# BAXI

**QAA73.110**
**Room Unit for Boiler Control with OpenTherm Interface**
Basic Documentation

# Contents

# 1    Summary

**Brief description**

The QAA73.110 is a digital multi-functional room unit for one or 2 heating circuits and d.h.w. control.

Boiler control delivers the outside temperature and other information to the QAA73.110 room unit via the OpenTherm communication interface. Based on the outside temperature, the room temperature and a number of other parameters, the interface calculates the required flow temperature setpoints for one or 2 heating circuits and transmits them to the boiler control.  In addition, the d.h.w. temperature setpoint is transmitted to the boiler control.

The optimization functions offer energy savings without sacrificing comfort. The room sensor required for that purpose is integrated in the unit.

## 1.1    Features

**Operating functions**

- Operating sections (operating levels) based on ergonomic and functional considerations
- Clear assignment of basic functions:
    – Operating mode, setpoint adjustment and occupancy button
    – A number of actual values can be accessed via the Info button
    – Additional functions can be programmed after opening the cover
    – Special service level with protected access
- Every setting or change is displayed and thus acknowledged
- Yearly clock with automatic summer- / wintertime changeover
- One heating program per heating circuit with up to 3 heating periods per day can be selected on an individual basis
- D.h.w. program with up to 3 heating periods per day can be selected on an individual basis
- Holiday program
- The heating programs and the d.h.w. program can be reset to their default settings
- Programming lock (e.g. for child-proofing)
- Clear text display in a number of selectable languages
- Special mode for setting the parameters of Siemens boiler control systems

**Functions**

- Weather-compensated flow temperature control while giving consideration to the building's thermal dynamics
- Weather-compensated flow temperature control with room compensation
- Pure room temperature control
- Effect of room temperature deviation can be adjusted
- Optimum start / stop control
- ECO functions (24-hour limit switch, automatic summer / winter changeover)
- Room temperature switching differential for limiting the room temperature
- Adjustable maximum limitation of the flow temperature (especially in connection with floor heating systems)
- Limitation of the rate of increase of the flow temperature setpoint
- Frost protection for the building, frost warning
- D.h.w. control with release and preselection of setpoint for the boiler controller
- Legionella function
- Integrated yearly clock with a reserve of at least 12 hours

**Other features**
- Elegant housing made of recyclable plastic
- Communication with the boiler control via OpenTherm interface
- Power supply via OpenTherm bus

## 1.2    Range of products

| | |
|---|---|
| Boiler Management Unit Premix TOP | LMU6x |
| Third party boiler control with OpenTherm interfaceRoom unit with OpenTherm interface | QAA73.110 |
| Mounting clips for panel mounting | AVS92.299 |

## 1.3    Field of use

**Target market**

The room units are designed for the OEM market. They are supplied directly to the boiler manufacturer and enhance the functionality and the level of control of small gas-fired appliances with integrated boiler temperature controllers.

**Types of buildings**

Suited for use in residential buildings with own heating systems, such as:
- Single or 2-family houses
- Smaller multifamily houses
- Holiday houses and villas

**Types of heating systems**

Standard heating systems, such as radiator, convector, underfloor and ceiling heating systems, and radiant panels. Especially suited for heating plants with pump heating circuits. If the boiler control systems feature integrated mixing valve control, it is also possible to control mixing heating circuits.

**Heat generating equipment**

Primarily in connection with:
- Heating boilers or small gas-fired appliances or condensing boilers
- Heating boilers or instantaneous water heaters with integrated d.h.w. storage tank that can be controlled with an appropriate OpenTherm signal

## 1.4    Product liability

- The products may only be used in building services plant and applications as described above
- When using the products, all requirements specified under "Technical data" must be observed
- The local regulations for electrical installation must be complied with

## 1.5    Environmental compatibility

**Note on disposal**

The unit contains electrical and electronic components and may not be disposed of as household garbage. **Local and currently valid legislation must be complied with!**

Siemens Building Technologies
HVAC Products

Basic Documentation QAA73.110 Room unit
**Error! Style not defined.**

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# 2 Handling

## 2.1 Engineering

**Mounting location**

- In the main living room or reference room
- The place of installation should be chosen so that the sensor can capture the room temperature as accurately as possible, without being affected by direct solar radiation or other heating or cooling sources.
- Mounting height is about 1.5 meters above the floor
- The unit can be fitted to most commercially available recessed conduit boxes or directly on the wall.
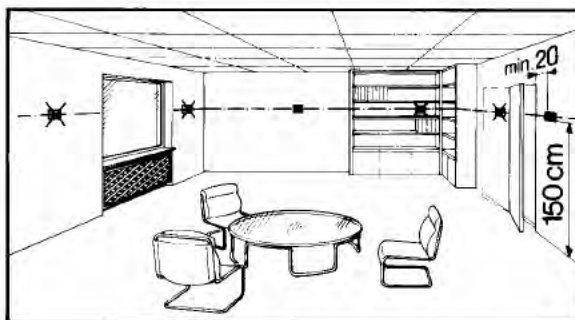


## 2.2 Installation

**Mounting conditions**

- Wall
- Boiler control panel (with the help of clips)
- The controller may not be exposed to dripping water
- Permissible ambient temperature:    0...50 °C

**Wall mounting**

**1. step**

Open the unit at the top and remove the base from the housing front.
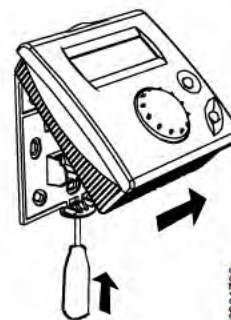


**2. step**

Fit the base to the wall with the help of screws.
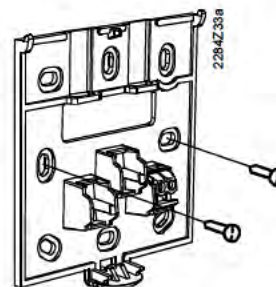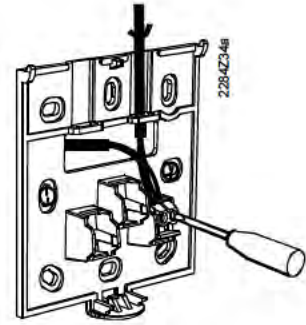
| 3. step | Pull the bus cable through the opening of the base and connect it to the screw teminals. |  |

| 4. step | Engage the housing front at the top of the base and close the unit to the bottom. |  |

| **Mounting in a panel cut-out**<br><br>1. step | Pull the bus cable through the opening of the base and connect it to the screw teminals. |  |

| 2. step | Engage the housing front at the top of the base and close the unit to the bottom. |  |

| 3. step | Slide the unit into the panel cut-out without applying any force Note: Do not use any tools when inserting the unit into the cut-out. If it does not fit, check the size of the cut-out and the housing. | |

| 4. step | Fit the clips (usually 4 pieces) to the rear of the housing. They engage on the housing. | |
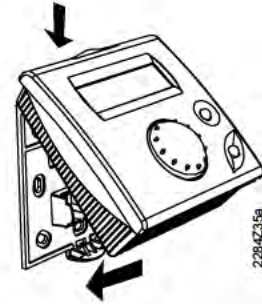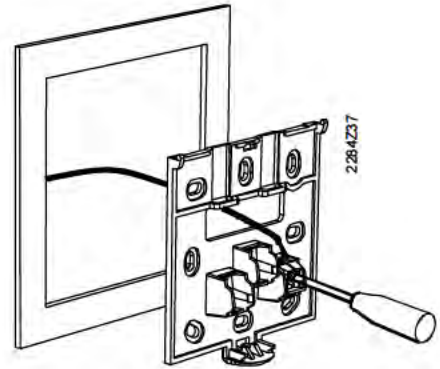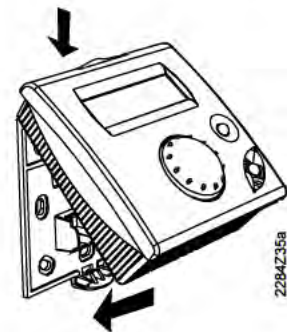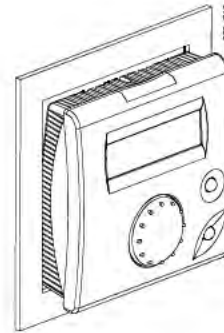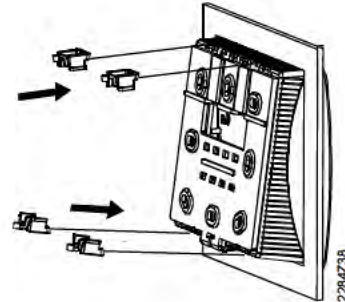
**Dimensions of cut-out**

The controller's mounting dimensions are 92 x 92 mm.
Due to the dimensions of the front, however, the standard spacing is 96 mm.
The mechanical mounting facility allows the controller to be fitted in front panels having a thickness of 1 to 3 mm.
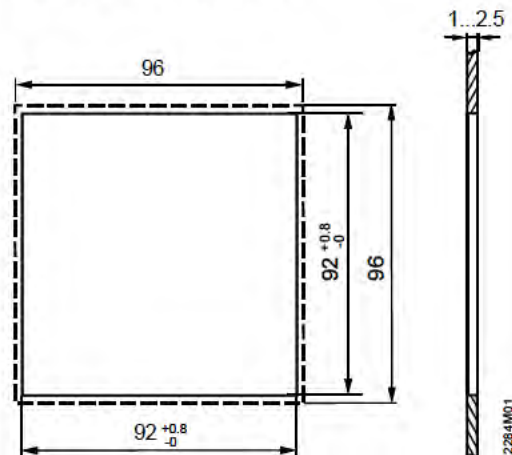
## 2.3    Electrical installation

**Regulations for installation**

The local regulations for electrical installations must be complied with.

**Connection diagram**
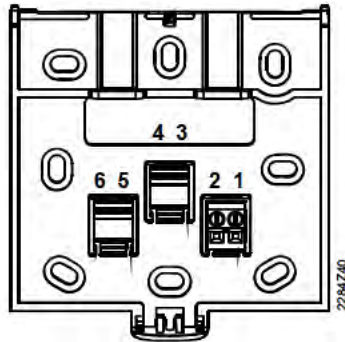


| | | |
|---|---|---|
| 1 | COA | OpenTherm terminal A (interchangeable) |
| 2 | COB | OpenTherm terminal B (interchangeable) |
| 3 | - | - |
| 4 | - | - |
| 5 | - | - |
| 6 | - | - |

⚠ 23 mA max

## 2.4   Operation

**Operating elements**
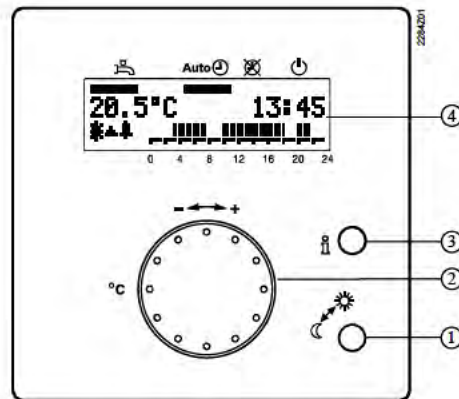


1. First operating level
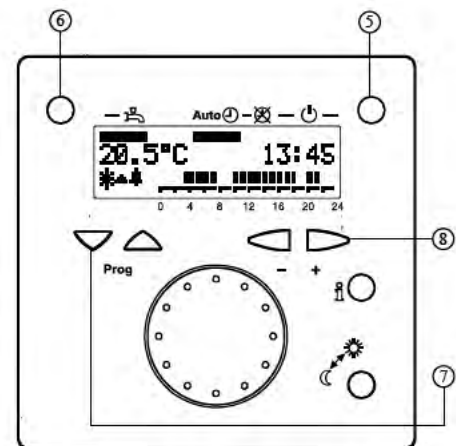
2. Second operating level

**Legend**

| Operating element | | Function |
|---|---|---|
| ① | Occupancy button | Changeover of operating level |
| ② | Setpoint knob for nominal temperature | Adjustment of room temperature setpoint |
| ③ | Info button | Change of info display |
| ④ | LCD with 2 lines each with 16 characters and pointer for operating mode | Display of data and operating mode |
| ⑤ | Heating circuit operating mode button and associated symbols | Operating mode changes to: |

Operating mode changes to:

**Auto ◷**   Automatic operation

⊗   continuous operation

⏻   Standby

⌸   D.h.w. heating ON / OFF

| ⑥ | D.h.w. operating mode button with associated symbol | |
| ⑦ | Line selection buttons (up and down) | Selection of operating line |
| ⑧ | Setting buttons (plus and minus) | Setting the parameters |

1. First operating level   Operating elements 1 to 4.

2. First operating level   Operating elements 5 to 8. Can be accessed only after opening a cover.

**Display**   The room unit has 2 display levels:

- The info level
- The parameter setting / programming level

**Examples of info level**

*Basic display:*
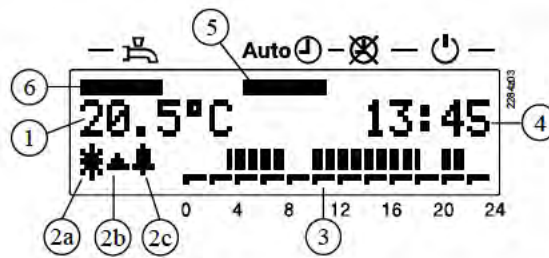


| 1 | Actual value of room temperature |
|---|---|
| 2a | Display of heating circuit operating level |
| | ❄ Nominal |
| | ☾ Reduced |
| | ❅ Frost protection |
| 2b | Flame status (activated, if flame present) |
| 2c | Fault/service (activated, if fault present / service due) |
| 3 | Time pointer |
| 4 | Time of day |
| 5 | Heating circuit operating modes |
| 6 | D.h.w. operating mode |

*Display of operating level, in this case "Nominal":*
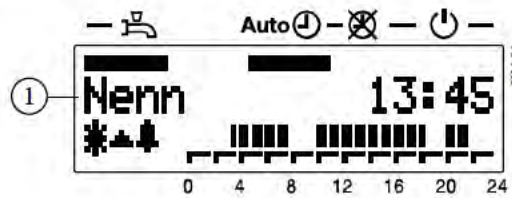


| 1 | Current operating level |
|---|---|

*Display of measured value "Outside temperature":*
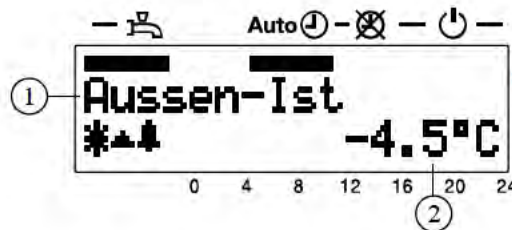


| 1 | Parameter name |
|---|---|
| 2 | Parameter value |

**Example of parameter level**

*Display of parameter "Holidays start":*
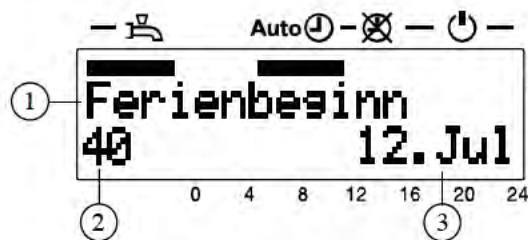


| 1 | Parameter name |
|---|---|
| 2 | Parameter number |
| 3 | Parameter value |

## 2.5 Communication with boiler control

**OpenTherm bus**

For communication between the QAA73.110 and boiler control, the OpenTherm protocol is used.

OpenTherm differentiates between 2 modes, Plus and Lite:

- In OpenTherm Plus mode, the QAA73.110 can read or write various standardized objects via the bus
- In OpenTherm Lite mode, the QAA73.110 delivers only one signal to the boiler control for controlling the heat output. In the event of fault, boiler control signals *Boiler Lock-Out Fault* to the QAA73.110

**Notes**
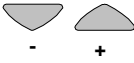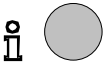
- The parameters displayed only in OpenTherm Plus mode are appropriately identified in the parameter lists
- The following descriptions of the individual parameters refer to the use of OpenTherm Plus and are based on the assumption that the relevant functions are supported by boiler control. Only then is the full functionality of the QAA73.110 ensured so that the most common applications can be fully covered
- If a parameter is not supported by boiler control, the display shows 3 strokes – – – in place of a value

## 2.6 Parameter settings for the enduser

**Description**

The following settings can be made to meet the individual needs of the enduser.

Setting

| | *Buttons* | *Explanation* | *Line* |
|---|---|---|---|
| 1 | ▽ △ **PROG** | Press one of the 2 line selection buttons. *This will take you directly to the programming level "Enduser".* | **1** |
| 2 | ▽ △ **PROG** | Press the line selection buttons to select the required line. *The parameter list on the next pages contains all available lines.* | **1** . . . **50** |
| 3 | ▽ △ **-    +** | Press the + or – button to set the required value. The setting will be stored as soon as you leave the programming mode or change to another line. *The parameter list on the next 2 pages contains all settings that can be made.* | |
| 4 | ⌑ ◯ | By pressing the Info button, you leave the programming level "Enduser". | Continuous display |

Note

If no button is pressed for about 8 minutes, the room unit will automatically return to the Info level.

## 2.6.1 Overview of enduser parameters

| Line | Function | Range | Unit | Resolution | Factory setting |
|---|---|---|---|---|---|
| *Time of day* | | | | | |
| 1 | Time of day | 0 ... 23:59 | hh:mm | 1 min | – |
| 2 | Date (day, month) | 1. Jan ... 31. Dec | dd.mm | 1 day | – |
| 3 | Year | 2000 ... 2094 | jjjj | 1 year | – |
| *Setpoints* | | | | | |
| 5 | Reduced room temperature setpoint (TRRw) | TRF ... TRN | °C | 0.5 | 16.0 |
| 6 | Frost protection setpoint of room temperature (TRF) | 4 ... TRRw | °C | 0.5 | 10.0 |
| 7* | Nominal setpoint of the d.h.w. temperature (TBWw) | TBWR ... TBWmax | °C | 1 | 55 |
| *Time switch program 1 (heating circuit 1)* | | | | | |
| 10 | Preselecting the weekday | Mo...Su, week | week-day | 1 day | – |
| 11 | Switch-on time period 1 | --:-- / 00:00 ... 24:00 | hh:mm | 10 min | 06:00 |
| 12 | Switch-off time period 1 | --:-- / 00:00 ... 24:00 | hh:mm | 10 min | 22:00 |
| 13 | Switch-on time period 2 | --:-- / 00:00 ... 24:00 | hh:mm | 10 min | --:-- |
| 14 | Switch-on time period 2 | --:-- / 00:00 ... 24:00 | hh:mm | 10 min | --:-- |
| 15 | Switch-on time period 3 | --:-- / 00:00 ... 24:00 | hh:mm | 10 min | --:-- |
| 16 | Switch-off time period 3 | --:-- / 00:00 ... 24:00 | hh:mm | 10 min | --:-- |
| *Time switch program 2* | | | | | |
| 20* | Preselecting the weekday | Mo...Su, week | week-day | 1 day | – |
| 21* | Switch-on time period 1 | --:-- / 00:00 ... 24:00 | hh:mm | 10 min | 06:00 |
| 22* | Switch-off time period 1 | --:-- / 00:00 ... 24:00 | hh:mm | 10 min | 22:00 |
| 23* | Switch-on time period 2 | --:-- / 00:00 ... 24:00 | hh:mm | 10 min | --:-- |
| 24* | Switch-off time period 2 | --:-- / 00:00 ... 24:00 | hh:mm | 10 min | --:-- |
| 25* | Switch-on time period 3 | --:-- / 00:00 ... 24:00 | hh:mm | 10 min | --:-- |
| 26* | Switch-off time period 3 | --:-- / 00:00 ... 24:00 | hh:mm | 10 min | --:-- |
| *Time switch program 3 (d.h.w.)* | | | | | |
| 30* | Preselecting the weekday | Mo...Su, week | week-day | 1 day | – |
| 31* | Switch-on time period 1 | --:-- / 00:00 ... 24:00 | hh:mm | 10 min | 06:00 |
| 32* | Switch-off time period 1 | --:-- / 00:00 ... 24:00 | hh:mm | 10 min | 22:00 |
| 33* | Switch-on time period 2 | --:-- / 00:00 ... 24:00 | hh:mm | 10 min | --:-- |
| 34* | Switch-off time period 2 | --:-- / 00:00 ... 24:00 | hh:mm | 10 min | --:-- |
| 35* | Switch-on time period 3 | --:-- / 00:00 ... 24:00 | hh:mm | 10 min | --:-- |
| 36* | Switch-off time period 3 | --:-- / 00:00 ... 24:00 | hh:mm | 10 min | --:-- |
| *Holidays* | | | | | |
| 40 | Holidays start (day.month) – – Inactive | 1. Jan ... 31. Dec | dd.mm | 1 day | --:-- |
| 41 | Holidays end (day.month) – –: Inactive | 1. Jan ... 31. Dec | dd.mm | 1 day | --:-- |
| 42 | Heating circuit operating level during holidays | Frost, reduced | – | – | Frost |
| *General* | | | | | |
| 45 | STANDARD time switch programs for HC1 + 2 and d.h.w. (press both buttons -/+ for 3 s) | No, yes | – | – | No |
| 46 | Summer / winter changeover temperature | 8 ... 30 | °C | 0.5 | 17.0 |
| 47 | Language | German, English | – | – | German |
| 50* | Display of fault (error code of QAA73.110 or boiler control) | 0 ... 255 | – | 1 | – |

\* These lines are only displayed in OpenTherm Plus mode. Also, the relevant functions must be supported by boiler control.

– – : – – = Switching point inactive

## 2.7    Parameter settings for the heating engineer

**Description**

Room unit configuration and parameter settings to be made by the heating engineer.

**Setting**

| | *Buttons* | *Explanation* | *Line* |
|---|---|---|---|
| 1 | PROG | Press one of the 2 line selection buttons. *This will take you first to the programming level "Enduser".* | **1** |
| 2 | PROG | Press both line selection buttons for at least 3 seconds. *This will take you to the programming level "Heating engineer".* | **51** |
| 3 | PROG | Press the line selection buttons to select the required line. *The parameter list on the next pages contains all available lines.* | **51** **. . .** **98** |
| 4 | - + | Press the + or – button to set the required value. The setting will be stored as soon as you leave the programming mode or change to another line. *The parameter list on the next pages contains all settings that can be made.* | |
| 5 | 🔲 | You leave the programming level "Heating engineer" by pressing the Info button. | Continuous display |

**Note**

If no button is pressed for about 8 minutes, the room unit will automatically return to the Info level.

## 2.7.1 Overview of heating engineer parameters

| Line | Function | Range | Unit | Resolution | Factory setting |
|------|----------|-------|------|------------|-----------------|
| *Service values* | | | | | |
| 51 | Current room temperature setpoint HC1 <br> Nominal, reduced or frost protection setpoint | 4 ... 35.0 | °C | 0.5 | – |
| 52* | Current room temperature setpoint HC2 <br> Nominal, reduced or frost protection setpoint | 4 ... 35.0 | °C | 0.5 | – |
| 53* | Outside temperature attenuated (is set to actual value by pressing both buttons -/+ for 3 s) | –50 ... +50 | °C | 0.5 | – |
| 54* | Outside temperature composite | –50 ... +50 | °C | 0.5 | – |
| 55* | Actual value 2 of d.h.w. temperature | 0 ... 127 | °C | 1 | – |
| 56* | D.h.w. flow rate | 0 ... 16 | l/min | 0.5 | – |
| 57* | Actual boiler return temperature | –40 ... 127 | °C | 1 | – |
| 58* | Actual value of the flue gas temperature | –40 ... 500 | °C | 1 | – |
| 59* | Actual temperature of solar collector | –40 ... 250 | °C | 1 | – |
| 61* | Actual temperature of solar storage tank | –40 ... 127 | °C | 1 | – |
| 62 | OpenTherm mode | Lite, Plus | – | – | – |
| 63 | Current flow temperature setpoint HC1 | 0...100 | °C | 1 | – |
| 64* | Current flow temerature setpoint HC2 | 0...100 | °C | 1 | – |
| *Frost protection for the plant (HK1 and HK2)* | | | | | |
| 70 | Heating curve slope HC1 – – = HC1 inactive | 2.5 ... 40.0 | – | 0.5 | 15.0 |
| 71 | Minimum limitation of flow temperature HC1 (TV1 min) | 8 ... TV1max | °C | 1 | 8 |
| 72 | Maximum limitation of flow temperature HC1 (TV1max) | TV1min ... ...TKmax | °C | 1 | 80 |
| 73 | Parallel displacement of heating curve HC1 | –4.5 ... +4.5 | K | 0.5 | 0.0 |
| 74* | Type of building construction | Heavy, Light | – | – | Light |
| 75* | Room influence | None, on HC1, on HC2, on HC1 + HC2 | – | – | on HC1 |
| 76 | Switching differential of room temperature (switch-off point) <br> – – . – = inactive | 0.5 ... 4.0 | K | 0.5 | 0.5 |
| 77 | Adaption of the heating curve | Inactive, active | – | – | Active |
| 78 | Optimum start control maximum forward shift | 0 ... 360 | min | 10 | 100 |
| 79 | Optimum stop control maximum forward shift | 0 ... 360 | min | 10 | 30 |
| 80* | Heating curve slope HC2 – – . – = HC2 inactive | 2.5 ... 40.0 | – | 0.5 | 15.0 |
| 81* | Minimum limitation of flow temperature HC2 (TV2min) | 8 ... TV2max | °C | 1 | 8 |
| 82* | Maximum limitation of flow temperature HC2 (TV2max) | TV2min ... ...TKmax | °C | 1 | 80 |
| 83* | Parallel displacement of heating curve HC2 | –4.5 ... +4.5 | K | 0.5 | 0.0 |
| *D.h.w.* | | | | | |
| 90* | Reduced setpoint of d.h.w. temperature (TBWR) | 8 ... TBWw | °C | 1 | 40 |
| 91 | Release of d.h.w. heating | 24h/day, TSP HC – 1h, TSP HC, TSP d.h.w. | – | – | TSP HC-1h |
| 92* | Legionella function | Off, weekly, daily | – | – | weekly |
| 93* | Operating mode selector of d.h.w. heating | Without ECO, With ECO | – | – | Without ECO |
| 94* | Control of d.h.w. circulating pump | D.h.w. release D.h.w. program Program 2 | – | – | D.h.w. program |

| Line | Function | Range | Unit | Resolution | Factory setting |
|------|----------|-------|------|------------|-----------------|
| **General** | | | | | |
| 95 | Programming lock | Locked / released | – | – | Released |
| 96* | Clock time master | QAA73, external | – | – | QAA73 |
| 97 | Summer time start | 1. Jan ... 31. Dec | dd.mm | 1 day | 25. March |
| 98 | Summer time end | 1. Jan ... 31. Dec | dd.mm | 1 day | 25. Oct |

\* These lines are only displayed in OpenTherm Plus mode. Also, the relevant functions must be supported by boiler control.
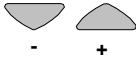
## 2.8    Parameter settings for the OEM

**Description**

Boiler-specific settings and protective functions for the boiler manufacturer.

**Setting**

| | Buttons | Explanation | Line |
|---|---|---|---|
| 1 | ▽ △ **PROG** | Press one of the 2 line selection buttons. *This will take you first to the programming level "Enduser".* | **1** |
| 2 | ▽ △ **PROG** 9 s | Press both line selection buttons for at least 9 seconds. *A special display for entering the code will appear.* | |
| 3 | **CODE** | Press buttons ▽△ + and ▽△ PROG to enter the required combination of the access code. *If the combination of buttons is correct, you reach the programming mode "OEM".* ➔ Wrong code: If the code has been entered incorrectly, the display will change to the "Parameter settings for the heating engineer". | |
| 4 | ▽ △ **PROG** | Press the line selection buttons to select the required line. *The parameter list on the next 2 pages contains all available lines.* | **100** . . . **199** |
| 5 | ▽ △ - + | Press the + or – button to set the required value. The setting will be stored as soon as you leave the programming mode or change to another line. *The following parameter list contains all available lines.* | |
| 6 | ○ i | You leave the programming level "OEM" by pressing the Info button. | Continuous display |

**Note**

If no button is pressed for about 8 minutes, the room unit will automatically return to the Info level.

### 2.8.1 Overview of OEM parameters

| Line | Function | Range | Unit | Resolution | Factory setting |
|------|----------|-------|------|------------|-----------------|
| *Space heating OEM* | | | | | |
| 100 | Maximum room temperature setpoint (TRwMax) | TRwMin ... 35 | °C | 0.5 | 35 |
| 101 | Minimum room temperature setpoint (TrwMin) | 4 ... TRwMax | °C | 0.5 | 10 |
| 102 | Gain factor of room influence (KORR) | 0 ... 20 | – | 1 | 4 |
| 103 | Quick setback constant (KON) (without room sensor) | 0 ... 20 | – | 1 | 2 |
| 104 | Boost of room temperature setpoint (DTRSA), boost heating | 0 ... 20 | K | 1 | 5 |
| 105 | Limitation of rate of increase of flow temperature setpoint | 0 ... 15 | K/min | 0.5 | 5 |
| 106 | Measured value correction of room temperature | –3.0 ... 3.0 | °C | 0.5 | 0 |
| *D.h.w. OEM* | | | | | |
| 130* | Maximum d.h.w. setpoint (TBWmax) | TBWw 80 | °C | 1 | 60 |
| 131* | Setpoint of legionella function (d.h.w.) | 8 ... 95 | °C | 1 | 65 |
| 132* | Dwelling time legionella function | 0...360 | min | 10 | 0 |
| 133* | Effect of legionella function on circulating pump | No / yes | – | – | Yes |
| *Service functions OEM* | | | | | |
| 150 | Info display | Temporary, continuously | – | – | Temporary |
| 151 | Frost warning –. – = inactive | –10 ... +10 | °C | 0.5 | 3.0 |
| 152 | Operation lock | Locked, released | – | – | Released |
| 153* | Action occupancy button | On HC1 + HC2, on HK1 | – | – | On HC1+HC2 |
| 199 | Software version (QAA73) | 0 ... 99.9 | – | 1 | – |

\* These lines are only displayed in OpenTherm Plus mode. Also, the relevant functions must be supported by boiler control.

## 2.9 Commissioning

**Prerequisites**

Prior to commissioning the controller, make the following checks:

- Correct mounting
- Correct connection to OpenTherm bus
- Enduser parameters are set as required
- Heating engineer parameters are set in compliance with plant requirements
- OEM parameters are set in compliance with technical requirements

Functional checks

The heating plant is started up via boiler control. To make the functional check, the individual functions of the room unit are checked in the plant.

# 2.10 Operational faults

**Room unit**

**No display on the room unit:**

- Is the heating plant's main switch turned on?
- Are the fuses in order?
- Check the wiring

**Room unit displays a wrong time of day or a wrong date:**

- Set the right time of day, the right date and the year on the room unit if the QAA73.110 is the clock master
- Set the correct time of day and the date on the clock master (if present)

**Boiler controller**

**Boiler control does not switch on**

- Does boiler control really have to operate?
- Press boiler control's lock-out reset button
- Check the control thermostat (TR) and the manual reset safety limit thermostat (STB)
- Check wiring and fuse of boiler control
- Check the communication link to boiler control

**Room temperature**

**The room temperature does not agree with the required temperature level:**

- Does the room temperature setpoint agree with the required temperature level?
- Is the required operating mode indicated?
- Are weekday, time of day and the displayed heating program correct?
  (Info displays)
- Has the heating curve slope been correctly set?
- Check wiring of outside sensor
- Has the "Nominal room temperature setpoint" with the "Parallel displacement of the heating curve" been calibrated based on the effective room temperature?
- Check boiler control

**D.h.w.**

**D.h.w. is not being heated:**

- Has the button for d.h.w. heating been pressed?
- Check setpoint of the d.h.w. temperature
- Check d.h.w. function of boiler control

# 3 Description of enduser settings

## User interface

### 3.1 Heating circuit operating modes

**Description**

The control provides 3 different heating circuit operating modes that can be directly selected as required.

**Operating modes**
**Auto** ⏱, ⊗, ⏻

The operating modes are selected by pressing the heating circuit operating mode button. It can be accessed after opening the cover.
The selected heating circuit operating mode applies to both heating circuits and is indicated on the display by a pointer under the relevant symbol.

**Effect**

| Operating mode | Designation | Effect of selected operating mode |
|---|---|---|
| **Auto** ⏱ | Automatic operation | • Heating circuit 1 according to time switch program 1 <br> • Heating circuit 2 according to time switch program 2 <br> • Holiday function is active |
| ⊗ | Continuous operation | • Heating circuits 1 and 2 continuously according to the adjusted nominal room temperature setpoint or reduced setpoint <br> • Holiday function is not active |
| ⏻ | Standby | • Heating circuits 1 and 2 are switched off <br> • Holiday function is not active <br> • Frost protection functions are active |

### 3.2 Operating mode of d.h.w. heating

**Description**

D.h.w. heating can be switched on and off independent of the other operating modes.
D.h.w. heating ON is indicated by a pointer under the d.h.w. symbol 🚰.

| No pointer | OFF |
|---|---|
| Complete pointer | ON |
| Half the pointer | ON with ECO function <br> ➔  This operating mode must be enabled on setting line 93! |

**Effect**

OFF        D.h.w. is not being heated.

ON         D.h.w. heating is switched on; a setpoint is generated based on the demand for heat and the settings and passed on to the BMU.

ON ECO     D.h.w. operating mode for plants with instantaneous d.h.w. heating. The setpoint is generated and passed on to the BMU. Die Temperatur wird jedoch durch die Kesselregelung nicht ständig auf dem Sollwert gehalten. D.h.w. heating is started only when d.h.w. is consumed.

**Notes**

• The d.h.w. operating mode and the different d.h.w. functions are active only if supported by boiler control and if communicated in OpenTherm Plus mode

• No d.h.w. functions are provided in OpenTherm Lite mode, that is, the d.h.w. operating mode button is inactive

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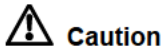
| ⚠ Caution | The QAA73.110 has no frost protection function for d.h.w. heating. Frost protection for d.h.w. must be ensured by boiler control. |
|---|---|

## 3.3 Occupancy button

**Description**

In automatic and continuous operation, the heating circuit operation level can be changed by pressing the occupancy button.

**Effect**

| Current operating mode | Effect on occupancy button |
|---|---|
| Automatic operation | The heating circuit operation level changes temporarily from nominal to reduced, or vice versa. This changeover is maintained until the next level changeover point of the time switch program is reached.<br><br>The change taking place after pressing the occupancy button will be indicated by the time pointer and appears on the display.<br>The effect relates to HC1 + 2 or only to HC1, depending on the selection of function 153. |
| Continuous operation | The heating circuit operation level changes from nominal to reduced, or vice versa. |
| D.h.w. | The occupancy button has no effect on d.h.w. heating. |
| Holiday program | The occupancy button has no effect. |
| summer operation | After automatic summer changeover, the occupancy button has no effect. |

## 3.4 Info button

**Description**

The Info level can be accessed any time by pressing the Info button. By repeatedly pressing the Info button, the various data made available by the Info level can be queried.

| Line | Display |
|---|---|
| 1 | Time of day, actual room temperature and operating mode |
| 2 | Indication of faults |
| 3 * | Status display: |
| 4 | Time of day and operating state heating circuit 1 |
| 5 | Time of day and date |
| 6 * | Actual value of outside temperature |
| 7 * | Lowest outside temperature** |
| 8 * | Highest outside temperature** |
| 9 | Actual value of the room temperature |
| 10 | Lowest room temperature** |
| 11 | Highest room temperature** |
| 12 * | Actual value of d.h.w. temperature |
| 13 * | Actual value of the boiler temperature |
| 14 * | Actual value of flow temperature |
| 15 * | Burner modulation |
| 16 * | Water pressure heating circuit |

Depending on the configuration made (operating line 150), the information selected last is continuously displayed, or changes back to the standard display after 8 minutes.

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\* These lines are only displayed in OpenTherm Plus mode. Also, the relevant functions must be supported by boiler control.

\*\* A reset to the actual temperature is made by pressing the +/– buttons for 3 seconds

## 3.5 Time of day, date and year

**Description**

To ensure proper functioning of the heating program, the time switch with the time of day, day, month and year must be correctly set.

**Lines 1, 2 and 3**

1. Press the line selection buttons to select line **1**, **2** or **3**.
2. Press the + / – buttons to set the current values.

| Line | Setting range | Unit |
|------|---------------|------|
| 1 | 00:00 ... 23:59 | Minute, hour, day, month, year |
| 2 | 1. Jan ... 31. Dec | |
| 3 | 2000 ... 2094 | |

**Effect**

Time of day, date and year will be set to their current values. These settings are important, ensuring that the heating program, the d.h.w. program, the holiday program and summer- / wintertime changeover of the room unit operate as required.

Notes

- While the settings are made, the clock continues to run
- During the time settings, the seconds are reset to zero each time a + or – button is pressed
- If, on line 96, the clock master was programmed for external, manual time settings via lines 1 to 3 are no longer possible

## 3.6 Nominal room temperature setpoint

**Description**

In nominal operation, the nominal room temperature setpoint is maintained.

**Nominal setpoint**
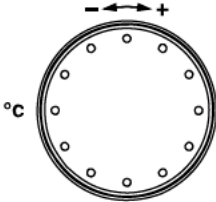
The nominal room temperature setpoint is adjusted with the knob for the nominal temperature, which is located on the controller front for direct access by the user. When turning the knob, the current room temperature setpoint is displayed and – when turning further – readjusted. The value applies to both heating circuits.

| Setting range | Unit | Factory setting |
|---|---|---|
| TRwMin ... TRwMax | °C | 20.0 |
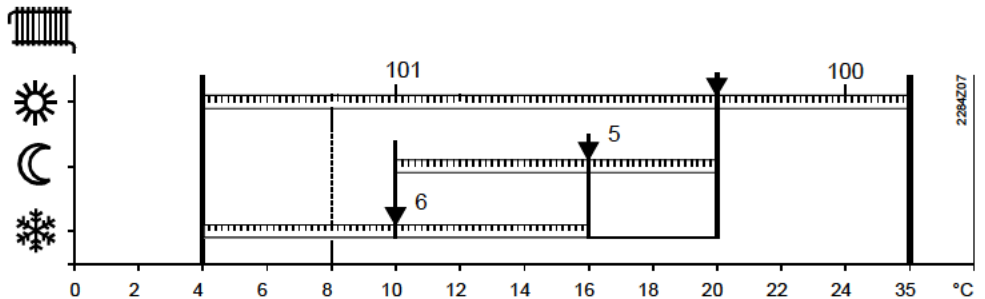
Room temperature setpoint setting ranges

5     Reduced room temperature setpoint
6     Frost protection setpoint of the room temperature

**Notes**

- Readjustment of the nominal setpoint with the knob can be locked via OEM parameter 152
- Minimum and maximum limitation of the nominal setpoint setting range can be accomplished via OEM parameters 100 and 101

**Effect**

When the nominal room temperature setpoint is active, the rooms will be heated according to the adjustment made with the setpoint knob.
The adjustment made with the knob is only active in automatic and continuous operation.

**Example**

The nominal phases depend on the settings made on lines **11** through **16** for heating circuit 1 and according to the settings made on lines **21** through **26** for heating circuit 2.
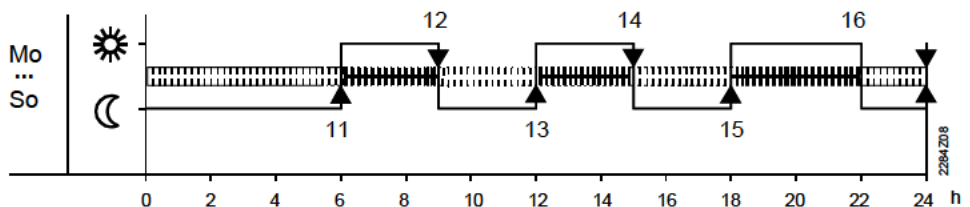
Nominal temperature and reduced temperature phases for heating circuit 1

## 3.7　Reduced room temperature setpoint

**Description**

The reduced room temperature setpoint ensures a lower room temperature during the night, for instance, to save energy.

**Line 5**

1. Press the line selection buttons to select line 5.
2. Press the + / – buttons to adjust the reduced room temperature setpoint.

| Setting range | Unit | Factory setting |
|---|---|---|
| TRF...TRN | °C | 16 |

TRF　Frost protection setpoint of room temperature (setting on line 6)

TRN　Nominal room temperature setpoint (to be adjusted with the setpoint knob)

**Note**

It is not possible to set the reduced setpoint above the adjustment made with the nominal temperature knob.

**Effect**

During the reduced phases, the reduced room temperature setpoint ☾ is maintained. Any lower nominal temperature is given priority however.

## 3.8　Frost protection setpoint of room temperature (TRF)

**Description**

This function prevents the room temperature from falling below the adjusted frost protection setpoint.

**Line 6**

1. Press the line selection buttons to select line 6.
2. Press the + / – buttons to adjust the frost protection setpoint of the room temperature.

| Setting range | Unit | Factory setting |
|---|---|---|
| 4...TRRw | °C | 10 |

TRRw　Reduced room temperature setpoint (setting on operating line 5)

**Effect**

This setting will change the frost protection setpoint of the room temperature.

**⚠ Caution**

This function is ensured only when the heating plant operates properly!

**Frost protection for the building**

In operating mode ⏻, the room temperature is prevented from falling below a certain level. This means that the frost protection setpoint of the room temperature ❄ will be maintained.

## 3.9　Nominal d.h.w. temperature setpoint

**Description**

During nominal operation, the nominal d.h.w. setpoint is maintained. It is possible to use 2 different d.h.w. temperature setpoints.

**Line 7**

1. Press the line selection buttons to select line 7.
2. Press the + / − buttons to adjust the nominal setpoint of the d.h.w. temperature.

| Setting range | Unit | Factory setting |
|---|---|---|
| TBWR...TBWmax | °C | 55 |

TBWR　　Reduced d.h.w. temperature setpoint (setting one line 90)
TBWmax　Maximum nominal setpoint of d.h.w. temperature (setting on line 130)

**Effect**

The temperature setpoint during normal d.h.w. operation will be changed.
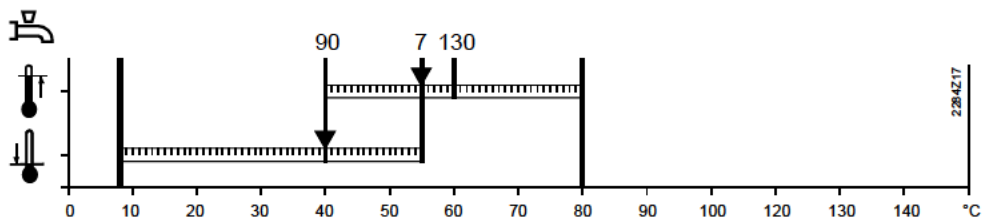


7　　　Nominal d.h.w. temperature setpoint
90　　Reduced setpoint of the d.h.w. temperature
130　　Maximum nominal setpoint of d.h.w. temperature

**D.h.w. temperature setpoints**

D.h.w. heating has 2 different setpoints that can be used:

Nominal setpoint of d.h.w. temperature (setting on line 7): It ensures the d.h.w. temperature required during occupancy times.

Reduced d.h.w. temperature setpoint (setting on operating line 90): It ensures the d.h.w. temperature required during the main occupancy times.

D.h.w. charging

The criteria required for releasing d.h.w. heating are defined by the settings made on line 91.

| Description | For the 2 heating circuits 1 and 2 as well as for d.h.w., it is possible to define independent time switch programs. This serves the following purpose: |
|---|---|

For the 2 heating circuits 1 and 2 as well as for d.h.w., it is possible to define independent time switch programs. This serves the following purpose:
- Space heating and d.h.w. heating operate only if there is a demand for heat
- The user can set the occupancy times to suit his lifestyle
- Energy can be saved by making adequate use of the time switch programs

For TSP1, parameters 10 through 16 are provided, für TSP2, the parameters 20 through 26 and for TSP3 the parameters 30 through 36.

**Notes**
- The time switch programs operate independently of each other.
- Die Parameter 20 ... Parameters 20 through 26 are visible only if boiler control supports a second heating circuit
- Die Parameter 30 ... Parameters 30 through 36 are visible only if line 91 is set for use by the d.h.w. time switch program

## 3.10 Preselecting the weekday

**Description**

With this setting, you select the weekdays or the 7-day block for which the switching times of the time switch program apply.

**Zeilen 10, 20, 30**

1. Press the line selection buttons to select line **10** or **20** or **30**.
2. Press the + / – buttons to preselect the 7-day block or the individual day.

| *Setting range* | *Unit* |
|---|---|
| Week Mo...Su | 7-day block <br> Individual days |

**Important**
- This setting must be made before the switching times are entered!
- For every day on which other switching times shall apply, the preselection of the individual day with subsequent entry of the switching times must be repeated

**Effect**

This setting is used to select either the whole week or individual days.

**Entry of 7-day block**

**7-day block:**
Entry of the switching times on lines 11 through 16 (for HC1), or of lines 21 through 26 (for HC2), or of lines 31 through 36 (for HC3), is identical for every day from Monday through Sunday

*Example of a time switch program valid for all weekdays*

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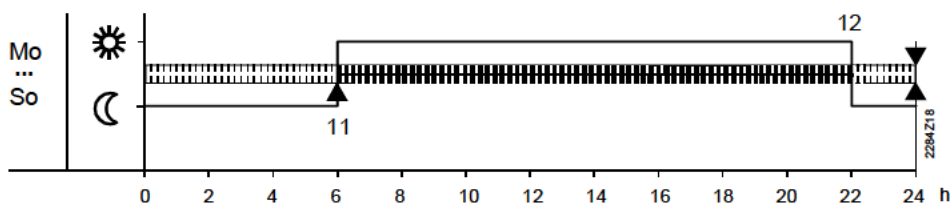
**Entry of individual days**

**7-day block:** Entry of the switching times on lines 11 through 16 (for HC1), or of lines 21 through 26 (for HC2), or of lines 31 through 36 (for d.h.w.), are **only** entered for the individual day selected here

*Example of a 7-day time switch program:*
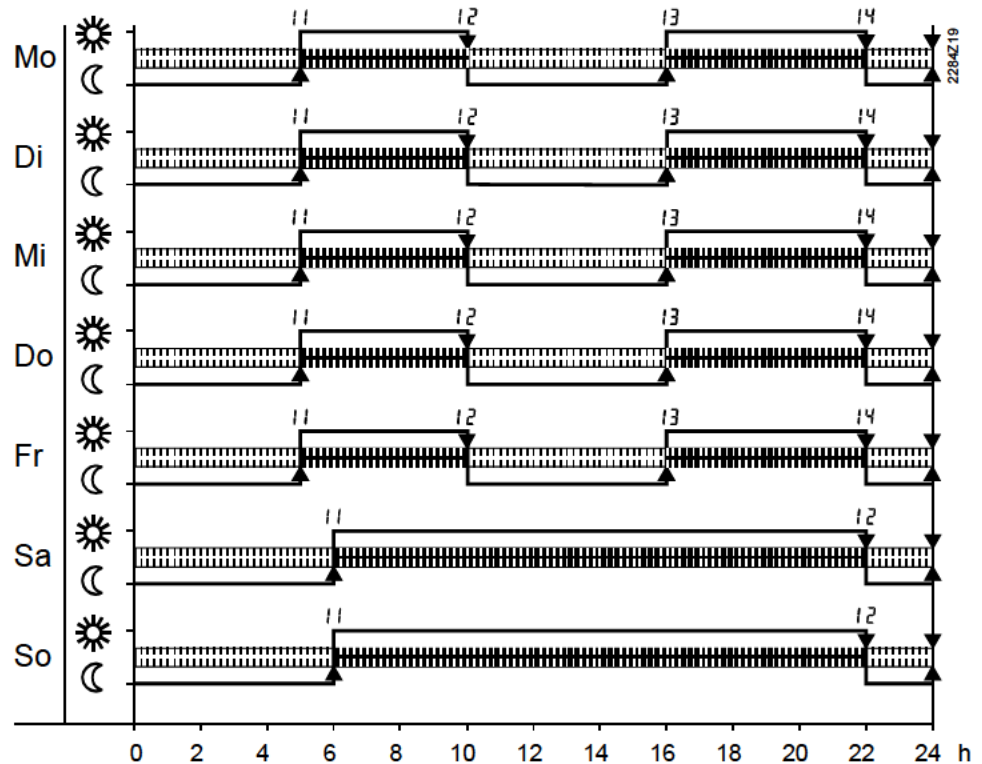


**Tip**

First, choose the 7-day block to enter the switching times required for the majority of days; then, select the individual days to make the required adjustments.

## 3.11 Switching times

**Description**

This setting defines the switching times for space heating and d.h.w. heating. The temperature setpoints of the 2 heating circuits and the d.h.w. usage times change at the times set.

**Lines    11 ... 16 for TSP1**
**21 ... 26 for TSP2**
**31 ... 36 for d.h.w**

1. Press the line selection buttons to select lines **11** through **16** (for HC1), or lines **21** through **26** (for HC2), or lines **31** through **36** (for d.h.w.).
2. Press the + / – buttons to set the switching time on each line.

| *Setting range* | *Unit* | *Factory setting* |
| --- | --- | --- |
| – – : – –  /  24:00 | h : min | see standard time switch programs |

**Important**

First, select the weekday for which the switching times shall be entered! (operating line 10 or 20 or 30)

**Note**

The room unit then makes a check to ensure the entries have been made in the correct order.

**Effect**

At the times entered, the program will switch to the respective functions:
– – : – –          Switching point inaktiv

00:00...24:00 At the time entered, a change to the respective function takes place.

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## 3.12  Holiday setting

**Description**

During the holiday period, the heating circuit operating level can be reduced. The start and the end of the holiday period are set here. This function is only active in automatic mode and acts on both heating circuits simultaneously.

**Line 40, 41**

1.  Press the line selection buttons to select line **40** for the start of the holiday period and line **41** for the end of the holiday period.
2.  Press the + / – buttons to set the start and then the end of the holiday period. First, the current date according to the internal clock is proposed.

| Line | Display | Unit | Factory setting | |
|------|---------|------|-----------------|---|
| 40 | 1. Jan ... 31. Dec | Day.Month | – – : – – | (inactiv) |
| 41 | 1. Jan ... 31. Dec | Day.Month | – – : – – | (inactiv) |

Note

The end of the holiday period can be changed only if a value has been set on the line for the start of the holiday period.

**Effect**

- After the start of the holiday period, the heating level will be reduced either to "Reduced" or " Frost" according to the parameter setting made on programming line 42. During the holidays, d.h.w. heating is locked
- On completion of the holiday period, the current room unit settings apply again
- The dates of the start and the end of the holiday period will automatically be cleared when the holidays are over

**Clearing**

The entered holiday period is cleared or aborted in the following way:
Select line 40 or 41 and keep the + / – buttons depressed for 3 seconds.

## 3.13  Heating circuit operating level during holidays

**Description**

There is a choice of reduced operation or frost protection mode, depending on the geographical location and individual requirements.

**Line 42**

1.  Press the line selection buttons to select line 42.
2.  Press the + / – buttons to set the heating circuit operating level.

| Display | Unit | Factory setting |
|---------|------|-----------------|
| Frost, reduced | – | Frost |

**Effect**

When using the "Reduced" setting, the reduced room temperature setpoint (TRRw) is maintained during the holidays; when using the "Frost" setting, the frost protection setpoint of the room temperature (TRF) is maintained.

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## 3.14  Standard times

**Description**

The standard time program resets the time settings of all time switch programs. For this purpose, the room unit is supplied with non-volatile factory settings.

**Line 45**

1. Press the line selection buttons to select line 45.
2. Press the + / – buttons for 3 seconds.
   The standard time program is activated as soon as the display changes to "Yes".

| *Display* | *Unit* |
|---|---|
| No / yes | – |

Caution

In that case, the individual settings will be lost!

**Effect**

The time settings for the time switch programs will be overwritten with standard values. This applies to the following settings:

- Switching times of time switch programs 1 and 2      **11** ... **16** or **21... 26**
- Switching times for d.h.w. program      **31** ... **36**

**Standard values**

| *Switching point* | *Setting line TSP1 or 2* | *d.h.w.* | *Standard time* |
|---|---|---|---|
| Switch-on time period 1 | 11 or 21 | 31 | 06 : 00 |
| Switch-off time period 1 | 12 or 22 | 32 | 22 : 00 |
| Switch-on time period 2 | 13 or 23 | 33 | – – : – – |
| Switch-off time period 2 | 14 or 24 | 34 | – – : – – |
| Switch-on time period 3 | 15 or 25 | 35 | – – : – – |
| Switch-off time period 3 | 16 or 26 | 36 | – – : – – |

– – : Inactive

# 3.15 Summer / winter changeover temperature

**Description**

The summer / winter changeover temperature is the criterion for automatic summer / winter changeover of the heating plant.
It offers the following benefits:

- Fully automatic operation throughout the year
- The heating will not be switched on when the outside temperature drops for short periods of time
- Additional savings function

**Line 46**

1. Press the line selection buttons to select line 46.
2. Press the + / – buttons to select the summer / winter changeover temperature.

| *Setting range* | *Unit* | *Factory setting* |
|---|---|---|
| 8 ... 30.0 | °C | 17 |

**Effect**

By changing the setting, the respective periods of time will be shortened or extended. The change will only affect the heating circuit.

Entry:

Increase:    Winter operation will start *earlier*
Summer operation will start *later* .

Decrease:    Winter operation will start *later*
Summer operation will start *earlier*

Changeover

To determine changeover, the setting of the summer / winter changeover temperature ( ± a fixed switching differential) is compared with the attenuated outside temperature.

| Heating **OFF** (from winter to summer) | TAged > SuWi +1 °C |
|---|---|
| Heating **ON** (from summer to winter) | TAged < SuWi -1 °C |

Notes

- This function only acts in automatic mode **Auto** ⏲
- During summer operation, Info line 4 Eco is displayed
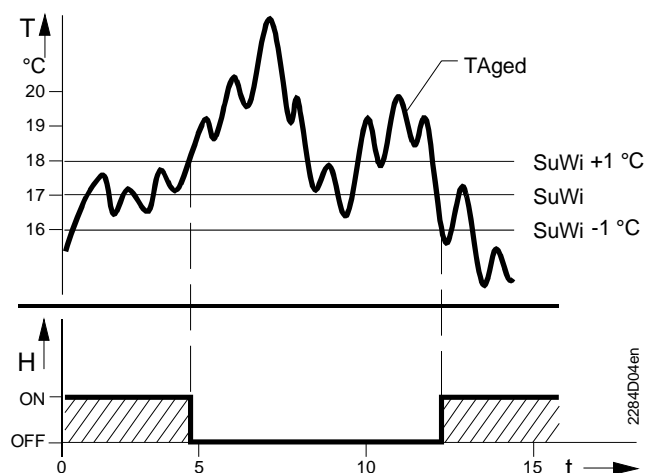


Changeover between summer and winter operation:

TAged    Attenuated outside temperature
SuWi    Summer / winter changeover temperature
T    Temperature
t    Time in days
H    Heating

## 3.16  Language

**Description**

There is a choice of languages for the display.

**Line 47**

1. Press the line selection buttons to select line 47.
2. Press the + / – buttons to select the required language.

| *Setting range* | *Factory setting* |
|---|---|
| German, English ... | German |

The assignment of other languages depends on the relevant software release. They can be selected by pressing the + / – buttons again.

## 3.17  Indication of faults

**Description**

The room unit indicates faults that may have occurred in the unit itself or in the system. Faults cannot be reset. They will be cleared only when rectified.

**Info line 2 or line 50**

Press the Info button to select Info line 2, or the line selection buttons to select line **50**.

**Effect**

If a fault is indicated, the fault / status code symbol flashes. The fault can be displayed in clear text by pressing the Info button. The fault automatically displayed is always the fault with the highest priority (most severe fault). If other faults are present at the same time, the next fault with the highest priority will be displayed after the present fault has been corrected.

Own displays

In the case of a room unit-specific fault or a fault of Siemens boiler control, the error code and appropriate error text will be displayed.



Example of own fault display

Other displays

In the event of a fault occurring on a boiler control system of other manufacture, the error code delivered is preceded by #.
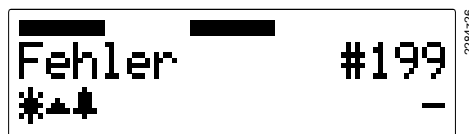


Example of other fault display

Error code list

| *Error code* | *Display QAA73.110* | *Description of error* |
|---|---|---|
| 0 | No error | No error |
| 10 | OutsideSens | Fault outside sensor |
| 60 | Room sensor | Fault room sensor |
| 100 | TimeMaster | No valid external time (yearly clock) |
| 118 | W-Press low | Water pressure too low |
| 124 | Boiler temp | Alarm boiler temperature (too high) |
| 131 | Burn lockout | Fault burner |
| 142 | OpenTherm | Missing partner unit on LPB |
| 150 | BMU | General BMU fault |
| 153 | Interlock | Boiler control interlocked |
| 162 | AirPressSwi | Fault air pressure switch |

| Other fault displays | Depending on the type of boiler control, the room unit also displays other error codes with the relevant error text. For detailed information, please refer to the technical documentation of the boiler controller used. |
|---|---|

## 3.18 Boiler status code

**Description**

The room unit displays status codes that are generated by Siemens boiler control and then transmitted via the OpenTherm bus. They will be cleared only when rectified.

**Info line 3**

Press the Info button to select Info line 3.

**Effect**

If a status code is indicated, the fault / status code symbol flashes.
When pressing the Info button, the relevant status code is displayed in clear text.

Status display:

| Display QAA73.110 | Description of error |
|---|---|
| None | No service required |
| Maintenance | Boiler or burner service required |
| Chimney sweep | Chimney sweep function active |
| Controller stop | Controller stop function active |
| Setting Vo LF | Low-fire setting Vo is active |
| Setting Vo HF | High-fire setting Vo is active |
| Para-mode | Unit is in parameter setting mode |
| Floor | Unit performes floor curing function |
| Modem | Standby by external BMU contact |
| BMU | Service non-Siemens boiler control required |

# 4 Description of the heating engineer settings

## *Service values*

## 4.1 Current room temperature setpoints

**Description**

Depending on the operating mode, the room temperature is maintained either at the nominal setpoint (TRN), the reduced setpoint (TRRw), or the frost protection setpoint (TRF).

These parameters show the current setpoints of heating circuits 1 and 2.

**Line 51, 52**

Press the line selection buttons to select line **51** (HC1) or **52** (HC2).

| Line | Display | Unit | Setpoint |
|------|---------|------|----------|
| 51 | 4 ... 35.0 | °C | HK1 |
| 52 | 4 ... 35.0 | °C | HK2 |

## 4.2 Attenuated outside temperature

**Description**

The attenuated outside temperature is the simulated room temperature of a fictive building that has no internal heat source. This means that it is only the outside temperature that affects the room temperature. Consideration is given to the building's thermal storage capacity.

The attenuated outside temperature is generated by the room unit. It is continually calculated based on the prevailing outside temperature.

**Line 53**

Operating line **53** automatically displays the actual value [°C] of the attenuated outside temperature. No direct setting can be made.

The generation of the attenuated outside temperature cannot be influenced.

| Display | Unit |
|---------|------|
| –50 ... +50 | °C |

Resetting

It is possible, however, to reset the attenuated outside temperature:

1. Press the line selection buttons to select line 53.

2. Press the + / – buttons for 3 seconds.
   As soon as the display stops flashing, the attenuated outside temperature is reset to the actual outside temperature.

**Effect**

The attenuated outside temperature affects directly only summer / winter changeover.
The attenuated outside temperature acts indirectly on flow temperature control via the composite outside temperature.
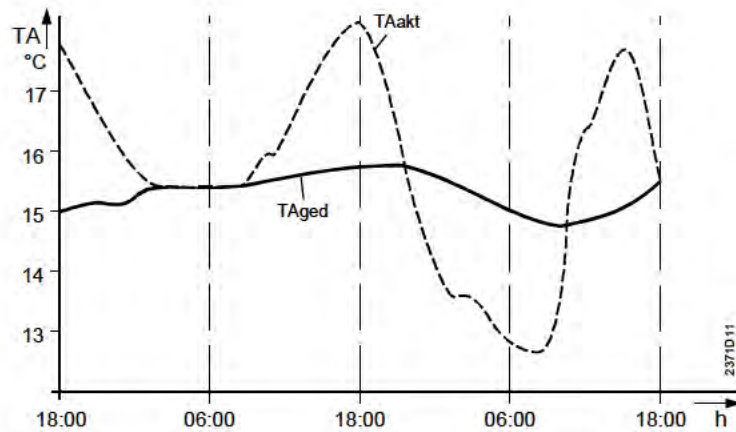
**Attenuated outside temperature**

TAakt      Actual outside temperature
TAged      Attenuated outside temperature

## 4.3    Composite outside temperature

**Description**

The composite outside temperature is a mixture of the actual outside temperature and the attenuated outside temperature as calculated by the room unit.
It is used as a compensating variable for flow temperature control.

**Line 54**

Operating line **54** automatically displays the actual value [°C] of the composite outside temperature. No direct setting can be made.

| Display | Unit |
|---------|------|
| -50 ... +50 | °C |

**Effect**

The composite outside temperature as a compensating variable acts on flow temperature control, that is thus matched to the prevailing weather conditions.
It also acts on the 24-hour heating limit to shut down the heating.
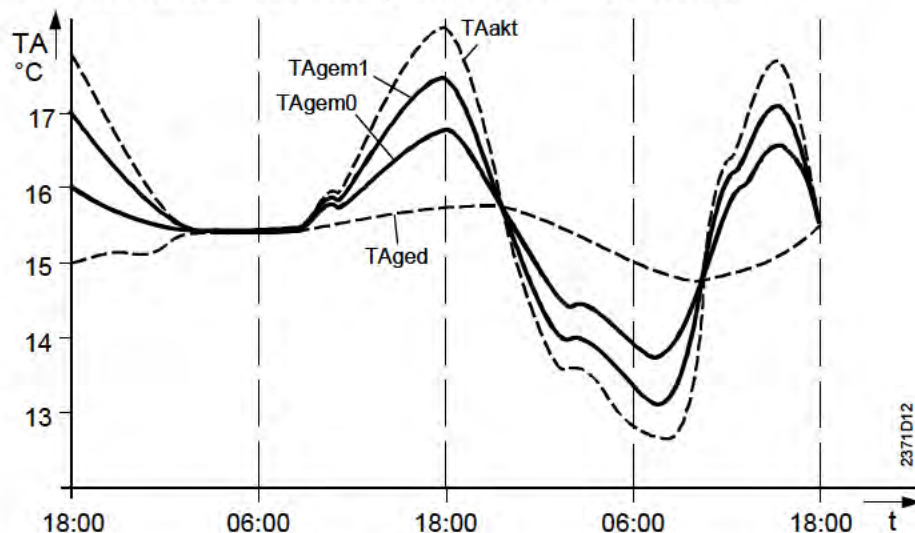


**Composite outside temperature**

TAakt      Actual outside temperature
TAged      Attenuated outside temperature
TAgem1      Composite outside temperature for light building structures
TAgem0      Composite outside temperature for heavy building structures

## 4.4 Actual value 2 of d.h.w. temperature

**Description**

The current d.h.w. temperature of the second d.h.w. sensor is displayed.

**Line 55**

Press the line selection buttons to select line 55.

| *Display* | *Unit* |
|-----------|--------|
| 0 ... 127 | °C |

## 4.5 D.h.w. flow rate

**Description**

The flow rate currently passing through the d.h.w. circuit is displayed.

**Line 56**

Press the line selection buttons to select line 56.

| *Display* | *Unit* |
|-----------|--------|
| 0 ... 16 | l/min |

## 4.6 Actual boiler return temperature

**Description**

The current boiler return temperature is displayed.

**Line 57**

Press the line selection buttons to select line 57.

| *Display* | *Unit* |
|-----------|--------|
| −40 ... +127 | °C |

## 4.7 Actual value of the flue gas temperature

**Description**

The current flue gas temperature is displayed.

**Line 58**

Press the line selection buttons to select line 58.

| *Display* | *Unit* |
|-----------|--------|
| −40 ... +500 | °C |

## 4.8 Actual value of solar collector temperature

**Description**

The current solar collector temperature is displayed.

**Line 59**

Press the line selection buttons to select line 59.

| *Display* | *Unit* |
|-----------|--------|
| −40 ... +250 | °C |

## 4.9    Actual value of solar storage tank temperature

**Description**

The current solar storage tank temperature is displayed.

**Line 61**

Press the line selection buttons to select line 61.

| *Display* | *Unit* |
| --- | --- |
| –40 ... +127 | °C |

## 4.10   OpenTherm mode

**Description**

For communication between the QAA73.110 and boiler control, the OpenTherm protocol is used.

OpenTherm differentiates between 2 modes, Plus and Lite:

- In OpenTherm Plus mode, the QAA73.110 can read or write various standardized objects via the bus

- In OpenTherm Lite mode, the QAA73.110 delivers only one signal to the boiler control for controlling the heat output. In the event of fault, boiler control signals *Boiler Lock-Out Fault* to the QAA73.110

**Line 62**

Press the line selection buttons to select line 62.

| *Display* | *Unit* |
| --- | --- |
| Lite, Plus | – |

**Effect**

Directly after connection of OpenTherm, the QAA73.110 ascertains whether boiler control supports the OpenTherm Plus or the OpenTherm Lite protocol.

The protocol currently used will automatically be displayed on this line.

Lite      *OpenTherm Lite* protocol is used
Plus     *OpenTherm Plus* protocol is used

## 4.11   Current flow temperature setpoint HC1 and HC2

**Description**

The current flow temperature setpoint is displayed. For heating circuit 1 on line 63, for heating circuit 2 on line 64.

**Line 63, 64**

Press the line selection buttons to select line **63** or **64**.

| *Display* | *Unit* |
| --- | --- |
| 0...100 | °C |

## 4.12 Heating curve slope

**Description**

The room unit generates the flow temperature setpoint based on the selected heating curve.

The result is a constant room temperature irrespective of outside temperature variations.

**Line 70 for HC 1**
**Line 80 for HC 2**

1. Press the line selection buttons to select line **70** (for HC1) or line **80** (for HC2).

2. Press the + / – buttons to select the heating curve slope or --.-

| Setting range | Unit | Factory setting |
|---|---|---|
| --.- / 2.5 ... 40.0 | Increment | 15.0 |

**Effect**

By changing the setting, the slope of the heating curve will be increased or decreased with the following effects:

Increase: The flow temperature will be **raised** when the outside temperature drops

Decrease: The flow temperature will be **raised less** when the outside temperature drops

The following settings produce the following effects:

2.5 ... 40.0 The room unit delivers a weather-compensated flow temperature for the respective heating circuit.

– –. – The relevant heating circuit is deactivated.

**Note**

- HC1 can be deactivated only if HC2 is also deactivated or does not exist
- Line 80 is visible only if a second heating circuit exists and if it is supported by boiler control
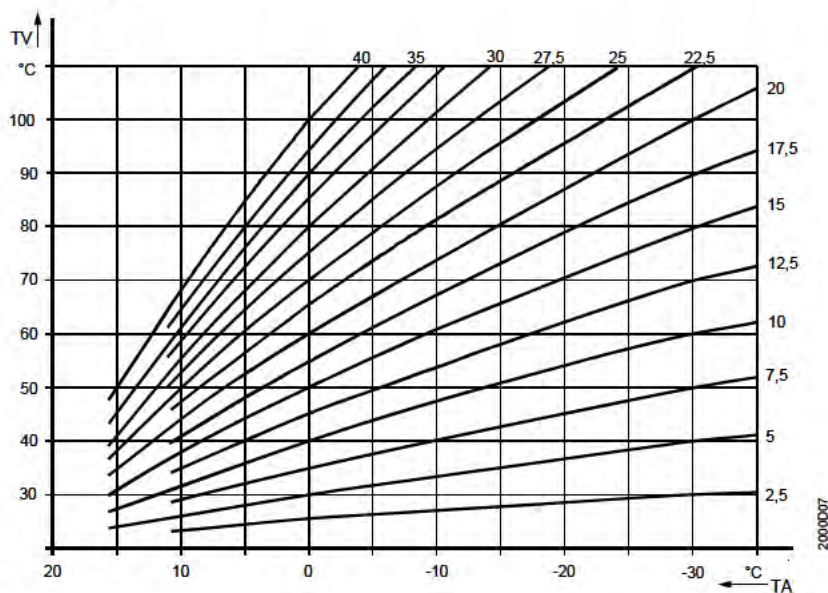


Heating circuit diagram

TV   Flow temperature
TA   Composite outside temperature

## 4.13 Minimum and maximum limitation of flow temperature HC1 and HC2

**Description**

Minimum and maximum limitation define the range within which the flow temperature setpoint may vary. They prevent too low or too high flow temperatures.

**Lines**
**71 and 72 for HC1**
**81 and 82 for HC2**

1. Press the line selection buttons to select line **71, 72, 81** or **82**.
2. Press the + / – buttons to set the required limitations of the flow temperature.

| Line | Setting range | Unit | Factory setting |
|------|--------------|------|-----------------|
| 71 | 8...TV1max | °C | 8 |
| 72 | TV1min...TKmax | °C | 80 |
| 81 | 8...TV2max | °C | 8 |
| 82 | TV2min...TKmax | °C | 80 |

| | |
|---|---|
| ...TKmax | Maximum boiler temperature |
| TV1max | Maximum limitation of flow temperature HC1 |
| TV1min ... | Minimum limitation of flow temperature HC1 |
| TV2max | Maximum limitation of flow temperature HC2 |
| TV2min | Minimum limitation of flow temperature HC2 |



| | |
|---|---|
| TVw | Current flow temperature setpoint |
| 71 | minimum limitation of flow temperature |
| 72 | maximum limitation of flow temperature |
| 81 | minimum limitation of flow temperature |
| 82 | maximum limitation of flow temperature |
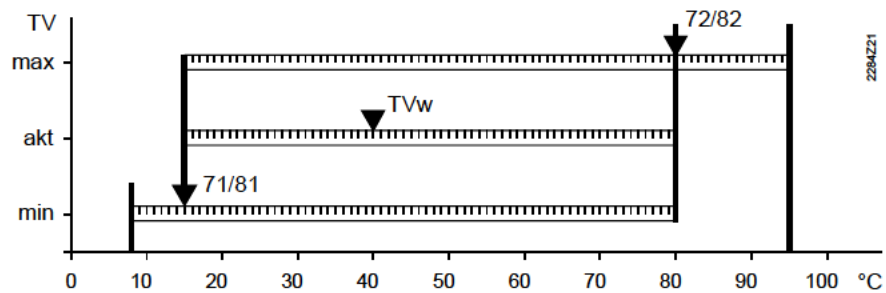
**Effect**

These settings provide maximum or minimum limitation of the flow temperature.

Important

Maximum limitation is **not** to be regarded as a safety function as required with underfloor heating systems, for example.

# 4.14 Parallel displacement of heating curve HC1/HC2

| | |
|---|---|
| **Description** | A parallel displacement of the heating curve ensures a better match of room temperature setpoint and actual room temperature. |
| **Line 73, 83** | 1. Press the line selection buttons to select line **73** or **83**.<br>2. Press the + / – buttons to set the parallel displacement.. |

| Line | HK | Setting range | Unit | Factory setting |
|---|---|---|---|---|
| 73 | 1 | –4.5...+4.5 | °C | 0.0 |
| 83 | 2 | –4.5...+4.5 | °C | 0.0 |

| | |
|---|---|
| **Effect** | By changing the value entered, all room temperature setpoints will be appropriately raised or lowered. This allows the room temperature setpoints to be matched to the effective room temperatures. |
| Example | If a nominal room temperature setpoint of 20 °C adjusted on the room unit always produces a room temperature of 22 °C (independent of the prevailing outside temperature), the heating curve should be displaced downward by 2 °C. |
| **Parallel displacement** | Each setpoint readjustment, be it by changing the setting value or the operational level, corresponds to a parallel displacement of the heating curve. |
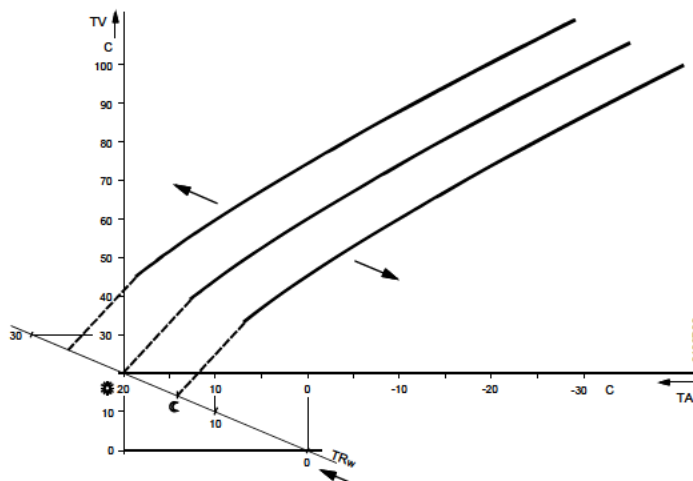


TV    Flow temperature
TA    Composite outside temperature
TRw   Room temperature setpoint

# 4.15 Type of building construction

**Description**

Enables the control system's rate of response to be matched to the type of building construction.

**Line 74**

1.  Press the line selection buttons to select line 74.
2.  Press the + / – buttons to select the type of building construction.

| *Setting range* | *Unit* | *Factory setting* |
| --- | --- | --- |
| Heavy, light | – | Light |

**Effect**

When the outside temperature varies, the room temperature changes at different rates, depending on the building's thermal storage capacity.
The above setting ensures that the generation of the composite outside temperature will be matched to the type of building construction. Also refer to " Composite outside temperature".

Entry:

Heavy building structures:
The room temperature will respond *slower* to outside temperature variations

Light        Light building structures:
The room temperature will respond *quicker* to outside temperature variations

**Building construction**

*   Heavy building structures:
    Buildings with thick walls or with external insulation
*   Light building structures:
    Buildings with a light envelope

# 4.16 Room influence

**Description**

Owing to the temperature checkback signal received from the room, a constant room temperature is maintained and, if required, boost heating or quick setback enabled.
The parameter defines the room influence on the control of the heating circuits.
Room temperature deviation is the temperature differential between actual room temperature and room temperature setpoint.

**Line 75**

1.  Press the line selection buttons to select line 75.
2.  Press the + / – buttons to select the room influence.

| *Setting range* | *Unit* | *Factory setting* |
| --- | --- | --- |
| None, on HC1, on HC2, on HC1 + HC2 | – | On HC1 |

**Effect**

The setting will activate the room influence on the required heating circuits.

Entry:

None        Room influence inactive: The measured room temperature will not affect temperature control

| On HC1 | Room influence acting on heating circuit 1: The measured room temperature has an impact on temperature control of heating circuit 1 (OpenTherm Lite mode) |
|---|---|
| On HC2 | Room influence acting on heating circuit 2: The measured room temperature has an impact on temperature control of heating circuit 2 |
| On HC1+HC2 | Room influence acting on heating circuits 1 and 2: The measured room temperature has an impact on temperature control of both heating circuits |

**Room influence**

Deviations of the actual room temperature from the setpoint are acquired and taken into account by temperature control.

To be able to use the control variant "Weather compensation with room influence", the following conditions must be satisfied:

- An **outside sensor** must be connected to boiler control
- Room influence **must** be enabled to act on the relevant heating circuits
- There may be **no thermostatic radiator valves** in the reference room (If such valves are present, they must be set to their fully open position).

## 4.17 Switching differential of the room temperature

**Description**

It is used for room temperature limitation. This function is recommended for pump heating circuits and prevents the rooms from getting overheated.

**Line 76**

1. Press the line selection buttons to select line 76.
2. Press the + / − buttons to set the room temperature switching differential.

| *Setting range* | *Unit* | *Factory setting* |
|---|---|---|
| − − . − | − | 0.5 |
| 0.5...4.0 | °C | |

**Effect**

The switching differential for 2-position control will be changed.
Entry:

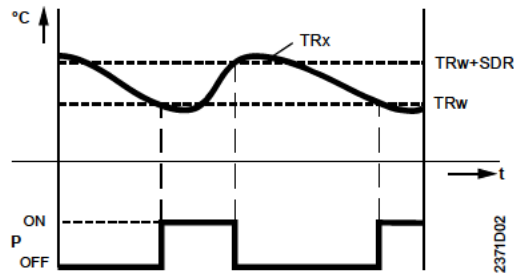| − − . − | Switching differential is inaktiv |
|---|---|
| | • The pump always remains activated |
| Decrease: | Switching differential will become smaller |
| | • The pumps are switched on and off **more often** |
| | • The room temperature varies within a **narrower** band |
| Increase: | Switching differential will become greater |
| | • The pumps are switched on and off **less often** |
| | • The room temperature varies within a **wider** band |

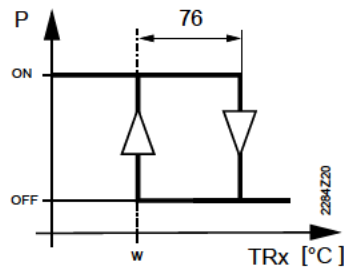| Room temperature control | With pump heating circuits, the amount of heat supplied is controlled by switching the pumps on and off. This is accomplished with 2-position control by means of the room temperature's switching differential. |
|---|---|

Functioning



**Legend**

| TRx | Actual value of the room temperature |
|---|---|
| TRw | Room temperature setpoint |
| SDR | Switching differential of room temperature |
| ON | Switch-on point |

Switching differential

| Pump ON | TRx | = | TRw |
|---|---|---|---|
| Pump OFF | TRx | = | TRw + SDR |



**Legend**

| TRx | Actual value of the room temperature |
|---|---|
| TRw | Room temperature setpoint |
| SDR | Switching differential of room temperature |
| P | Pump (ON / OFF) |
| w | Setpoint |
| △ | Switch-on point |

Note

The heating circuit pumps are controlled not directly by the QAA73.110, but by boiler control. For this reason, this functionality is not ensured by the room unit alone.

# 4.18 Adaption of the heating curve

**Description**

The adaption facility learns from the different heating situations and matches the control to the heating circuit at regular intervals. Adaption of the heating curve takes place automatically, which means that it need not be adjusted manually.

**Line 77**

1. Press the line selection buttons to select line 77.
1. Press the + / – buttons to select the type of heating curve adaption.

| Setting range | Unit | Factory setting |
|---|---|---|
| Inactive / active | – | Active |

**Effect**

The setting will switch automatic adaption of the heating curve on or off.

Entry:

| Inactive | No adaption: The heating curve settings are maintained. |
|---|---|
| Active | Automatic adaption: The heating curve will automatically be adapted as soon as the operating level "Nominal room temperature setpoint" is used. |

Note

Adaption acts according to line 75 "Room influence".

**Adaption**

The adaption facility automatically matches the heating curve to the type of building construction and the heating requirements. Adaption gives consideration to room temperature deviations, outside temperature characteristics and adaption sensitivity.

Note

To achieve an optimum adaptation, the following situations should occur as rarely as possible - especially after commissioning - since this would reset certain calculations required for the adaptation:
– Manual correction of heating curve
– Power failure
– Changes to the room temperature setpoint

Process

Every day at midnight, the room temperature control differential of the previous day is evaluated. This evaluation leads to an automatic readjustment of the heating curve.

- Simple adaption (range )
  At attenuated outside temperatures below 4 °C, it is only the slope of the heating curve that is adapted.
  In this temperature range, the readjustment is weighted with factor f2 and adaption sensitivity 2.

- Combined adaption (range )
  At attenuated outside temperatures of between 4 and 12 °C, it is partly the slope and partly the parallel displacement that are adapted.
  In this temperature range, the readjustment of the parallel displacement is weighed with factor f1 and adaption sensitivity 1.
  In this temperature range, the readjustment of the slope is weighted with factor f2 and adaption sensitivity 2.

- No adaption (range )
  At attenuated outside temperatures above 12 °C, the heating curve will not be adapted

Diagram

Example using a nominal room temperature setpoint of 20 °C.
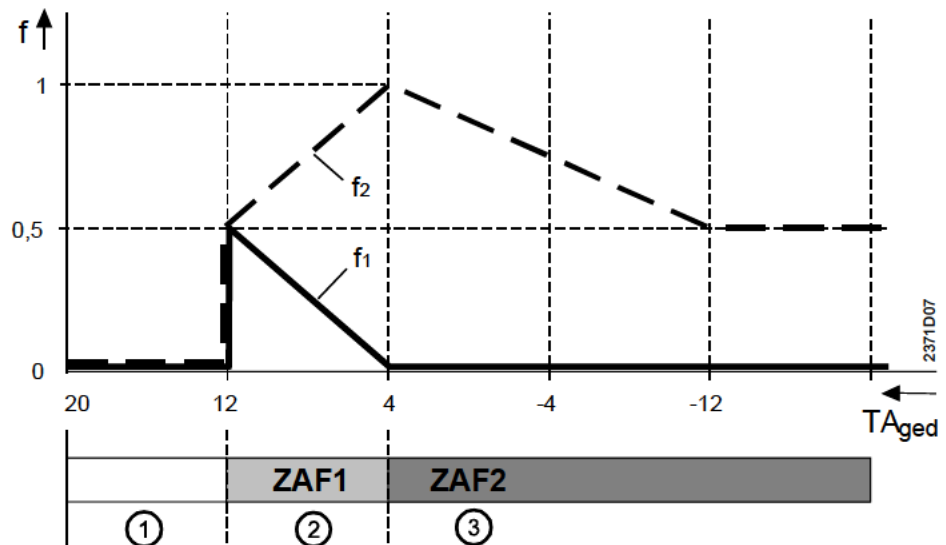


| | | |
|---|---|---|
| f | Factor | |
| f1 | Factor for parallel displacement | |
| f2 | Factor for slope | |
| TAged | Attenuated outside temperature | |
| ZAF1 | adaption sensitivity 1 | |
| ZAF2 | adaption sensitivity 2 | |

## 4.19 Maximum forward shift for optimum start control

**Description**

Maximum forward shift is a limit function for limiting the switch-on point with optimum start control. It is active only when room influence is used.

**Line 78**

1. Press the line selection buttons to select line 78.
2. Press the + / – buttons to select the type of building construction.

| Setting range | Unit | Factory setting |
|---|---|---|
| 0 ... 360 | min | 100 |

**Effect**

| | |
|---|---|
| 0 | Optimum start control switched off |
| 10 ... 360 | Optimum start control switched on |

Note

Optimum start control acts according to line **75** "Room influence".

**Optimum start control**

The maximum forward shift for optimum start control can be set between 0 and 360 minutes. Setting 0 means that optimum stop control is deactivated.

During non-occupancy hours, the heating is maintained at the reduced level. Towards the end of the setback period, optimization switches the control back to the nominal temperature level.

Optimization calculates the changeover time such that, at the start of occupancy, the room temperature will have reached the nominal setpoint.

The switch-on point for the heating system (change to the nominal temperature level) is selected such that, at the start of occupancy according to the heating program, the room temperature reached will be the setpoint minus 0.25 K.

Note

Optimum start control only acts on the first occupancy period of the day.

## 4.20 Maximum forward shift for optimum stop control

**Description**

Maximum forward shift is a limit function for limiting the switch-off point with optimum stop control. It is active only when room influence is used.

**Line 79**

1. Press the line selection buttons to select line 79.
2. Press the + / – buttons to select the type of building construction.

| Setting range | Unit | Factory setting |
|---|---|---|
| 0 ... 360 | min | 30 |

**Effect**

| | |
|---|---|
| 0 | Optimum stop control deactivated |
| 10 ... 360 | Optimum stop control activated |

Note

Optimum stop control acts according to line 75 "Room influence".

**optimum stop control**

The maximum forward shift for optimum stop control can be set between 0 and 360 minutes.  Setting 0 means that optimum stop control is deactivated.

Basic Documentation QAA73.110 Room unit
**Error! Style not defined.**

During occupancy hours, the heating is maintained at the nominal level. Towards the end of the occupancy time, the control switches to the reduced level.

Optimization calculates the changeover time such that, at the end of occupancy time, the room temperature will be 0.5 °C below the nominal setpoint (early shut-down).

**Note**

Optimum stop control only acts on the last occupancy period of the day.

## D.h.w.

## 4.21  Reduced setpoint of the d.h.w. temperature

**Description**

Reduction of the d.h.w. temperatures outside main occupancy times.
The time switch integrated in the room unit automatically switches between main and secondary occupancy times.
D.h.w. is at a high temperature level only if required. This saves energy by reducing the temperature when not in use.
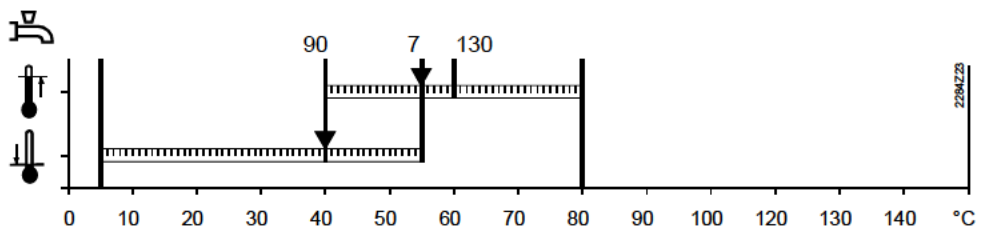
**Line 90**

1.  Press the line selection buttons to select line 90.
2.  Press the + / – buttons to adjust the reduced setpoint of the d.h.w. temperature.

| Setting range | Unit | Factory setting |
|---|---|---|
| 8...TBWw | °C | 40 |

TBWw     Nominal d.h.w. temperature setpoint

**Effect**

The temperature setpoint during reduced d.h.w. operation will be changed.



7     Nominal d.h.w. temperature setpoint
90    Reduced setpoint of the d.h.w. temperature
130   Maximum nominal setpoint of d.h.w. temperature

**D.h.w. temperature setpoints**

D.h.w. heating has 2 different setpoints that can be used:

- Nominal d.h.w. temperature setpoint
  Produces the d.h.w. temperature required during the main occupancy times

- Reduced setpoint of the d.h.w. temperature
  Produces the d.h.w. temperature required outside the main occupancy times

The periods of time during which these d.h.w. temperature setpoints shall be used can be set on line 91.

## 4.22  Release of d.h.w. heating

**Description**

Makes it possible to limit the period of time during which d.h.w. heating at the nominal setpoint is released. D.h.w. heating at the nominal setpoint can thus be released as required by the users.

Siemens Building Technologies
HVAC Products

Basic Documentation QAA73.110 Room unit
**Error! Style not defined.**

CE1P2284en
19.06.2002

| | |
|---|---|
| **Line 91** | 1. Press the line selection buttons to select line 91. |
| | 2. Press the + / – buttons to enter the required period of time during which d.h.w. heating at the nominal setpoint shall be released. |

| *Setting range* | *Unit* | *Factory setting* |
|---|---|---|
| 24h / day, TSP HC – 1h<br>TSP HC, TSP d.h.w. | – | TSP HC – 1h |

**Effect**

The setting defines the period of time during which d.h.w. heating at the nominal setpoint is released. Outside this period of time, the reduced d.h.w. setpoint applies. There is one exception, however, function "D.h.w. push" (function with no setting). Release of d.h.w. heating to the nominal setpoint takes place when using the following settings:

| | |
|---|---|
| 24 h/day | 24 hours per day |
| TSP HC – 1h | According to the heating circuit time switch program(s) with a forward shift of one hour |
| TSP HC | According to the heating circuit time switch program(s) |
| TSP d.h.w. | According to the d.h.w. time switch program |

## 4.23 Legionella function

**Description**

The legionella function ensures that the d.h.w. in the storage tank will periodically be raised to a temperature of at least 60 °C, thus making certain that potential legionella viruses will be killed.

Important

Diese Funktion darf für Brauchwassersysteme mit Durchlauferhitzer **nicht** eingeschaltet sein!

| | |
|---|---|
| **Line 92** | 1. Press the line selection buttons to select line 92. |
| | 2. Press the + / – buttons to activate or deactivate the legionella function. |

| *Setting range* | *Unit* | *Factory setting* |
|---|---|---|
| off / weekly/ daily | – | weekly |

**Effect**

The setting activates or deactivates the legionella function.

Entry:

| | |
|---|---|
| OFF | Function inactive |
| Weekly | ON: Function is activated every Monday morning when d.h.w. is heated up for the first time and lasts a maximum of 2.5 hours. The d.h.w. is heated up to the adjusted legionella setpoint. |
| Daily | Function is activated every day when d.h.w. is heated up for the first time and lasts a maximum of 2.5 hours. The d.h.w. is heated up to the adjusted legionella setpoint. |

Notes

- If on the starting day of the legionella function, d.h.w. is not heated, or if the function is aborted, it will be repeated the next day when d.h.w. is heated for the first time.
- This function is possible only when d.h.w. heating is released by the d.h.w. heating program.

## 4.24  D.h.w. operating mode selector

**Description**

The operating mode button for d.h.w. on the controller front an be extended by the d.h.w. operating mode "ON eco". This additional operating mode is used for d.h.w. systems with instantaneous heating. Also refer to section "D.h.w. operating mode".

**Line 93**

1. Press the line selection buttons to select line 93.
2. Press the + / – buttons to release or lock operating mode "ON eco".

| Setting range | Unit | Factory setting |
|---|---|---|
| Without ECO / With ECO | – | Without ECO |

**Effect**

When using setting "With ECO", the user can also select operating mode "ON Eco" via the d.h.w. operating mode button.

## 4.25  Control of d.h.w. circulating pump

**Description**

The d.h.w. circulating pump is used for circulating the d.h.w. D.h.w. circulation prevents the d.h.w. from cooling down by the time it reaches the consumer. With this setting, the temporal dependence for operation of the circulating pump can be selected.

**Line 94**

| Setting range | Unit | Factory setting |
|---|---|---|
| Release of d.h.w.  / Prog 2 | – | D.h.w. program |

**Release of d.h.w.** – according to d.h.w. release
The d.h.w. circulating pump is activated and deactivated according to the d.h.w. release selected on line 91. During that period of time, the circulating pump operates continuously, without giving consideration to actual d.h.w. heating.

**Prog 3** – according to time switch program 3
The d.h.w. circulating pump is controlled according to the switching times of time switch program 3. It is thus possible to operate the circulating pump only during the times of usage individually set.

**Prog 2** - according to time switch program 2
The d.h.w. circulating pump is controlled according to the switching times of time switch program 2. It is thus possible to operate the circulating pump only during individually set times of usage.

Forward shift

The circulating pump does not follow any forward shift. This means it is operated in accordance with the actual times of usage.

### *General*

## 4.26  Programming

**Description**

If the parameter values shall not be changed, entry can be locked.

**Line 95**

1. Press the line selection buttons to select line 95.
2. Press the + / – buttons to activate or deactivate programming.

| Setting range | Unit | Factory setting |
|---|---|---|
| Locked / released | – | Released |

**Effect**

Released    The parameter values can be changed.

locked    The parameter values can still be displayed, but changes are no longer possible.
When pressing the + / – buttons, the display shows symbol ⫪ in place of the value.

**Temporary cancellation of programming**

On the programming or parameter setting level, locked programming can temporarily be deactivated. To do this, the down button ( ▾ ) and the (+) button must be pressed simultaneously for at least 3 seconds. This temporary cancellation of the programming lock is maintained until the next change to the Info level is made.

**Continuous cancellation of programming**

To have programming continuously released, the down button ( ▾ ) and the (+) button must be pressed simultaneously for at least 3 seconds. Then, parameter "Programming" can be set to **released**.

## 4.27  Clock time master

**Description**

The clock time of the QAA73.110 and the clock time of the connected boiler control can be synchronized. In that case, one of the units will be defined as the clock time master, and the other unit adopts the time of day from the master.

**Line 96**

1. Press the line selection buttons to select line 96.
2. Press the + / – buttons to define the clock time master.

| Setting range | Unit | Factory setting |
|---|---|---|
| QAA73, external | – | QAA73 |

**Effect**

The setting defines the clock time master.

Display:

QAA73 QAA73.110 is the clock time master. OpenTherm transmits the time of day to the boiler control, either periodically or after an adjustment.

Externally The QAA73.110 adopts the time of day periodically (every 5 minutes) from the boiler control. In that case, the time of day cannot be readjusted on the QAA73.110.

## 4.28  Winter- / summertime changeover

**Description**

This function enables the yearly clock to automatically switch to wintertime.

**Line 97**

1. Press the line selection buttons to select line 97.
2. Press the + / – buttons to set the date of changeover.

| Setting range | Unit | Factory setting |
|---|---|---|
| 1. Jan ... 31. Dec | dd.mm | 25. March |

**Effect**

On the Sunday following the set date, the time of day of the room unit will switch to summertime. For that purpose, the time of day is shifted forward by one hour.

**International standards**

In compliance with international standards, the change from winter- to summertime is made on the last Sunday in March, and the change from summer- to wintertime on the last Sunday in October. The factory setting of the room unit meets this requirement as the Sundays in question lie in the adjustable period of time between the factory setting and the last day of the relevant month.

# 4.29  Summer- / wintertime changeover

**Description**

This function enables the yearly clock to automatically switch to wintertime.

**Line 98**

1.  Press the line selection buttons to select line 98.
2.  Press the + / – buttons to set the date of changeover.

| *Setting range* | *Unit* | *Factory setting* |
| --- | --- | --- |
| 1. Jan ... 31. Dec | dd.mm | 25. Oct |

**Effect**

On the Sunday following the set date, the time of day of the room unit will switch to wintertime.
For that purpose, the time of day is shifted backward by one hour.

# 5 Description of the OEM settings

*Space heating OEM*

## 5.1 Maximum setpoint (TRwMax) and minimum setpoint (TRwMin) of room temperature

**Description**

The nominal setpoint of the room temperature can be adjusted within a certain setting range. That setting range is limited by the maximum room temperature setpoint (TrwMax) and the minimum room temperature setpoint (TrwMin).

**Line 100, 101**

1. Press the line selection buttons to select line **100** or **101**.
2. Press the + / – buttons to set the maximum rate of increase.

| Line | Setting range | Unit | Factory setting |
|------|---------------|------|-----------------|
| 100 | TRwMin ... 35 | °C | 35 |
| 101 | 4... TRwMax | °C | 10 |

**Effect**

The upper or lower limit of the nominal room temperature setpoint will be changed.

## 5.2 Gain factor of room influence (KORR)

**Description**

Defines the influence of room temperature setpoint deviations on the controlled system. The room influence can be activated and deactivated (operating line 75).

**Line 102**

1. Press the line selection buttons to select line 102.
2. Press the + / – buttons to set the gain factor.

| Setting range | Unit | Factory setting |
|---------------|------|-----------------|
| 0...20 | – | 4 |

**Effect**

Changing this setting has the following impact:

Increase: Authority of room influence will increase

Decrease: Authority of room influence will decrease

**Correction**

The following example shows how and according to which formula the room temperature setpoint will be corrected.

Example with formula

Room temperature setpoint $\quad$ TRw $\quad$ = Actual room temperature

$\qquad\qquad\qquad\qquad\qquad\qquad$ TRx $\quad$ = 22 °C

Correction factor $\qquad\qquad$ KORR $\quad$ = 8
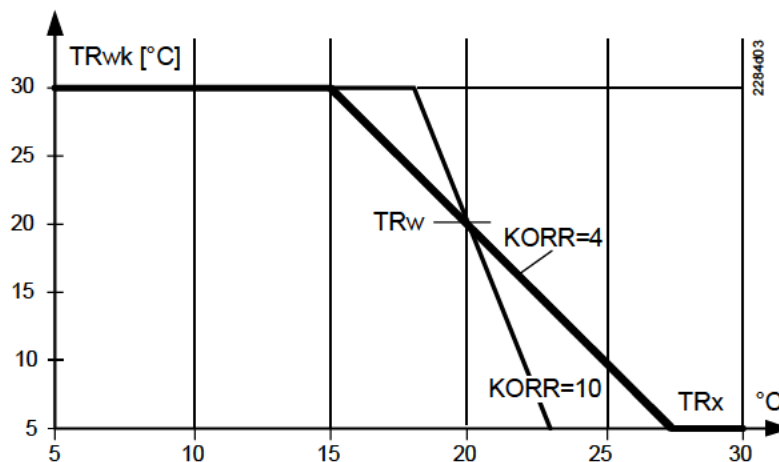
$$TRwk = TRw + \frac{KORR}{2}\ (TRw - TRx)$$

$$TRwk = 20\ °C + 4\ (20\ °C - 22\ °C) = 12\ °C$$

KORR $\qquad$ Constant for room influence
TRx $\qquad$ Actual value of the room temperature
TRw $\qquad$ Room temperature setpoint
TRwk $\qquad$ Room temperature setpoint (readjusted)

As the example shows, if the room temperature is 2 °C too high, the room influence temporarily shifts the room temperature setpoint down to a level of 12 °C.

Example with graph



The corrected room temperature setpoint

Note

KORR works only if the room temperature influence on line 75 is activated.

# 5.3 Constant for quick setback (KON)

**Description**

Quick setback takes advantage of the thermal storage capacity of a building. The constant for quick setback is only active in the case of quick setback of control systems with no room influence.

**Line 103**

1. Press the line selection buttons to select line 103.
2. Press the + / − buttons to set the constant.

| Setting range | Unit | Factory setting |
|---|---|---|
| 0...20 | − | 2 |

**Effect**

The duration of quick setback will be changed.

Entry:

Increase:     Setback time will become longer
           For well insulated buildings that cool down slowly

Decrease:     Setback time will become shorter
           For poorly insulated buildings that cool down rather quickly

**Quick setback with no room influence**

Quick setback is started as soon as a change to a lower room temperature setpoint takes place (e.g. switching times in automatic mode).

The heating circuit pump will be deactivated until the quick setback time has elapsed, which is the result of setting 103, the composite outside temperature and the room temperature setpoint jump.
The quick setback time is limited to a maximum of 15 hours.

Example

The example applies to a setpoint step change of 4 °C (e.g. TRw from 20 °C to 16 °C):

| TAgem | Setting on operating line 103 | | | | | |
|---|---|---|---|---|---|---|
| | 0 | 4 | 8 | 12 | 15 | 20 |
| −20 | 0 | 0 | 0 | 0 | 0 | 0 |
| −10 | 0 | 0.5 h | 1 h | 1.5 h | 2 h | 2.5 h |
| 0 | 0 | 3 h | 6 h | 9 h | 11 h | 15 h |
| +10 | 0 | 5 h | 11 h | 15 h | 15 h | 15 h |

## 5.4 Boost of the room temperature setpoint (DTRSA)

**Description**

This function temporarily raises the room temperature setpoint so that the room will be heated up quicker.

**Note**

This function only acts on the heating circuits according to line 75.

**Line 104**

1. Press the line selection buttons to select line 104.
2. Press the + / − buttons to adjust the room temperature setpoint boost.

| Setting range | Unit | Factory setting |
|---|---|---|
| 0...20 | °C (K) | 5 |

**Effect**

The duration of boost heating will be changed.

Entry:

Increase: More setpoint boost
Heating up time will become shorter

Decrease: Less setpoint boost
Heating up time will become longer

**Boost heating**

Boost heating is started as soon as switching to a higher room temperature setpoint occurs (e.g. switching times in automatic mode).
The room temperature setpoint will be raised by the setting made on line 104 until the room is heated up (TRw - ¼ °C).
The boost produces an increase in the flow temperature setpoint.
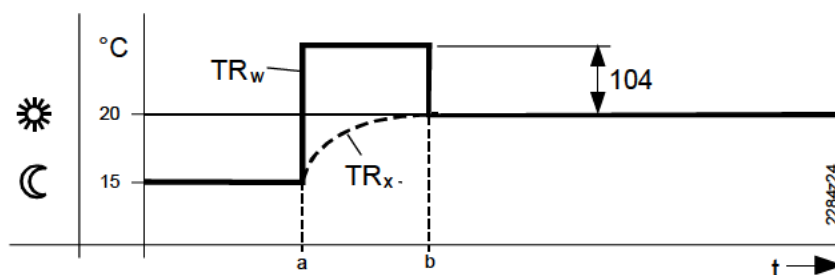


TRx  Actual value of the room temperature
TRw  Room temperature setpoint
104  Setpoint boost
t  Time

## 5.5 Limitation of rate of increase of flow temperature setpoint

**Description**

The rate of increase of the flow temperature setpoint indicates how quickly the flow temperature setpoint may rise (in K per minute). It can be limited.
The limitation set applies to both heating circuits.

**Line 105**

1. Press the line selection buttons to select line 105.
2. Press the + / – buttons to set the maximum rate of increase.

| Setting range | Unit | Factory setting |
| --- | --- | --- |
| 0 ... 15 | K/min | 5 |

**Effect**

The rate of increase will be limited by the setting.

## 5.6 Measured value correction of room temperature

**Description**

Calibration of the room sensor ensures that the display of the effective room temperature will be more accurate.

**Line 106**

1. Press the line selection buttons to select line 106.
2. Press the + / – buttons to select the required correction of the sensor characteristic.

| Setting range | Unit | Factory setting |
| --- | --- | --- |
| −3 ... +3 | ºC | 0 |

**Effect**

The sensor characteristic is displaced parallel by the selected value.
When entering a negative value, the temperature measured will be lowered by that value, when entering a positive value, it will be raised by that value.

### *D.h.w. OEM*

## 5.7 Maximum d.h.w. setpoint (TBWmax)

**Description**

Function for limiting the nominal setpoint of the d.h.w. temperature. This yields the following benefits:
- Setting can be limited by the enduser
- Reduced risk of scalding
- Minimized susceptibility to scale

**Line 130**

1. Press the line selection buttons to select line 130.
2. Press the + / – buttons to adjust the maximum setpoint of the d.h.w. temperature.

| Setting range | Unit | Factory setting |
| --- | --- | --- |
| TBWw...80 | °C | 60 |

TBWw Nominal d.h.w. temperature setpoint

| Effect | The setting will ensure maximum limitation of the nominal d.h.w. temperature setpoint. |
|---|---|
| Note | A d.h.w. setpoint maximum (TBWmax) of a BMU transmitted via OpenTherm is given priority and replaces that of the controller (setting 130). |

## 5.8 Setpoint of the legionella function

**Description**

The setpoint of the legionella function is an adjustable temperature level to which the d.h.w. temperature is raised when the legionella function is activated, aimed at killing any legionella viruses that may have occurred.

**Line 131**

1. Press the line selection buttons to select line 131.
2. Press the + / – buttons to adjust the required setpoint.

| Setting range | Unit | Factory setting |
|---|---|---|
| 8...95 | °C | 65 |

**Effect**

The setting changes the d.h.w. setpoint during the period of time the d.h.w. is heated up as a result of the legionella function.

## 5.9 Dwelling time at legionella function setpoint

**Description**

The setpoint of the legionella function (operating line 92) is maintained for at least the period of time set here.

**Line 132**

| Setting range | Unit | Factory setting |
|---|---|---|
| 0...360 | min | 0 |

--- Function deactivated (no dwelling time)

**Effect**

The dwelling time starts as soon as the legionella setpoint is reached.
During the entire dwelling time, the temperature may not fall below the legionella setpoint by more than the set LMU d.h.w. switching differential (standard setting 5K + 2K). The legionella function is terminated when this criterion is met.

## 5.10 Effect of legionella function on the circulating pump

**Description**

Flushing the circulation piping ensures that the legionella viruses will also be killed in that part of the plant.

**Setting on operating line 133**

| Setting range | Unit | Factory setting |
|---|---|---|
| No / yes | | Yes |

**Effect**

| No | The circulating pump **does not run** during the time of the legionella function. |
|---|---|
| Yes | The circulating pump **runs** during the time of the legionella function, even if it would not be allowed to run based on control of the d.h.w. circulating pump (setting 94). |

➔ **Important**

If this function is deactivated, there is a risk that legionella viruses will return from the circulation piping to the d.h.w. storage tank right after the storage tank has been thermally desinfected.

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## 5.11  Info display

**Description**

The Info display can be made to appear continuously or temporarily.

**Line 150**

1.  Press the line selection buttons to select line 150.
2.  Press the + / - buttons to select the display mode.

| Setting range | Unit | Factory setting |
| --- | --- | --- |
| Temporary, continuously | – | Temporary |

**Effect**

This setting selects the display mode of the Info display:

When entering X:

| | |
| --- | --- |
| Temporary | The information selected on the Info level is displayed for only 8 minutes.  After that period of time, the display will return to the standard display (actual room temperature, time of day and time pointer) |
| Continuously | The information selected last with the Info button will be continuously displayed. |

## 5.12  Frost warning

**Description**

A frost warning can be generated depending on a selectable outside temperature.

**Line 151**

1.  Press the line selection buttons to select line **151**.
2.  Press the + / – buttons to select the required function.

| Setting range | Unit | Factory setting |
| --- | --- | --- |
| – – . –   /   –10 ... +10 | °C | 3.0 |

Note

– – . – no frost warning

**Effect**

If the outside temperature falls to the selected temperature level or drops below it, the Info display shows the actual outside temperature as a flashing value.

## 5.13  Operation

**Description**

Using this setting, operation can be locked or released.

**Line 152**

1. Press the line selection buttons to select line **152**.
2. Press the + / – buttons to select the required function.

| Setting range | Unit | Factory setting |
|---|---|---|
| Locked / released | – | Released |

**Effect**

The following operating elements are now locked, thus preventing tampering:
- Button for selecting the heating circuit's operating mode
- D.h.w. operating mode button
- Setpoint knob for nominal temperature
- Occupancy button

## 5.14  Action occupancy button

**Description**

The action of the occupancy button can be restricted to heating circuit 1 or it can apply to both heating circuits.

**Line 153**

1. Press the line selection buttons to select line 153.
2. Press the + / – buttons to select the required function.

| Setting range | Unit | Factory setting |
|---|---|---|
| On HC1 + HC2, on HC1 | – | On HC1 + HC 2 |

**Effect**

When pressing the occupancy button in automatic or continuous operation, either both heating circuits or only heating circuit 1 is acted upon.

## 5.15  Software version

**Description**

The software version installed represents the state of the software available at the time the controller was produced. It is thus possible to identify the software version without removing the unit.

**Line 199**

Press the line selection buttons to select line 199.

| Display | Unit |
|---|---|
| 00.0 ... 99.9 | – |

**Effect**

The software version will automatically be displayed on this line.
Example:        01.0
The first 2 digits give the software version The third digit gives the software revision
                (01.**0**)

# 6 Functions

**Introduction**

The functions described below require no settings. They are performed automatically but have an impact on the plant.
For the rectification of faults, planning and plant maintenance, it may therefore be very advantageous to know about their impact on plant operation.

## 6.1 Types of compensation

The room unit offers 3 types of compensation each of which generates the effective flow temperature setpoint in a different way. They are the following:

− Weather compensation
− Weather compensation with room influence
− Room compensation

Note

If no outside sensor is connected and the room sensor of the QAA73.110 fails, a fault status signal will be delivered. In that case, the room unit will change to emergency operation "with no sensor" to generate the flow temperature setpoint based on the current room temperature setpoint and a fixed outside temperature of 0 °C

### 6.1.1 Weather compensation

**Description**

With this type of compensation, the building's heat losses are compensated by an adequate flow temperature.
The colder the weather, the quicker the building cools down and the greater the heating circuit's heat demand.
With this type of compensation, it must be ensured that the heating curve is correctly set, because the room unit gets **no feedback from the space** whether the amount of heat supplied meets the demand of the users.

**Prerequisites**

The room influence (line 75) must be set to "None" and, in addition, an outside sensor must be connected.

### 6.1.2 Weather compensation with room influence

**Description**

Compared to pure weather compensation, this type of compensation offers enhanced comfort because with the room influence, the room unit gets a feedback from the space.

**Prerequisites**

The room influence (line 75) must be activated for the required heating circuits and, in addition, an outside sensor must be connected.

**Room influence**

The room influence acts on the room temperature setpoint. The deviation of setpoint / actual value of the room temperature is multiplied by the correction factor KORR/2 and added to the deviation from the room temperature setpoint in the opposite direction.

Room influence acts:

• In the case of deviations of setpoint / actual value of the room temperature
• With automatic or manual changeover to a higher or lower room temperature setpoint

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### 6.1.3 Room compensation

**Description**

With pure room compensation, a PID control algorithm is activated. This is the preferred control mode if the room temperature is the only compensating variable available. The selected control algorithm gives consideration to both the actual value of the room temperature and the current slope (gradient). The P-part is generated by the control deviation, the D-part from the gradient of the room temperature. The I-part suppresses continuous deviations of setpoint / actual value.

**Prerequisites**

The room influence (line 75) must be activated for the required heating circuits and, in addition, no outside sensor may be connected.

**Effect**

The flow temperature and thus the room temperature are controlled as a function of the actual room temperature and its current development. For example, if the room temperature rises slightly, the flow temperature will immediately be reduced even if there is deviation of setpoint / actual value apparent yet. To prevent continuous deviations, the I-part of PID control keeps the room temperature at the required level.

## 6.2 Automatic 24-hour heating limit

**Description**

This is a fast-acting savings function since the heating is switched off when there is no more demand for heat. Economical operation is ensured throughout the year since manual switching off is no longer required, especially during intermediate seasons.

**Notes**

- The automatic 24-hour heating limit does not function in continuous operation ⊗
- When the 24-hour heating limit is activated, the Info line displays Eco

### 6.2.1 Without room influence

**Introduction**

If no room influence is activated, the 24-hour heating limit switches depending on the flow temperature setpoint and the adjusted setpoint ☀, ☾ or ❄.

**Process**

The temperature basis used for this function are the flow temperature setpoint and the current room temperature setpoint.

**Switching off**

If the flow temperature setpoint falls below the room temperature setpoint plus a correction value, the heating will be switched off.

Heating OFF:

| TVw | = | TRw +2 S/10 |
|-----|---|-------------|

**Switching on**

If the flow temperature setpoint exceeds the room temperature setpoint plus a correction value, the heating will be switched on.

Heating ON:

| TVw | = | TRw +4 S/10 |
|-----|---|-------------|

| TVw | Flow temperature setpoint |
|-----|---------------------------|
| TRw | Room temperature setpoint |
| s   | Slope of the heating curve |

## 6.2.2 With room influence

**Introduction**

If the room influence on the heating circuits is activated, the room influence readjusts the flow temperature setpoint of the relevant heating circuits. In that case, the 24-hour heating limit switches depending on the corrected flow temperature setpoint and the adjusted setpoint ☀, ☾ or ❄.

**Process**

The temperature basis used for this function are the values of the readjusted flow temperature setpoint and of the current room temperature setpoint.

**Switching off**

If the flow temperature setpoint corrected by the room influence falls below the room temperature setpoint plus a correction value, the heating will be switched off.

- Heating's switch-off point:

$$TVwk \leq TRw + 2\frac{S}{10} - \frac{KORR}{16}$$

**Switching on**

If the flow temperature setpoint corrected by the room influence exceeds the room temperature setpoint plus a correction factor, the heating will be switched on.

- Heating's switch-on point:

$$TVwk \geq TRw + 4\frac{S}{10} - \frac{KORR}{16}$$

KORR   Factor for room influence (line 102)
TVwk   Flow temperature setpoint corrected by the room temperature
TRw    Room temperature setpoint
s      Slope of the heating curve

## 6.3 Quick setback with room influence

**Description**

The thermal storage capacity of a building is utilized when changing to a lower setpoint. The quick setback described here only acts on the heating circuits where room influence is active.

**Process**

Quick setback is started as soon as a change to a lower room temperature setpoint takes place (e.g. switching times in automatic mode).
Quick setback is terminated as soon as the actual room temperature reaches the level of the respective room temperature setpoint (TRx = TRw).
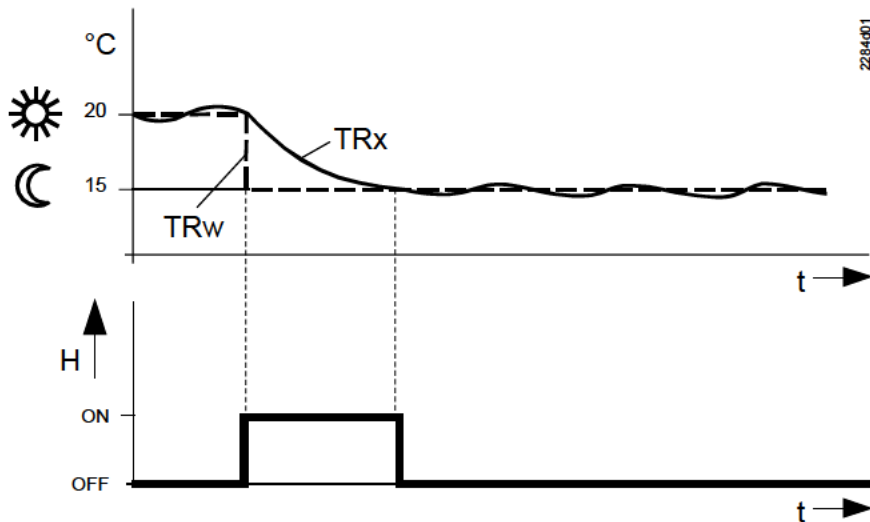


| TRx | Actual value of the room temperature |
| TRw | Room temperature setpoint |
| H | Quick setback |

**Effect**

Due to the readjustment of the room temperature setpoint, the heating circuit pump will be switched off until the quick setback process is terminated. This means that the room temperature falls quicker since the supply of heat from the flow or boiler is cut off.

**Note**

If no room influence is selected, quick setback will be provided not by this process but according to the quick setback function 103.

## 6.4 D.h.w. push

**Benefit**

Availability of d.h.w. is also ensured during non-occupancy times.

**Description**

If, due to unexpected demand, the d.h.w. storage tank is emptied, the d.h.w. push provides one-time charging of the storage tank until the nominal d.h.w. temperature setpoint is reached.

**Exception**

The d.h.w. push is not active when instantaneous d.h.w. heating is used.

**Process**

The d.h.w. push is triggered as soon as the actual d.h.w. temperature falls by more than 10 °C below the reduced d.h.w. setpoint.

**Effect**

When the d.h.w. push is triggered, the d.h.w. is heated once until its nominal temperature setpoint is reached.
Then, the active d.h.w. program applies again.

Example
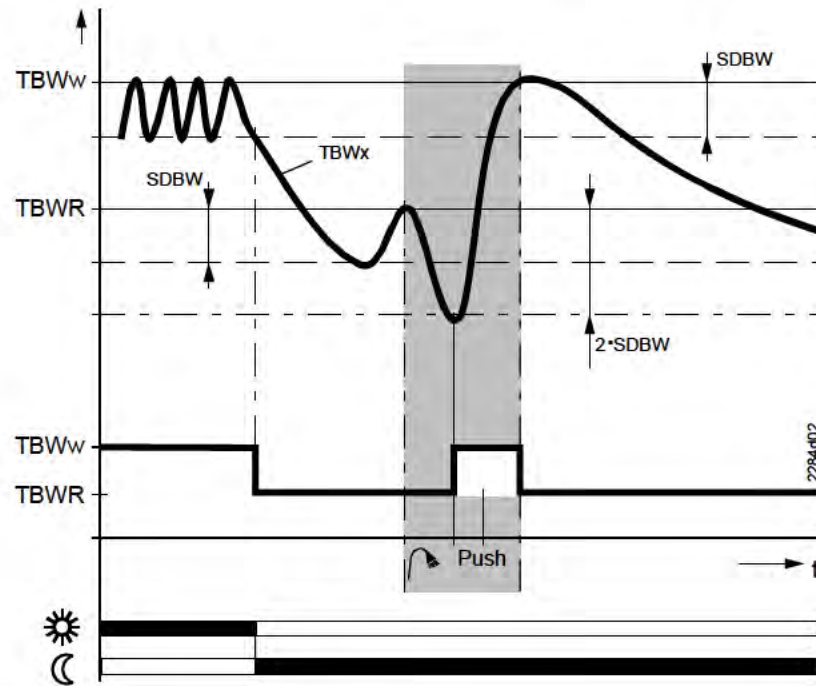


| | |
|---|---|
| SDBW | Switching differential d.h.w. |
| TBWw | Nominal d.h.w. temperature setpoint |
| TBWR | Reduced setpoint of the d.h.w. temperature |

## 6.5 Frost protection

**Description**

Frost protection functions prevent plant and room temperatures from falling below a certain level, thus protecting the heating plant and the rooms from freezing.

### 6.5.1 Frost protection for the building

**Effect**

The room unit's frost protection function ensures that the room temperature will not fall below the selected frost protection value as long as the heating plant operates.

### 6.5.2 Frost protection for the boiler and the d.h.w.

⚠ **Caution**

Frost protection for the boiler and the d.h.w. must be ensured by the boiler control.

# 7 Dimensions

**Room unit**



96

96 91 96

47

2284M02

**Panel cutout**



96

$92 ^{+0.8}_{-0}$

96

$92 ^{+0.8}_{-0}$

1...2

2284M01
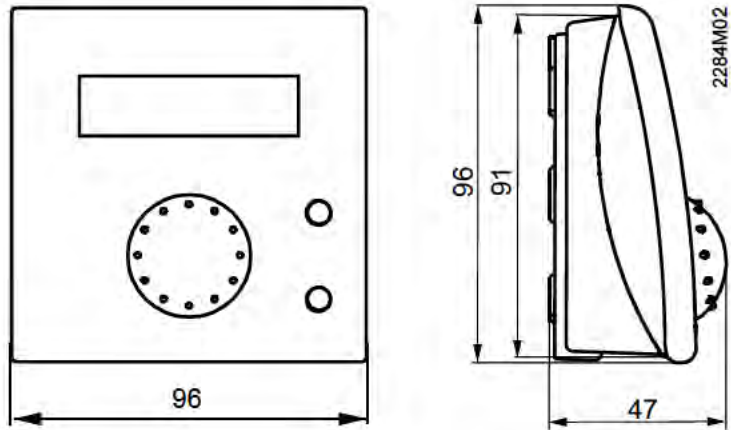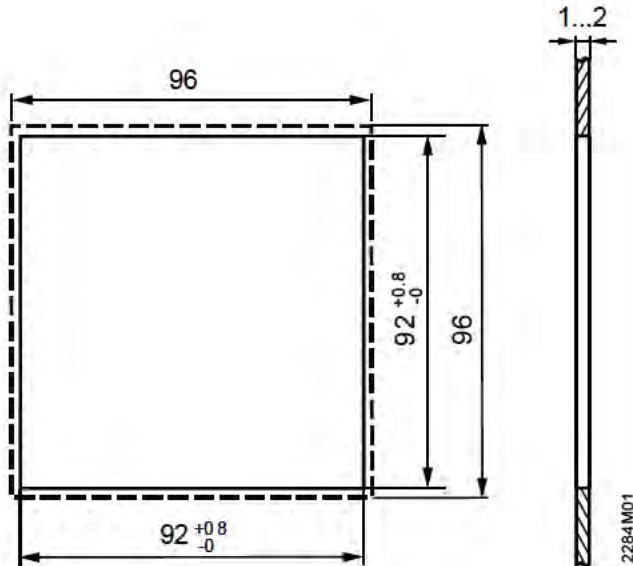
# 8 Technical data

| | | |
|---|---|---|
| Operating voltage | OpenTherm Bus | |
| | Terminals | 2-wire (interchangeable) |
| | Cable length | max. 50 m |
| | Cable resistance | max. 2 x 5 Ω |
| | Power consumption | 30 mW (typically) |
| Protection | Safety class | III to EN 60 730<br>when mounted in compliance with regulations |
| | Degree of protection of housing | IP 20 to EN 60529 |
| | Contamination | environment to EN 60730 |
| Environmental conditions | Operation | IEC 721-3-3 class 3K 5 |
| | Temperatures | 0..0.50 °C |
| | Humidity | < 85 % r.h. |
| | Transport | IEC 721-3-2 class 2K 3 |
| | Temperatures | -25...70 °C |
| | Humidity | < 95 % r.h. |
| | Storage | IEC 721-3-1 class 1K 3 |
| | Temperatures | –25...70 °C |
| | Humidity | < 95 % r.h. |
| Standards | CE conformity | |
| | EMC directive | 89/336/EEC |
| | – Immunity | EN 50 082-1, EN 50 082-2 |
| | – Emissions | EN 50 081-1, EN 50 081-2 |
| | Low voltage directive | 73/23/EEC |
| | – Electrical safety | EN 60 730-1, EN 60 730-2-9 |
| Room sensor | Measuring range | 0..00.45 °C |
| Other features | Backup of time switch | min. 12 h |
| | Software class | A to EN 60 730 |
| | Weight | approx. 0.17 kg |

# Index

# Corrigenda

The following changes have been made in this document compared to the last edition. The page numbers are those of the present edition. The pages numbers are those of the present edition.

| Page | Modification: |
|------|---------------|
| 1 | Former version  V1.0 of 16.08.2001          New version  V1.1 of 23.04.2002 |
| 15 | Setting lines 10 to 36  Function text changed<br>Setting lines 30 to 36  Footnote * amended |
| 17 | Setting lines 63, 64 added<br>Setting line 92  Setting range and basic value changed<br>Setting line 94 added<br>Setting line 95  Completely changed |
| 20 | Setting lines 132, 133 added<br>Setting line 152  Function text changed |
| 23 | Info button line 3 changed |
| 28 | Description changed |
| 29 | Entry of individual days HC2 to TSP changed<br>Chapter Switching times  HC2 to TSP changed |
| 31 | Block "Effect and standard values"  Changed to TSP |
| 34 | Title "Maintenance indication" changed to "Boiler status code"<br>Table  Boiler changed to maintenance, lines  Floor curing and modem added |
| 38 | Section  Current flow temperature setpoint HC1 and HC2 added |
| 48 | Chapter "Legionella funktion"  Setting range and description of block "Effect" changed |
| 49 | Chapter "Control of d.h.w. circulating pump" changed |
| 50 | Chapter "Operating lock for programming " changed |
| 57 | Chapter "Dwlling time of legionella funkcion" and "Effect of legionella funkcion on circulating pump" added |
| 59 | Section "Operating lock" added |
| 65 | Panel thickness changed |