any special maintenance. Clean its external surfaces with a wet piece of cloth.

## 7.5 Emergency mode of the controller

After disconnection of the SDC12-31ACD01 controller from the power supply the system setting will be as follows:

- The fan will run (FAN ON)
- The boiler circuit pump will run (PUMP ON)
- The air flap (terminals 17, 18) will be open (Flap OPEN)

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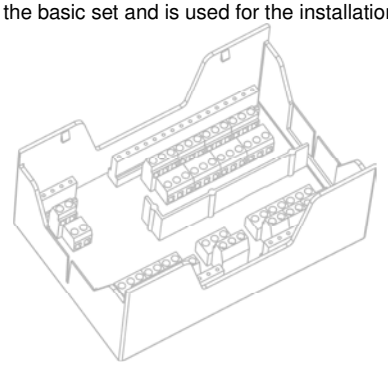
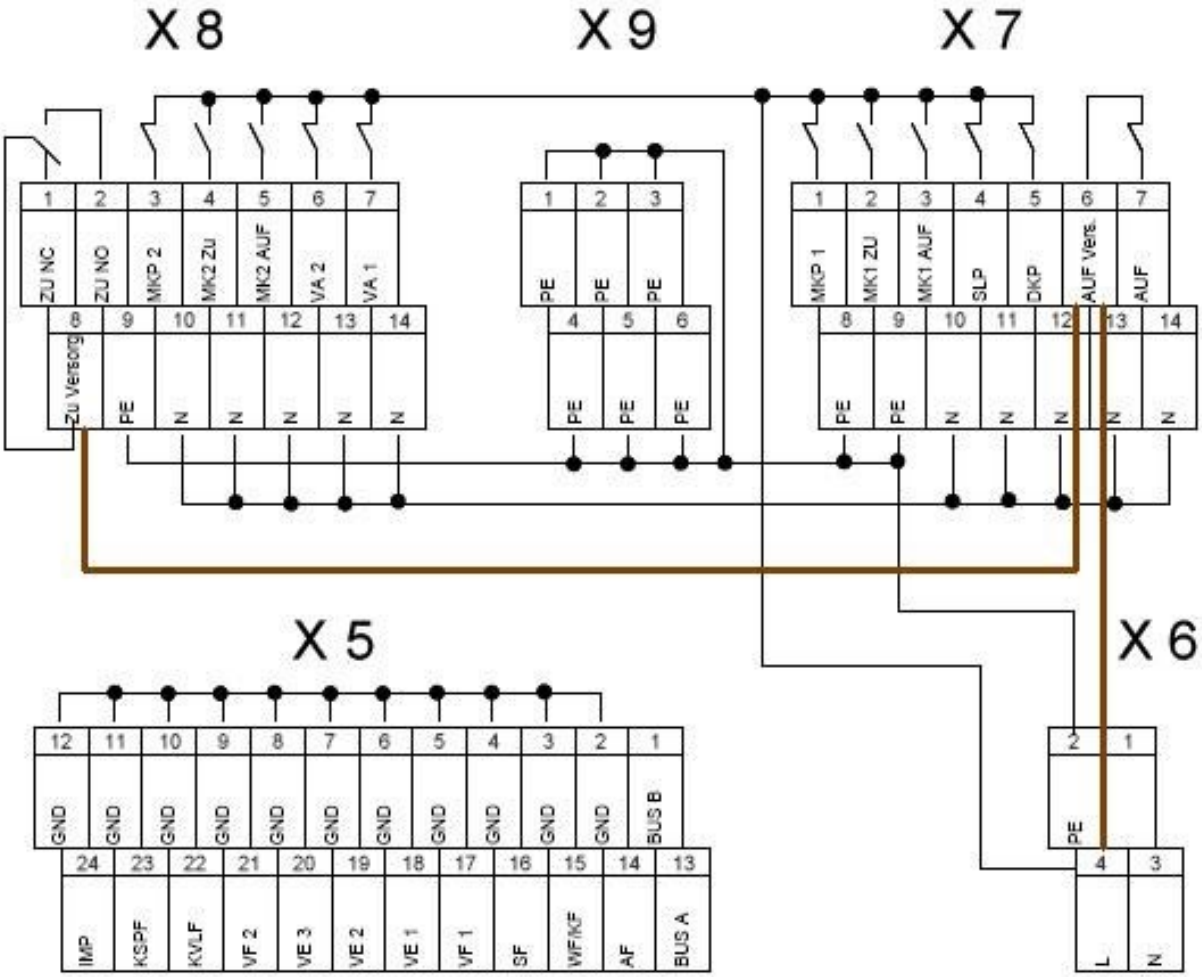
## 7.6 SCS12 connection terminal board

- The SC12 terminal board is part of the basic set and is used for the installation into the boiler panel.



### 7.6.1 Interconnection diagram of the SCS12 terminal board




**NOTE:**

If a boiler of type **2,3,4,5** or **6** (boiler controlled by the controller) is connected and the boiler **doe not have** a prepared conductor in its own electric harness (generally marked as **L-IN**) for the terminal X7:6, the terminal board must be complemented with an interconnection terminal **X6:4** / **X7:6** as the contact **X7:6** / **X7:7 is not supplied by the terminal board**, but only controlled.

**Valid for boilers of the GSE type only** - they must be supplemented with the interconnection terminal **X7:6** / **X8:8** for the control of the boiler servo flap.

## 7.6.2 Description of interconnection of the SCS12 terminal board

| Name | | Description | Note | Conductor colour | Terminal board: position |
|---|---|---|---|---|---|
| Inputs, sensors | AF | Outdoor sensor | Outdoor temperature sensor | h | X5 : 2 |
| | | | | m | X5 : 14 |
| | WF | Boiler sensor | Boiler water temperature sensor | h | X5 : 3 |
| | | | | m | X5 : 15 |
| | SF | DHW sensor | Combined heater sensor if DHW is controlled | h | X5 : 4 |
| | | | | m | X5 : 16 |
| | VF1 | Heating circuit 1 | Heating circuit 1 sensor | h | X5 : 5 |
| | | | | m | X5 : 17 |
| | VI1 | Variable input 1 | AGF hydr. example 17, 19 and 20, sensor, switching contact, modem, alarm input, etc. | červ | X5 : 6 |
| | | | | b | X5 : 18 |
| | VI2 | Variable input 2 | PF hydr. example 4, 12 and 20, sensor, switching contact, modem, alarm input, etc. | h | X5 : 7 |
| | | | | m | X5 : 19 |
| | VI3 | Variable input 3 | PF hydr. example 3, 10 and 19, sensor, switching contact, modem, alarm input, etc. | h | X5 : 8 |
| | | | | m | X5 : 20 |
| | VF2 | Heating circuit 2 | Heating circuit 2 sensor | h | X5 : 9 |
| | | | | m | X5 : 21 |
| | KVLF | Solar panel | Solar panel sensor | h | X5 : 10 |
| | | | | m | X5 : 22 |
| | KSPF | Accum. tank bottom | Tank bottom sensor of an automatic source of heat (solar, pellets, etc.) | h | X5 : 11 |
| | | | | m | X5 : 23 |
| | IMP | Impulse input | Connection of a flow meter, counter, etc. | h | X5 : 12 |
| | | | | m | X5 : 24 |
| | BUS A,B | Data bus | Data input connection, e.g. from SDW 10, 20, another controller, etc. | A | X5 : 13 |
| | | | | B | X5 : 1 |

| Name | | Description | Note | Conductor colour | Terminal board: position |
|---|---|---|---|---|---|
| Outputs, devices | 230V/50Hz | Power supply | Main power supply of the controller from which controlled appliances are supplied | br (b) | X6 : 4 |
| | | | | m | X6 : 3 |
| | | | | gy | X6 : 2 |
| | Terminal* | Controlled boiler | Phase interconnection if a fan or boiler burner is controlled | br (b) | X6 : 4 - X7 : 6 |
| | | GSE boiler only | Phase interconnection if a boiler GSE exhaust flap is controlled | br (b) | X7 : 6 - X8 : 8 |
| | FAN / L2 | Fan / burner L2 | Fan / boiler burner control if boiler type 2, 3 and 4 is defined | br (b) | X7 : 7 |
| | | | | m | X7 : 14 |
| | | | | gy | X7 : 9 |
| | DKP | Boiler pump | Boiler circuit pump (Laddomat 21, etc.) | br (b) | X7 : 5 |
| | | | | m | X7 : 13 |
| | | | | gy | X7 : 8 |
| | SLP | DHW pump | DHW charging pump, DHW charging servo valve, etc. | br (b) | X7 : 4 |
| | | | | m | X7 : 12 |
| | | | | gy | X9 : 6 |
| | MC1 | MC1 servo drive | opens | č | X7 : 3 |
| | | | closes | h | X7 : 2 |
| | | | working neutral | m | X7 : 11 |
| | MKP1 | Circuit 1 pump | System circuit pump (MC1) | br (b) | X7 : 1 |
| | | | | m | X7 : 10 |
| | | | | gy | X9 : 5 |
| | VO1 | Variable output 1 | E.g. solar pump, DHW circ. pump, DHW electric coil, etc. | br (b) | X8 : 7 |
| | | | | m | X8 : 14 |
| | | | | gy | X9 : 1 |
| | VO2 | Variable output 2 | E.g. zone valve in hydr. example 4 and 20 | br (b) | X8 : 6 |
| | | | | m | X8 : 13 |
| | | | | gy | X9 : 4 |
| | MC2 | MC2 servo drive | open | č | X8 : 5 |
| | | | closes | h | X8 : 4 |
| | | | working neutral | m | X8 : 12 |
| | MKP2 | Circuit 2 pump | System circuit pump (MC2) | br (b) | X8 : 3 |
| | | | | m | X8 : 11 |
| | | | | gy | X8 : 9 |
| | SERVO GSE | GSE exhaust flap | Conductor 1 - opens | h | X8 : 8 |
| | | | Conductor 2 - closes | b | X8 : 2 |
| | | | Conductor 3 - working neutral | m | X8 : 10 |

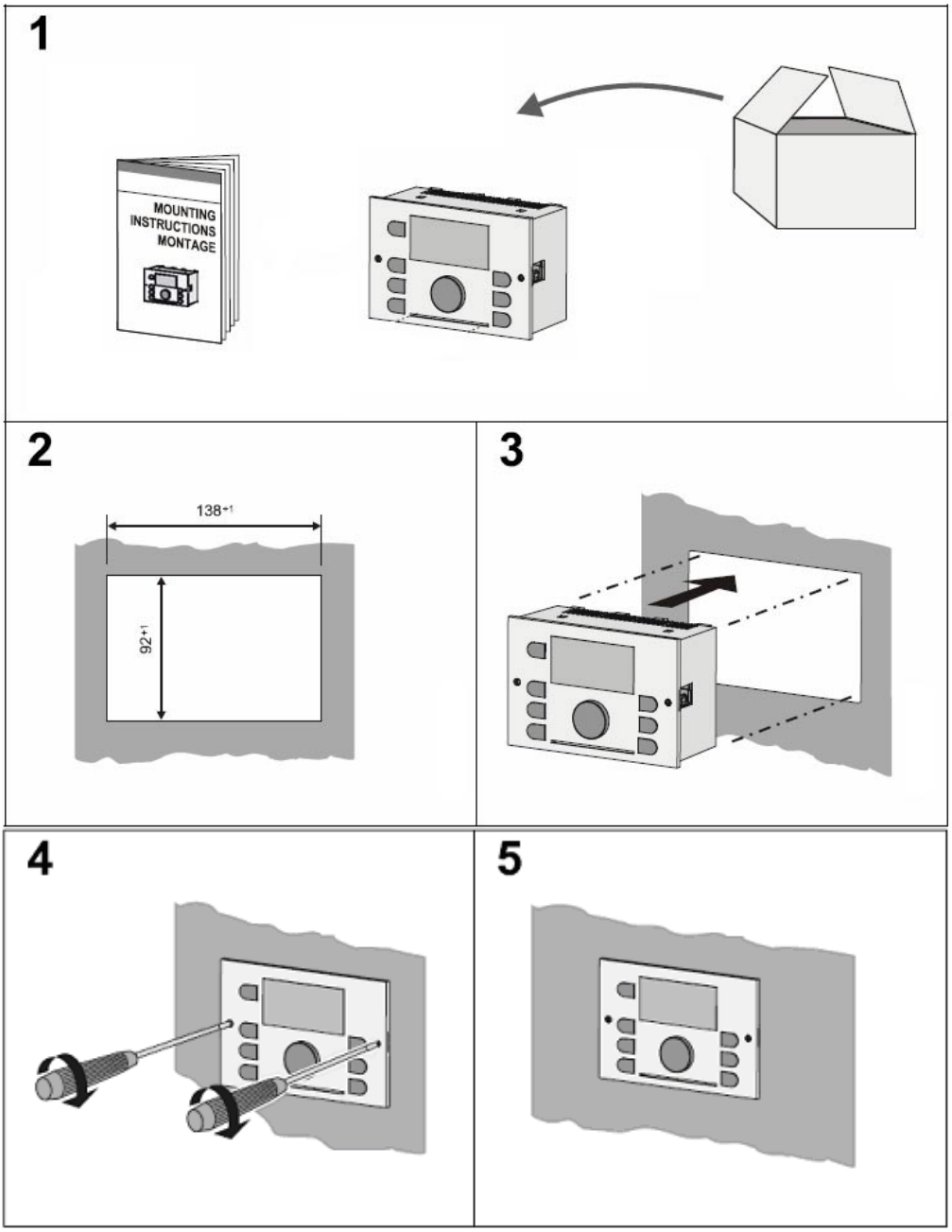
Legend: Phase - (b) black, (br) brown, working neutral - (bl) blue, PE - (gy) green and yellow, (červ) - red, (b) - white

Note
- If you need to extend conductors, observe valid electrical assembly standards, colours and marking of conductors
- Working neutral terminals N are connected in the terminal board, if necessary you can place the respective conductor on another terminal.
  Connected N terminals - X6:3; X7:10- X7:14; X8:10 - X8:14 (see electric diagram of the terminal board)
- Grounding terminals PE are connected in the terminal board, if necessary you can place the respective conductor on another terminal.
  Connected PE terminals - X6:2; X7:8 - X7:9; X8:9; X9:1 - X9:6 (see electric diagram of the terminal board)

* **Only if the supply conductor to X7:6 (usually marked L-IN) is not part of the el. harness of the boiler**

GB

### 7.6.3 Controller installation into the panel



## 7.7 Description of SCS12 terminal board interconnection

| TERM. BOARD **X5** | |
|---|---|
| No. | Designat. |
| **1** | **T2B B** |
| **2** | **GND** |
| **3** | **GND** |
| **4** | **GND** |
| **5** | **GND** |
| **6** | **GND** |
| **7** | **GND** |
| **8** | **GND** |
| **9** | **GND** |
| **10** | **GND** |
| **11** | **GND** |
| **12** | **GND** |

| TERM. BOARD **X6** | |
|---|---|
| No. | Designat. |
| **1** | **T2B A** |
| **2** | **AF** |
| **3** | **WF/KF** |
| **4** | **SF** |
| **5** | **VF1** |
| **6** | **VI1** |
| **7** | **VI2** |
| **8** | **VI3** |
| **9** | **VF2** |
| **10** | **KVLF** |
| **11** | **KSPF** |
| **12** | **IMP** |

| | TERM. BOARD **X7** | |
|---|---|---|
| | No. | Designat. |
| ** | **1** | **T1** |
| | **2** | |
| * | **3** | |
| | **4** | |
| | **5** | **L1** |
| *** | **6** | |
| | **7** | **BZ1** |
| | **8** | **BZ2** |
| | **9** | **T6** |
| | **10** | **T8** |
| | **11** | **T7 / V1 OPEN** |

| TERM. BOARD **X8** | |
|---|---|
| No. | Designat. |
| **1** | **T2 / V1 CLOSE** |
| **2** | **DKP** |
| **3** | **SLP** |
| **4** | **MK 1 OPEN** |
| **5** | **MK 1 CLOSE** |
| **6** | **MKP1** |
| **7** | **VO1** |
| **8** | **VO2** |
| **9** | **MK 2 OPEN** |
| **10** | **MK 2 CLOSE** |
| **11** | **MKP2** |

| TERM. BOARD **X9** | |
|---|---|
| No. | Designat. |
| **1** | **N** |
| **2** | **N** |
| **3** | **N** |
| **4** | **N** |
| **5** | **N** |
| **6** | **N** |
| **7** | **N** |
| **8** | **N** |
| **9** | **N** |
| **10** | **N** |
| **11** | **N** |
| **12** | **N** |
| **13** | **N** |

| TERM. BOARD **X10** | |
|---|---|
| No. | Designat. |
| **1** | **PE** |
| **2** | **PE** |
| **3** | **PE** |
| **4** | **PE** |
| **5** | **PE** |
| **6** | **PE** |
| **7** | **PE** |
| **8** | **PE** |
| **9** | **PE** |
| **10** | **PE** |
| **11** | **PE** |
| **12** | **PE** |
| **13** | **PE** |

* **Terminal for control of ATMOS boilers (Boiler type 2 to 6)**
**Terminal for control of a boiler fan (2 - 6) / boiler burner (2, 3)**

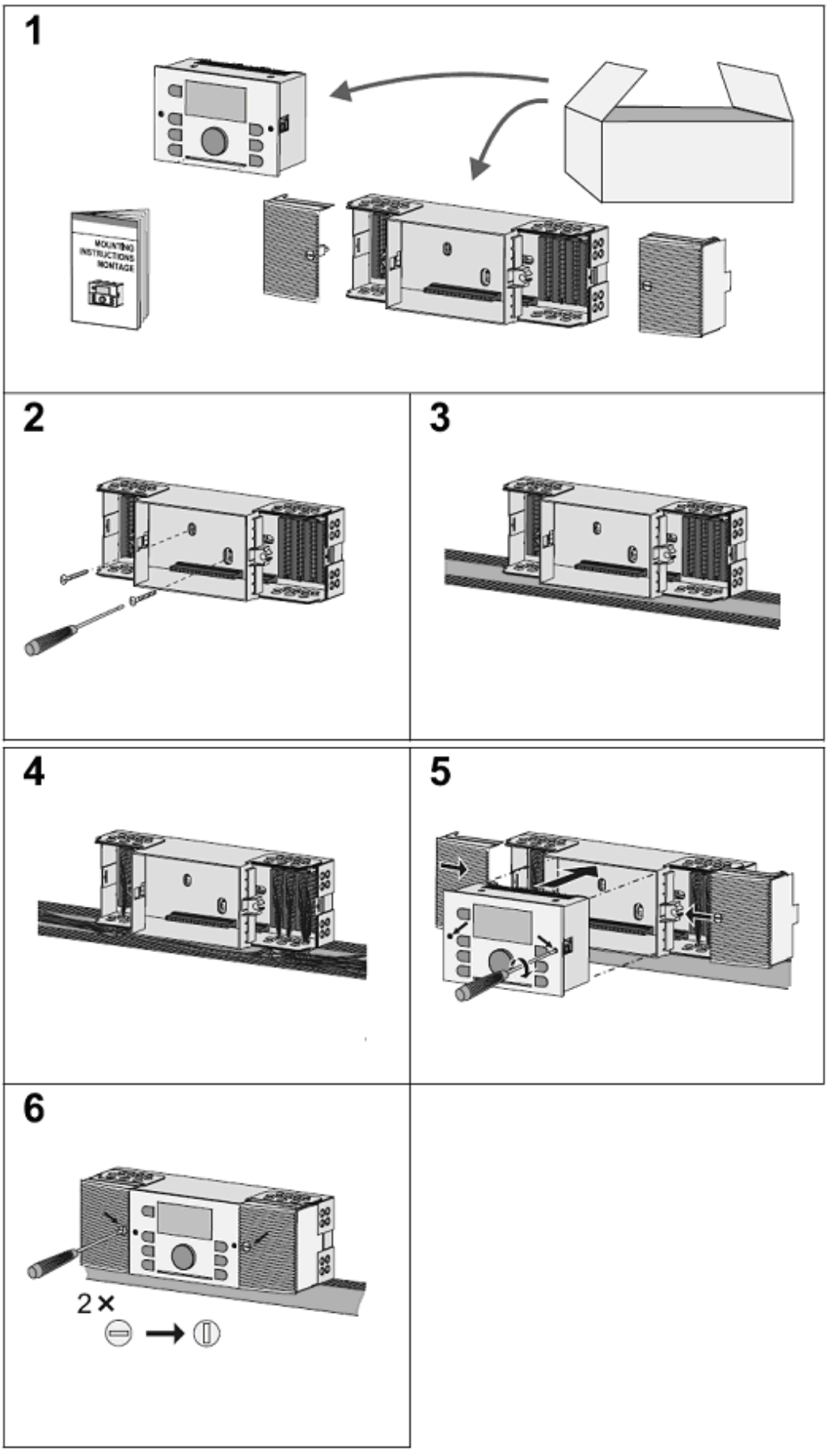
** Valid only if the supply conductor to X7:6 (usually marked L-IN) is not part of the el. harness of the boiler

*** **Terminal for control of an air servo flap of ATMOS GSE, GSX boilers**

| ZKRATKA | POPIS | ZKRATKA | POPIS |
|---|---|---|---|
| T2B A | BUS A | T7 | ATMOS GSE, GSX BOILER GSE EXHAUST FLAP |
| T2B B | BUS B | T8 | HEATER RELAY OUTPUT - 2-STAGE |
| AF | OUTDOOR SENSOR | DKP | BOILER CIRCUIT PUMP |
| WF/KF | BOILER WATER TEMPERATURE SENSOR | SLP | DHW PUMP |
| SF | DHW SENSOR | MKP1 | MC1 PUMP |
| VF1 | MC1 SENSOR | MK 1 OPEN | CIRCUIT 1 MIXING VALVE OPENS |
| VE1 | VARIABLE INPUT 1 | MK 1 CLOSE | CIRCUIT 1 MIXING VALVE CLOSES |
| VE2 | VARIABLE INPUT 2 | VA1 | VARIABLE OUTPUT 1 |
| VE3 | VARIABLE INPUT 3 | VA2 | VARIABLE OUTPUT 2 |
| VF2 | MC2 SENSOR | MKP2 | MC2 PUMP |
| KVLF | SOLAR PANEL SENSOR | MK 2 OPEN | CIRCUIT 2 MIXING VALVE OPENS |
| KSPF | SOLAR TANK SENSOR<br>ACCUM. TANK BOTTOM SENSOR of an automatic boiler (type 3, 6) | MK 2 CLOSE | CIRCUIT 2 MIXING VALVE CLOSES |
| IMP | PULSE INPUT | GND | GROUNDING (FOR SENSORS) |
| T1 | INPUT FOR RELAY OF ATMOS BOILER FAN / BURNER, connect the terminal ** or L-IN conductor from the boiler harness | N | WORKING NEUTRAL |
| T2 | ATMOS BOILER FAN (type 2 -6) / BURNER (type 5, 6) | L1 | 230V - POWER SUPPLY |
| T6 | INPUT FOR RELAY OF ATMOS BOILER EXHAUST FLAP - connect the terminal*** | PE | GROUNDING (FOR PUMPS, SERVO DRIVES, ETC.) |
| BZ1,BZ2 | OPERATION HOUR COUNTER . not used | WE-BUS A,B | Not used |

GB

### 7.7.1 Controller installation into the SWS12 terminal board



# 8 Examples of controller connections and settings

## 8.1 SCS12 and SWS12 terminal board connection examples - hydraulic diagram no. 001

| | Name | Description | Note | Conductor colour | SCS12 | SWS12 |
|---|---|---|---|---|---|---|
| Inputs, sensors | AF | Outdoor sensor | Outdoor temperature sensor | br | X5 : 2 | X5 : 2 |
| | | | | bl | X5 : 14 | X6 : 2 |
| | WF | Boiler sensor | Boiler water temperature sensor | br | X5 : 3 | X5 : 3 |
| | | | | bl | X5 : 15 | X6 : 3 |
| | SF | DHW sensor | Combined heater sensor if DHW is controlled | br | X5 : 4 | X5 : 4 |
| | | | | bl | X5 : 16 | X6 : 4 |
| | VF1 | Heating circuit 1 | Heating circuit 1 sensor | br | X5 : 5 | X5 : 5 |
| | | | | bl | X5 : 17 | X6 : 5 |
| | VI1 | Variable input 1 | AGF hydr. example 17, 19 and 20, sensor, switching contact, modem, alarm input, etc. | r | X5 : 6 | X5 : 6 |
| | | | | w | X5 : 18 | X6 : 6 |
| | VI2 | Variable input 2 | PF hydr. example 4, 12 and 20, sensor, switching contact, modem, alarm input, etc. | br | X5 : 7 | X5 : 7 |
| | | | | bl | X5 : 19 | X6 : 7 |
| | VI3 | Variable input 3 | PF hydr. example 3, 10 and 19, sensor, switching contact, modem, alarm input, etc. | br | X5 : 8 | X5 : 8 |
| | | | | bl | X5 : 20 | X6 : 8 |
| | VF2 | Heating circuit 2 | Heating circuit 2 sensor | br | X5 : 9 | X5 : 9 |
| | | | | bl | X5 : 21 | X6 : 9 |
| | KVLF | Solar panel | Solar panel sensor | br | X5 : 10 | X5 : 10 |
| | | | | bl | X5 : 22 | X6 : 10 |
| | KSPF | Accum. tank bottom | Tank bottom sensor of an automatic source of heat (solar, pellets, etc.) | br | X5 : 11 | X5 : 11 |
| | | | | bl | X5 : 23 | X6 : 11 |
| | IMP | Impulse input | Connection of a flow meter, counter, etc. | br | X5 : 12 | X5 : 12 |
| | | | | bl | X5 : 24 | X6 : 12 |
| | BUS A,B | Data bus | Data input connection, e.g. from SDW 10, 20, another controller, etc. | A | X5 : 13 | X5 : 1 |
| | | | | B | X5 : 1 | X6 : 1 |

| | Name | Description | Note | Conductor colour | SCS12 | SWS12 |
|---|---|---|---|---|---|---|
| Outputs, devices | 230V/50Hz | Power supply | Main power supply of the controller from which controlled appliances are supplied | br (b) | X6 : 4 | X7 : 5 |
| | | | | bl | X6 : 3 | X9 : 5 |
| | | | | gy | X6 : 2 | X10 : 5 |
| | DKP | Boiler pump | Boiler circuit pump (Laddomat 21, etc.) | br (b) | X7 : 5 | X8 : 2 |
| | | | | bl | X7 : 13 | X9 : 2 |
| | | | | gy | X7 : 8 | X10 : 2 |
| | SLP | DHW pump | DHW charging pump, DHW charging servo valve, etc. | br (b) | X7 : 4 | X8 : 3 |
| | | | | bl | X7 : 12 | X9 : 3 |
| | | | | gy | X9 : 6 | X10 : 3 |
| | MC1 | MC1 servo drive | opens | b | X7 : 3 | X8 : 4 |
| | | | closes | br | X7 : 2 | X8 : 5 |
| | | | working neutral | bl | X7 : 11 | X9 : 4 |
| | MKP1 | Circuit 1 pump | System circuit pump (MC1) | br (b) | X7 : 1 | X8 : 6 |
| | | | | bl | X7 : 10 | X9 : 6 |
| | | | | gy | X9 : 5 | X10 : 6 |
| | VO1 | Variable output 1 | E.g. solar pump, DHW circ. pump, DHW electric coil, etc. | br (b) | X8 : 7 | X8 : 7 |
| | | | | bl | X8 : 14 | X9 : 7 |
| | | | | gy | X9 : 1 | X10 : 7 |
| | VO2 | Variable output 2 | | br (b) | X8 : 6 | X8 : 8 |
| | | | | bl | X8 : 13 | X9 : 8 |
| | | | | gy | X9 : 4 | X10 : 8 |
| | MC2 | MC2 servo drive | opens | b | X8 : 5 | X8 : 9 |
| | | | closes | br | X8 : 4 | X8 : 10 |
| | | | working neutral | bl | X8 : 12 | X9 : 9 |
| | MKP2 | Circuit 2 pump | System circuit pump (MC2) | br (b) | X8 : 3 | X8 : 11 |
| | | | | bl | X8 : 11 | X9 : 11 |
| | | | | gy | X8 : 9 | X10 : 11 |

Legend : Phase - (b) black, (br) brown, working neutral - (bl) blue, PE - (**gy**) green and yellow, (**r**) - red, (w) - white

Notes
- If you need to extend conductors, observe valid electrical assembly standards, colours and marking of conductors
- Working neutral terminals N are connected in the terminal board, if necessary you can place the respective conductor on another terminal.
  Connected N terminals - X6:3; X7:10- X7:14; X8:10 - X8:14 (see electric diagram of the terminal board)
- Grounding terminals PE are connected in the terminal board, if necessary you can place the respective conductor on another terminal.
  Connected PE terminals - X6:2; X7:8 - X7:9; X8:9; X9:1 - X9:6 (see electric diagram of the terminal board)

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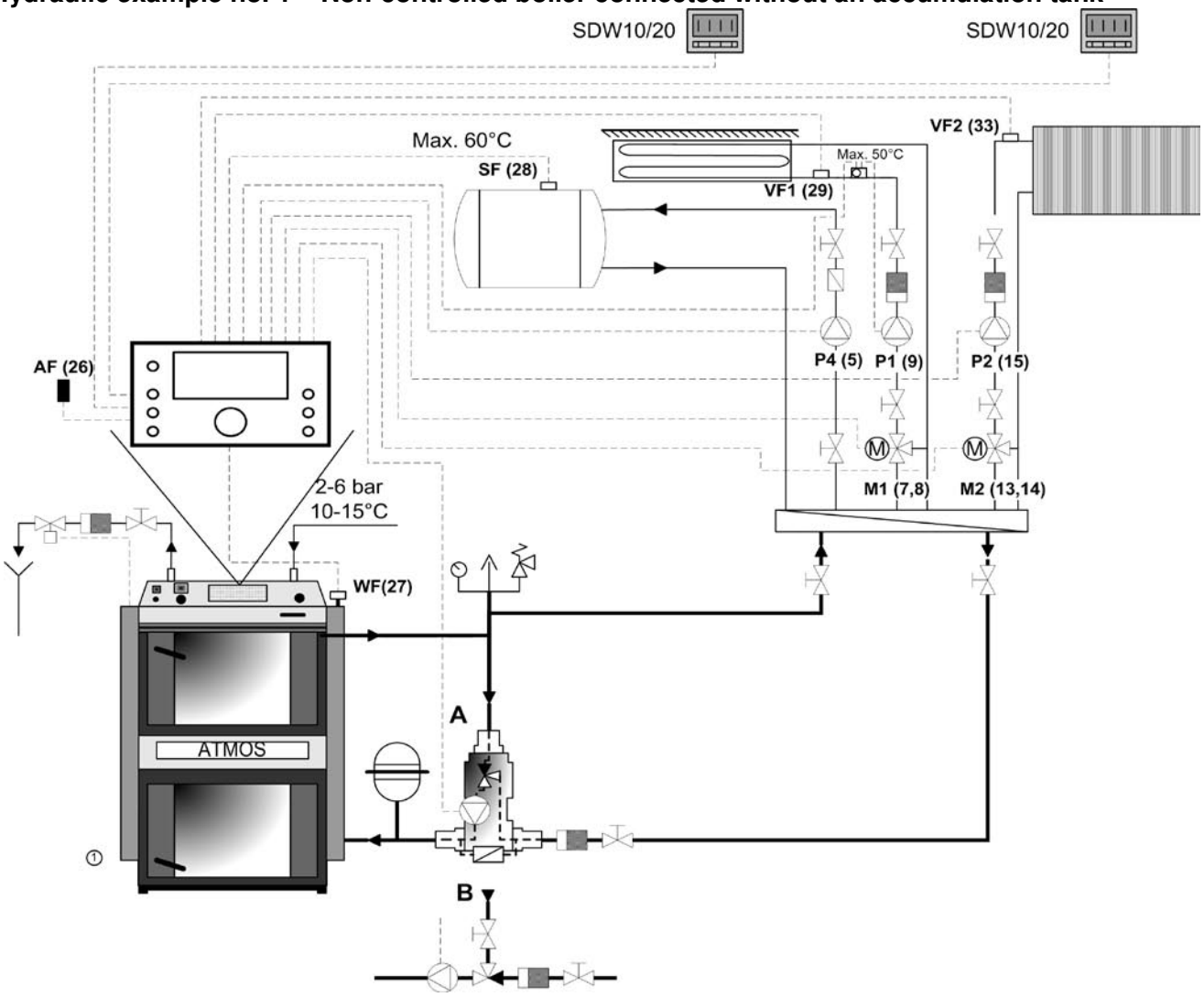
### 8.1.1 Hydraulic example no. 1 – Non-controlled boiler connected without an accumulation tank



### 8.1.2 Example of parameter settings for hydraulic diagram no. 001

HYDRAULIC Menu

| Parameter | Description | Setting |
|---|---|---|
| 1 | Hydraulic diagram | 0001 |
| 2 | DHW pump output | 1 (DHW charging pump) |
| 3 | Output of mixing circuit 1 | 3 (Mixing circuit) |
| 4 | Output of mixing circuit 2 | 3 (Mixing circuit) |
| 5 | Output of the heating circuit (HC) pump | KKPF (fixed) |
| 6 | Variable output 1 | OFF |
| 7 | Variable output 2 | OFF |
| 8 | Variable input 1 | OFF |
| 9 | Variable input 2 | OFF |
| 10 | Variable input 3 | OFF |

SOLID FUEL Menu

| | | |
|---|---|---|
| 1 | Boiler type | 1 |
| 2 | Minimum temperature (boiler type 2,3,4) | 80°C |
| 3 | Maximum temperature (boiler type 2,3,4) | 95°C |
| 4 | Boiler pump switch-on | 70°C |
| 5 | Pump differential | 5K |
| 14 | Heating circuit start up | 75°C |
| 19 | Boiler switch-off type WF/AGF | 1 (WF) |
| 20 | Start-up protection of the boiler circulation pump | ON |

GB

## 8.2 Terminal board connection example - hydraulic diagram no. 003

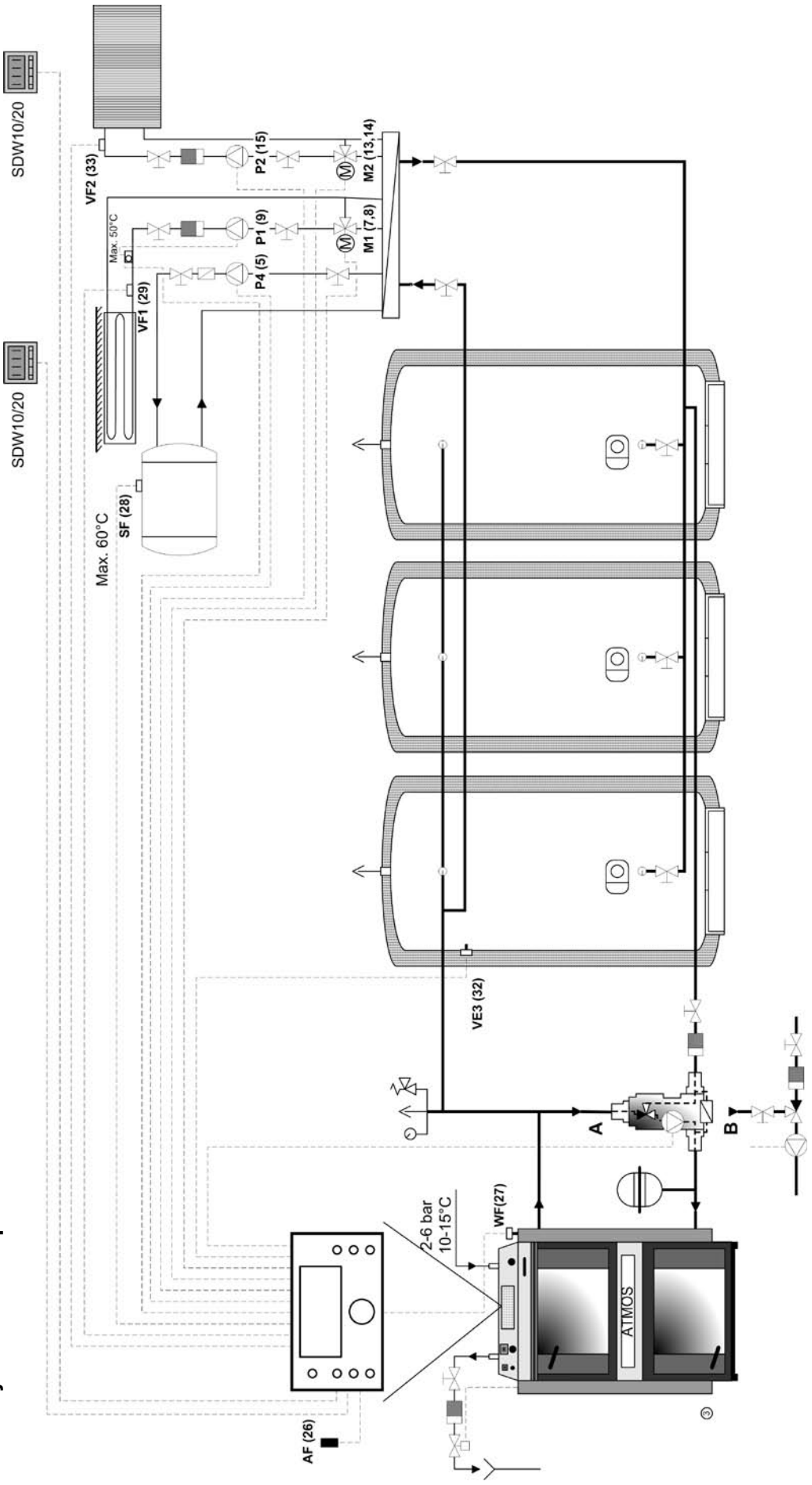
| | Name | Description | Note | Cond. colour | SCS12 | SWS12 |
|---|---|---|---|---|---|---|
| Inputs, sensors | AF | Outdoor sensor | Outdoor temperature sensor | br | X5 : 2 | X5 : 2 |
| | | | | bl | X5 : 14 | X6 : 2 |
| | WF | Boiler sensor | Boiler water temperature sensor | br | X5 : 3 | X5 : 3 |
| | | | | bl | X5 : 15 | X6 : 3 |
| | SF | DHW sensor | Combined heater sensor if DHW is controlled | br | X5 : 4 | X5 : 4 |
| | | | | bl | X5 : 16 | X6 : 4 |
| | VF1 | Heating circuit 1 | Heating circuit 1 sensor | br | X5 : 5 | X5 : 5 |
| | | | | bl | X5 : 17 | X6 : 5 |
| | VI1 | Variable input 1 | AGF hydr. example 17, 19 and 20, sensor, switching contact, modem, alarm input, etc. | r | X5 : 6 | X5 : 6 |
| | | | | w | X5 : 18 | X6 : 6 |
| | VI2 | Variable input 2 | PF hydr. example 4, 12 and 20, sensor, switching contact, modem, alarm input, etc. | br | X5 : 7 | X5 : 7 |
| | | | | bl | X5 : 19 | X6 : 7 |
| | VI3 | Variable input 3 | PF hydr. example 3, 10 and 19, sensor, switching contact, modem, alarm input, etc. | br | X5 : 8 | X5 : 8 |
| | | | | bl | X5 : 20 | X6 : 8 |
| | VF2 | Heating circuit 2 | Heating circuit 2 sensor | br | X5 : 9 | X5 : 9 |
| | | | | bl | X5 : 21 | X6 : 9 |
| | KVLF | Solar panel | Solar panel sensor | br | X5 : 10 | X5 : 10 |
| | | | | bl | X5 : 22 | X6 : 10 |
| | KSPF | Accum. tank bottom | Tank bottom sensor of an automatic source of heat (solar, pellets, etc.) | br | X5 : 11 | X5 : 11 |
| | | | | bl | X5 : 23 | X6 : 11 |
| | IMP | Impulse input | Connection of a flow meter, counter, etc. | br | X5 : 12 | X5 : 12 |
| | | | | bl | X5 : 24 | X6 : 12 |
| | BUS A,B | Data bus | Data input connection, e.g. from SDW 10, 20, another controller, etc. | A | X5 : 13 | X5 : 1 |
| | | | | B | X5 : 1 | X6 : 1 |

| | Name | Description | Note | Cond. colour | SCS12 | SWS12 |
|---|---|---|---|---|---|---|
| Outputs, devices | 230V/50Hz | Power supply | Main power supply of the controller from which controlled appliances are supplied | br (b) | X6 : 4 | X7 : 5 |
| | | | | bl | X6 : 3 | X9 : 5 |
| | | | | gy | X6 : 2 | X10 : 5 |
| | DKP | Boiler pump | Boiler circuit pump (Laddomat 21, etc.) | br (b) | X7 : 5 | X8 : 2 |
| | | | | bl | X7 : 13 | X9 : 2 |
| | | | | gy | X7 : 8 | X10 : 2 |
| | SLP | DHW pump | DHW charging pump, DHW charging servo valve, etc. | br (b) | X7 : 4 | X8 : 3 |
| | | | | bl | X7 : 12 | X9 : 3 |
| | | | | gy | X9 : 6 | X10 : 3 |
| | MC1 | MC1 servo drive | opens | č | X7 : 3 | X8 : 4 |
| | | | closes | br | X7 : 2 | X8 : 5 |
| | | | working neutral | bl | X7 : 11 | X9 : 4 |
| | MKP1 | Circuit 1 pump | System circuit pump (MC1) | br (b) | X7 : 1 | X8 : 6 |
| | | | | bl | X7 : 10 | X9 : 6 |
| | | | | gy | X9 : 5 | X10 : 6 |
| | VO1 | Variable output 1 | E.g. solar pump, DHW circ. pump, DHW electric coil, etc. | br (b) | X8 : 7 | X8 : 7 |
| | | | | bl | X8 : 14 | X9 : 7 |
| | | | | gy | X9 : 1 | X10 : 7 |
| | VO2 | Variable output 2 | | br (b) | X8 : 6 | X8 : 8 |
| | | | | bl | X8 : 13 | X9 : 8 |
| | | | | gy | X9 : 4 | X10 : 8 |
| | MC2 | MC2 servo drive | opens | č | X8 : 5 | X8 : 9 |
| | | | closes | br | X8 : 4 | X8 : 10 |
| | | | working neutral | bl | X8 : 12 | X9 : 9 |
| | MKP2 | Circuit 2 pump | System circuit pump (MC2) | br (b) | X8 : 3 | X8 : 11 |
| | | | | bl | X8 : 11 | X9 : 11 |
| | | | | gy | X8 : 9 | X10 : 11 |

Legend: Phase - (b) black, (br) brown, working neutral - (bl) blue, PE - (gy) green and yellow, (r) - red, (w) - white

Notes
- If you need to extend conductors, observe valid electrical assembly standards, colours and marking of conductors
- Working neutral terminals N are connected in the terminal board, if necessary you can place the respective conductor on another terminal.
  Connected N terminals - X6:3; X7:10- X7:14; X8:10 - X8:14 (see electric diagram of the terminal board)
- Grounding terminals PE are connected in the terminal board, if necessary you can place the respective conductor on another terminal.
  Connected PE terminals - X6:2; X7:8 - X7:9; X8:9; X9:1 - X9:6 (see electric diagram of the terminal board)

### 8.2.1 Hydraulic example no. 003 – Non-controlled boiler connected to an accumulation tank



GB

### 8.2.2 Example of parameter settings for hydraulic diagram no. 003

HYFRAULIC Menu

| Parameter | Description | Setting |
|---|---|---|
| 1 | Hydraulic diagram | 0003 |
| 2 | DHW pump output | 1 (DHW charging pump) |
| 3 | Output of mixing circuit 1 | 3 (Mixing circuit) |
| 4 | Output of mixing circuit 2 | 3 (Mixing circuit) |
| 5 | Output of the heating circuit (HC) pump | KKPF (fixed) |
| 6 | Variable output 1 | OFF |
| 7 | Variable output 2 | OFF |
| 8 | Variable input 1 | OFF |
| 9 | Variable input 2 | OFF |
| 10 | Variable input 3 | 19 (PF) |

SOLID FUEL Menu

| | | |
|---|---|---|
| 1 | Boiler type | 1 |
| 2 | Minimum temperature (boiler type 2,3,4) | 80°C |
| 3 | Maximum temperature (boiler type 2,3,4) | 95°C |
| 4 | Boiler pump switch-on | 30°C |
| 5 | Pump differential | 5K |
| 17 | Switch-over of the boiler circulation pump to WF/AGF | 1 (WF) |
| 19 | Boiler switch-off type WF/AGF | 1 |
| 20 | Start-up protection of the boiler circulation pump | OFF |

BUFFER Menu

| | | |
|---|---|---|
| 1 | Minimum temperature - release of heating circuits | 40°C |
| 2 | Maximum temperature | 105°C |
| 5 | Forced losses | OFF |
| 9 | Buffer protection during charging | ON |
| 14 | Minimum required buffer temperature (min. SETPOINT) | OFF |
| 15 | DKP switch-off differential (between the buffer and boiler) | -3 K |
| 16 | DKP re-start differential | 0 K |

## 8.3 Terminal board connection example - hydraulic diagram no. 004

| Name | | Description | Note | Cond. colour | SCS12 | SWS12 |
|---|---|---|---|---|---|---|
| Inputs, sensors | AF | Outdoor sensor | Outdoor temperature sensor | br | X5 : 2 | X5 : 2 |
| | | | | bl | X5 : 14 | X6 : 2 |
| | WF | Boiler sensor | Boiler water temperature sensor | br | X5 : 3 | X5 : 3 |
| | | | | bl | X5 : 15 | X6 : 3 |
| | SF | DHW sensor | Combined heater sensor if DHW is controlled | br | X5 : 4 | X5 : 4 |
| | | | | bl | X5 : 16 | X6 : 4 |
| | VF1 | Heating circuit 1 | Heating circuit 1 sensor | br | X5 : 5 | X5 : 5 |
| | | | | bl | X5 : 17 | X6 : 5 |
| | VI1 | Variable input 1 | AGF hydr. example 17, 19 and 20, sensor, switching contact, modem, alarm input, etc. | b | X5 : 6 | X5 : 6 |
| | | | | w | X5 : 18 | X6 : 6 |
| | VI2 | Variable input 2 | PF hydr. example 4, 12 and 20, sensor, switching contact, modem, alarm input, etc. | br | X5 : 7 | X5 : 7 |
| | | | | bl | X5 : 19 | X6 : 7 |
| | VI3 | Variable input 3 | PF hydr. example 3, 10 and 19, sensor, switching contact, modem, alarm input, etc. | br | X5 : 8 | X5 : 8 |
| | | | | bl | X5 : 20 | X6 : 8 |
| | VF2 | Heating circuit 2 | Heating circuit 2 sensor | br | X5 : 9 | X5 : 9 |
| | | | | bl | X5 : 21 | X6 : 9 |
| | KVLF | Solar panel | Solar panel sensor | br | X5 : 10 | X5 : 10 |
| | | | | bl | X5 : 22 | X6 : 10 |
| | KSPF | Accum. tank bottom | Tank bottom sensor of an automatic source of heat (solar, pellets, etc.) | br | X5 : 11 | X5 : 11 |
| | | | | bl | X5 : 23 | X6 : 11 |
| | IMP | Impulse input | Connection of a flow meter, counter, etc. | br | X5 : 12 | X5 : 12 |
| | | | | bl | X5 : 24 | X6 : 12 |
| | BUS A,B | Data bus | Data input connection, e.g. from SDW 10, 20, another controller, etc. | A | X5 : 13 | X5 : 1 |
| | | | | B | X5 : 1 | X6 : 1 |

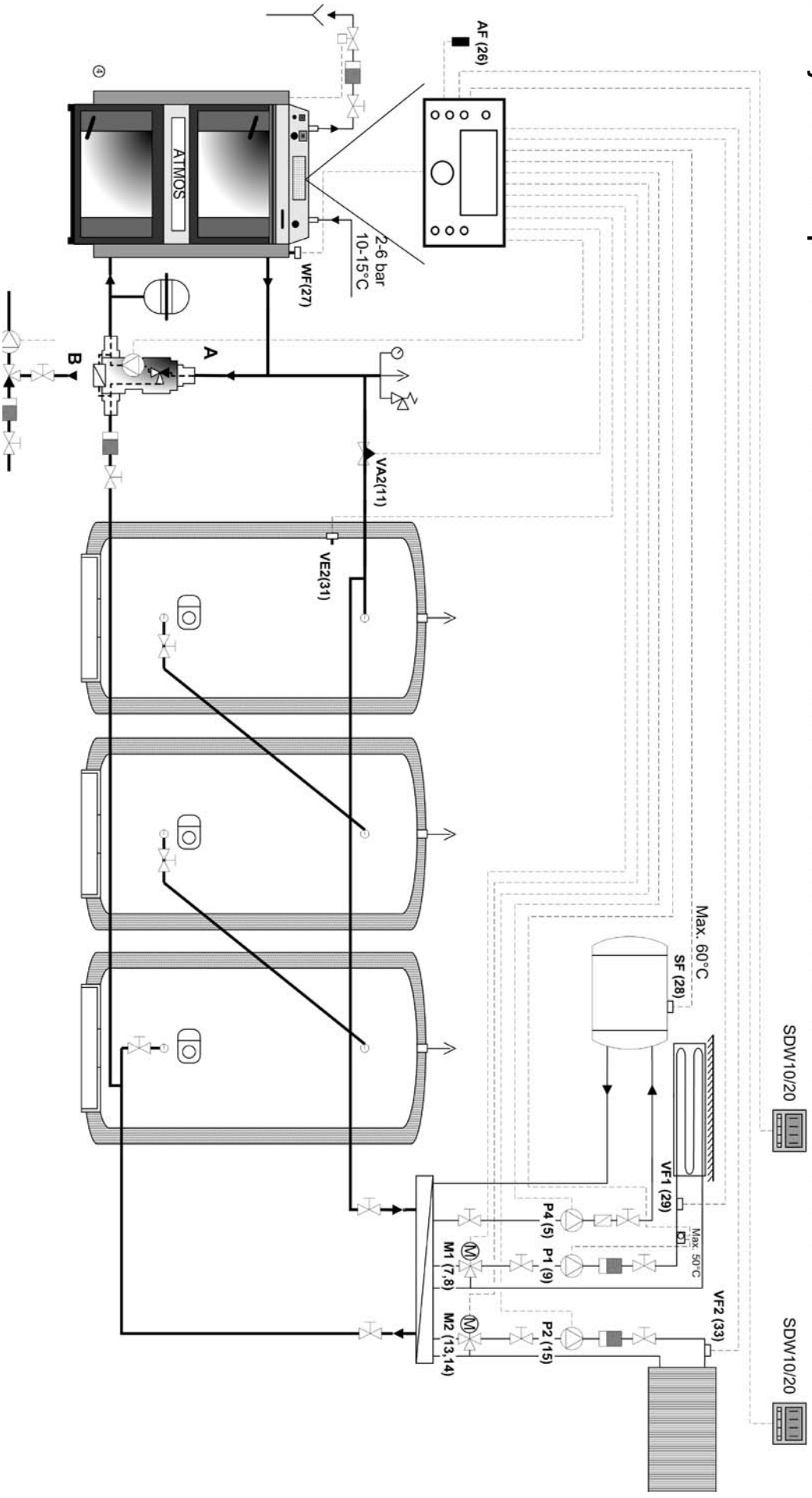
| Name | | Description | Note | Cond. colour | SCS12 | SWS12 |
|---|---|---|---|---|---|---|
| Outputs, devices | 230V/50Hz | Power supply | Main power supply of the controller from which controlled appliances are supplied | br (b) | X6 : 4 | X7 : 5 |
| | | | | bl | X6 : 3 | X9 : 5 |
| | | | | gy | X6 : 2 | X10 : 5 |
| | DKP | Boiler pump | Boiler circuit pump (Laddomat 21, etc.) | br (b) | X7 : 5 | X8 : 2 |
| | | | | bl | X7 : 13 | X9 : 2 |
| | | | | gy | X7 : 8 | X10 : 2 |
| | SLP | DHW pump | DHW charging pump, DHW charging servo valve, etc. | br (b) | X7 : 4 | X8 : 3 |
| | | | | bl | X7 : 12 | X9 : 3 |
| | | | | gy | X9 : 6 | X10 : 3 |
| | MC1 | MC1 servo drive | opens | b | X7 : 3 | X8 : 4 |
| | | | closes | br | X7 : 2 | X8 : 5 |
| | | | working neutral | bl | X7 : 11 | X9 : 4 |
| | MKP1 | Circuit 1 pump | System circuit pump (MC1) | br (b) | X7 : 1 | X8 : 6 |
| | | | | bl | X7 : 10 | X9 : 6 |
| | | | | gy | X9 : 5 | X10 : 6 |
| | VO1 | Variable output 1 | E.g. solar pump, DHW circ. pump, DHW electric coil, etc. | br (b) | X8 : 7 | X8 : 7 |
| | | | | bl | X8 : 14 | X9 : 7 |
| | | | | gy | X9 : 1 | X10 : 7 |
| | VO2 | Variable output 2 | Zone valve (PLP) | br (b) | X8 : 6 | X8 : 8 |
| | | | | bl | X8 : 13 | X9 : 8 |
| | | | | gy | X9 : 4 | X10 : 8 |
| | MC2 | MC2 servo drive | opens | b | X8 : 5 | X8 : 9 |
| | | | closes | br | X8 : 4 | X8 : 10 |
| | | | working neutral | bl | X8 : 12 | X9 : 9 |
| | MKP2 | Circuit 2 pump | System circuit pump (MC2) | br (b) | X8 : 3 | X8 : 11 |
| | | | | bl | X8 : 11 | X9 : 11 |
| | | | | gy | X8 : 9 | X10 : 11 |

Legend: Phase - (b) black, (br) brown, working neutral - (bl) blue, PE - (gy) green and yellow, (r) - red, (w) - white

Notes
- If you need to extend conductors, observe valid electrical assembly standards, colours and marking of conductors
- Working neutral terminals N are connected in the terminal board, if necessary you can place the respective conductor on another terminal.
  Connected N terminals - X6:3; X7:10- X7:14; X8:10 - X8:14 (see electric diagram of the terminal board)
- Grounding terminals PE are connected in the terminal board, if necessary you can place the respective conductor on another terminal.
  Connected PE terminals - X6:2; X7:8 - X7:9; X8:9; X9:1 - X9:6 (see electric diagram of the terminal board)

GB

### 8.3.1 Hydraulic example no. 4 – Non-controlled boiler connected with an accumulation tank and zone valve



### 8.3.2 Example of parameter setting for hydraulic diagram no. 004

HYDRAULIC Menu

| Parameter | Description | Setting |
|---|---|---|
| 1 | Hydraulic diagram | 0004 |
| 2 | DHW pump output | 1 (DHW charging pump) |
| 3 | Output of mixing circuit 1 | 3 (Mixing circuit) |
| 4 | Output of mixing circuit 2 | 3 (Mixing circuit) |
| 5 | Output of the heating circuit (HC) pump | KKPF (fixed) |
| 6 | Variable output 1 | OFF |
| 7 | Variable output 2 | 16 (PLP) zone valve |
| 8 | Variable input 1 | OFF |
| 9 | Variable input 2 | 19 (PF) |
| 10 | Variable input 3 | OFF |

SOLID FUEL Menu

| | | |
|---|---|---|
| 1 | Boiler type | 1 |
| 2 | Minimum temperature (boiler type 2,3,4) | 80°C |
| 3 | Maximum temperature (boiler type 2,3,4) | 95°C |
| 4 | Boiler pump switch-on | 70°C |
| 5 | Pump switch-on differential | 5K |
| 20 | Start-up protection of the boiler circulation pump | OFF |

BUFFER Menu

| | | |
|---|---|---|
| 1 | Minimum temperature - release of heating circuits | 40°C |
| 2 | Maximum temperature | 105°C |
| 5 | Forced losses | OFF |
| 9 | Buffer protection during charging | ON |
| 14 | Minimum required buffer temperature (min. SETPOINT) | OFF |
| 15 | DKP switch-off differential (between the buffer and boiler) | -3 K |
| 16 | DKP re-start differential | 0 K |

GB

## 8.4 Terminal board connection example - hydraulic diagram no. 009

| | Name | Description | Note | Cond. colour | SCS12 | SWS12 |
|---|---|---|---|---|---|---|
| Inputs, sensors | AF | Outdoor sensor | Outdoor temperature sensor | br | X5 : 2 | X5 : 2 |
| | | | | bl | X5 : 14 | X6 : 2 |
| | WF | Boiler sensor | Boiler water temperature sensor | br | X5 : 3 | X5 : 3 |
| | | | | bl | X5 : 15 | X6 : 3 |
| | SF | DHW sensor | Combined heater sensor if DHW is controlled | br | X5 : 4 | X5 : 4 |
| | | | | bl | X5 : 16 | X6 : 4 |
| | VF1 | Heating circuit 1 | Heating circuit 1 sensor | br | X5 : 5 | X5 : 5 |
| | | | | bl | X5 : 17 | X6 : 5 |
| | VI1 | Variable input 1 | AGF hydr. example 17, 19 and 20, sensor, switching contact, modem, alarm input, etc. | r | X5 : 6 | X5 : 6 |
| | | | | b | X5 : 18 | X6 : 6 |
| | VI2 | Variable input 2 | PF hydr. example 4, 12 and 20, sensor, switching contact, modem, alarm input, etc. | br | X5 : 7 | X5 : 7 |
| | | | | bl | X5 : 19 | X6 : 7 |
| | VI3 | Variable input 3 | PF hydr. example 3, 10 and 19, sensor, switching contact, modem, alarm input, etc. | br | X5 : 8 | X5 : 8 |
| | | | | bl | X5 : 20 | X6 : 8 |
| | VF2 | Heating circuit 2 | Heating circuit 2 sensor | br | X5 : 9 | X5 : 9 |
| | | | | bl | X5 : 21 | X6 : 9 |
| | KVLF | Solar panel | Solar panel sensor | br | X5 : 10 | X5 : 10 |
| | | | | bl | X5 : 22 | X6 : 10 |
| | KSPF | Accum. tank bottom | Tank bottom sensor of an automatic source of heat (solar, pellets, etc.) | br | X5 : 11 | X5 : 11 |
| | | | | bl | X5 : 23 | X6 : 11 |
| | IMP | Impulse input | Connection of a flow meter, counter, etc. | br | X5 : 12 | X5 : 12 |
| | | | | bl | X5 : 24 | X6 : 12 |
| | BUS A,B | Data bus | Data input connection, e.g. from SDW 10, 20, another controller, etc. | A | X5 : 13 | X5 : 1 |
| | | | | B | X5 : 1 | X6 : 1 |

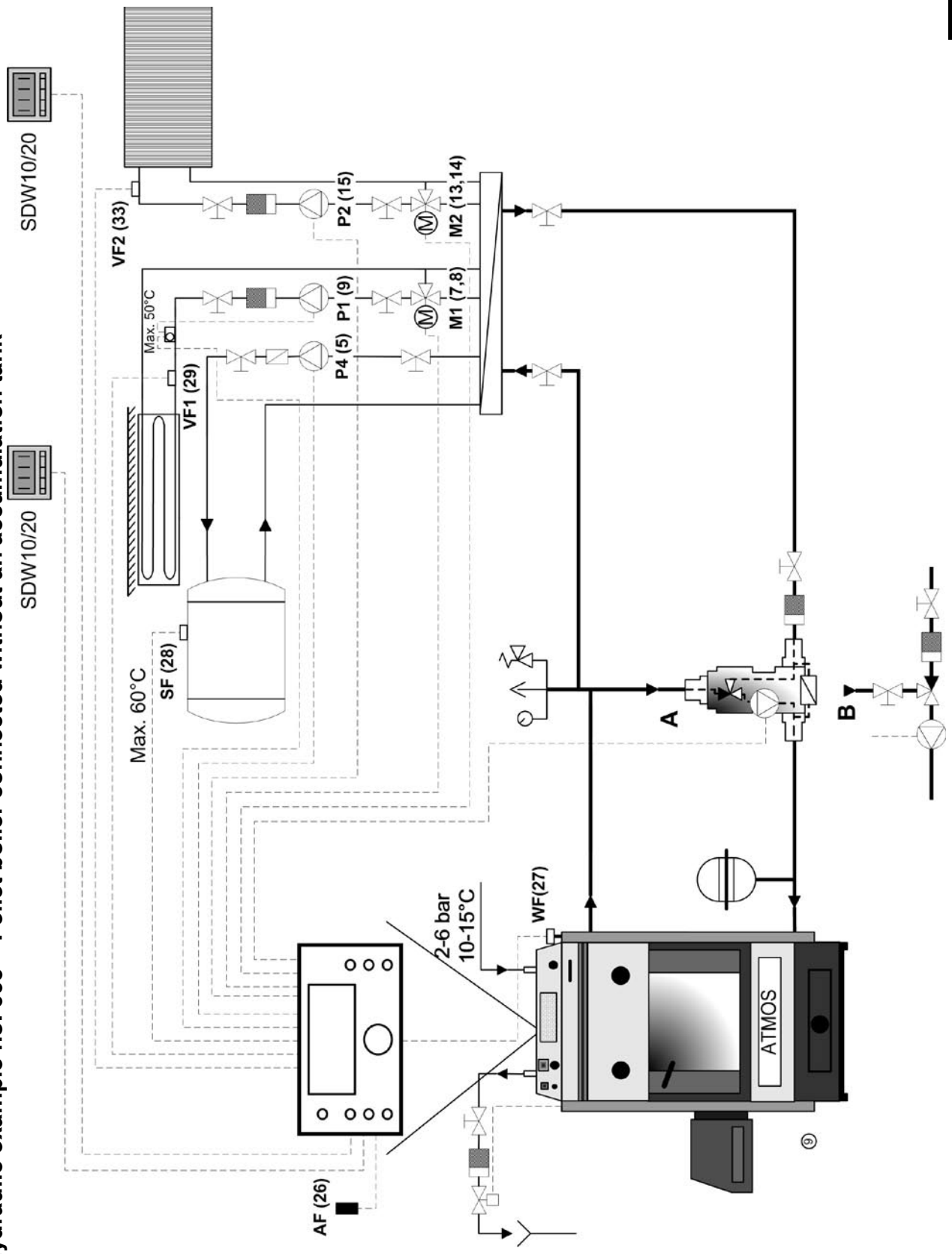
| | Name | Description | Note | Cond. colour | SCS12 | SWS12 |
|---|---|---|---|---|---|---|
| Outputs, devices | 230V/50Hz | Power supply | Main power supply of the controller from which controlled appliances are supplied | br (b) | X6 : 4 | X7 : 5 |
| | | | | bl | X6 : 3 | X9 : 5 |
| | | | | gy | X6 : 2 | X10 : 5 |
| | Terminal* | Boiler type 2 | Burner and fan contact supply | br (b) | X6 : 4 - X7 : 6 | X7:1 - X7:2 |
| | FAN / L2 | Fan / burner L2 | Controlled fan / boiler burner contact | br (b) | X7 : 7 | X8 : 1 |
| | | | | bl | X7 : 14 | X9 : 1 |
| | | | | gy | X7 : 9 | X10 : 1 |
| | DKP | Boiler pump | Boiler circuit pump (Laddomat 21, etc.) | br (b) | X7 : 5 | X8 : 2 |
| | | | | bl | X7 : 13 | X9 : 2 |
| | | | | gy | X7 : 8 | X10 : 2 |
| | SLP | DHW pump | DHW charging pump, DHW charging servo valve, etc. | br (b) | X7 : 4 | X8 : 3 |
| | | | | bl | X7 : 12 | X9 : 3 |
| | | | | gy | X9 : 6 | X10 : 3 |
| | MC1 | MC1 servo drive | opens | b | X7 : 3 | X8 : 4 |
| | | | closes | br | X7 : 2 | X8 : 5 |
| | | | working neutral | bl | X7 : 11 | X9 : 4 |
| | MKP1 | Circuit 1 pump | System circuit pump (MC1) | br (b) | X7 : 1 | X8 : 6 |
| | | | | bl | X7 : 10 | X9 : 6 |
| | | | | gy | X9 : 5 | X10 : 6 |
| | VO1 | Variable output 1 | E.g. solar pump, DHW circ. pump, DHW electric coil, etc. | br (b) | X8 : 7 | X8 : 7 |
| | | | | bl | X8 : 14 | X9 : 7 |
| | | | | gy | X9 : 1 | X10 : 7 |
| | VO2 | Variable output 2 | | br (b) | X8 : 6 | X8 : 8 |
| | | | | bl | X8 : 13 | X9 : 8 |
| | | | | gy | X9 : 4 | X10 : 8 |
| | MC2 | MC2 servo drive | opens | b | X8 : 5 | X8 : 9 |
| | | | closes | br | X8 : 4 | X8 : 10 |
| | | | working neutral | bl | X8 : 12 | X9 : 9 |
| | MKP2 | Circuit 2 pump | System circuit pump (MC2) | br (b) | X8 : 3 | X8 : 11 |
| | | | | bl | X8 : 11 | X9 : 11 |
| | | | | gy | X8 : 9 | X10 : 11 |

Legend: Phase - (b) black, (br) brown, working neutral - (bl) blue, PE - (gy) green and yellow, (r) - red, (w) - white

Notes
- If you need to extend conductors, observe valid electrical assembly standards, colours and marking of conductors
- Working neutral terminals N are connected in the terminal board, if necessary you can place the respective conductor on another terminal.
  Connected N terminals - X6:3; X7:10- X7:14; X8:10 - X8:14 (see electric diagram of the terminal board)
- Grounding terminals PE are connected in the terminal board, if necessary you can place the respective conductor on another terminal.
  Connected PE terminals - X6:2; X7:8 - X7:9; X8:9; X9:1 - X9:6 (see electric diagram of the terminal board)

*Only if the supply conductor to X7:6 (usually marked L-IN) is not part of the cable harness

### 8.4.1 Hydraulic example no. 009 – Pellet boiler connected without an accumulation tank



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### 8.4.2 Example of parameter settings for hydraulic diagram no. 009

HYDRAULIC Menu

| Parameter | Description | Setting |
|---|---|---|
| 1 | Hydraulic diagram | 0001 |
| 2 | DHW pump output | 1 (DHW charging pump) |
| 3 | Output of mixing circuit 1 | 3 (Mixing circuit) |
| 4 | Output of mixing circuit 2 | 3 (Mixing circuit) |
| 5 | Output of the heating circuit (HC) pump | KKPF (fixed) |
| 6 | Variable output 1 | OFF |
| 7 | Variable output 2 | OFF |
| 8 | Variable input 1 | OFF |
| 9 | Variable input 2 | OFF |
| 10 | Variable input 3 | OFF |

SOLID FUEL Menu

| | | |
|---|---|---|
| 1 | Boiler type | 2 |
| 2 | Minimum temperature (boiler type 2,3,4) | 80℃ |
| 3 | Maximum temperature (boiler type 2,3,4) | 95℃ |
| 4 | Boiler pump switch-on | 70℃ |
| 5 | Pump differential | 5K |
| 6 | Pellet boiler (burner) switching differential | 6K |
| 14 | Release of heating circuits | 75℃ |
| 17 | Switch-over of the boiler circulation pump to WF/AGF | 1 (WF) |
| 20 | Start-up protection of the boiler circulation pump | ON |

## 8.5 Terminal board connection example - hydraulic diagram no. 0010

| | Name | Description | Note | Cond. colour | SCS12 | SWS12 |
|---|---|---|---|---|---|---|
| Inputs, sensors | AF | Outdoor sensor | Outdoor temperature sensor | br | X5 : 2 | X5 : 2 |
| | | | | bl | X5 : 14 | X6 : 2 |
| | WF | Boiler sensor | Boiler water temperature sensor | br | X5 : 3 | X5 : 3 |
| | | | | bl | X5 : 15 | X6 : 3 |
| | SF | DHW sensor | Combined heater sensor if DHW is controlled | br | X5 : 4 | X5 : 4 |
| | | | | bl | X5 : 16 | X6 : 4 |
| | VF1 | Heating circuit 1 | Heating circuit 1 sensor | br | X5 : 5 | X5 : 5 |
| | | | | bl | X5 : 17 | X6 : 5 |
| | VI1 | Variable input 1 | AGF hydr. example 17, 19 and 20, sensor, switching contact, modem, alarm input, etc. | r | X5 : 6 | X5 : 6 |
| | | | | w | X5 : 18 | X6 : 6 |
| | VI2 | Variable input 2 | PF hydr. example 4, 12 and 20, sensor, switching contact, modem, alarm input, etc. | br | X5 : 7 | X5 : 7 |
| | | | | bl | X5 : 19 | X6 : 7 |
| | VI3 | Variable input 3 | PF hydr. example 3, 10 and 19, sensor, switching contact, modem, alarm input, etc. | br | X5 : 8 | X5 : 8 |
| | | | | bl | X5 : 20 | X6 : 8 |
| | VF2 | Heating circuit 2 | Heating circuit 2 sensor | br | X5 : 9 | X5 : 9 |
| | | | | bl | X5 : 21 | X6 : 9 |
| | KVLF | Solar panel | Solar panel sensor | br | X5 : 10 | X5 : 10 |
| | | | | bl | X5 : 22 | X6 : 10 |
| | KSPF | Accum. tank bottom | Tank bottom sensor of an automatic source of heat (solar, pellets, etc.) | br | X5 : 11 | X5 : 11 |
| | | | | bl | X5 : 23 | X6 : 11 |
| | IMP | Impulse input | Connection of a flow meter, counter, etc. | br | X5 : 12 | X5 : 12 |
| | | | | bl | X5 : 24 | X6 : 12 |
| | BUS A,B | Data bus | Data input connection, e.g. from SDW 10, 20, another controller, etc. | A | X5 : 13 | X5 : 1 |
| | | | | B | X5 : 1 | X6 : 1 |

| | Name | Description | Note | Cond. colour | SCS12 | SWS12 |
|---|---|---|---|---|---|---|
| Outputs, devices | 230V/50Hz | Power supply | Main power supply of the controller from which controlled appliances are supplied | Br (b) | X6 : 4 | X7 : 5 |
| | | | | bl | X6 : 3 | X9 : 5 |
| | | | | gy | X6 : 2 | X10 : 5 |
| | Terminal* | Boiler type 3 | Boiler fan / burner supply | br (b) | X6 : 4 - X7 : 6 | X7:1 - X7:2 |
| | FAN / L2 | Fan / burner L2 | Controlled boiler fan / burner contact | br (b) | X7 : 7 | X8 : 1 |
| | | | | bl | X7 : 14 | X9 : 1 |
| | | | | gy | X7 : 9 | X10 : 1 |
| | DKP | Boiler pump | Boiler circuit pump (Laddomat 21, etc.) | br (b) | X7 : 5 | X8 : 2 |
| | | | | bl | X7 : 13 | X9 : 2 |
| | | | | gy | X7 : 8 | X10 : 2 |
| | SLP | DHW pump | DHW charging pump, DHW charging servo valve, etc. | br (b) | X7 : 4 | X8 : 3 |
| | | | | bl | X7 : 12 | X9 : 3 |
| | | | | gy | X9 : 6 | X10 : 3 |
| | MC1 | MC1 servo drive | opens | b | X7 : 3 | X8 : 4 |
| | | | closes | br | X7 : 2 | X8 : 5 |
| | | | working neutral | bl | X7 : 11 | X9 : 4 |
| | MKP1 | Circuit 1 pump | System circuit pump (MC1) | br (b) | X7 : 1 | X8 : 6 |
| | | | | bl | X7 : 10 | X9 : 6 |
| | | | | gy | X9 : 5 | X10 : 6 |
| | VO1 | Variable output 1 | E.g. solar pump, DHW circ. pump, DHW electric coil, etc. | br (b) | X8 : 7 | X8 : 7 |
| | | | | bl | X8 : 14 | X9 : 7 |
| | | | | gy | X9 : 1 | X10 : 7 |
| | VO2 | Variable output 2 | | br (b) | X8 : 6 | X8 : 8 |
| | | | | bl | X8 : 13 | X9 : 8 |
| | | | | gy | X9 : 4 | X10 : 8 |
| | MC2 | MC2 servo drive | opens | b | X8 : 5 | X8 : 9 |
| | | | closes | br | X8 : 4 | X8 : 10 |
| | | | working neutral | bl | X8 : 12 | X9 : 9 |
| | MKP2 | Circuit 2 pump | System circuit pump (MC2) | br (b) | X8 : 3 | X8 : 11 |
| | | | | bl | X8 : 11 | X9 : 11 |
| | | | | gy | X8 : 9 | X10 : 11 |

Legend: Phase - (b) black, (br) brown, working neutral - (bl) blue, PE - (gy) green and yellow, (r) - red, (w) - white

Notes
- If you need to extend conductors, observe valid electrical assembly standards, colours and marking of conductors
- Working neutral terminals N are connected in the terminal board, if necessary you can place the respective conductor on another terminal.
  Connected N terminals - X6:3; X7:10- X7:14; X8:10 - X8:14 (see electric diagram of the terminal board)
- Grounding terminals PE are connected in the terminal board, if necessary you can place the respective conductor on another terminal.
  Connected PE terminals - X6:2; X7:8 - X7:9; X8:9; X9:1 - X9:6 (see electric diagram of the terminal board)

* Only if the supply conductor to X7:6 (usually marked L-IN) is not part of the cable harness

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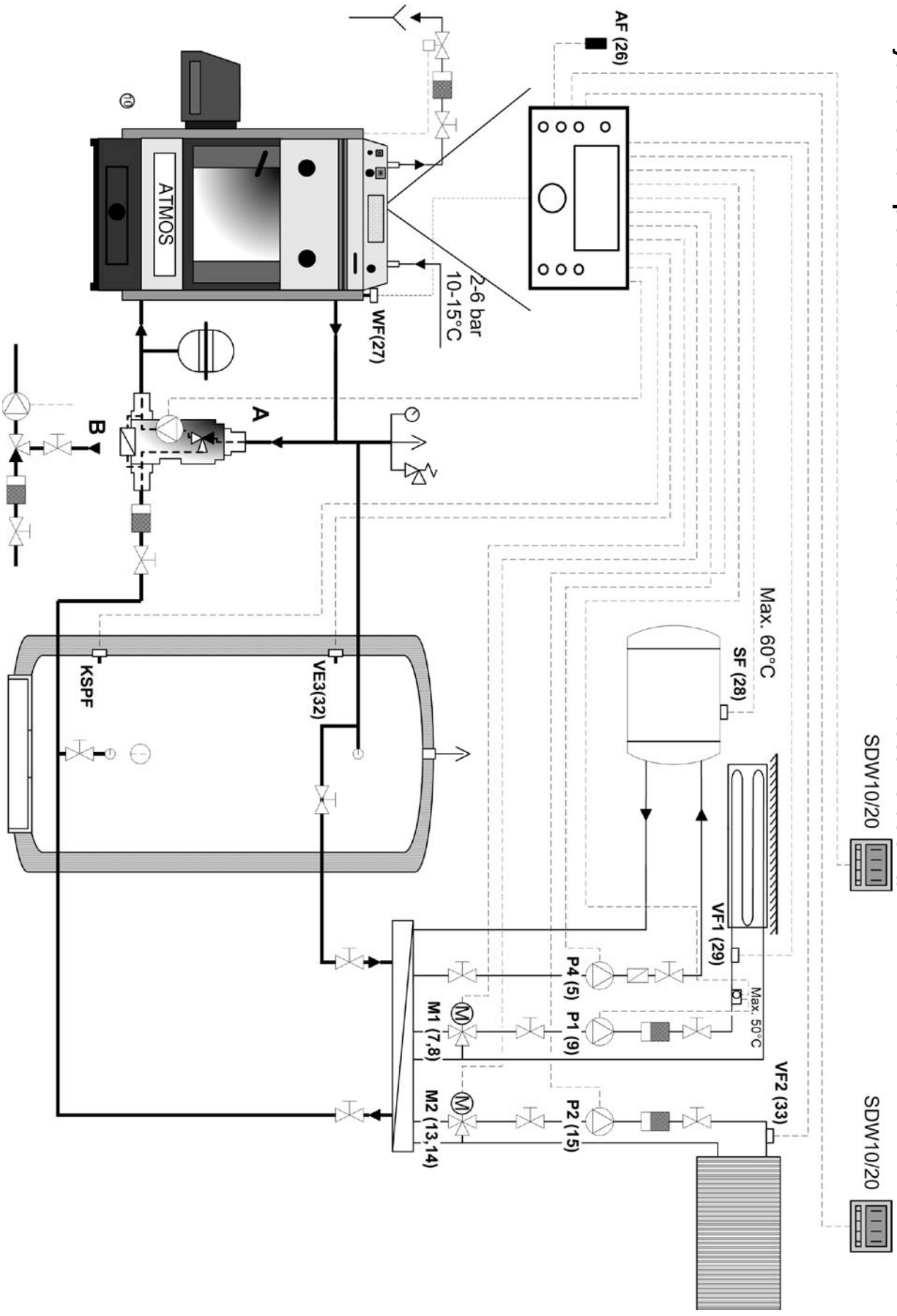
## 8.5.1 Hydraulic example no. 0010 – Pellet boiler connected with an accumulation tank



### 8.5.2 Example of parameters settings for hydraulic diagram no. 0010

HYDRAULIC Menu

| Parameter | Description | Setting |
|---|---|---|
| 1 | Hydraulic diagram | 0010 |
| 2 | DHW pump output | 1 (DHW charging pump) |
| 3 | Output of mixing circuit 1 | 3 (Mixing circuit) |
| 4 | Output of mixing circuit 2 | 3 (Mixing circuit) |
| 5 | Output of the heating circuit (HC) pump | KKPF (fixed) |
| 6 | Variable output 1 | OFF |
| 7 | Variable output 2 | OFF |
| 8 | Variable input 1 | OFF |
| 9 | Variable input 2 | OFF |
| 10 | Variable input 3 | 19 (PF) |

SOLID FUEL Menu

| | | |
|---|---|---|
| 1 | Boiler type | 3 |
| 2 | Minimum temperature (boiler type 2,3,4) | 80°C |
| 3 | Maximum temperature (boiler type 2,3,4) | 95°C |
| 4 | Boiler pump switch-on | 30°C |
| 5 | Differential pump switch-on | 5K |
| 6 | Pellet boiler (burner) switching differential | 6K |
| 16 | Forced losses of the heater | 3 - storage tank |
| 17 | Switch-over of the boiler circulation pump to WF/AGF | 1 (WF) |
| 20 | Start-up protection of the boiler circulation pump | OFF |

BUFFER Menu

| | | |
|---|---|---|
| 1 | Minimum temperature - release of heating circuits | 40°C |
| 2 | Maximum temperature | 105°C |
| 9 | Buffer protection during charging | ON |
| 14 | Min. required buffer temperature (min. SETPOINT) | 60°C |
| 15 | DKP switch-off differential (between the buffer and boiler) | -3 K |
| 16 | DKP re-start differential | 0 K |

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## 8.6 Terminal board connection example - hydraulic diagram no. 0012

| | Name | Description | Note | Cond. colour | SCS12 | SWS12 |
|---|---|---|---|---|---|---|
| Inputs, sensors | AF | Outdoor sensor | Outdoor temperature sensor | br | X5 : 2 | X5 : 2 |
| | | | | bl | X5 : 14 | X6 : 2 |
| | WF | Boiler sensor | Boiler water temperature sensor | br | X5 : 3 | X5 : 3 |
| | | | | bl | X5 : 15 | X6 : 3 |
| | SF | DHW sensor | Combined heater sensor if DHW is controlled | br | X5 : 4 | X5 : 4 |
| | | | | bl | X5 : 16 | X6 : 4 |
| | VF1 | Heating circuit 1 | Heating circuit 1 sensor | br | X5 : 5 | X5 : 5 |
| | | | | bl | X5 : 17 | X6 : 5 |
| | VI1 | Variable input 1 | AGF hydr. example 17, 19 and 20, sensor, switching contact, modem, alarm input, etc. | r | X5 : 6 | X5 : 6 |
| | | | | W | X5 : 18 | X6 : 6 |
| | VI2 | Variable input 2 | PF hydr. example 4, 12 and 20, sensor, switching contact, modem, alarm input, etc. | br | X5 : 7 | X5 : 7 |
| | | | | bl | X5 : 19 | X6 : 7 |
| | VI3 | Variable input 3 | PF hydr. example 3, 10 and 19, sensor, switching contact, modem, alarm input, etc. | br | X5 : 8 | X5 : 8 |
| | | | | bl | X5 : 20 | X6 : 8 |
| | VF2 | Heating circuit 2 | Heating circuit 2 sensor | br | X5 : 9 | X5 : 9 |
| | | | | bl | X5 : 21 | X6 : 9 |
| | KVLF | Solar panel | Solar panel sensor | br | X5 : 10 | X5 : 10 |
| | | | | bl | X5 : 22 | X6 : 10 |
| | KSPF | Accum. tank bottom | Tank bottom sensor of an automatic source of heat (solar, pellets, etc.) | br | X5 : 11 | X5 : 11 |
| | | | | bl | X5 : 23 | X6 : 11 |
| | IMP | Impulse input | Connection of a flow meter, counter, etc. | br | X5 : 12 | X5 : 12 |
| | | | | bl | X5 : 24 | X6 : 12 |
| | BUS A,B | Data bus | Data input connection, e.g. from SDW 10, 20, another controller, etc. | A | X5 : 13 | X5 : 1 |
| | | | | B | X5 : 1 | X6 : 1 |

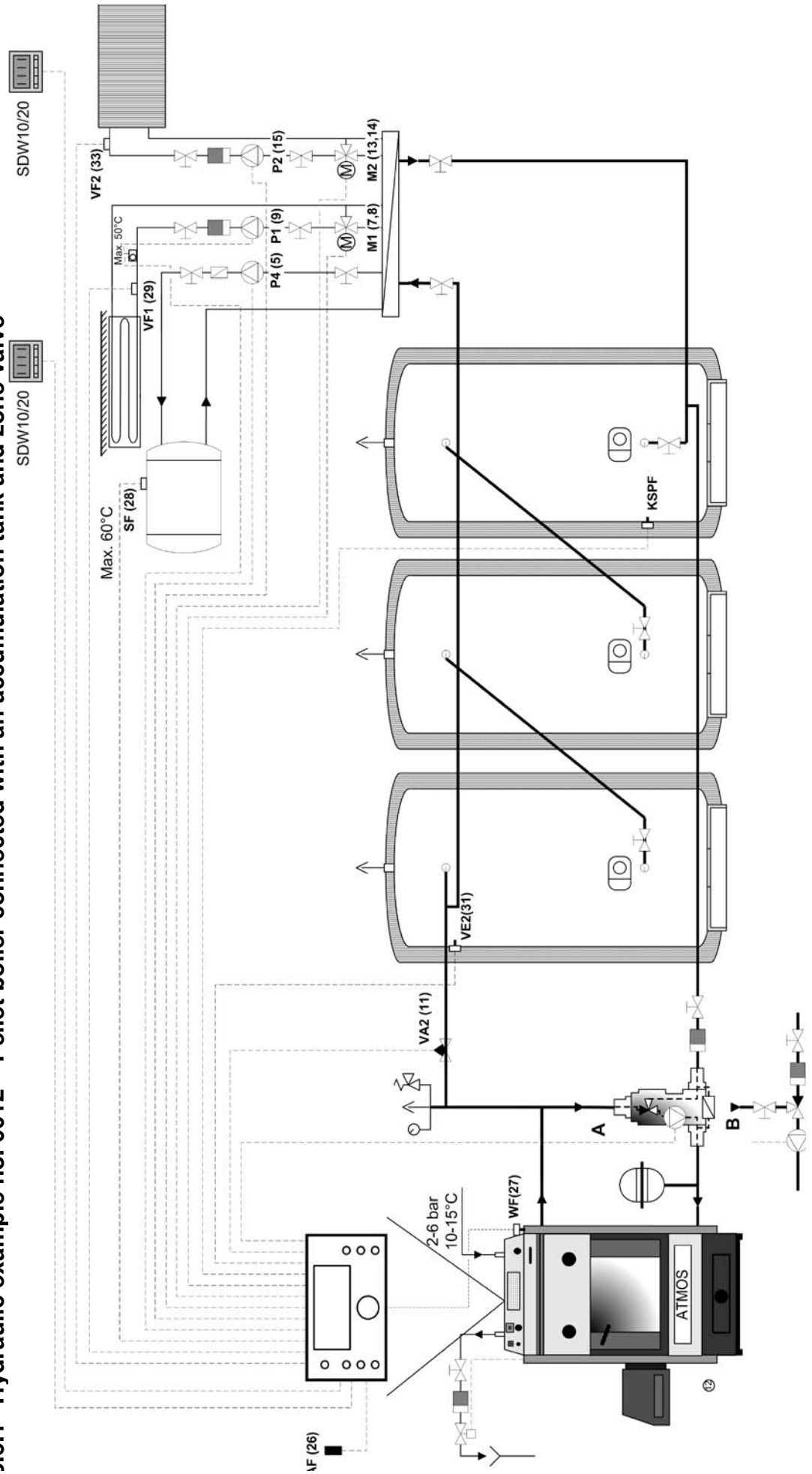
| | Name | Description | Note | Cond. colour | SCS12 | SWS12 |
|---|---|---|---|---|---|---|
| Outputs, devices | 230V/50Hz | Power supply | Main power supply of the controller from which controlled appliances are supplied | br (b) | X6 : 4 | X7 : 5 |
| | | | | bl | X6 : 3 | X9 : 5 |
| | | | | gy | X6 : 2 | X10 : 5 |
| | Terminal* | Boiler type 3 | Boiler fan / burner contact supply | br (b) | X6 : 4 - X7 : 6 | X7:1-X7:2 |
| | FAN / L2 | Fan / burner L2 | Controlled boiler fan / burner contact | br (b) | X7 : 7 | X8 : 1 |
| | | | | bl | X7 : 14 | X9 : 1 |
| | | | | gy | X7 : 9 | X10 : 1 |
| | DKP | Boiler pump | Boiler circuit pump (Laddomat 21, etc.) | br (b) | X7 : 5 | X8 : 2 |
| | | | | bl | X7 : 13 | X9 : 2 |
| | | | | gy | X7 : 8 | X10 : 2 |
| | SLP | DHW pump | DHW charging pump, DHW charging servo valve, etc. | br (b) | X7 : 4 | X8 : 3 |
| | | | | bl | X7 : 12 | X9 : 3 |
| | | | | gy | X9 : 6 | X10 : 3 |
| | MC1 | MC1 servo drive | opens | b | X7 : 3 | X8 : 4 |
| | | | closes | br | X7 : 2 | X8 : 5 |
| | | | working neutral | bl | X7 : 11 | X9 : 4 |
| | MKP1 | Circuit 1 pump | System circuit pump (MC1) | br (b) | X7 : 1 | X8 : 6 |
| | | | | bl | X7 : 10 | X9 : 6 |
| | | | | gy | X9 : 5 | X10 : 6 |
| | VO1 | Variable output 1 | E.g. solar pump, DHW circ. pump, DHW electric coil, etc. | br (b) | X8 : 7 | X8 : 7 |
| | | | | bl | X8 : 14 | X9 : 7 |
| | | | | gy | X9 : 1 | X10 : 7 |
| | VO2 | Variable output 2 | Zone valve (PLP) | br (b) | X8 : 6 | X8 : 8 |
| | | | | bl | X8 : 13 | X9 : 8 |
| | | | | gy | X9 : 4 | X10 : 8 |
| | MC2 | MC2 servo drive | opens | b | X8 : 5 | X8 : 9 |
| | | | closes | br | X8 : 4 | X8 : 10 |
| | | | working neutral | bl | X8 : 12 | X9 : 9 |
| | MKP2 | Circuit 2 pump | System circuit pump (MC2) | br (b) | X8 : 3 | X8 : 11 |
| | | | | bl | X8 : 11 | X9 : 11 |
| | | | | gy | X8 : 9 | X10 : 11 |

Legend: Phase - (b) black, (br) brown, working neutral - (bl) blue, PE - (gy) green and yellow, (r) - red, (w) - white

Notes
- If you need to extend conductors, observe valid electrical assembly standards, colours and marking of conductors
- Working neutral terminals N are connected in the terminal board, if necessary you can place the respective conductor on another terminal.
  Connected N terminals - X6:3; X7:10- X7:14; X8:10 - X8:14 (see electric diagram of the terminal board)
- Grounding terminals PE are connected in the terminal board, if necessary you can place the respective conductor on another terminal.
  Connected PE terminals - X6:2; X7:8 - X7:9; X8:9; X9:1 - X9:6 (see electric diagram of the terminal board)

* Only if the supply conductor to X7:6 (usually marked L-IN) is not part of the cable harness

### 3.6.1 Hydraulic example no. 0012 – Pellet boiler connected with an accumulation tank and zone valve



GB

### 8.6.2 Example of parameter settings for hydraulic diagram no. 12

HYDRAULIC Menu

| Parameter | Description | Setting |
|---|---|---|
| 1 | Hydraulic diagram | 0012 |
| 2 | DHW pump output | 1 (DHW charging pump) |
| 3 | Output of mixing circuit 1 | 3 (Mixing circuit) |
| 4 | Output of mixing circuit 2 | 3 (Mixing circuit) |
| 5 | Output of the heating circuit (HC) pump | KKPF (fixed) |
| 6 | Variable output 1 | OFF |
| 7 | Variable output 2 | 16 (PLP) zone valve |
| 8 | Variable input 1 | OFF |
| 9 | Variable input 2 | 19 (PF) |
| 10 | Variable input 3 | OFF |

SOLID FUEL Menu

| | | |
|---|---|---|
| 1 | Boiler type | 3 |
| 2 | Minimum temperature (boiler type 2,3,4) | 80°C |
| 3 | Maximum temperature (boiler type 2,3,4) | 95°C |
| 4 | Boiler pump switch-on | 70°C |
| 5 | Differential pump switch-on | 5K |
| 6 | Pellet boiler switching differential | 6K |
| 16 | Forced losses of the heater | 3 |
| 17 | Switch-over of the boiler circulation pump to WF/AGF | 1 (WF) |
| 19 | Boiler switch-off type | 1 |
| 20 | Start-up protection of the boiler circulation pump | OFF |

BUFFER Menu

| | | |
|---|---|---|
| 1 | Minimum temperature - release of heating circuits | 40°C |
| 2 | Maximum temperature | 105°C |
| 9 | Buffer protection during charging | ON |
| 14 | Minimum required buffer temperature (min. SETPOINT) | 60°C |
| 15 | DKP switch-off differential (between the buffer and boiler) | -3 K |
| 16 | DKP re-start differential | 0 K |

## 8.7 Terminal board connection example - hydraulic diagram no. 0017

| | Name | Description | Note | Cond. colour | SCS12 | SWS12 |
|---|---|---|---|---|---|---|
| Inputs, sensors | AF | Outdoor sensor | Outdoor temperature sensor | h | X5 : 2 | X5 : 2 |
| | | | | bl | X5 : 14 | X6 : 2 |
| | WF | Boiler sensor | Boiler water temperature sensor | h | X5 : 3 | X5 : 3 |
| | | | | bl | X5 : 15 | X6 : 3 |
| | SF | DHW sensor | Combined heater sensor if DHW is controlled | h | X5 : 4 | X5 : 4 |
| | | | | bl | X5 : 16 | X6 : 4 |
| | VF1 | Heating circuit 1 | Heating circuit 1 sensor | h | X5 : 5 | X5 : 5 |
| | | | | bl | X5 : 17 | X6 : 5 |
| | VI1 | Variable input 1 | AGF hydr. example 17, 19 and 20, sensor, switching contact, modem, alarm input, etc. | r | X5 : 6 | X5 : 6 |
| | | | | w | X5 : 18 | X6 : 6 |
| | VI2 | Variable input 2 | PF hydr. example 4, 12 and 20, sensor, switching contact, modem, alarm input, etc. | h | X5 : 7 | X5 : 7 |
| | | | | bl | X5 : 19 | X6 : 7 |
| | VI3 | Variable input 3 | PF hydr. example 3, 10 and 19, sensor, switching contact, modem, alarm input, etc. | h | X5 : 8 | X5 : 8 |
| | | | | bl | X5 : 20 | X6 : 8 |
| | VF2 | Heating circuit 2 | Heating circuit 2 sensor | h | X5 : 9 | X5 : 9 |
| | | | | bl | X5 : 21 | X6 : 9 |
| | KVLF | Solar panel | Solar panel sensor | h | X5 : 10 | X5 : 10 |
| | | | | bl | X5 : 22 | X6 : 10 |
| | KSPF | Accum. tank bottom | Tank bottom sensor of an automatic source of heat (solar, pellets, etc.) | h | X5 : 11 | X5 : 11 |
| | | | | bl | X5 : 23 | X6 : 11 |
| | IMP | Impulse input | Connection of a flow meter, counter, etc. | h | X5 : 12 | X5 : 12 |
| | | | | bl | X5 : 24 | X6 : 12 |
| | BUS A,B | Data bus | Data input connection, e.g. from SDW 10, 20, another controller, etc. | A | X5 : 13 | X5 : 1 |
| | | | | B | X5 : 1 | X6 : 1 |

| | Name | Description | Note | Cond. colour | SCS12 | SWS12 |
|---|---|---|---|---|---|---|
| Outputs, devices | 230V/50Hz | Power supply | Main power supply of the controller from which controlled appliances are supplied | br (b) | X6 : 4 | X7 : 5 |
| | | | | bl | X6 : 3 | X9 : 5 |
| | | | | gy | X6 : 2 | X10 : 5 |
| | Terminal* | Boiler type 4 | Boiler fan contact supply | br (b) | X6 : 4 - X7 : 6 | X7:1 – X7:2 |
| | | | Only if a boiler GSE exhaust flap is controlled | br (b) | X7 : 6 - X8 : 8 | X7:6 – X7:9 |
| | FAN | Fan | Controlled fan contact | br (b) | X7 : 7 | X8 : 1 |
| | | | | bl | X7 : 14 | X9 : 1 |
| | | | | gy | X7 : 9 | X10 : 1 |
| | DKP | Boiler pump | Boiler circuit pump (Laddomat 21, etc.) | br (b) | X7 : 5 | X8 : 2 |
| | | | | bl | X7 : 13 | X9 : 2 |
| | | | | gy | X7 : 8 | X10 : 2 |
| | SLP | DHW pump | DHW charging pump, DHW charging servo valve, etc. | br (b) | X7 : 4 | X8 : 3 |
| | | | | bl | X7 : 12 | X9 : 3 |
| | | | | gy | X9 : 6 | X10 : 3 |
| | MC1 | MC1 servo drive | opens | b | X7 : 3 | X8 : 4 |
| | | | closes | h | X7 : 2 | X8 : 5 |
| | | | working neutral | bl | X7 : 11 | X9 : 4 |
| | MKP1 | Circuit 1 pump | System circuit pump (MC1) | br (b) | X7 : 1 | X8 : 6 |
| | | | | bl | X7 : 10 | X9 : 6 |
| | | | | gy | X9 : 5 | X10 : 6 |
| | VO1 | Variable output 1 | E.g. solar pump, DHW circ. pump, DHW electric coil, etc. | br (b) | X8 : 7 | X8 : 7 |
| | | | | bl | X8 : 14 | X9 : 7 |
| | | | | gy | X9 : 1 | X10 : 7 |
| | VO2 | Variable output 2 | E.g. zone valve in hydr. example 4 and 20 | br (b) | X8 : 6 | X8 : 8 |
| | | | | bl | X8 : 13 | X9 : 8 |
| | | | | gy | X9 : 4 | X10 : 8 |
| | MC2 | MC2 servo drive | opens | b | X8 : 5 | X8 : 9 |
| | | | closes | h | X8 : 4 | X8 : 10 |
| | | | working neutral | bl | X8 : 12 | X9 : 9 |
| | MKP2 | Circuit 2 pump | System circuit pump (MC2) | br (b) | X8 : 3 | X8 : 11 |
| | | | | bl | X8 : 11 | X9 : 11 |
| | | | | gy | X8 : 9 | X10 : 11 |
| | SERVO GSE | GSE exhaust flap | Conductor 1 - opens | h | X8 : 8 | X7 : 9 |
| | | | Conductor 2 - closes | b | X8 : 2 | X7 : 11 |
| | | | Conductor 3 - working neutral | bl | X8 : 10 | X9 : 10 |

Legend: Phase - (b) black, (br) brown, working neutral - (bl) blue, PE - (gy) green and yellow, (r) - red, (w) - white

Notes
- If you need to extend conductors, observe valid electrical assembly standards, colours and marking of conductors
- Working neutral terminals N are connected in the terminal board, if necessary you can place the respective conductor on another terminal. Connected N terminals - X6:3; X7:10- X7:14; X8:10 - X8:14 (see electric diagram of the terminal board)
- Grounding terminals PE are connected in the terminal board, if necessary you can place the respective conductor on another terminal.
Connected PE terminals - X6:2; X7:8 - X7:9; X8:9; X9:1 - X9:6 (see electric diagram of the terminal board)
* Only if the supply conductor to X7:6 (usually marked L-IN) is not part of the cable harness

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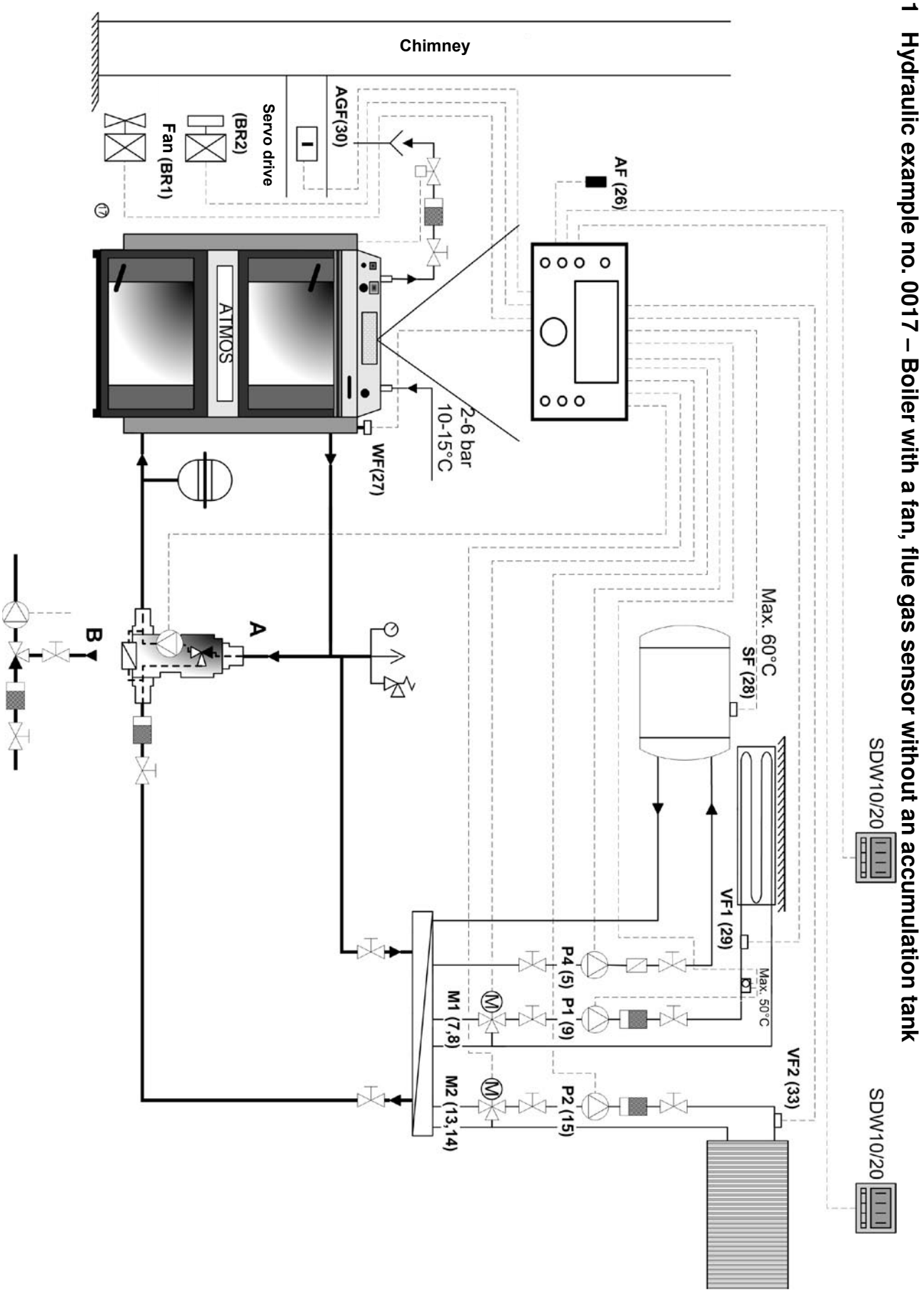
## 8.7.1 Hydraulic example no. 0017 – Boiler with a fan, flue gas sensor without an accumulation tank



### 8.7.2 Example of parameter settings for hydraulic diagram no. 0017

HYDRAULIC Menu

| Parameter | Description | Setting |
|---|---|---|
| 1 | Hydraulic diagram | 0017 |
| 2 | DHW pump output | 1 (DHW charging pump) |
| 3 | Output of mixing circuit 1 | 3 (Mixing circuit) |
| 4 | Output of mixing circuit 2 | 3 (Mixing circuit) |
| 5 | Output of the heating circuit (HC) pump | KKPF (fixed) |
| 6 | Variable output 1 | OFF |
| 7 | Variable output 2 | OFF |
| 8 | Variable input 1 | 16 (AGF) flue gas sensor |
| 9 | Variable input 2 | OFF |
| 10 | Variable input 3 | OFF |

SOLID FUEL Menu

| | | |
|---|---|---|
| 1 | Boiler type | 4 |
| 2 | Minimum temperature (boiler type 2,3,4) | 80°C |
| 3 | Maximum temperature (boiler type 2,3,4) | 95°C |
| 4 | Boiler pump switch-on | 70°C |
| 5 | Pump differential | 5K |
| 7 | Fan switching differential | 3K |
| 14 | Release of heating circuits | 75°C |
| 17 | Switch-over of the boiler circulation pump to WF/AGF | 2 (AGF) |
| 18 | Minimum flue gas temperature | 80°C |
| 20 | Start-up protection of the boiler circulation pump | ON |

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## 8.8 Terminal board connection example - hydraulic diagram no. 0019

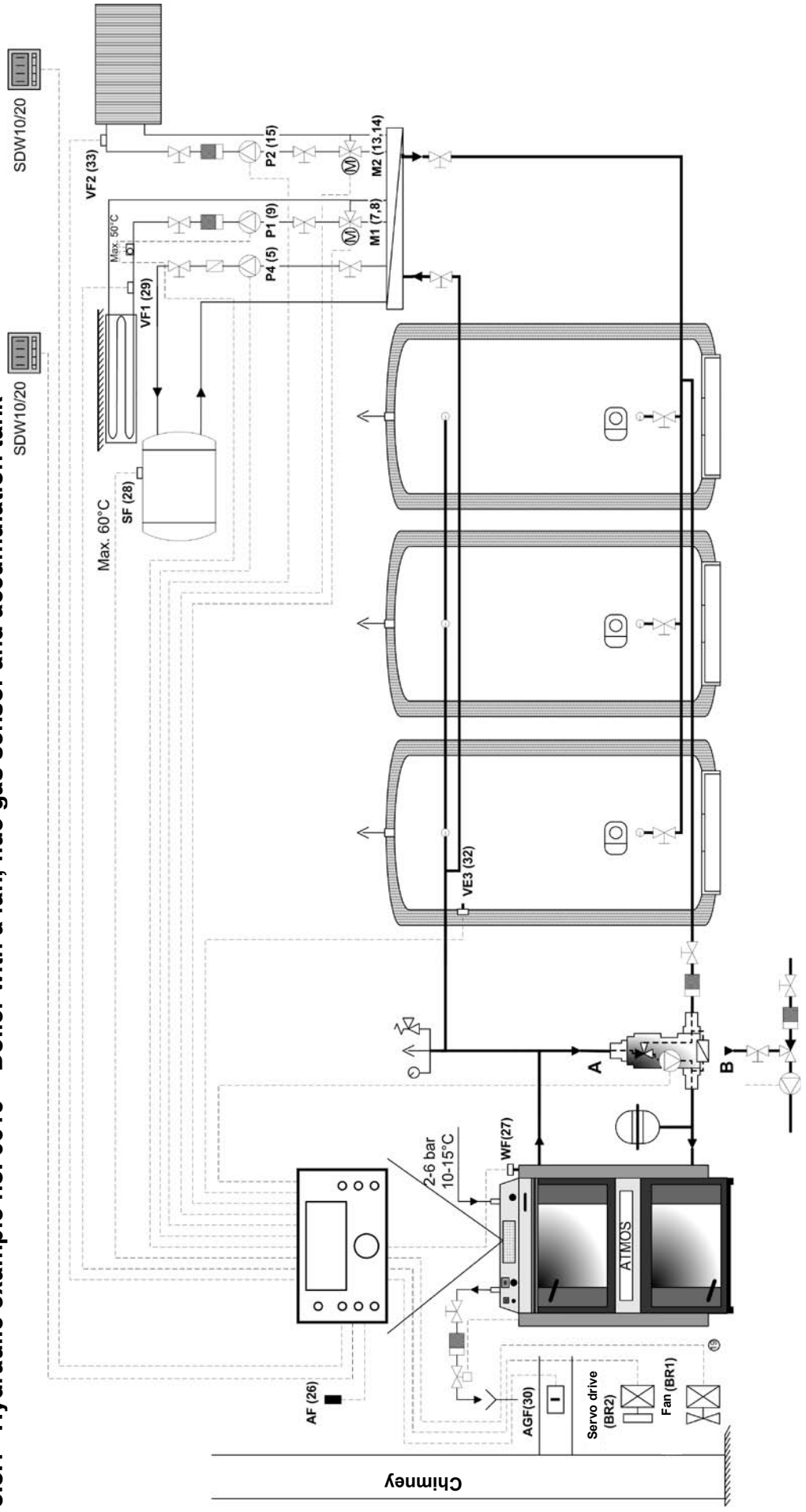
| | Name | Description | Note | Cond. colour | SCS12 | SWS12 |
|---|---|---|---|---|---|---|
| Inputs, sensors | AF | Outdoor sensor | Outdoor temperature sensor | br | X5 : 2 | X5 : 2 |
| | | | | bl | X5 : 14 | X6 : 2 |
| | WF | Boiler sensor | Boiler water temperature sensor | br | X5 : 3 | X5 : 3 |
| | | | | bl | X5 : 15 | X6 : 3 |
| | SF | DHW sensor | Combined heater sensor if DHW is controlled | br | X5 : 4 | X5 : 4 |
| | | | | bl | X5 : 16 | X6 : 4 |
| | VF1 | Heating circuit 1 | Heating circuit 1 sensor | br | X5 : 5 | X5 : 5 |
| | | | | bl | X5 : 17 | X6 : 5 |
| | VI1 | Variable input 1 | AGF hydr. example 17, 19 and 20, sensor, switching contact, modem, alarm input, etc. | r | X5 : 6 | X5 : 6 |
| | | | | w | X5 : 18 | X6 : 6 |
| | VI2 | Variable input 2 | PF hydr. example 4, 12 and 20, sensor, switching contact, modem, alarm input, etc. | br | X5 : 7 | X5 : 7 |
| | | | | bl | X5 : 19 | X6 : 7 |
| | VI3 | Variable input 3 | PF hydr. example 3, 10 and 19, sensor, switching contact, modem, alarm input, etc. | br | X5 : 8 | X5 : 8 |
| | | | | bl | X5 : 20 | X6 : 8 |
| | VF2 | Heating circuit 2 | Heating circuit 2 sensor | br | X5 : 9 | X5 : 9 |
| | | | | bl | X5 : 21 | X6 : 9 |
| | KVLF | Solar panel | Solar panel sensor | br | X5 : 10 | X5 : 10 |
| | | | | bl | X5 : 22 | X6 : 10 |
| | KSPF | Accum. tank bottom | Tank bottom sensor of an automatic source of heat (solar, pellets, etc.) | br | X5 : 11 | X5 : 11 |
| | | | | bl | X5 : 23 | X6 : 11 |
| | IMP | Impulse input | Connection of a flow meter, counter, etc. | br | X5 : 12 | X5 : 12 |
| | | | | bl | X5 : 24 | X6 : 12 |
| | BUS A,B | Data bus | Data input connection, e.g. from SDW 10, 20, another controller, etc. | A | X5 : 13 | X5 : 1 |
| | | | | B | X5 : 1 | X6 : 1 |

| | Name | Description | Note | Cond. colour | SCS12 | SWS12 |
|---|---|---|---|---|---|---|
| Outputs, devices | 230V/50Hz | Power supply | Main power supply of the controller from which controlled appliances are supplied | br (b) | X6 : 4 | X7 : 5 |
| | | | | bl | X6 : 3 | X9 : 5 |
| | | | | gy | X6 : 2 | X10 : 5 |
| | Terminal* | Boiler type 4 | Boiler fan contact supply | br (b) | X6 : 4 - X7 : 6 | X7:1 - X7:2 |
| | | | Only if a boiler GSE exhaust flap is controlled | br (b) | X7 : 6 - X8 : 8 | X7:6 - X7:9 |
| | FAN | Fan | Controlled fan contact | br (b) | X7 : 7 | X8 : 1 |
| | | | | bl | X7 : 14 | X9 : 1 |
| | | | | gy | X7 : 9 | X10 : 1 |
| | DKP | Boiler pump | Boiler circuit pump (Laddomat 21, etc.) | br (b) | X7 : 5 | X8 : 2 |
| | | | | bl | X7 : 13 | X9 : 2 |
| | | | | gy | X7 : 8 | X10 : 2 |
| | SLP | DHW pump | DHW charging pump, DHW charging servo valve, etc. | br (b) | X7 : 4 | X8 : 3 |
| | | | | bl | X7 : 12 | X9 : 3 |
| | | | | gy | X9 : 6 | X10 : 3 |
| | MC1 | MC1 servo drive | opens | b | X7 : 3 | X8 : 4 |
| | | | closes | br | X7 : 2 | X8 : 5 |
| | | | working neutral | bl | X7 : 11 | X9 : 4 |
| | MKP1 | Circuit 1 pump | System circuit pump (MC1) | br (b) | X7 : 1 | X8 : 6 |
| | | | | bl | X7 : 10 | X9 : 6 |
| | | | | gy | X9 : 5 | X10 : 6 |
| | VO1 | Variable output 1 | E.g. solar pump, DHW circ. pump, DHW electric coil, etc. | br (b) | X8 : 7 | X8 : 7 |
| | | | | bl | X8 : 14 | X9 : 7 |
| | | | | gy | X9 : 1 | X10 : 7 |
| | VO2 | Variable output 2 | | br (b) | X8 : 6 | X8 : 8 |
| | | | | bl | X8 : 13 | X9 : 8 |
| | | | | gy | X9 : 4 | X10 : 8 |
| | MC2 | MC2 servo drive | opens | b | X8 : 5 | X8 : 9 |
| | | | closes | br | X8 : 4 | X8 : 10 |
| | | | working neutral | bl | X8 : 12 | X9 : 9 |
| | MKP2 | Circuit 2 pump | System circuit pump (MC2) | br (b) | X8 : 3 | X8 : 11 |
| | | | | bl | X8 : 11 | X9 : 11 |
| | | | | gy | X8 : 9 | X10 : 11 |
| | SERVO GSE | GSE exhaust flap | Conductor 1 - opens | br | X8 : 8 | X7 : 9 |
| | | | Conductor 2 - closes | b | X8 : 2 | X7 : 11 |
| | | | Conductor 3 - working neutral | bl | X8 : 10 | X9 : 10 |

Legend: Phase - (b) black, (br) brown, working neutral - (bl) blue, PE - (gy) green and yellow, (r) - red, (w) - white

Notes
- If you need to extend conductors, observe valid electrical assembly standards, colours and marking of conductors
- Working neutral terminals N are connected in the terminal board, if necessary you can place the respective conductor on another terminal.
  Connected N terminals - X6:3; X7:10- X7:14; X8:10 - X8:14 (see electric diagram of the terminal board)
- Grounding terminals PE are connected in the terminal board, if necessary you can place the respective conductor on another terminal. Connected PE terminals - X6:2; X7:8 - X7:9; X8:9; X9:1 - X9:6 (see electric diagram of the terminal board)
  * Only if the supply conductor to X7:6 (usually marked L-IN) is not part of the cable harness

## 8.8.1 Hydraulic example no. 0019 – Boiler with a fan, flue gas sensor and accumulation tank



### 8.8.2 Example of parameter settings for hydraulic diagram no. 0019

HYDRAULIC Menu

| Parameter | Description | Setting |
|---|---|---|
| 1 | Hydraulic diagram | 0019 |
| 2 | DHW pump output | 1 (DHW charging pump) |
| 3 | Output of mixing circuit 1 | 3 (Mixing circuit) |
| 4 | Output of mixing circuit 2 | 3 (Mixing circuit) |
| 5 | Output of the heating circuit (HC) pump | KKPF (fixed) |
| 6 | Variable output 1 | OFF |
| 7 | Variable output 2 | OFF |
| 8 | Variable input 1 | 16 (AGF) |
| 9 | Variable input 2 | OFF |
| 10 | Variable input 3 | 19 (PF) |

SOLID FUEL Menu

| | | |
|---|---|---|
| 1 | Boiler type | 4 |
| 2 | Minimum temperature (boiler type 2,3,4) | 80°C |
| 3 | Maximum temperature (boiler type 2,3,4) | 95°C |
| 4 | Boiler pump switch-on | 30°C |
| 5 | Pump switch-on differential | 5K |
| 7 | Burner switching differential | 3K |
| 16 | Forced losses of the heater | 3 - storage tank |
| 17 | Switch-over of the boiler circulation pump to WF/AGF | 2 (AGF) |
| 18 | Minimum flue gas temperature | 80°C |
| 20 | Start-up protection of the boiler circulation pump | OFF |

BUFFER Menu

| | | |
|---|---|---|
| 1 | Minimum temperature - release of heating circuits | 40°C |
| 2 | Maximum temperature | 105°C |
| 9 | Buffer charging protection | ON |
| 14 | Min. required buffer temperature (min. SETPOINT) | OFF |
| 15 | DKP switch-off differential (between the buffer and boiler) | -3 K |
| 16 | DKP re-start differential | 0 K |

## 8.9 Terminal board connection example - hydraulic diagram no. 0020

| | Name | Description | Note | Cond. colour | SCS12 | SWS12 |
|---|---|---|---|---|---|---|
| Inputs, sensors | AF | Outdoor sensor | Outdoor temperature sensor | br | X5 : 2 | X5 : 2 |
| | | | | bl | X5 : 14 | X6 : 2 |
| | WF | Boiler sensor | Boiler water temperature sensor | br | X5 : 3 | X5 : 3 |
| | | | | bl | X5 : 15 | X6 : 3 |
| | SF | DHW sensor | Combined heater sensor if DHW is controlled | br | X5 : 4 | X5 : 4 |
| | | | | bl | X5 : 16 | X6 : 4 |
| | VF1 | Heating circuit 1 | Heating circuit 1 sensor | br | X5 : 5 | X5 : 5 |
| | | | | bl | X5 : 17 | X6 : 5 |
| | VI1 | Variable input 1 | AGF hydr. example 17, 19 and 20, sensor, switching contact, modem, alarm input, etc. | r | X5 : 6 | X5 : 6 |
| | | | | W | X5 : 18 | X6 : 6 |
| | VI2 | Variable input 2 | PF hydr. example 4, 12 and 20, sensor, switching contact, modem, alarm input, etc. | br | X5 : 7 | X5 : 7 |
| | | | | bl | X5 : 19 | X6 : 7 |
| | VI3 | Variable input 3 | PF hydr. example 3, 10 and 19, sensor, switching contact, modem, alarm input, etc. | br | X5 : 8 | X5 : 8 |
| | | | | bl | X5 : 20 | X6 : 8 |
| | VF2 | Heating circuit 2 | Heating circuit 2 sensor | br | X5 : 9 | X5 : 9 |
| | | | | bl | X5 : 21 | X6 : 9 |
| | KVLF | Solar panel | Solar panel sensor | br | X5 : 10 | X5 : 10 |
| | | | | bl | X5 : 22 | X6 : 10 |
| | KSPF | Accum. tank bottom | Tank bottom sensor of an automatic source of heat (solar, pellets, etc.) | br | X5 : 11 | X5 : 11 |
| | | | | bl | X5 : 23 | X6 : 11 |
| | IMP | Impulse input | Connection of a flow meter, counter, etc. | br | X5 : 12 | X5 : 12 |
| | | | | bl | X5 : 24 | X6 : 12 |
| | BUS A,B | Data bus | Data input connection, e.g. from SDW 10, 20, another controller, etc. | A | X5 : 13 | X5 : 1 |
| | | | | B | X5 : 1 | X6 : 1 |

| | Name | Description | Note | Cond. colour | SCS12 | SWS12 |
|---|---|---|---|---|---|---|
| Outputs, devices | 230V/50Hz | Power supply | Main power supply of the controller from which controlled appliances are supplied | br (b) | X6 : 4 | X7 : 5 |
| | | | | bl | X6 : 3 | X9 : 5 |
| | | | | gy | X6 : 2 | X10 : 5 |
| | Terminal* | Boiler type 4 | Boiler fan contact supply | br (b) | X6 : 4 - X7 : 6 | X7:1 - X7:2 |
| | | Boiler type 4 | Only if a boiler GSE exhaust flap is controlled | br (b) | X7 : 6 - X8 : 8 | X7:6 - X7:9 |
| | FAN / L2 | Fan / burner L2 | Controlled fan contact | br (b) | X7 : 7 | X8 : 1 |
| | | | | bl | X7 : 14 | X9 : 1 |
| | | | | gy | X7 : 9 | X10 : 1 |
| | DKP | Boiler pump | Boiler circuit pump (Laddomat 21, etc.) | br (b) | X7 : 5 | X8 : 2 |
| | | | | bl | X7 : 13 | X9 : 2 |
| | | | | gy | X7 : 8 | X10 : 2 |
| | SLP | DHW pump | DHW charging pump, DHW charging servo valve, etc. | br (b) | X7 : 4 | X8 : 3 |
| | | | | bl | X7 : 12 | X9 : 3 |
| | | | | gy | X9 : 6 | X10 : 3 |
| | MC1 | MC1 servo drive | opens | b | X7 : 3 | X8 : 4 |
| | | | closes | br | X7 : 2 | X8 : 5 |
| | | | working neutral | bl | X7 : 11 | X9 : 4 |
| | MKP1 | Circuit 1 pump | System circuit pump (MC1) | br (b) | X7 : 1 | X8 : 6 |
| | | | | bl | X7 : 10 | X9 : 6 |
| | | | | gy | X9 : 5 | X10 : 6 |
| | VO1 | Variable output 1 | E.g. solar pump, DHW circ. pump, DHW electric coil, etc. | br (b) | X8 : 7 | X8 : 7 |
| | | | | bl | X8 : 14 | X9 : 7 |
| | | | | gy | X9 : 1 | X10 : 7 |
| | VO2 | Variable output 2 | Zone valve (PLP) | br (b) | X8 : 6 | X8 : 8 |
| | | | | bl | X8 : 13 | X9 : 8 |
| | | | | gy | X9 : 4 | X10 : 8 |
| | MC2 | MC2 servo drive | opens | b | X8 : 5 | X8 : 9 |
| | | | closes | br | X8 : 4 | X8 : 10 |
| | | | working neutral | bl | X8 : 12 | X9 : 9 |
| | MKP2 | Circuit 2 pump | System circuit pump (MC2) | br (b) | X8 : 3 | X8 : 11 |
| | | | | bl | X8 : 11 | X9 : 11 |
| | | | | gy | X8 : 9 | X10 : 11 |
| | SERVO GSE | GSE exhaust flap | Conductor 1 - opens | br | X8 : 8 | X7 : 9 |
| | | | Conductor 2 - closes | b | X8 : 2 | X7 : 11 |
| | | | Conductor 3 - working neutral | bl | X8 : 10 | X9 : 10 |

Legend : Phase - (b) black, (br) brown, working neutral - (bl) blue, PE - (gy) green and yellow, (r) - red, (w) - white

Notes
- If you need to extend conductors, observe valid electrical assembly standards, colours and marking of conductors
- Working neutral terminals N are connected in the terminal board, if necessary you can place the respective conductor on another terminal.
  Connected N terminals - X6:3; X7:10- X7:14; X8:10 - X8:14 (see electric diagram of the terminal board)
- Grounding terminals PE are connected in the terminal board, if necessary you can place the respective conductor on another terminal.
  Connected PE terminals - X6:2; X7:8 - X7:9; X8:9; X9:1 - X9:6 (see electric diagram of the terminal board)

* Only if the supply conductor to X7:6 (usually marked L-IN) is not part of the cable harness

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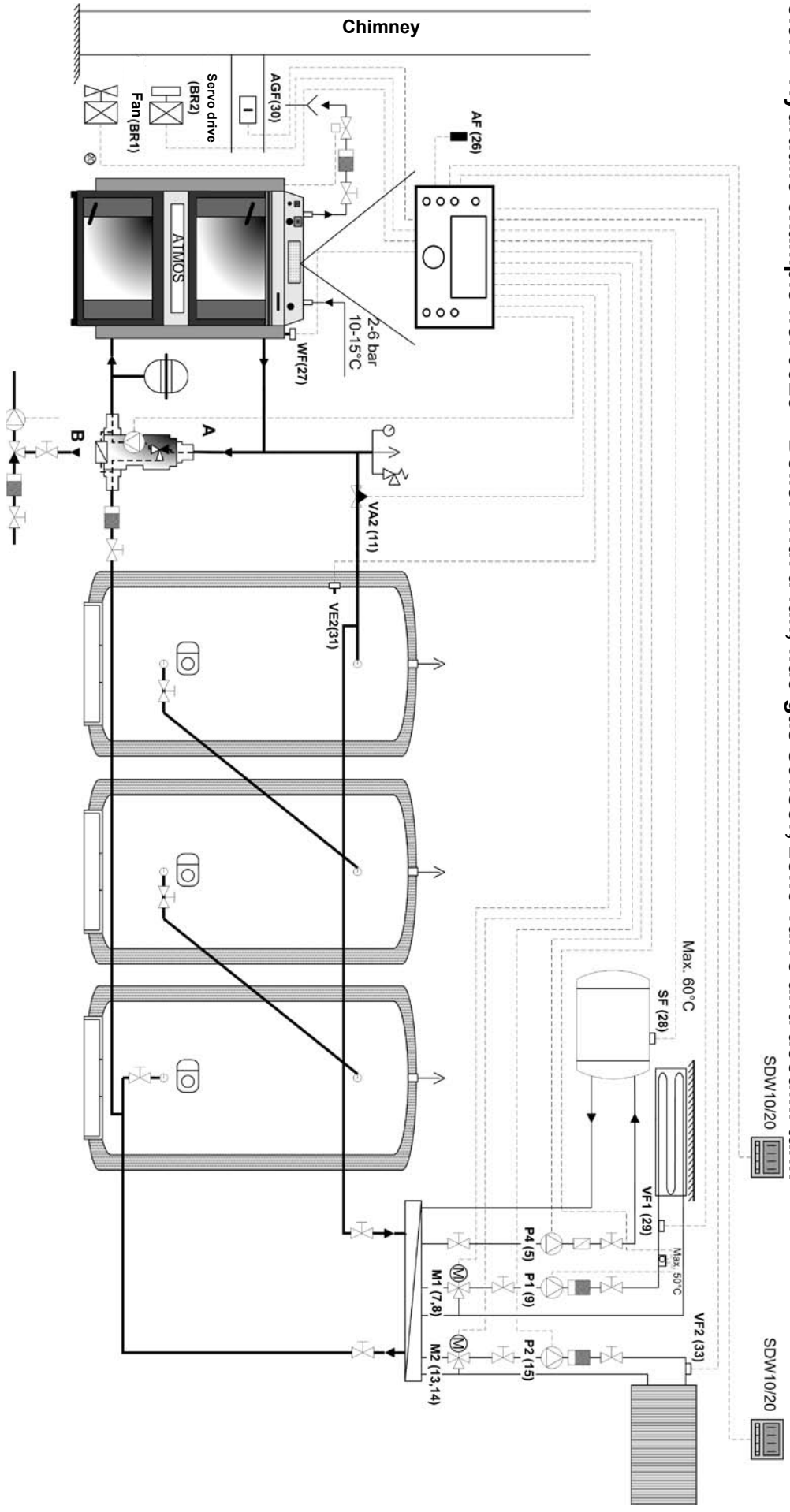
## 8.9.1 Hydraulic example no. 0020 – Boiler with a fan, flue gas sensor, zone valve and accum. tank



### 8.9.2 Example of parameter settings for hydraulic diagram no. 0020

HYDRAULIC Menu

| Parameter | Description | Setting |
|---|---|---|
| 1 | Hydraulic diagram | 0020 |
| 2 | DHW pump output | 1 (DHW charging pump) |
| 3 | Output of mixing circuit 1 | 3 (Mixing circuit) |
| 4 | Output of mixing circuit 2 | 3 (Mixing circuit) |
| 5 | Output of the heating circuit (HC) pump | KKPF (fixed) |
| 6 | Variable output 1 | OFF |
| 7 | Variable output 2 | 16 (PLP) |
| 8 | Variable input 1 | 16 (AGF) |
| 9 | Variable input 2 | 19 (PF) |
| 10 | Variable input 3 | OFF |

SOLID FUEL Menu

| | | |
|---|---|---|
| 1 | Boiler type | 4 |
| 2 | Minimum temperature (boiler type 2,3,4) | 80°C |
| 3 | Maximum temperature (boiler type 2,3,4) | 95°C |
| 4 | Boiler pump switch-on | 70°C |
| 5 | Differential pump switch-on | 5K |
| 7 | Fan switching differential | 3K |
| 16 | Forced losses of the heater | 3 - storage tank |
| 17 | Switch-over of the boiler circulation pump to WF/AGF | 2 (WF) |
| 19 | Minimum flue gas temperature | 80°C |
| 20 | Start-up protection of the boiler circulation pump | OFF |

BUFFER Menu

| | | |
|---|---|---|
| 1 | Minimum buffer temperature - release of heating circuits | 40°C |
| 2 | Maximum temperature | 105°C |
| 9 | Buffer charging protection | ON |
| 14 | Buffer temperature | OFF |
| 15 | DKP switch-off differential (between the buffer and boiler) | -3 K |
| 16 | DKP re-start differential | 0 K |

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## 8.10 Terminal board connection example - hydraulic diagram no. 0031

| | Name | Description | Note | Cond. colour | SCS12 | SWS12 |
|---|---|---|---|---|---|---|
| Inputs, sensors | AF | Outdoor sensor | Outdoor temperature sensor | h | X5 : 2 | X5 : 2 |
| | | | | m | X5 : 14 | X6 : 2 |
| | WF | Boiler sensor | Boiler water temperature sensor | h | X5 : 3 | X5 : 3 |
| | | | | m | X5 : 15 | X6 : 3 |
| | SF | DHW sensor | Combined heater sensor if DHW is controlled | h | X5 : 4 | X5 : 4 |
| | | | | m | X5 : 16 | X6 : 4 |
| | VF1 | Heating circuit 1 | Heating circuit 1 sensor | h | X5 : 5 | X5 : 5 |
| | | | | m | X5 : 17 | X6 : 5 |
| | VE1 | Variable input 1 | Flue gas sensor (AGF) | červ | X5 : 6 | X5 : 6 |
| | | | | b | X5 : 18 | X6 : 6 |
| | VE2 | Variable input 2 | E.g. temp. sensor, switching contact, modem, alarm input, etc. | h | X5 : 7 | X5 : 7 |
| | | | | m | X5 : 19 | X6 : 7 |
| | VE3 | Variable input 3 | | h | X5 : 8 | X5 : 8 |
| | | | | m | X5 : 20 | X6 : 8 |
| | VF2 | Heating circuit 2 | Heating circuit 2 sensor | h | X5 : 9 | X5 : 9 |
| | | | | m | X5 : 21 | X6 : 9 |
| | KVLF | Solar panel | Solar panel sensor | h | X5 : 10 | X5 : 10 |
| | | | | m | X5 : 22 | X6 : 10 |
| | KSPF | Accum. tank bottom | DHW tank bottom sensor for the solar system | h | X5 : 11 | X5 : 11 |
| | | | | m | X5 : 23 | X6 : 11 |
| | IMP | Impulse input | Connection of a flow meter, counter, etc. | h | X5 : 12 | X5 : 12 |
| | | | | m | X5 : 24 | X6 : 12 |
| | BUS A,B | Data bus | Data input connection, e.g. from SDW 10, 20, another controller, etc. | A | X5 : 13 | X5 : 1 |
| | | | | B | X5 : 1 | X6 : 1 |

| | Name | Description | Note | Cond. colour | SCS12 | SWS12 |
|---|---|---|---|---|---|---|
| Outputs, devices | 230V/50Hz | Power supply | Main power supply of the controller from which controlled appliances are supplied | h (č) | X6 : 4 | X7 : 5 |
| | | | | m | X6 : 3 | X9 : 5 |
| | | | | zž | X6 : 2 | X10 : 5 |
| | Terminal * | Boiler type 4 | Power supply of the boiler fan contact | h (č) | X6:4 - X7:6 | X7:1 - X7:2 |
| | | Boiler type 4 | Only if GSE boiler exhaust flap is controlled | h (č) | X7:6 - X8:8 | X7:6 - X7:9 |
| | FAN | Fan | Controlled fan contact | h (č) | X7 : 7 | X8 : 1 |
| | | | | m | X7 : 14 | X9 : 1 |
| | | | | zž | X7 : 9 | X10 : 1 |
| | DKP | Boiler pump | Boiler circuit pump (Laddomat 21, etc.) | h (č) | X7 : 5 | X8 : 2 |
| | | | | m | X7 : 13 | X9 : 2 |
| | | | | zž | X7 : 8 | X10 : 2 |
| | SLP | DHW pump | DHW charging pump (SLP), DHW charging servo valve (SLP) DHW electric heating (ETUV), DHW circulation pump (ZKP), etc. | h (č) | X7 : 4 | X8 : 3 |
| | | | | m | X7 : 12 | X9 : 3 |
| | | | | zž | X9 : 6 | X10 : 3 |
| | MK1 | MC1 servo drive | opens | č | X7 : 3 | X8 : 4 |
| | | | closes | h | X7 : 2 | X8 : 5 |
| | | | working neutral | m | X7 : 11 | X9 : 4 |
| | MKP1 | Circuit 1 pump | System circuit pump (MC1) | h (č) | X7 : 1 | X8 : 6 |
| | | | | m | X7 : 10 | X9 : 6 |
| | | | | zž | X9 : 5 | X10 : 6 |
| | VO1 | Variable output 1 | Control phase L2 of boiler burner (L2-OUT) | h (č) | X8 : 7 | X8 : 7 |
| | | | | m | X8 : 14 | X9 : 7 |
| | | | | zž | X9 : 1 | X10 : 7 |
| | VO2 | Variable output 2 | E.g. circulation pump (ZKP), solar pump (SOP), etc. | h (č) | X8 : 6 | X8 : 8 |
| | | | | m | X8 : 13 | X9 : 8 |
| | | | | zž | X9 : 4 | X10 : 8 |
| | MK2 | MC2 servo drive | opens | č | X8 : 5 | X8 : 9 |
| | | | closes | h | X8 : 4 | X8 : 10 |
| | | | working neutral | m | X8 : 12 | X9 : 9 |
| | MKP2 | Circuit 2 pump | System circuit pump (MC2) | h (č) | X8 : 3 | X8 : 11 |
| | | | | m | X8 : 11 | X9 : 11 |
| | | | | zž | X8 : 9 | X10 : 11 |
| | SERVO GSE | GSE exhaust flap | Conductor 1 - opens | h | X8 : 8 | X7 : 9 |
| | | | Conductor 2 - closes | b | X8 : 2 | X7 : 11 |
| | | | Conductor 3 - working neutral | m | X8 : 10 | X9 : 10 |

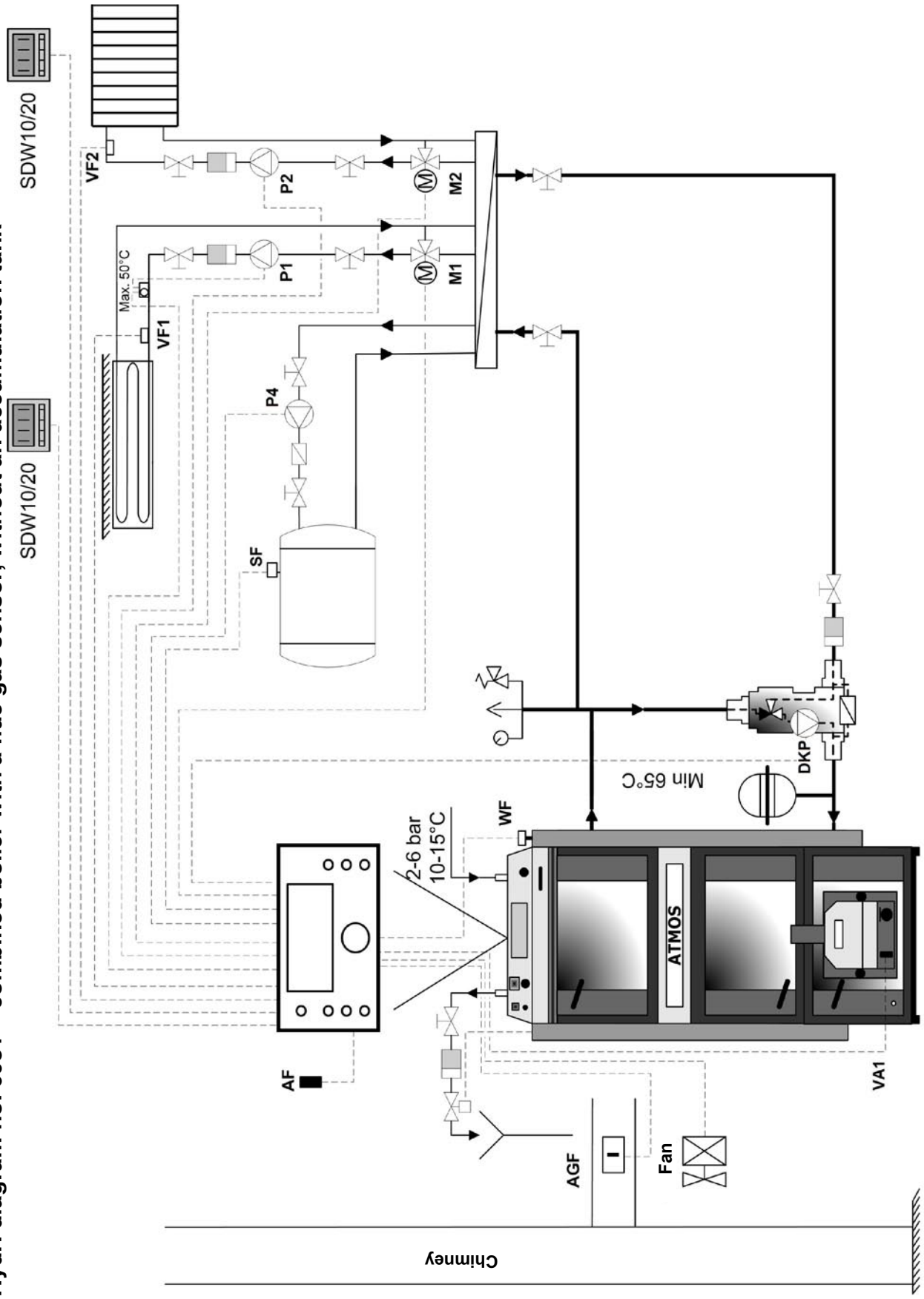
Legend: Phase L - (**č**) black, (**h**) brown, working neutral N - (**m**) blue, PE - (**zž**) green and yellow, (**červ**) - red, (**b**) - white

Notes.
- If you need to extend conductors, observe valid electrical assembly standards, colours and marking of conductors
- Working neutral terminals N are connected in the terminal board, if necessary you can place the respective conductor on another terminal, connected N terminals - X6:3; X7:10- X7:14; X8:10 - X8:14 (see el. diagram of the terminal board)

- Grounding terminals PE are connected in the terminal board, if necessary you can place the respective conductor on another terminal, connected PE terminals PE - X6:2; X7:8 - X7:9; X8:9; X9:1 - X9:6 (see el. diagram of the terminal board)

* Only if the supply conductor to X7:6 (usually marked L-IN) is not part of the cable harness

**8.10.1 Hydr. diagram no. 0031 – combined boiler with a flue gas sensor, without an accumulation tank**



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### 8.10.2 Example of parameter settings for hydraulic diagram no. 0031

HYDRAULIC Menu

| Parameter | Description | Setting |
|---|---|---|
| 1 | Hydraulic diagram | 0031 |
| 2 | DHW pump output | 1 (DHW charging pump) |
| 3 | Output of mixing circuit 1 | 3 (Mixing circuit) |
| 4 | Output of mixing circuit 2 | 3 (Mixing circuit) |
| 5 | Output of the heating circuit (HC) pump | DKP (fixed) |
| 6 | Variable output 1 | L2 Boiler burner (fixed) |
| 7 | Variable output 2 | OFF |
| 8 | Variable input 1 | 16 (AGF) flue gas sensor |
| 9 | Variable input 2 | OFF |
| 10 | Variable input 3 | OFF |

SOLID FUEL Menu

| | | |
|---|---|---|
| 1 | Boiler type | 5 |
| 2 | Minimum temperature (boiler type 2,3,4) | 80°C |
| 3 | Maximum temperature (boiler type 2,3,4) | 95°C |
| 4 | Switch-on of the boiler pump (DKP) | 70°C |
| 5 | Boiler pump differential | 5K |
| 7 | Switch-on differential of the fan | 3K |
| 17 | Switch-over of the boiler pump to WF/AGF | 2 (AGF) |
| 18 | Minimum flue gas temperature | 60°C |
| 20 | Protection of the circulation pump of the boiler on switch-on | ON |

SOURCES Menu

| | | |
|---|---|---|
| 1 | Automatic switch over after burning out of SRC-1 | 1 (SRC-2) |
| 12 | Name of SRC-1 | WOOD |
| 13 | Name of SRC-2 | PELET |

## 8.11 Terminal board connection example - hydraulic diagram no. 0032

| | Name | Description | Note | Cond. colour | SCS12 | SWS12 |
|---|---|---|---|---|---|---|
| Inputs, sensors | AF | Outdoor sensor | Outdoor temperature sensor | h | X5 : 2 | X5 : 2 |
| | | | | m | X5 : 14 | X6 : 2 |
| | WF | Boiler sensor | Boiler water temperature sensor | h | X5 : 3 | X5 : 3 |
| | | | | m | X5 : 15 | X6 : 3 |
| | SF | DHW sensor | Combined heater sensor if DHW is controlled | h | X5 : 4 | X5 : 4 |
| | | | | m | X5 : 16 | X6 : 4 |
| | VF1 | Heating circuit 1 | Heating circuit 1 sensor | h | X5 : 5 | X5 : 5 |
| | | | | m | X5 : 17 | X6 : 5 |
| | VE1 | Variable input 1 | Flue gas sensor (AGF) | červ | X5 : 6 | X5 : 6 |
| | | | | b | X5 : 18 | X6 : 6 |
| | VE2 | Variable input 2 | E.g. bottom sensor of the tank for boiler FPF, INFO sensor, switching contact, modem, alarm input, etc. | h | X5 : 7 | X5 : 7 |
| | | | | m | X5 : 19 | X6 : 7 |
| | VE3 | Variable input 3 | Top sensor of the accumulation tank (PF) | h | X5 : 8 | X5 : 8 |
| | | | | m | X5 : 20 | X6 : 8 |
| | VF2 | Heating circuit 2 | Heating circuit 2 sensor | h | X5 : 9 | X5 : 9 |
| | | | | m | X5 : 21 | X6 : 9 |
| | KVLF | Solar panel | Solar panel sensor | h | X5 : 10 | X5 : 10 |
| | | | | m | X5 : 22 | X6 : 10 |
| | KSPF | Accum. tank bottom | DHW tank bottom sensor for the solar system | h | X5 : 11 | X5 : 11 |
| | | | | m | X5 : 23 | X6 : 11 |
| | IMP | Impulse input | Connection of a flow meter, counter, etc. | h | X5 : 12 | X5 : 12 |
| | | | | m | X5 : 24 | X6 : 12 |
| | BUS A,B | Data bus | Data input connection, e.g. from SDW 10, 20, another controller, etc. | A | X5 : 13 | X5 : 1 |
| | | | | B | X5 : 1 | X6 : 1 |

| | Name | Description | Note | Cond. colour | SCS12 | SWS12 |
|---|---|---|---|---|---|---|
| Outputs, devices | 230V/50Hz | Power supply | Main power supply of the controller from which controlled appliances are supplied | h (č) | X6 : 4 | X7 : 5 |
| | | | | m | X6 : 3 | X9 : 5 |
| | | | | zž | X6 : 2 | X10 : 5 |
| | Terminal * | Boiler type 4 | Power supply of the boiler fan contact | h (č) | X6:4 - X7:6 | X7:1 - X7:2 |
| | | Boiler type 4 | Only if GSE boiler exhaust flap is controlled | h (č) | X7:6 - X8:8 | X7:6 - X7:9 |
| | FAN | Fan | Controlled fan contact | h (č) | X7 : 7 | X8 : 1 |
| | | | | m | X7 : 14 | X9 : 1 |
| | | | | zž | X7 : 9 | X10 : 1 |
| | DKP | Boiler pump | Boiler circuit pump (Laddomat 21, etc.) | h (č) | X7 : 5 | X8 : 2 |
| | | | | m | X7 : 13 | X9 : 2 |
| | | | | zž | X7 : 8 | X10 : 2 |
| | SLP | DHW pump | DHW charging pump (SLP), DHW charging servo valve (SLP) DHW electric heating (ETUV), DHW circulation pump (ZKP), etc. | h (č) | X7 : 4 | X8 : 3 |
| | | | | m | X7 : 12 | X9 : 3 |
| | | | | zž | X9 : 6 | X10 : 3 |
| | MK1 | MC1 servo drive | opens | č | X7 : 3 | X8 : 4 |
| | | | closes | h | X7 : 2 | X8 : 5 |
| | | | working neutral | m | X7 : 11 | X9 : 4 |
| | MKP1 | Circuit 1 pump | System circuit pump (MC1) | h (č) | X7 : 1 | X8 : 6 |
| | | | | m | X7 : 10 | X9 : 6 |
| | | | | zž | X9 : 5 | X10 : 6 |
| | VA1 | Variable output 1 | Control phase L2 of boiler burner (L2-OUT) | h (č) | X8 : 7 | X8 : 7 |
| | | | | m | X8 : 14 | X9 : 7 |
| | | | | zž | X9 : 1 | X10 : 7 |
| | VA2 | Variable output 2 | E.g. circulation pump (ZKP), solar pump (SOP), etc. | h (č) | X8 : 6 | X8 : 8 |
| | | | | m | X8 : 13 | X9 : 8 |
| | | | | zž | X9 : 4 | X10 : 8 |
| | MK2 | MC2 servo drive | opens | č | X8 : 5 | X8 : 9 |
| | | | closes | h | X8 : 4 | X8 : 10 |
| | | | working neutral | m | X8 : 12 | X9 : 9 |
| | MKP2 | Circuit 2 pump | System circuit pump (MC2) | h (č) | X8 : 3 | X8 : 11 |
| | | | | m | X8 : 11 | X9 : 11 |
| | | | | zž | X8 : 9 | X10 : 11 |
| | SERVO GSE | GSE exhaust flap | Conductor 1 - opens | h | X8 : 8 | X7 : 9 |
| | | | Conductor 2 - closes | b | X8 : 2 | X7 : 11 |
| | | | Conductor 3 - working neutral | m | X8 : 10 | X9 : 10 |

Legend: Phase L - (**č**) black, (**h**) brown, working neutral N - (**m**) blue, PE - (**zž**) green and yellow, (**červ**) - red, (**b**) - white

Notes.

- If you need to extend conductors, observe valid electrical assembly standards, colours and marking of conductors

- Working neutral terminals N are connected in the terminal board, if necessary you can place the respective conductor on another terminal, connected N terminals - X6:3; X7:10- X7:14; X8:10 - X8:14 (see el. diagram of the terminal board)

- Grounding terminals PE are connected in the terminal board, if necessary you can place the respective conductor on another terminal, connected PE terminals PE - X6:2; X7:8 - X7:9; X8:9; X9:1 - X9:6 (see el. diagram of the terminal board)

* Only if the supply conductor to X7:6 (usually marked L-IN) is not part of the cable harness

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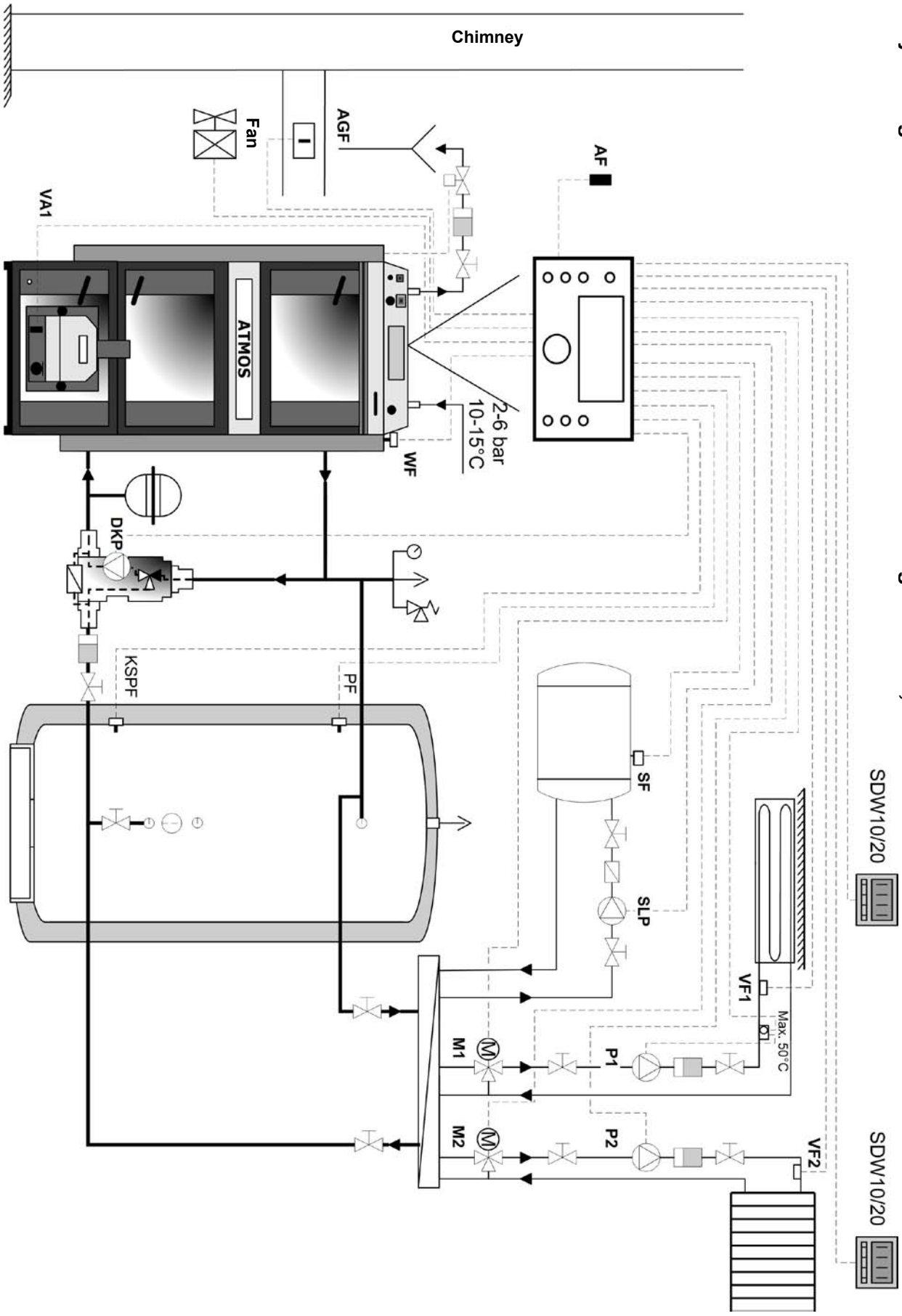
## 8.11.1 Hydr. diagram 0032 – combined boiler with a flue gas sensor, with an accumulation tank



### 8.11.2 Example of parameter settings for hydraulic diagram no. 0032

HYDRAULIC Menu

| Parameter | Description | Setting |
|---|---|---|
| 1 | Hydraulic diagram | 0032 |
| 2 | DHW pump output | 1 (DHW charging pump) |
| 3 | Output of mixing circuit 1 | 3 (Mixing circuit) |
| 4 | Output of mixing circuit 2 | 3 (Mixing circuit) |
| 5 | Output of the heating circuit (HC) pump | DKP (fixed) |
| 6 | Variable output 1 | L2 Boiler burner (fixed) |
| 7 | Variable output 2 | OFF |
| 8 | Variable input 1 | 16 (AGF) Flue gas sensor |
| 9 | Variable input 2 | OFF |
| 10 | Variable input 3 | 19 (PF) Top tank sensor |

SOLID FUEL Menu

| | | |
|---|---|---|
| 1 | Boiler type | 6 |
| 2 | Minimum temperature (boiler type 2,3,4) | 80°C |
| 3 | Maximum temperature (boiler type 2,3,4) | 95°C |
| 4 | Switch-on of the boiler pump (DKP) | 30°C |
| 5 | Boiler pump differential | 5K |
| 7 | Switch-on differential of the fan | 3K |
| 16 | Forced losses of heater | 3 - buffer |
| 17 | Switch-over of the boiler pump to WF/AGF | 2 (AGF) |
| 18 | Minimum flue gas temperature | 60°C |
| 20 | Protection of the circulation pump of the boiler on switch-on | ON |

BUFFER Menu

| | | |
|---|---|---|
| 1 | Minimum temperature - release of heating circuits | 40°C |
| 2 | Maximum temperature | 105°C |
| 9 | Charging protection | ON |
| 14 | Min. required tank temperature (min. SET-POINT) | 60°C |
| 15 | DKP switching differential (between the tank and boiler) | -3 K |
| 16 | Differential of DKP restart | 0 K |

SOURCES Menu

| | | |
|---|---|---|
| 1 | Automatic switch over after burning out of SRC-1 | 1 (SRC-2) |
| 12 | Name of SRC-1 | WOOD |
| 13 | Name of SRC-2 | PELET |

GB

## 8.12 Terminal board connection example - hydraulic diagram no. 0033

| | Name | Description | Note | Cond. colour | SCS12 | SWS12 |
|---|---|---|---|---|---|---|
| Inputs, sensors | AF | Outdoor sensor | Outdoor temperature sensor | h | X5 : 2 | X5 : 2 |
| | | | | m | X5 : 14 | X6 : 2 |
| | WF | Boiler sensor | Boiler water temperature sensor | h | X5 : 3 | X5 : 3 |
| | | | | m | X5 : 15 | X6 : 3 |
| | SF | DHW sensor | Combined heater sensor if DHW is controlled | h | X5 : 4 | X5 : 4 |
| | | | | m | X5 : 16 | X6 : 4 |
| | VF1 | Heating circuit 1 | Heating circuit 1 sensor | h | X5 : 5 | X5 : 5 |
| | | | | m | X5 : 17 | X6 : 5 |
| | VE1 | Variable input 1 | Flue gas sensor (AGF) | červ | X5 : 6 | X5 : 6 |
| | | | | b | X5 : 18 | X6 : 6 |
| | VE2 | Variable input 2 | E.g. bottom sensor of the tank for boiler FPF, INFO sensor, switching contact, modem, alarm input, etc. | h | X5 : 7 | X5 : 7 |
| | | | | m | X5 : 19 | X6 : 7 |
| | VE3 | Variable input 3 | Top sensor of the accumulation tank (PF) | h | X5 : 8 | X5 : 8 |
| | | | | m | X5 : 20 | X6 : 8 |
| | VF2 | Heating circuit 2 | Heating circuit 2 sensor | h | X5 : 9 | X5 : 9 |
| | | | | m | X5 : 21 | X6 : 9 |
| | KVLF | Solar panel | Solar panel sensor | h | X5 : 10 | X5 : 10 |
| | | | | m | X5 : 22 | X6 : 10 |
| | KSPF | Accum. tank bottom | DHW tank bottom sensor for the solar system | h | X5 : 11 | X5 : 11 |
| | | | | m | X5 : 23 | X6 : 11 |
| | IMP | Impulse input | Connection of a flow meter, counter, etc. | h | X5 : 12 | X5 : 12 |
| | | | | m | X5 : 24 | X6 : 12 |
| | BUS A,B | Data bus | Data input connection, e.g. from SDW 10, 20, another controller, etc. | A | X5 : 13 | X5 : 1 |
| | | | | B | X5 : 1 | X6 : 1 |

| | Name | Description | Note | Cond. colour | SCS12 | SWS12 |
|---|---|---|---|---|---|---|
| Outputs, devices | 230V/50Hz | Power supply | Main power supply of the controller from which controlled appliances are supplied | h (č) | X6 : 4 | X7 : 5 |
| | | | | m | X6 : 3 | X9 : 5 |
| | | | | zž | X6 : 2 | X10 : 5 |
| | Terminal * | Boiler type 4 | Power supply of the boiler fan contact | h (č) | X6:4 - X7:6 | X7:1 - X7:2 |
| | | Boiler type 4 | Only if GSE boiler exhaust flap is controlled | h (č) | X7:6 - X8:8 | X7:6 - X7:9 |
| | FAN | Fan | Controlled fan contact | h (č) | X7 : 7 | X8 : 1 |
| | | | | m | X7 : 14 | X9 : 1 |
| | | | | zž | X7 : 9 | X10 : 1 |
| | DKP | Boiler pump | Boiler circuit pump (Laddomat 21, etc.) | h (č) | X7 : 5 | X8 : 2 |
| | | | | m | X7 : 13 | X9 : 2 |
| | | | | zž | X7 : 8 | X10 : 2 |
| | SLP | DHW pump | DHW charging pump (SLP), DHW charging servo valve (SLP) DHW electric heating (ETUV), DHW circulation pump (ZKP), etc. | h (č) | X7 : 4 | X8 : 3 |
| | | | | m | X7 : 12 | X9 : 3 |
| | | | | zž | X9 : 6 | X10 : 3 |
| | MK1 | MC1 servo drive | opens | č | X7 : 3 | X8 : 4 |
| | | | closes | h | X7 : 2 | X8 : 5 |
| | | | working neutral | m | X7 : 11 | X9 : 4 |
| | MKP1 | Circuit 1 pump | System circuit pump (MC1) | h (č) | X7 : 1 | X8 : 6 |
| | | | | m | X7 : 10 | X9 : 6 |
| | | | | zž | X9 : 5 | X10 : 6 |
| | VA1 | Variable output 1 | Control phase L2 of boiler burner (L2-OUT) | h (č) | X8 : 7 | X8 : 7 |
| | | | | m | X8 : 14 | X9 : 7 |
| | | | | zž | X9 : 1 | X10 : 7 |
| | VA2 | Variable output 2 | E.g. circulation pump (ZKP), solar pump (SOP), etc. | h (č) | X8 : 6 | X8 : 8 |
| | | | | m | X8 : 13 | X9 : 8 |
| | | | | zž | X9 : 4 | X10 : 8 |
| | MK2 | MC2 servo drive | opens | č | X8 : 5 | X8 : 9 |
| | | | closes | h | X8 : 4 | X8 : 10 |
| | | | working neutral | m | X8 : 12 | X9 : 9 |
| | MKP2 | Circuit 2 pump | System circuit pump (MC2) | h (č) | X8 : 3 | X8 : 11 |
| | | | | m | X8 : 11 | X9 : 11 |
| | | | | zž | X8 : 9 | X10 : 11 |
| | SERVO GSE | GSE exhaust flap | Conductor 1 - opens | h | X8 : 8 | X7 : 9 |
| | | | Conductor 2 - closes | b | X8 : 2 | X7 : 11 |
| | | | Conductor 3 - working neutral | m | X8 : 10 | X9 : 10 |

Legend: Phase L - (**č**) black, (**h**) brown, working neutral N - (**m**) blue, PE - (**zž**) green and yellow, (**červ**) - red, (**b**) - white

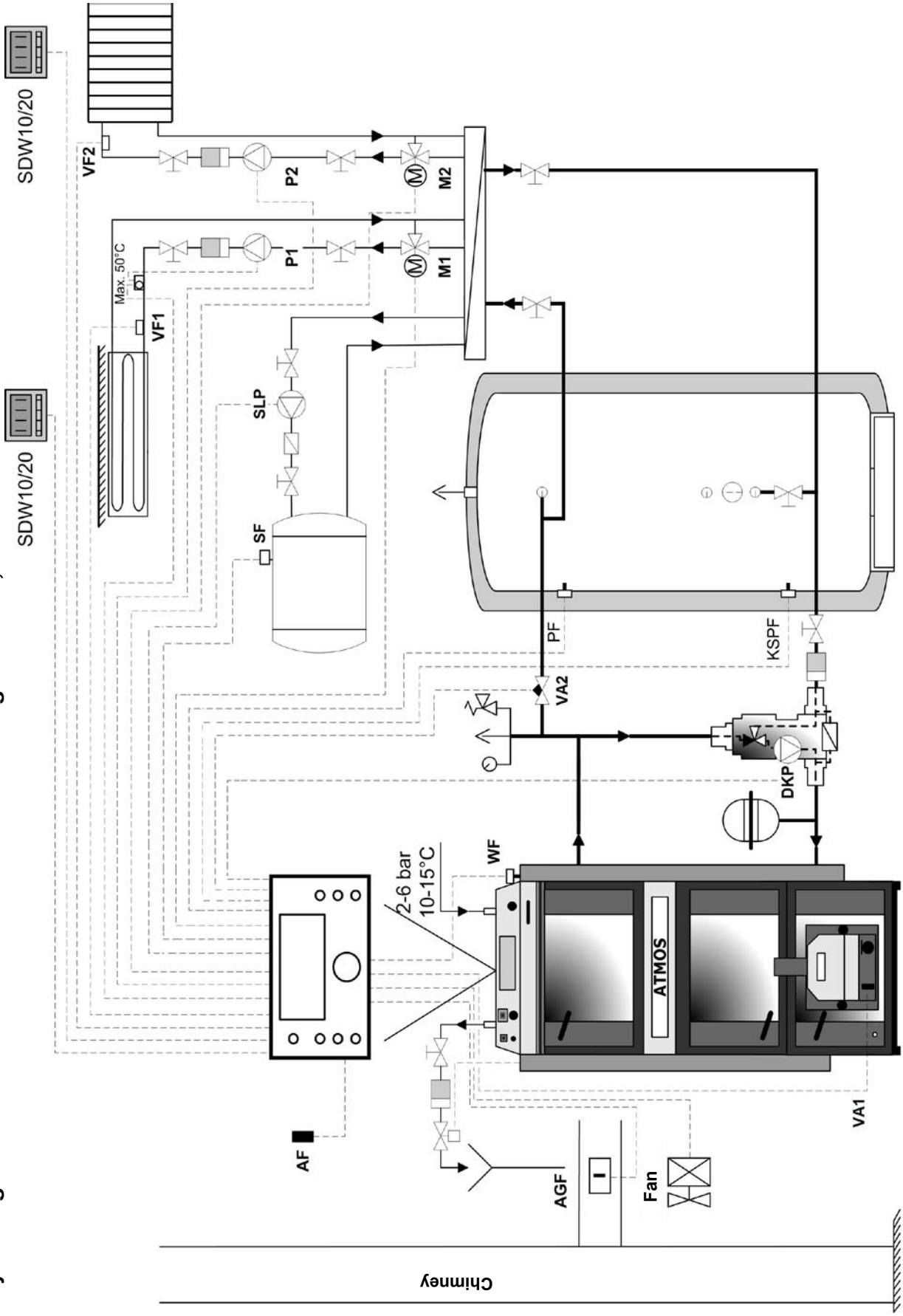
Notes - If you need to extend conductors, observe valid electrical assembly standards, colours and marking of conductors

- Working neutral terminals N are connected in the terminal board, if necessary you can place the respective conductor on another terminal, connected N terminals - X6:3; X7:10- X7:14; X8:10 - X8:14 (see el. diagram of the terminal board)

- Grounding terminals PE are connected in the terminal board, if necessary you can place the respective conductor on another terminal, connected PE terminals PE - X6:2; X7:8 - X7:9; X8:9; X9:1 - X9:6 (see el. diagram of the terminal board)

* Only if the supply conductor to X7:6 (usually marked L-IN) is not part of the cable harness

**8.12.1 Hydr. diagram no. 0033 – combined boiler with a flue gas sensor, accumulation tank and zone valve**



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## 8.12.2 Example of parameter settings for hydraulic diagram no. 0033

HYDRAULIC Menu

| Parameter | Description | Setting |
|---|---|---|
| 1 | Hydraulic diagram | 0032 |
| 2 | DHW pump output | 1 (DHW charging pump) |
| 3 | Output of mixing circuit 1 | 3 (Mixing circuit) |
| 4 | Output of mixing circuit 2 | 3 (Mixing circuit) |
| 5 | Output of the heating circuit (HC) pump | DKP (fixed) |
| 6 | Variable output 1 | L2 Boiler burner (fixed) |
| 7 | Variable output 2 | 16 (PLP) |
| 8 | Variable input 1 | 16 (AGF) Flue gas sensor |
| 9 | Variable input 2 | PF (fixed) |
| 10 | Variable input 3 | OFF |

SOLID FUEL Menu

| | | |
|---|---|---|
| 1 | Boiler type | 6 |
| 2 | Minimum temperature (boiler type 2,3,4) | 80℃ |
| 3 | Maximum temperature (boiler type 2,3,4) | 95℃ |
| 4 | Switch-on of the boiler pump (DKP) | 30℃ |
| 5 | Boiler pump differential | 5K |
| 7 | Switch-on differential of the fan | 3K |
| 16 | Forced losses of heater | 3 - buffer |
| 17 | Switch-over of the boiler pump to WF/AGF | 2 (AGF) |
| 18 | Minimum flue gas temperature | 60℃ |
| 20 | Protection of the circulation pump of the boiler on switch-on | OFF |

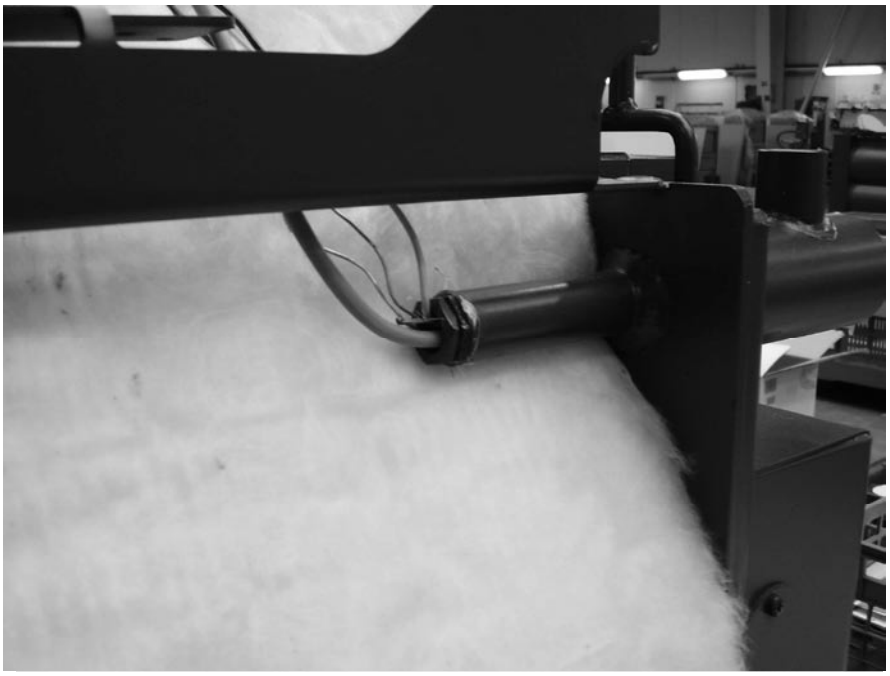
BUFFER Menu

| | | |
|---|---|---|
| 1 | Minimum temperature - release of heating circuits | 40℃ |
| 2 | Maximum temperature | 105℃ |
| 9 | Charging protection | ON |
| 14 | Min. required tank temperature (min. SET-POINT) | 60℃ |
| 15 | DKP switching differential (between the tank and boiler) | -3 K |
| 16 | Differential of DKP restart | 0 K |

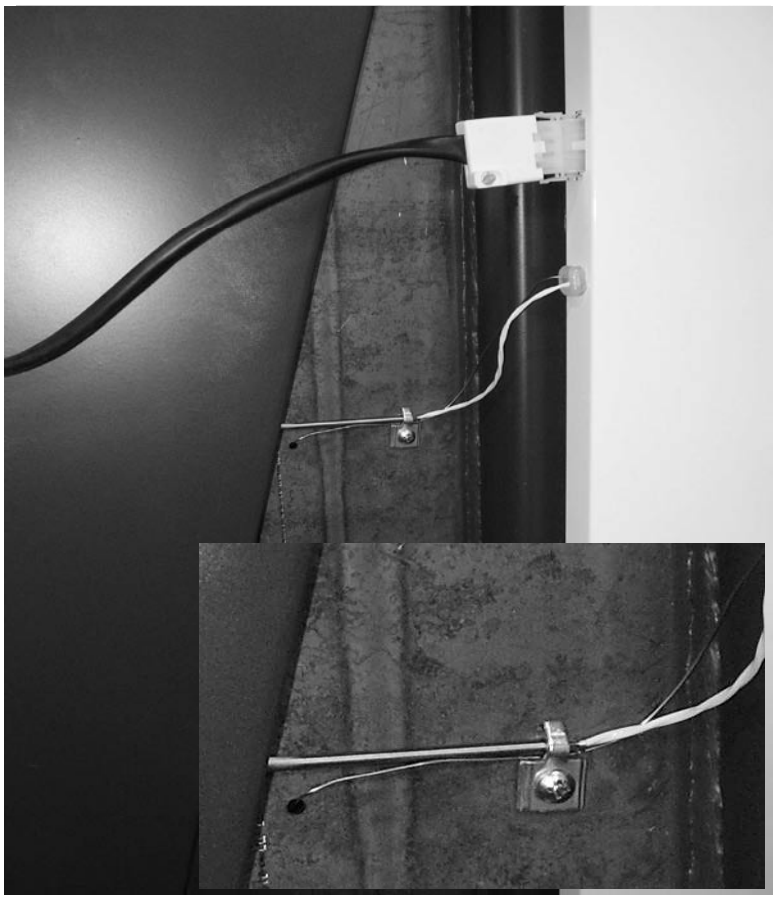
SOURCES Menu

| | | |
|---|---|---|
| 1 | Automatic switch over after burning out of SRC-1 | 1 (SRC-2) |
| 12 | Name of SRC-1 | WOOD |
| 13 | Name of SRC-2 | PELET |

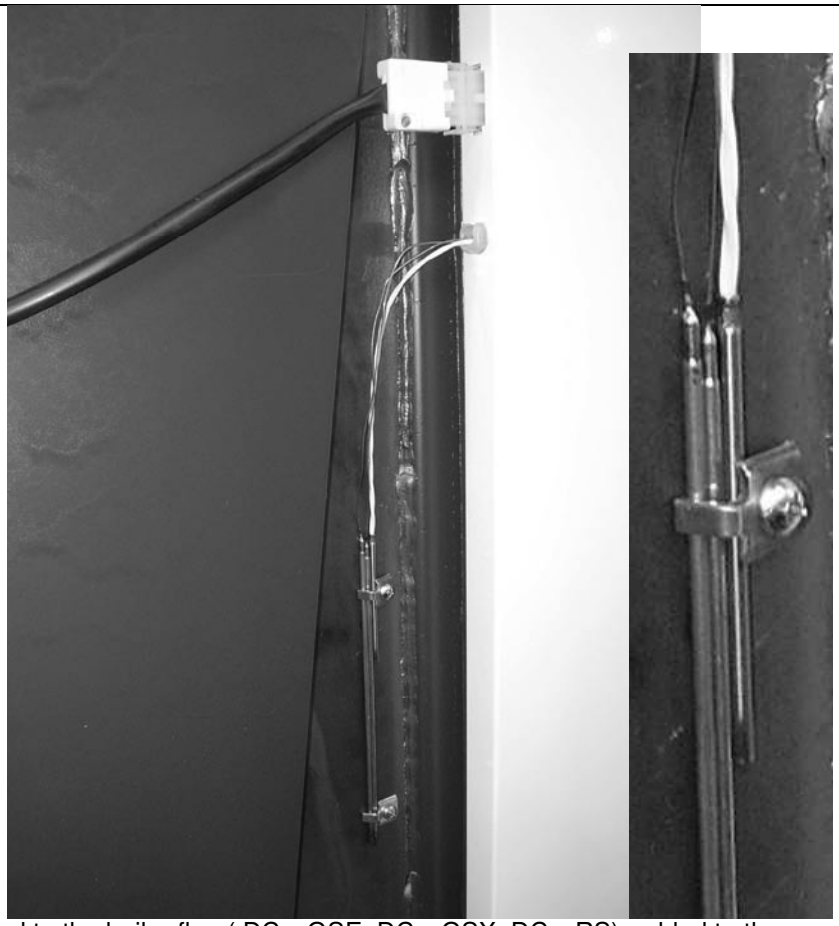
## 8.13 Recommended installation of sensors



WF boiler temperature sensor in a pocket, added to the other sensors of thermostats of the original electro-mechanical control of the boiler



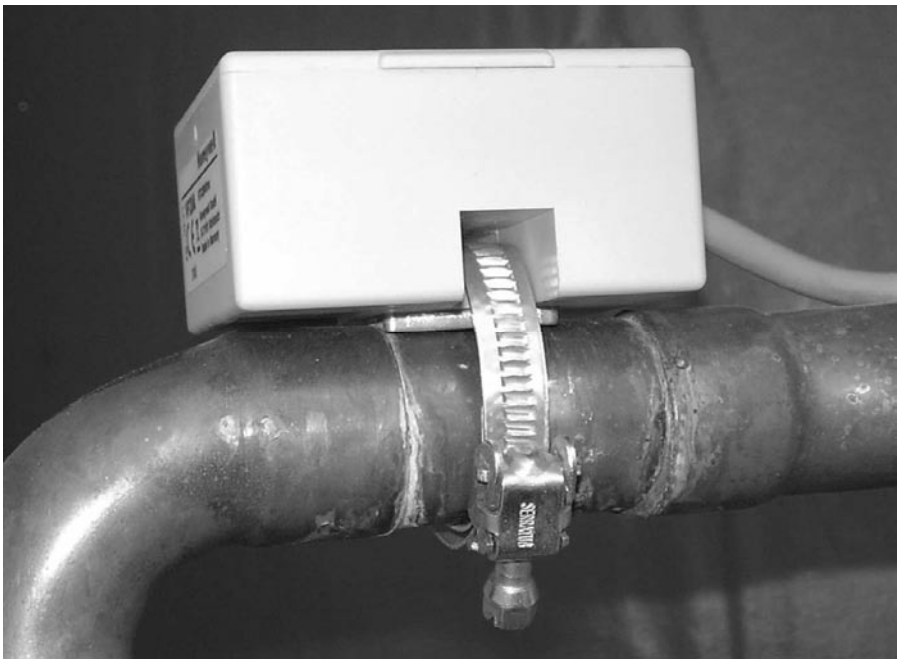
Flue gas sensor attached to the boiler flue ( CxxS, DCxxS, DCxxR, DCxxSX, DCxxGS ), added to the sensor of the thermostat of the original electro-mechanical control of the boiler
!!! This sensor must be covered with insulation !!!



Flue gas sensor attached to the boiler flue ( DCxxGSE, DCxxGSX, DCxxRS), added to the sensor of the thermostat of the original electro-mechanical control of the boiler
!!! This sensor must be covered with insulation !!!

PF temperature sensor of the top part of the tank (VE), or DHW sensor in a combined DHW heater inserted in a pocket .
!!! The PF sensor (VE) must always be at least 10 cm under the connection of the pipeline to the tank; we do not recommend you to attach it to the pipeline to ensure optimum function of the controller!!!

KSPF temperature sensor of the bottom part of the tank, inserted in a pocket .
!!! The KSPF must always be at least 10 cm above the connection of the pipeline to the tank; we do not recommend you to attach it to the pipeline to ensure optimum function of the controller!!!



Contact sensor after the mixing valve to the heating circuit

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# 9 Abbreviations used in the documentation

| | | | |
|---|---|---|---|
| RED | Reduced mode | HBR | Hydraulic buffer |
| AF | Outdoor sensor | IMP | Pulse input |
| AF 2 | Outdoor sensor 2 | HK/HC | Heating circuit |
| AGF | Flue gas temperature sensor | KKPF | Solid fuel boiler circulation pump |
| AGK | Air flap | KP | Boiler circulation pump |
| AGFmin | Minimum flue gas temperature | KRLF | Solar sensor of return water |
| AT | Fixed buffer value (boiler type 3) | KSPF | Solar sensor / bottom tank sensor |
| ATW-Temp.1 | Flue gas temperature / Switching value for the exhaust flap | KTmax | Maximum boiler temperature |
| ATW1 SD | Switching difference for the exhaust flap | KTmin | Minimum boiler temperature |
| ATW Temp.2 | Flue gas temperature / Fan control | KTpein | Boiler pump enabling |
| BR1 | Status of burner 1 | KVLF | Solar sensor |
| BRS/BRSP | External boiler: oil/gas boiler | MIMO | Mixing valve motor |
| BCP | Boiler circulation pump | MK/MIX | Mixed heating circuit |
| BS | Buffer sensor (top) | MKP | Mixed circuit pump |
| BS2 | Buffer sensor (bottom) | P1 | Time program 1 |
| BULP | Buffer charging pump | P2 | Time program 2 |
| BUS | Data bus | P3 | Time program 3 |
| BZ1 | Hour counter for burner 1 | PF | Buffer sensor (top) |
| BZ2 | Hour counter for burner 2 | PF1 | Buffer sensor 1 (top) |
| CC | Constant control | PF2 | Buffer sensor 2 (bottom) |
| CHP | Charging pump | PFsoll | Fixed value of the buffer (boiler type 3) |
| CIR | Circulation pump | PLP | Tank zone valve |
| DHW | Domestic hot water | PLV | Tank valve |
| DHWP | Hot water charging pump | PWF | Parallel heating enabling |
| DKP | Direct circuit pump | RBP | Return supply pump |
| ECO | Economic (reduced) mode | RED | Reduced mode |
| EHP | Electric heating of accum. tank | RG | Room unit |
| ELH | DHW electric heating (summer mode only) | RLP | Return pipeline pump |
| ETUV | DHW electric heating (controlled) | SBUS | Buffer solar sensor |
| ERR | Sensor Malfunction | SD I | Switch-over differential I |
| FAN | Fan (ON/OFF) | SD II | Switch-over differential II |
| FKF | Solid fuel boiler sensor | SDaus | FSK switch-off differential |
| FPF | Buffer sensor | SDbr | Buffer switch-on differential (pellet or buffer mode) |
| FR | Constant flow temp. control | SDein | FSK switch-on difference |
| FSK | Solid fuel boiler | Ta | Fan running time in the manual mode (Burnout) |
| FSP | Charging pump | Tb | Fan running time in the manual mode (Start) |
| SDF | Fan switching differential | VA | Variable output (general) |
| SDpein | Pump switch-on diff. (corresponds to KTpein) | VA/VO1 | Variable output 1 |
| SDplv | Buffer valve switch-over differential | VA/VO2 | Variable output 2 |
| SF | Buffer sensor | VE/VI | Variable input (general) |
| SFB | Solid fuel buffer sensor | VE/VI1 | Variable input 1 |
| SFD | Solar dispersion | VE/VI2 | Variable input 2 |
| SFS | Solid fuel boiler sensor | VE/VI3 | Variable input 3 |
| SFP | Solid fuel charging pump | VF1 | Sensor of mixed circuit 1 |
| SLP | Buffer charging pump | VF2 | Sensor of mixed circuit 2 |
| SLV | Solar heating switch-over charging | WEZ | General source of heat / Heater |
| SLVS | Solar sensor of charging switch-over | WF/KF | Boiler temperature |
| SOP | Solar heating charging pump | ZKP | Circulation pump |
| SPFS | Solar heating flow pump | ZUP | Charging pump |
| SPRS | Solar heating return pipeline sensor | | |
| SSP | Laminar flow pump | | |

# 10 Tips and tricks

This chapter serves as a guide for understanding of some statuses of components controlled by the ACD01 controller. As the controller contains a lot of adjustable options, variable inputs and parameters, not all causes and problems can be explained here. For this purpose use the Service Manual, this table only serves as a quick reference guide.

**Principal terms**

- Temperature is specified in °C, temperature difference (differential) is specified in Kelvin and the relationship is 1 K = 1 °C
- The **"i"** key is used to view the condition and temperatures of the whole system, so first it is necessary to verify all information about current and required temperatures, status of individual components to determine whether an error has occurred.
- If parameters that have an influence on the function and calculations of the controller are changed during operation, the controller must be switched off and on again so that all calculation can be performed with new values.

| Component | Problem | Boiler type | Arrangement | Note | Possible cause |
|---|---|---|---|---|---|
| Boiler pump | OFF although the boiler is heating | Non-controlled or pellet boiler | Without an accumulation tank | | The switch-on temperature of the pump is higher than the current boiler water temperature |
| | | Flue gas sensor boiler | | | Low flue gas temperature |
| | | Flue gas sensor boiler | With an accumulation tank | | Water temperature is lower than tank water temperature by more than 3°C |
| | ON although the boiler temperature is lower than the tank temp. | Any | With an accumulation tank | | If the current boiler temperature is higher than the critical one, the pump is ON to relieve energy from the boiler |
| Three-way mixer | Is continuously closed although the desired room temperature is not achieved | | Without an accumulation tank | With a room unit | The current boiler temperature is lower than the system switch on temperature |
| | | | With an accumulation tank | Without a room unit | Wrongly set heating curve or its inclination, active summer mode, etc. |
| | | | | | Low accumulation tank temperature |
| | | | | System pump is running | Low accumulation tank temperature, active frost protection |
| | Is continuously open although the room temperature is higher than the desired one | | Without an accumulation tank | With a room unit | Current boiler temp. is higher than critical, the pump is ON and mixer open to relieve energy from boiler |
| | | | Any | Without a room unit | Wrongly set heating curve or its inclination, active summer mode, etc. |
| | | | With an accumulation tank | With a room unit | Current boiler temp. is higher than critical, the pump is ON and mixer open to relieve energy from boiler |
| System pump | At standstill | | Any | | No system start temperature |
| | | | | | REDUCED mode is set and room temperature achieved |
| | | | | | Thermostat function active |
| | Running | | | | Frost protection active |
| | | | | | ANTI-BLOCKING active in summer mode |
| Boiler fan | Stops after 1 hour from start-up | Flue gas sensor boiler | | | Minimum flue gas temperature is not achieved |

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# 11 Notes

## 11.1 Overview of time programs

| P1 | | Weekday | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
| Cycle 1 | Start | : | : | : | : | : | : | : |
| | End | : | : | : | : | : | : | : |
| Cycle 2 | Start | : | : | : | : | : | : | : |
| | End | : | : | : | : | : | : | : |
| Cycle 3 | Start | : | : | : | : | : | : | : |
| | End | : | : | : | : | : | : | : |

| P2 | | Weekday | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
| Cycle 1 | Start | : | : | : | : | : | : | : |
| | End | : | : | : | : | : | : | : |
| Cycle 2 | Start | : | : | : | : | : | : | : |
| | End | : | : | : | : | : | : | : |
| Cycle 3 | Start | : | : | : | : | : | : | : |
| | End | : | : | : | : | : | : | : |

| P3 | | Weekday | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
| Cycle 1 | Start | : | : | : | : | : | : | : |
| | End | : | : | : | : | : | : | : |
| Cycle 2 | Start | : | : | : | : | : | : | : |
| | End | : | : | : | : | : | : | : |
| Cycle 3 | Start | : | : | : | : | : | : | : |
| | End | : | : | : | : | : | : | : |

| DHW | | Weekday | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
| Cycle 1 | Start | : | : | : | : | : | : | : |
| | End | : | : | : | : | : | : | : |
| Cycle 2 | Start | : | : | : | : | : | : | : |
| | End | : | : | : | : | : | : | : |
| Cycle 3 | Start | : | : | : | : | : | : | : |
| | End | : | : | : | : | : | : | : |

## 11.2 Description of the heating system and controller settings –

| | Arrangement | Without accum. tank | With accum. tank | With accum. tank and zone valve |
|---|---|---|---|---|
| Boiler type | 1 - Non-controlled | **1** | **3** | **4** |
| | 2, 3 – Automatic | **9** | **10** | **12** |
| | 4 – With an AGF flue gas sensor | **17** | **19** | **20** |
| | 5, 6 - Combined | **31** | **32** | **33** |
| Circuits | DHW | **YES / NO** | **YES / NO** | **YES / NO** |
| | MC-1 | **YES / NO** | **YES / NO** | **YES / NO** |
| | MC-2 | **YES / NO** | **YES / NO** | **YES / NO** |
| Variable input s | VI1 | | **AGF** | **AGF** |
| | VI2 | | | **PF** |
| | VI3 | | **PF** | |
| Variable outputs | VO1 | **BURNER TYPE 5** | **BURNER TYPE 6** | **BURNER TYPE 6** |
| | VO2 | | | **Zone valve PLP** |
| SENSO RS | KSPF | **bivalent DHW** | **HYDR. 10, 32 / SOLAR** | **HYDR. 12, 33 / SOLAR** |
| | KVLF | **bivalent DHW** | **SOLAR** | **SOLAR** |
| BUS | Room unit | **SDW 10 / 20 SDW 10 / 20** | **SDW 10 / 20 SDW 10 / 20** | **SDW 10 / 20 SDW 10 / 20** |

## 11.3 Installation notes

## 12.2 Resistance values of sensors

| Resistance of a Honeywell NTC 20 kΩ sensor, sensors for AF, WF/KF, SF, VF1, VF2, VI1, VI2, VI3, KSPF | | | | | | | |
|---|---|---|---|---|---|---|---|
| ℃ | kΩ | ℃ | kΩ | ℃ | kΩ | ℃ | kΩ |
| -20 | 220.6 | 0 | 70.20 | 20 | 25.34 | 70 | 3.100 |
| -18 | 195.4 | 2 | 63.04 | 25 | 20.00 | 75 | 2.587 |
| -16 | 173.5 | 4 | 56.69 | 30 | 15.88 | 80 | 2.168 |
| -14 | 154.2 | 6 | 51.05 | 35 | 12.69 | 85 | 1.824 |
| -12 | 137.3 | 8 | 46.03 | 40 | 10.21 | 90 | 1.542 |
| -10 | 122.4 | 10 | 41.56 | 45 | 8.258 | 95 | 1.308 |
| -8 | 109.2 | 12 | 37.55 | 50 | 6.718 | 100 | 1.114 |
| -6 | 97.56 | 14 | 33.97 | 55 | 5.495 | | |
| -4 | 87.30 | 16 | 30.77 | 60 | 4.518 | | |
| -2 | 78.23 | 18 | 27.90 | 65 | 3.734 | | |

| Resistance values of PT 1000 sensors for VI1 (adjustment of AGF), KVLF | | | | | | | |
|---|---|---|---|---|---|---|---|
| ℃ | Ω | ℃ | Ω | ℃ | Ω | ℃ | Ω |
| 0 | 1000.00 | 80 | 1308.93 | 140 | 1535.75 | 280 | 2048.76 |
| 10 | 1039.02 | 85 | 1327.99 | 150 | 1573.15 | 300 | 2120.19 |
| 20 | 1077.93 | 90 | 1347.02 | 160 | 1610.43 | 320 | 2191.15 |
| 25 | 1093.46 | 95 | 1366.03 | 170 | 1647.60 | 340 | 2261.66 |
| 30 | 1116.72 | 100 | 1385.00 | 180 | 1684.65 | 360 | 2331.69 |
| 40 | 1155.39 | 105 | 1403.95 | 190 | 1721.58 | 380 | 2401.27 |
| 50 | 1193.95 | 110 | 1422.86 | 200 | 1758.40 | 400 | 2470.38 |
| 60 | 1232.39 | 115 | 1441.75 | 220 | 1831.68 | 450 | 2641.12 |
| 70 | 1270.72 | 120 | 1460.61 | 240 | 1904.51 | 500 | 2811.00 |
| 75 | 1289.84 | 130 | 1498.24 | 260 | 1976.86 | | |

## 12.3 Measurement ranges of sensors

| Name | Abbreviation on the unit back side | Sensor type | Measurement range |
|---|---|---|---|
| Outdoor sensor | AF | Honeywell NTC 20 kΩ | -50 ℃ ... 90 ℃ |
| Boiler sensor | KF | Honeywell NTC 20 kΩ | -50 ℃ ... 125 ℃ |
| Flow sensor 1 | VF1 | Honeywell NTC 20 kΩ | -50 ℃ ... 125 ℃ |
| Flow sensor 2 | VF2 | Honeywell NTC 20 kΩ | -50 ℃ ... 125 ℃ |
| DHW sensor | SF | Honeywell NTC 20 kΩ | -50 ℃ ... 125 ℃ |
| Solar panel sensor | KVLF | PT1000 | -50 ℃ ... 500 ℃ |
| Buffer sensor | KSPF | Honeywell NTC 20 kΩ | -50 ℃ ... 125 ℃ |
| Variable input VI1 *) | VI1 | Honeywell NTC 20 kΩ<br>PT1000 | -50 ℃ ... 125 ℃<br>-50 ℃ … 500 ℃ |
| Variable input VI2 | VI2 | Honeywell NTC 20 kΩ | -50 ℃ ... 125 ℃ |
| Variable input VI3 | VI3 | Honeywell NTC 20 kΩ | -50 ℃ ... 125 ℃ |

## 12.4 Digital inputs

| Name | Abbreviation on the unit back side | Input type | Measurement range |
|---|---|---|---|
| Pulse counter | Imp | Low voltage | ≤ 10 Hz |