

Operating instructions

RYMASKON[®] 500-BACnet

RYMASKON[®] 500-Modbus

Room control unit with colour touch screen,
with BACnet or Modbus connection

Thermostat for controlling and regulating
temperature, light, air conditioning and blind (1 zone)



INSTALLATION AND COMMISSIONING

Commissioning is mandatory and may only be performed by qualified personnel! Please read these instructions prior to installation and commissioning, and comply with the specifications that they contain!

Mounting shall take place while observing all relevant regulations and standards applicable for the place of measurement (e.g. such as welding instructions, etc.). It is particularly important to comply with the following:

- VDE / VDI technical temperature measurements, directives, measurement set-ups for temperature measurements.
- EMC directives
- It is imperative to avoid parallel routing of current-carrying lines
- We recommend the use of shielded cables with the shielding attached to the DDC/PLC at one side.

Before mounting, make sure that the existing technical parameters of the measuring instrument comply with the actual conditions at the place of utilization, particularly with regard to:

- the measuring range
- the maximum permissible temperature and humidity
- the protection type and protection class
- oscillation, vibration and impacts must be avoided (< 0.5 g)

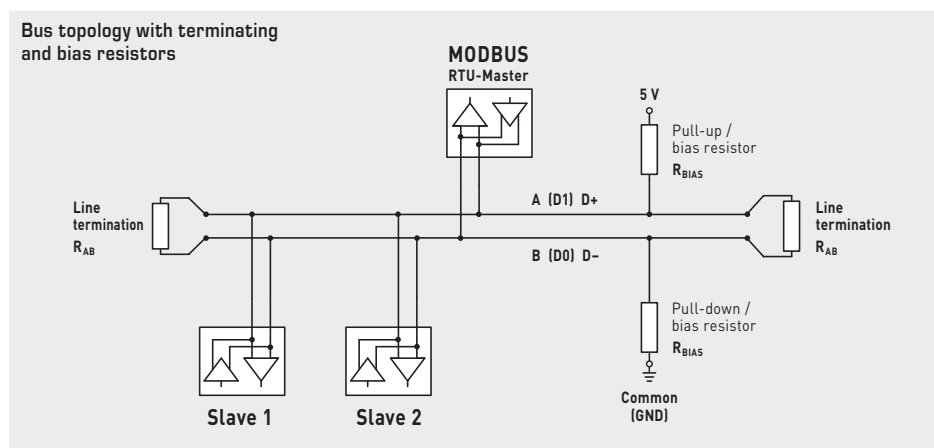
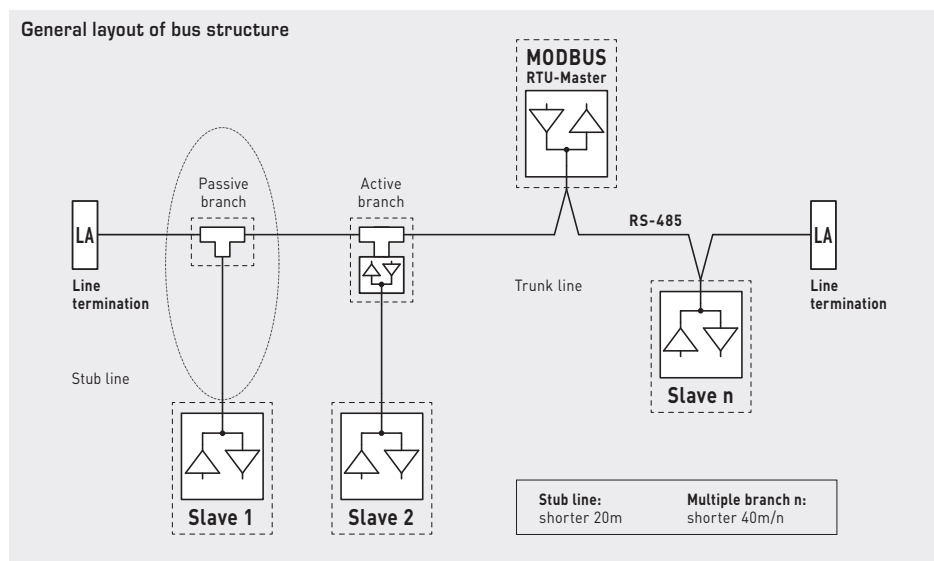
IMPORTANT NOTES

Only the valid edition of our conditions and the valid "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry" (ZVEI conditions) and the supplementary clause "Extended Retention of Title" apply as the terms and conditions regulating this purchase.

The following points must also be complied with:

- These instructions must be read before installation and commissioning, and all of the specifications that they contain must be complied with.
- The units must only be connected to an extra-low safety voltage in a de-energised condition. Use shielded cables to avoid damage to the unit and faults (e.g. resulting from voltage induction), avoid parallel routing with live lines, and comply with the EMC directives.
- This unit must only be used for its intended purpose, whereby the applicable VDE safety regulations and all regulations issued by the regional and national regulatory authorities, TÜV and local energy providers must be complied with. The purchaser must ensure that the relevant building and safety regulations are complied with, and must avoid hazards of all kinds.
- No warranty or liability whatsoever will be accepted for defects and damage arising from improper use of this unit.
- The warranty and liability excludes consequential damage caused by a fault in this unit.
- The units must only be installed and commissioned by qualified personnel.
- Only the technical data and connecting conditions specified by the installation and operating instructions which are included in the scope of delivery of the unit apply. Deviations from the depictions contained in the catalogue are not additionally listed, and are possible as a result of technical progress and the continuous improvement of our products.
- Any alterations made to the unit by the user will void the warranty.
- This unit must not be installed close to sources of heat (e.g. radiators) or their heat flow. Avoid direct solar irradiation or heat radiation from similar sources (powerful lamps, halogen spotlights).
- Operating this unit close to other devices that do not comply with EMC directives may influence the functionality thereof.
- This unit must not be used for monitoring purposes which serve the purpose of protecting persons against hazards or injury, as an Emergency Stop switch on systems or machinery, or for any other similar safety-related purposes.
- The housing dimensions and the dimensions of accessories may differ slightly from the specifications of these instructions.
- Changes to these documents are not permitted
- In cases of complaint, we will only accept complete units returned in their original packaging.

INSTALLATION



Terminating resistors may only be installed at the ends of the bus line.

No more than two line terminators are permitted in networks without repeaters.

The bias resistors for bus level definition in the idle state are usually activated at the Modbus master / repeater.

The maximum number of subscribers per Modbus segment is 32 devices.

With a greater number of subscribers, the bus must be subdivided into several segments separated by repeaters. The subscriber address can be set from 1 to 247.

A cable with a twisted-pair data line / power supply line and copper shielding braid must be used for the bus line. The line capacitance should be less than 100 pF/m (e.g. Profibus cable).

CONFIGURATION

The communication interface must be configured from the unit (see parameter table - System page 22). All other parameters can also be changed via the Modbus master.

Changed communication parameters are activated when Setting Mode is exited; the unit performs a soft reset. Alternatively, the new settings can also be activated by switching the unit off and on again (deactivate and reactivate supply voltage).

The configuration parameters are stored in the non-volatile memory of the controller.

After changing the configuration via the display, the new parameters are saved when the controller returns to Normal Display Mode.

If the changes were made via the bus (Modbus), the parameter for updating the non-volatile memory is required in order to force saving. If configuration takes place via the display, the parameters are saved after an expiry time or when the settings menu is closed.

An **existing configuration** can be **transferred** to other units using the **RYMASKON USB-CT** configuration tool (see next page).

RYMASKON USB-CT

Configuration tool
 for rapid transfer of the
 unit configuration

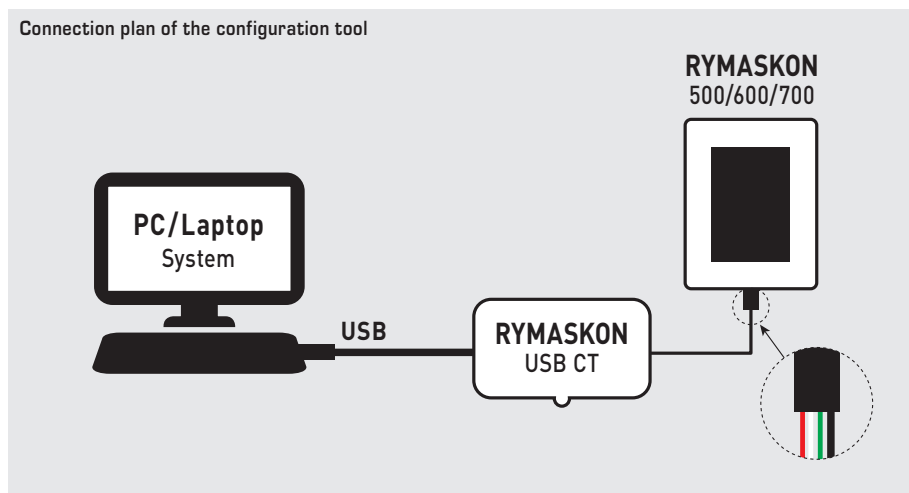


A configuration can be transferred to other units.
 To do so, a unit must first be configured using the display via the bus.

After which the **RYMASKON USB-CT**
 and software on the PC can be used to transfer the configuration to other units.

The current software and detailed information are available in the **RYMASKON USB-CT**
 download area (spluss.de/r/2L6VM.htm).

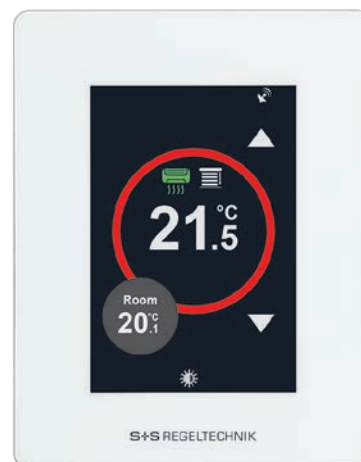
Connection plan of the configuration tool



KEY FEATURES

Basic model type 510

- 24 V AC/DC voltage supply
- 3.5 inch touch display with background lighting
- Modbus or BACnet
- Wall mounting on standard in-wall flush boxes
- Integrated temperature sensor (basic equipment)
- Integrated humidity sensor
- Regulation of heating or cooling via relay (2-point regulator)
- Operation of temperature, light, air conditioning and sun protection (1 zone) via touch display
- 2 resistance inputs (NTC10K) for external temperature sensors
- 1 digital input (potential-free)
- 1 relay output (7 A), (2-point regulation)
- Operating modes Comfort (Normal), OFF, Boost, ECO, Holiday, Frost Protection



DESCRIPTIONIntroduction and
technical data

The **RYMASKON® 500 / 600 / 700** series of room control units are designed for controlling the climatic zone in residential, hotel and office rooms and individually regulate the heating/cooling steps of the internal rooms. A colour touch display with modern icons is used for the visual display and operation at the location. The product range is characterised by the variety of combination options of the individual components.

The **RYMASKON® 500 Thermostat** series regulates a **heating or cooling valve** directly through a relay. The **sun protection** (blinds, shutters) can be controlled in one zone via the bus. Through the appropriate symbols, it is possible to control the light and air conditioning instead of the sun protection. In addition to the integrated temperature sensor, two external temperature sensors (NTC10K) can also be connected. A measuring element for relative humidity is also available. The devices are used in room climate technology and heating/cooling systems, such as cooling ceilings and floor heating. Wall mounting is performed on standard in-wall flush boxes. The devices are optionally available with a Modbus or BACnet communication interface (optionally without communication) and in various type versions (see number key).

The basic model **RYMASKON® 510 Thermostat** with colour touch display (3.5"), in a white housing, possesses an integrated temperature and humidity sensor, 2 resistance inputs (for external NTC10K temperature sensors), 1 digital input, 1 relay output (7A) and optionally with a Modbus or BACnet connection. The room control units are used for controlling heating/cooling directly through the relay (2-point regulation) light, air conditioning and the sun protection (1 zone) via the bus.

TECHNICAL DATA	(Basic model)
Device type:	room control unit with 2-point regulation
Functions:	temperature, light, air conditioning and sun protection (1 zone)
Communication:	Modbus RTU Slave address range can be configured between 1...247 or BACnet MS/TP device ID 65100 (default) and MAC address can be configured between 1...127 RS 485 interface, max. 63 devices, 9600 / 19200 / 38400 / 57500 / 76800 Baud, none / even / odd parity, 1 / 2 stop bits
Power supply:	24 V AC/DC (± 15%)
Power consumption:	max. 1.92 W
Inputs:	2 resistance inputs (NTC10K) for external temperature sensors 1 digital input (potential-free), impedance <1 kOhm
Outputs:	1 relay output (2-point regulation) 7 A (resistive load); 1.3 A (inductive load)
Operating mode:	Comfort, ECO, OFF, Boost, Holiday, Frost Protection
Control element:	3.5" touch display with background lighting, cut-out approx. 50 x 75 mm, resolution 320 x 480 pixels, 255,000 colours
TEMPERATURE	
Sensor:	integrated temperature sensor
Measuring range:	-40...+125 °C
Accuracy:	typically ±0.5 °C at +25 °C
HUMIDITY	
Sensor:	integrated humidity sensor
Measuring range:	0...100% RH
Accuracy:	typically ±2% RH (20...80% RH) at +25 °C
Electrical connection:	0.14 - 1.5 mm ² , via screw terminals
Housing:	plastic, polycarbonate material, self-extinguishing, white colour (optionally black or chrome), weight approx. 220 g
Housing dimensions:	approx. 88 x 112 x 14.5 mm (on-wall) approx. 52 x 53 x 28.5 mm (in-wall)
Mounting:	wall mounting on in-wall flush box, Ø 55 mm
Ambient temperature:	0...+50 °C (operation); -30...+70 °C (storage)
Permitted humidity:	0...95% RH, (non-precipitating air)
Protection type:	IP 20 (according to EN 60529)
Standards:	CE conformity, according to EMC directive 2004/108/EU, Low-Voltage directive 2006/95/EU, according to EN 61000-6-1/3, EN 60730-1, EN 6100-4-2/4/5/11

RYMASKON® 500 Thermostat (series)
 Number key for type versions

RYM5-10Tx-xx0x-000

Pos. 1-4 Type name
 RYMASKON 500

RYM5]

Pos. 5 Channel configuration
 Type 510 **2RI, 1DI, 1RO 7A**

1]

Pos. 7 Device type
 Thermostat

T]

Pos. 8 Communication
 without
 Modbus
 BACnet

A]
 M]
 B]

Pos. 9 Voltage supply
 12 V DC
 24 V AC/DC
 90-250 V AC

1]
 2]
 M]

Pos. 10 Additional measuring elements
 without *
RH (rel. humidity)

0]
 1]

Pos. 11 Extra options
 without

0]

Pos. 12 Housing colour
 black
 white
 chrome

1]
 2]
 3]

Pos. 5 **RI** Resistance input (NTC10K) for external temperature sensors
DI Digital input (potential-free)
RO Relay output (7 A), (2-point regulation)

Pos. 10 * The **temperature sensor** forms part of the basic equipment and is included in the option "without" additional measuring elements.

RYMASKON® 510 Thermostat (basic model),

Type / WG02	Communi-cation	Measuring element	Control system	Colour	Display	Item No.
Rymaskon 512-MOD-RH	Modbus	T RH	T S L K	white	■	RYM5-10TM-2102-000
Rymaskon 512-BAC-RH	BACnet	T RH	T S L K	white	■	RYM5-10TB-2102-000
Measuring element / control system:	T = Temperature sensor (basic equipment) RH = Humidity sensor	T = Temperature heating / cooling S = Sun protection L = Light K = Air Conditioning (AC)				

Channel configuration:
2RI 2 resistance inputs (NTC10K) for external temperature sensors
1DI 1 digital input (potential-free)
1RO 1 Relay output (7 A), (2-point regulation)

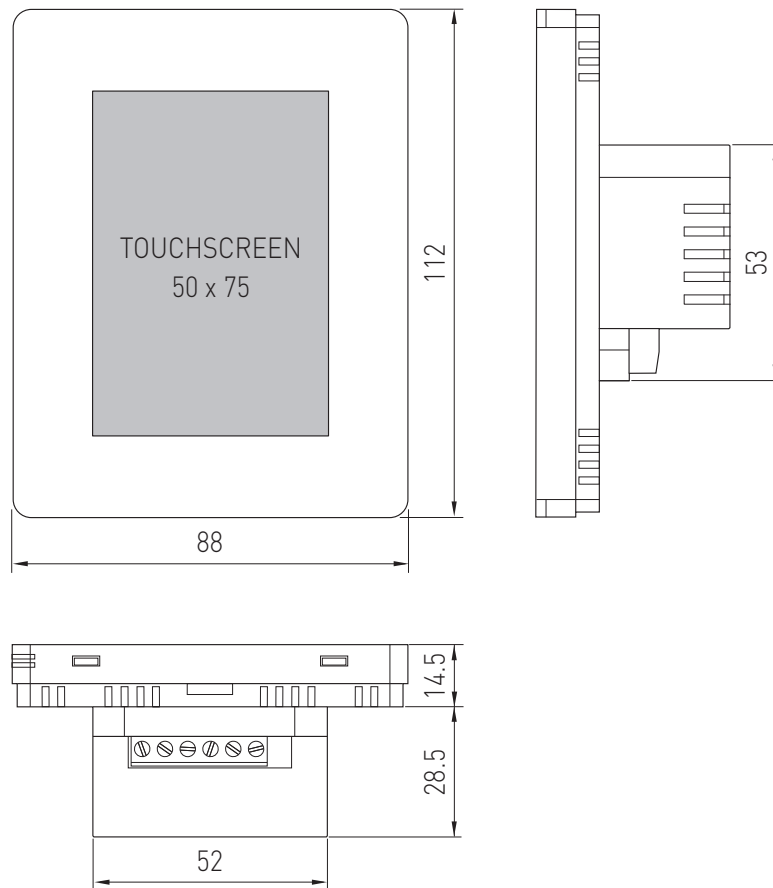
Type variants:
 Basic model **Type 510** available from stock – freely configurable model variants available upon request!
 See number key (above) for configuration options.

ACCESSORIES

RYMASKON USB_CT	Configuration tool for rapid transfer of the unit configuration from the PC to all units in the building	1901-51Z3-0002-000
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DIMENSIONAL DRAWING

Dimensional drawing
[mm]

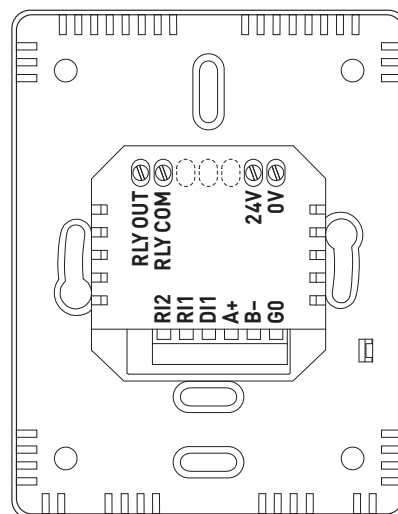


WIRING

Connection diagram
Typ 510
(Basic model)

WARNING:

Switch off the power supply before commencing the wiring work!



RYMASKON 510

RLY	30V DC 7A(res) / 1.3(ind)
OUT	Rated Relay Output
COM	Relay Common Terminal
24V	24V AC/DC Supply
0V	0V Supply
Inputs	
	NTC10K Temperature Sensor
R11	Input 1 (External Sensor)
R12	Input 2 (External Sensor)
DI1	Digital Input (Potential-free)
Modbus / BACnet MS/TP	
A+	RS485 A+
B-	RS485 B-
G0	GND (internally linked with 0V Supply)

USER INTERFACE

Screens, lighting
and calibration

The following diagrams are typical display options for the **RYMASKON® 500 Thermostat**.

All icons and functions can be revealed and hidden individually.

The multicolour touch screen visualizes the actual state of the system.

The **large ring** (red/blue/white) shows the current temperature setpoint.

The colour of the large ring can be set via the bus. The intensity of the ring colour changes depending on the difference between the target temperature and the actual temperature.

The small **action circle** (grey) alternately displays the current sensor values (if enabled).

MAIN SCREEN

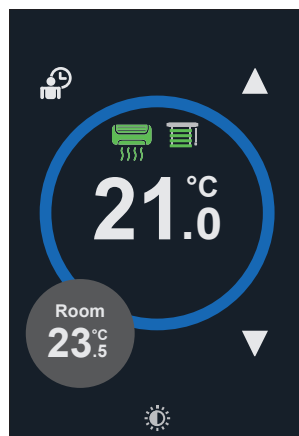


Fig. 1a Main screen

AUXILIARY SCREEN

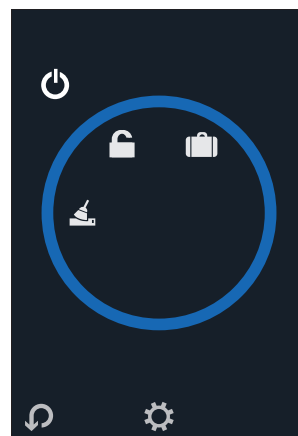


Fig. 1b Auxiliary screen
(opens by tapping the grey action circle on the main screen)

BLIND SCREEN

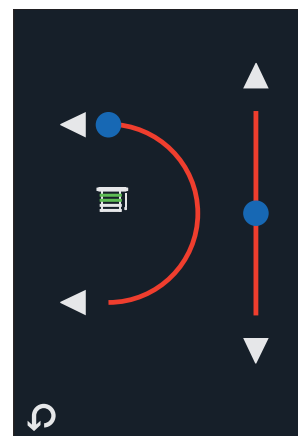


Fig. 1c Blind screen
(opens by tapping the blind icon on the main screen)


Screen backlighting (standby)

If the display of the main screen is not touched for 30 sec., the display will be dimmed to the configured standby value (default 5 / max. 20).

The brightness of the touch display in standby can be adjusted in the settings (display - brightness).

If this value is configured to 0, the display is completely dark when it is inactive.

Touch the display to automatically re-enable the backlighting.

Tapping the  icon on the **main screen** to immediately dim the display to the set value.

Tapping the icon again in standby to completely switch off backlighting.

Screen calibration

The touch display can be re-calibrated during a unit reset.

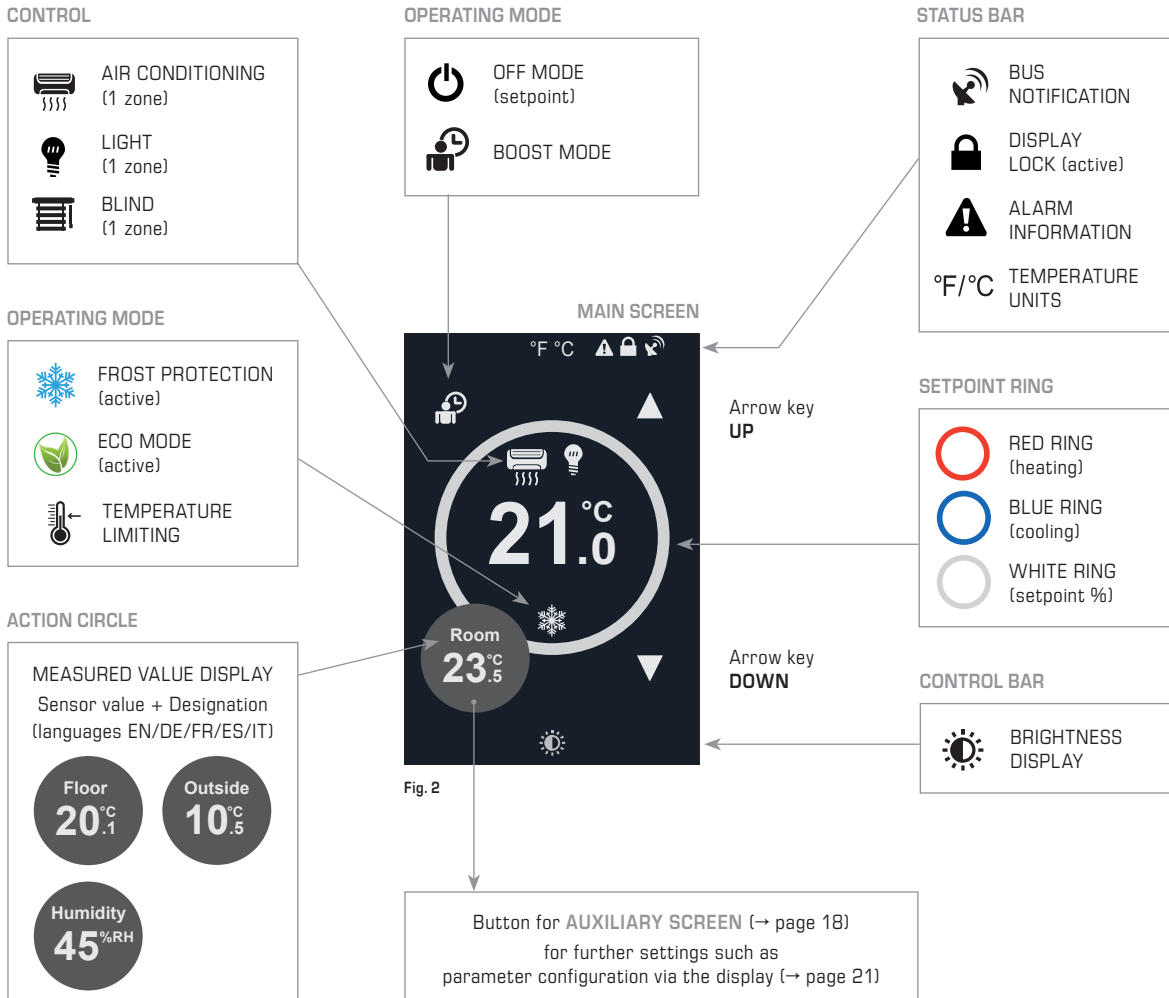
The unit performs the following two types of resets:

1. When the unit starts up (power supply present)
2. After completing parameter configuration in setting mode and returning to the main screen.

During reset (dark screen), swipe in the direction of all four edges of the display and then follow the instructions. Confirm recalibration with "OK".

MAIN SCREEN ICONS

Screen areas and explanation of icons



The **main screen** of the room control units has four touch-sensitive areas for changing system settings. All parameter values are provided as Modbus or BACnet variables.

- Arrow keys **UP ▲** and **DOWN ▼** to change the current setpoint (temperature).
- Small **action circle** for displaying the measured temperature (internal or external via R11/2), the moisture content in the air (devices with RH option) and as a button to access the auxiliary screen.
- Function-based switching icon in **Holiday Mode** shows the holiday icon, in **Boost Mode** shows the boost icon and in **OFF Mode** shows the off icon, with which the respective mode can be activated and aborted.
- **ECO** and **frost protection** icon, is shown under the target temperature when active.
- **Air conditioning** icon for activation/deactivation of the air conditioning control if enabled.
- **Light** icon for activation/deactivation of the room lighting if enabled.
- **Blind** icon as a button to access the blind screen to control the blinds (OPEN/CLOSE and the slats' angle of inclination), if enabled.

TEMPERATURE MEASUREMENT

Sensor assignment and designations of the temperature zone

The **RYMASKON® 500 Thermostat** can show up to three temperatures and the relative humidity (RH option) in the grey action circle.

Room, zone 1, main control circuit

The room temperature is used together with the target temperature in the **main control circuit** to regulate the temperature. The internal temperature sensor is connected by default. Alternatively, an external temperature sensor (NTC10K) connected to RI1 / RI2 can be used (Settings - Inputs - RI1 / RI2 Mode - Control). The temperature value is always displayed and cannot be hidden. The name can be changed (Settings - Display - Zone 1 *Text*).



Floor, zone 2, auxiliary control circuit, MIN - MAX

With the floor temperature, the temperature of a floor heating system can be regulated via configurable temperature limits (min. limit/max. limit), for example. The function and display is active if an external temperature sensor (NTC10K) is connected to RI1 / RI2 and the connected channel is configured to **"MIN - MAX"** (Settings - Inputs - RI1 / RI2 Mode - MIN-MAX).

The floor temperature is shown in the action circle. The name can be changed (Settings - Display - Zone 2 *Text*). If "Zone 2 *Text*" is configured to disabled, the temperature is not displayed.



Outside, zone 3, simple display

The outside temperature is displayed in the action circle if an external temperature sensor (NTC10K) is connected to RI1 / RI2 and the connected channel is configured to **"Outside"** (Settings - Inputs - RI1 / RI2 Mode - Outside). Alternatively, the unit can be configured so that the outside temperature is transmitted via the bus to the unit (Settings - Inputs - outside temperature source - network).

The **name** can be changed (Settings - Display - Zone 3 *Text*).

If "Zone 3 *Text*" is configured to disabled, the temperature is not displayed.



NOTE:

For explanations regarding **RI1 / RI2** see chapter **MODES FOR INPUTS RI1 & RI2**

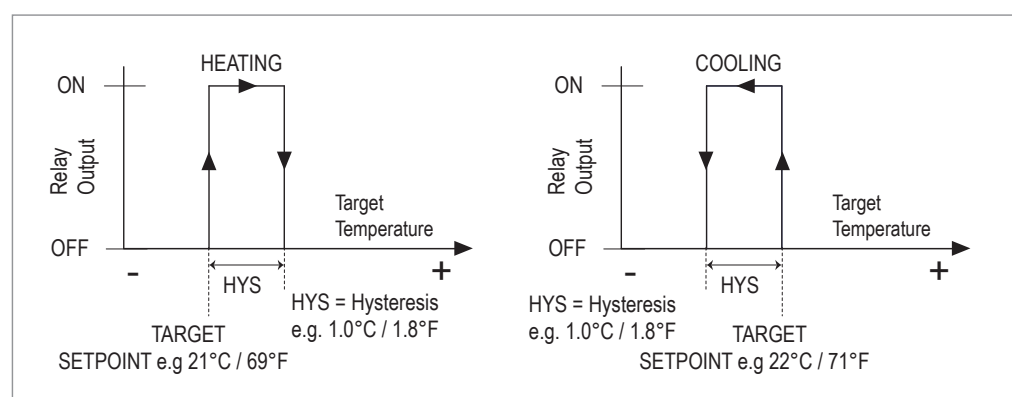
For explanations regarding **Auxiliary control circuit (floor)** see chapter

AUXILIARY CONTROL CIRCUIT

MAIN CONTROL CIRCUIT (Changeover)

Heating or cooling

The thermostat regulates the target temperature through the switching on and off of the relay, as required. In this process, a hysteresis in the control program causes – in heating mode, for example – the target temperature and the hysteresis to require being exceeded before the relay switches off. In cooling mode, the hysteresis functions the other way around. This prevents switching on or off too quickly. The diagram below illustrates this principle. The main temperature control circuit can be forcibly changed via the bus or through the digital input (DI1) to heating or cooling mode (changeover). This makes it possible to use the same pipe for heating and cooling in different seasons (summer/winter mode).



The target temperature can be adjusted by the user using the arrow keys **UP** and **DOWN** and it changes depending on the operating conditions:

- In **COMFORT MODE** (standard mode), the target temperature (room) can be adjusted by the user or via the bus.
- In **ECO MODE**, the target temperature is switched over to the ECO setpoint.
- In **OFF MODE**, the target temperature is switched over to the frost protection setpoint.

AUXILIARY CONTROL CIRCUIT

(Floor, min-max)

Regulation of floor heating / floor cooling

If a temperature sensor is connected to RI1/2 and the input is configured to auxiliary control circuit (Settings - Inputs - RI1/2 - Min-Max), the thermostat monitors the floor temperature.

For **heating control** in Comfort/ECO/Boost mode:

- The relay is switched off when the upper limit of the floor temperature is exceeded.
- The relay is switched on again if the floor temperature drops by 1°C (hysteresis) below the upper limit.
- The relay is switched on when the lower limit of the floor temperature is undershot. This priority switching is overridden if the floor temperature is once again 1°C above the lower limit (hysteresis).

The monitoring of the upper limit is typically used for protecting the floor surface. The monitoring of the lower limit is primarily suited for bathers to improve comfort when walking on the floor in bare feet or to dry damp floor surfaces.

For **cooling control** in Comfort/ECO/Boost mode:

- The relay is switched off if the floor temperature drops below the lower limit.
- The relay is switched on if the floor temperature is 1°C above the lower limit (hysteresis).

The monitoring of the lower limit is usually used for preventing condensation.

Upper limit, lower limit and hysteresis are configurable.

(Settings - Control Settings - Min. Limit / Max. Limit / Limit Hysteresis)

The temperature limiting icon is displayed on the main screen to indicate that the limit value control is active.

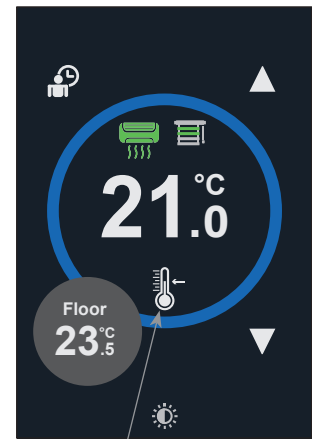
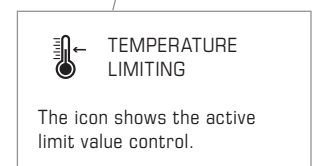


Fig. 3



INPUTS RI1 & RI2

for two external temperature sensors (NTC10K)

Can also be configured as digital inputs (DI)

An external NTC10K sensor can be connected to these inputs for temperature control and monitoring. Configuration options:

- **Deactivated (default)**
- **Main control circuit (room, zone 1)**
RI is used for the main control of the temperature.
The name can be changed (Settings - Display - Zone 1 Text). If "Zone 1 Text" is configured to disabled, the temperature is not displayed.
- **Auxiliary control circuit, Min-Max (floor, zone 2)**
RI is used for regulating the upper/lower limit values of the temperature of the floor heating/cooling.
The name can be changed (Settings - Display - Zone 2 Text).
If "Zone 2 Text" is configured to disabled, the temperature is not displayed.
- **Outside (outside, zone 3)**
RI is used for displaying the outside temperature in the action circle of the display.
The name can be changed (Settings - Display - Zone 3 Text). If "Zone 3 Text" is configured to disabled, the temperature is not displayed.
- **Bus**
RI is available for temperature recording using the connected NTC10K sensor via the bus (no control function). The temperature value is not displayed.

The inputs can also be used as voltage-free contacts for priority switching with respect to the operating mode or for messages via the bus. The following additional options can be configured:

- **Close for ECO** Voltage-free digital input for priority switching to ECO if closed.
- **Open for ECO** Voltage-free digital input for priority switching to ECO if open.
- **Close for OFF** Voltage-free digital input for priority switching to OFF if closed.
- **Open for OFF** Voltage-free digital input for priority switching to OFF if open.
- **Bus** Voltage-free digital input for reading via the bus.

NOTE:

If both RI1 and RI2 are configured as an outside temperature input, RI2 has priority.

DIGITAL INPUT

DI1

(voltage-free)

The voltage-free digital input can be used for priority switch-on of the ECO, OFF and FROST modes, as a changeover or only for monitoring purposes.

Configuration options:

- Close for ECO Mode
- Open for ECO Mode
- Close for OFF/frost protection mode
- Open for OFF/frost protection mode
- Changeover between heating and cooling
- Alarm
- Bus

Configuration of "**Close for**": the voltage-free digital contact can be linked to an external timer, for example, to switch the unit to ECO/OFF mode when the timer has elapsed. In the case of a changeover from open (comfort mode) to closed (ECO/OFF mode), the operating mode only changes once the time configured in the parameter "Digital Input Delay" has elapsed.

Configuration of "**Open for**": voltage-free digital input can be used to activate the ECO/OFF mode when the contact opens. In this operating mode, it is suitable for the connection of a window switch, door card switch or PIR sensor. During a transition from closed to open, the operating mode only changes once the time configured in the parameter "Digital Input Delay" has elapsed.

Configuration of "**Changeover**": the digital input can be used for the priority switching of heating and cooling mode. The unit works in heating mode when the contact is open and in cooling mode when the contact is closed.

Configuration of "**Alarm**": when the digital input closes, a "DI Contact Alarm" message is displayed on the display.

Configuration of "**Bus**": the digital input is used for monitoring purposes via the bus. No further effects on the regulation of the unit.

RH OPTION

Determining the relative humidity [% RH] in the room air

Units with an RH option can detect the relative humidity in the room with an accuracy of 2 % using an internal sensor.

The measured value is shown on the display in the small grey action circle.

The RH display is enabled by default and can be deactivated in the configuration settings. The RH value can be accessed as a variable via the bus.



OFF MODE

Display and setting of OFF mode

Depending on the system configuration, the unit can be switched to **OFF mode** via the display, the voltage-free digital input (e.g. with an external timer) or the bus (under normal conditions, the relay switches off).

OFF mode can be aborted by tapping on the OFF icon. The system is designed so that the last command always determines the current status. Example: if the unit has been set to OFF mode through priority switching via the bus or via the digital input, the user can abort OFF mode by tapping on the OFF icon. On the other hand, a networked unit which the user has switched to OFF mode can be switched back to the normal operating mode by the bus master.

If the unit changes to **OFF mode** and then goes back into **Comfort mode** (standard mode), the target temperature is reset to the nominal value. The reset can be deactivated (Settings - Control Settings - Setpoint Reset).

NOTE: The availability of the OFF icon on the main screen can be deactivated (Settings - Display - Show Off Icon).

FROST PROTECTION

In **OFF mode**, the **frost protection function** is activated, and the set frost protection target temperature is displayed (greyed-out). The frost protection target temperature can be configured (Settings - Control Settings - Frost Setpoint). If the room temperature in OFF mode drops below the frost protection setpoint, the relay is switched on. The snowflake icon appears on the display ❄️. Once the temperature is 2°C above the frost protection setpoint again, the relay is switched off.

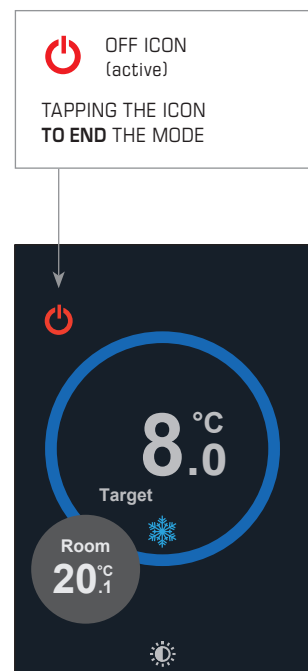


Fig. 4

ECO MODE

Display and setting of the ECO mode

The unit can be switched to ECO mode via the bus or the digital input. ECO mode is also activated if Holiday mode is configured to ECO mode (cf. section Holiday mode).

The ECO icon is shown on the display. Tapping the ECO icon in the main screen to abort ECO Mode.

The last command applies, i.e. if was switched to ECO via the bus or the digital input, the user can cancel the mode by tapping the ECO icon.

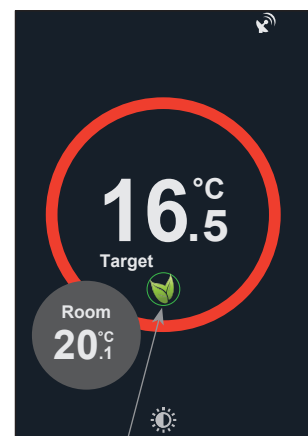


Fig. 5

BOOST

Display and setting of the boost mode (boost function)

Activating the **boost function** (Settings - Operating Modes - Boost Time) allows the relay of the thermostat to be switched on for the configured duration. Boost has priority over the automatic temperature regulation and switches the output capacity on. In the default settings, the boost time is set to the value 0 (deactivated).

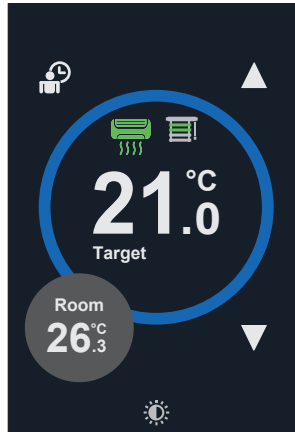


Fig. 6a



Fig. 6b

TEMPERATURE UNIT

Selection of degrees Celsius (°C) or degrees Fahrenheit (°F)

WARNING!

Changing the default setting for the temperature unit will set the defaults for all other parameters.

Changing the default setting for the temperature unit is intended to be performed as necessary at the start of commissioning.

If the icon for switching between °C /°F is enabled (Settings - Display - Show Unit Swap - Enabled), the temperature displays can be switched between degrees Celsius and Fahrenheit by tapping the icon on the main screen.

This option is especially useful for applications in hotels etc. with international guests.

You can also determine which temperature unit (°C /°F) is set as the default value on the unit in the settings (Systems, Native Units).

If the unit default setting is changed, the unit will reload the factory default settings with the changed unit for all temperature displays.

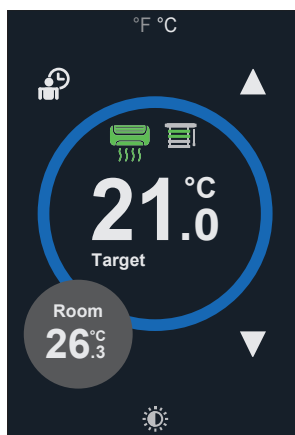


Fig. 7a Temperature in °C

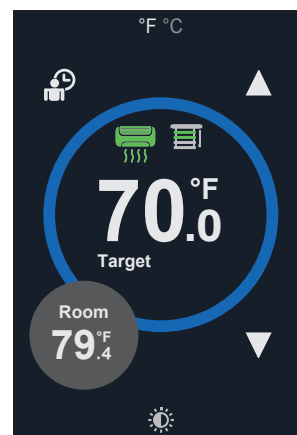


Fig. 7b Temperature in °F

LANGUAGE SELECTION

Release of language selection (EN/DE/FR/ES/IT) to change the language on the main and auxiliary screen

Different languages are available for the main and auxiliary screen and can be set in the system configuration (Settings -> System -> Language).

The user of the thermostat can also be allowed to select the language themselves. To this end, a switching icon can be released in the settings as an acronym at the bottom left of the **main screen** for the active language (Settings -> System -> Show Language Swap) (Fig. 8a).

Tapping the acronym to display the available languages, and the operator can directly change the language on the screen. (Fig. 8b)



Fig. 8a Language abbreviation (opens by tapping the selection of the language options)

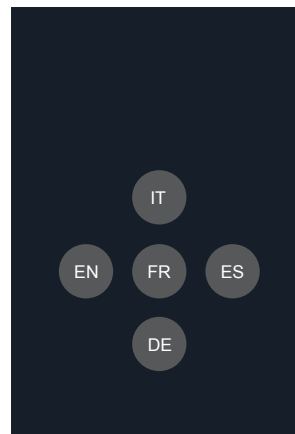


Fig. 8b Language options

ICONS

BLIND

LIGHT

AIR CONDITIONING

AIR CONDITIONING (AC)
 (1 zone)
 LIGHTS
 (1 zone)
 TAPPING ON THE ICON ENABLES
 SWITCHING ON OR OFF

MAIN SCREEN

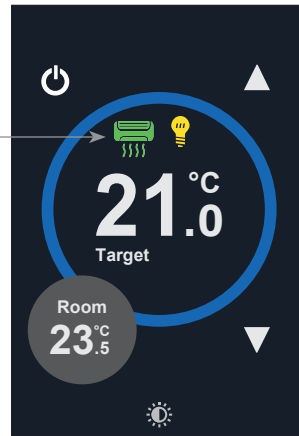


Fig. 9a Air conditioning and light enabling

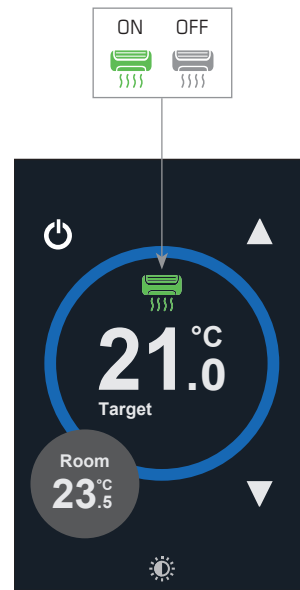


Fig. 9b Air conditioning (1 zone)

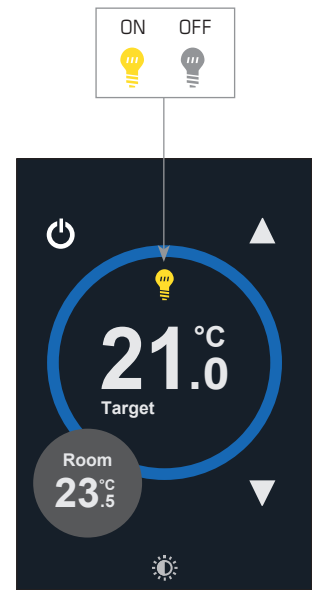


Fig. 9c Lights (1 zone)

MAIN SCREEN

BLIND
 (1 zone)

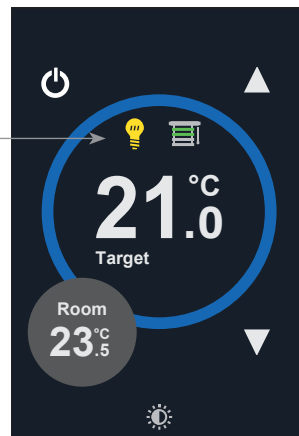


Fig. 9d Blind enabling

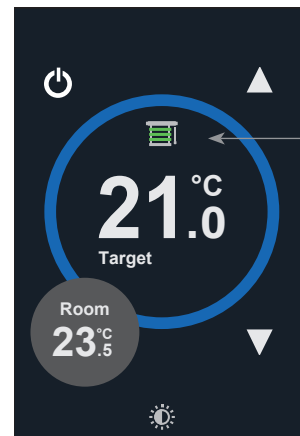


Fig. 9e Blind (1 zone)

CONTROL

LIGHT

AIR CONDITIONING

Display and settings
 (1 zone)

To operate the **air conditioning** and **room lighting**, the **switching icons** for air conditioning and lights can be enabled for display on the **main screen**.

Tapping the respective icon switches the function **ON** or **OFF**.

The status of the switching icons can be accessed and changed via the bus.

The switching icons are enabled in the settings (Display, AC / Lights).

NOTE:


Only **1 zone** at a time can be switched for the light, air conditioning and blind functions. A configuration for 2 light zones, 2 air conditioning zones or 2 blind zones is not possible.

The light, climate and blind functions share two **icon positions** on the main screen.

All possible configurations are displayed in Fig. 9a - 9e.

BLIND CONTROL

Display and settings
 (1 zone)

To operate the blind zones, the switching icon  is enabled on the **main screen**. (1 zone).

The switching icon is enabled in the setting (Display - Lights/Blind).

NOTE:

Only **1 zone** at a time can be switched for the light, air conditioning and blind functions. A configuration for 2 light zones, 2 air conditioning zones or 2 blind zones is not possible. The light, climate and blind functions share two **icon positions** on the main screen. All possible configurations are displayed in Fig. 9a - 9e.

Tapping the icon so that the unit displays the **blind screen**.

Depending on the configuration in the settings menu, an adjustment of the blind can be made on the blind screen using the arrows with different increments and movement types. The step size and movement types can be configured as follows (Settings - Display).

Blind mode (increments):

- 2 positions (On/Off)
- 5 positions (4 increments)
- 11 positions (10 increments)
- Infinite/1% increments
 The positions are distributed equally from 0–100%.

Blind configuration (movement type, graphical illustration):

- translatory movement "Level" (Fig.10a)
- rotary movement "Tilt" (Fig. 10b)
- translatory + rotary movement "Level + Tilt" (Fig. 10c)

BLIND SCREEN (display options)

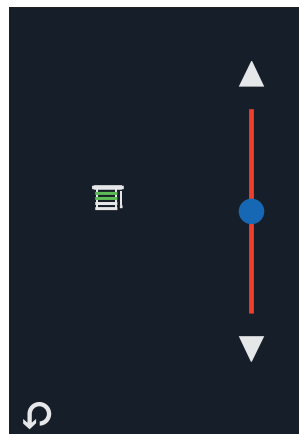


Fig. 10a 'Level'

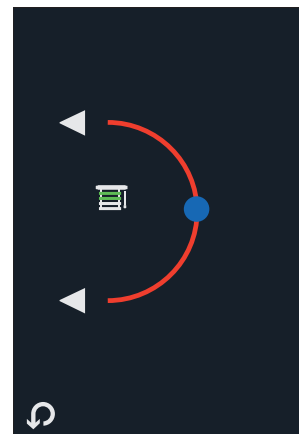


Fig. 10b 'Tilt'

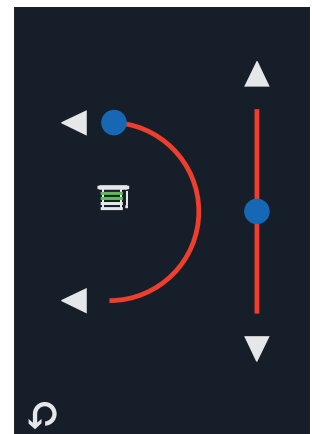


Fig. 10c 'Level + Tilt'

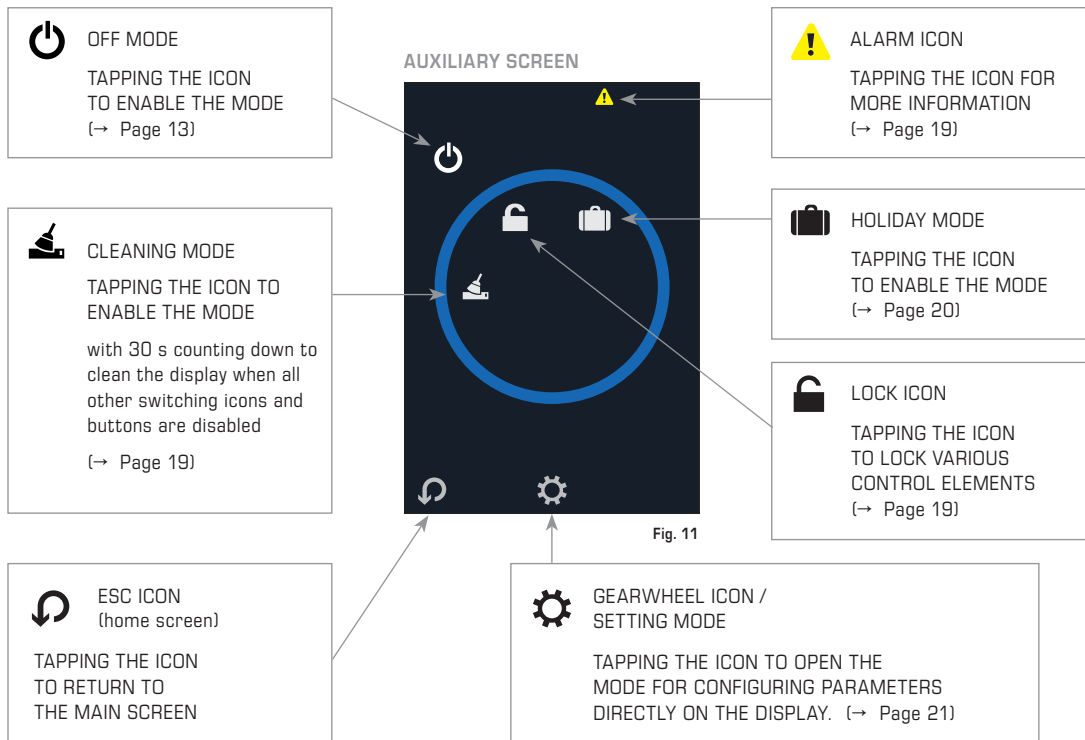
Briefly tapping one of the arrows on the **blind screen** to change the displayed value (0–100%) by the configured increment. Use the bus to retrieve and change the value (blind position).

If **infinite increment** is set, the control responds to display actions as follows:

- Briefly tapping the arrow to change the value by 1%.
- tapping an arrow for longer than 0.6s to change the value automatically; then let go of the arrow. Automatic change stops by briefly tapping the arrow or when the minimum / maximum value (0% / 100%) is reached.

The valid command is always the latest one. That means that if the blind position has been changed via the bus, the user can change the mode value again, and vice versa.

AUXILIARY SCREEN ICONS



AUXILIARY SCREEN

Other operating icons and information

The **auxiliary screen** can be accessed by touching the small grey action circle on the main screen.


If necessary, protect access to the auxiliary screen using a **PIN** code ("Staff Code", default: 0000 = no PIN required).

The auxiliary screen has several touch-sensitive areas to change the settings.

- **Alarm icon** to get warnings (error messages).
- **Cleaning icon** to enable clearing mode (30 s timer).
- **Lock icon** to activate and deactivate LOCK mode (display lock); multiple access levels are available.
- **Holiday icon** for activating HOLIDAY mode.
- **OFF icon** to enable OFF mode; disable it via the main screen.
- **Gearwheel icon** to open setting mode (see "Parameter configuration").

ALARM DISPLAY

Access to alarm notifications

Tapping the alarm icon  on the **auxiliary screen** to access the warnings on the unit.

NOTE:

If "Bus" is set as the sensor source, the alarm will be suppressed.

Typical causes of alarm notifications:

- **External sensor 1 (RI1) error**
(if enabled but not connected)
- **External sensor 2 (RI2) error**
(if enabled but not connected)
- **Integrated sensor error**
- **Digital contact error**

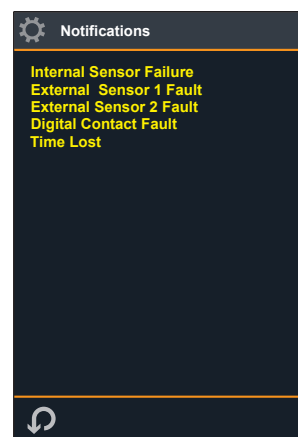


Fig. 12

CLEANING MODE

Enabling cleaning mode (to clean the display)

Tapping the cleaning icon  on the **auxiliary screen** to enable cleaning mode.

The unit changes into "display cleaning" mode, all switching icons and buttons are disabled and a 30s timer is displayed.

The display can be cleared during this time without accidental entries.

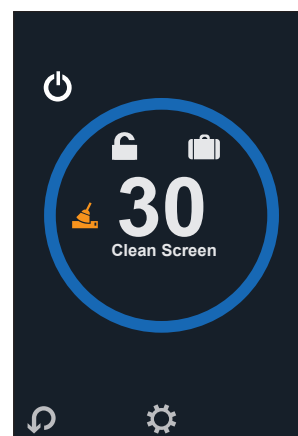



Fig. 13

LOCK MODE

Enabling the display lock

Tapping the lock icon  on the **auxiliary screen** to lock the unit against unauthorised access.

Define a **PIN** code to enable/disable the locking state ("Lock Code", default: 0000 = no PIN required).

NOTE:

The display lock is retained when the unit is switched off and back on.

The following configurations are available (see table).

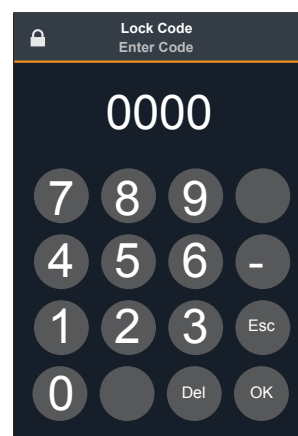





Fig. 14

	ACTIVE SWITCHING ICONS						
LOCK MODE	 LOCK	 UP / DOWN	BOOST / OFF MODE	ECO / HOLIDAY CLEANING MODE	AIR CON AC	LIGHT	BLIND
Deactivated	–	●	●	●	●	●	●
Only ON / OFF	●	–	●	–	●	●	●
Only adjustment	●	●	–	–	–	–	–
No input	●	–	–	–	–	–	–

HOLIDAY MODE

Activating
Holiday mode

Tapping the **Holiday icon**  on the auxiliary screen to set the number of days' holiday from 1 to 31.

After confirming with OK, the thermostat immediately switches to OFF or ECO mode depending on the configuration (Settings - Operating Modes - Holiday Mode).

If you set the days to 0, or tapping the OK button, the thermostat permanently changes to holiday mode. Holiday mode can be cancelled by tapping on the holiday icon.

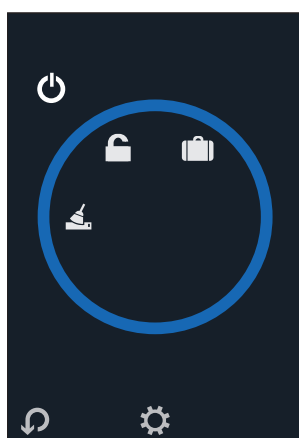


Fig. 15a Tapping on the Holiday icon on the auxiliary screen

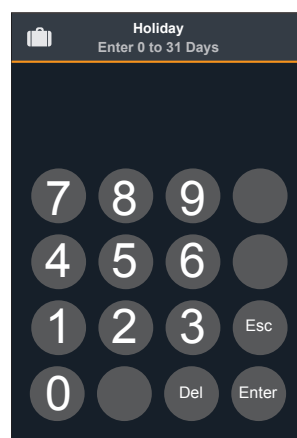


Fig. 15b Setting the days of holiday




Fig. 15c Holiday OFF display



Fig. 15d Holiday ECO display

PARAMETER CONFIGURATION

Setting mode for changing parameters directly on the display

Tapping the gearwheel icon  on the **auxiliary screen** to enable setting mode to configure accessible parameters directly on the display.

To access the information, you need to enter a **PIN code** ("Maintenance Code", default: 6666).

NOTE:

Change the PIN code in the settings (System – Maintenance Code). Write down the new PIN in case you need to look it up at a later stage.

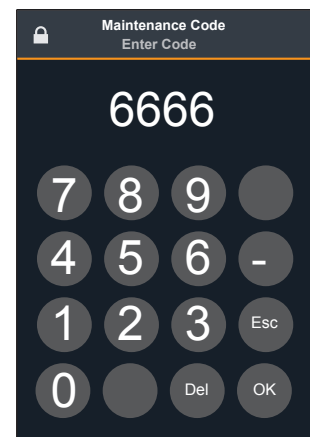


Fig. 16

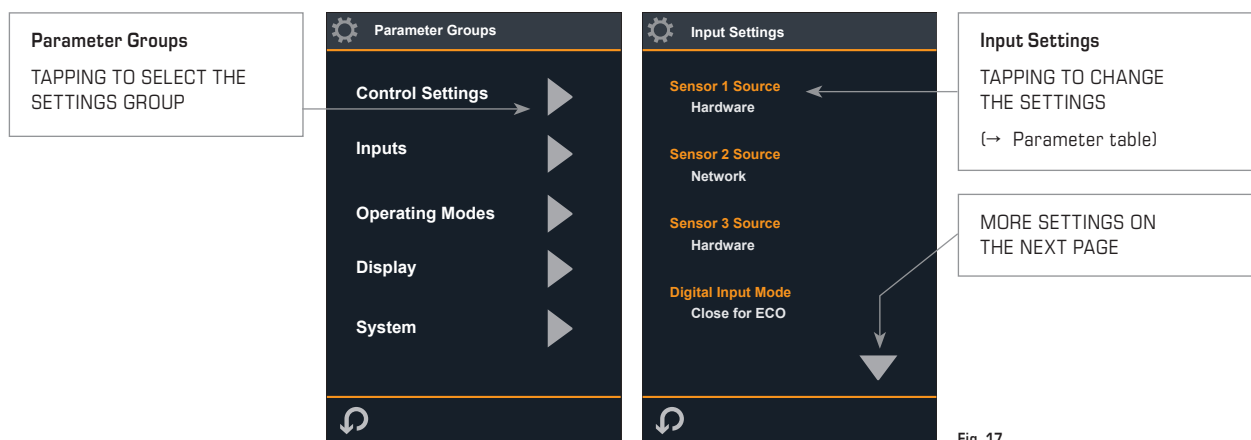


Fig. 17

After successfully entering the PIN code, the "Parameter Groups" are displayed. Tapping the arrow keys to access the list of the subordinate "Input Settings". The text is used as a button to enter parameter settings. For a description and input ranges, **see the parameter table** on the following pages.

NOTE:

Modified communication parameters are enabled when exiting the setting mode – the unit performs a soft reset. As an alternative, the new settings can also be enabled by switching the unit off and back on.

Saving parameters

The configuration parameters are stored in the unit's non-volatile memory. After modifying the configuration via the display, the new parameters are saved when the unit returns to the main screen.

If the changes were made via the bus (Modbus), the parameter for updating the non-volatile memory is required in order to force saving.

If configuration takes place via the display, the parameters are saved after a countdown or when the settings menu is closed.

PARAMETER-TABELLE

Einstellungsmodus über Gerätebildschirm

CONTROL SETTINGS		
Parameter name	Description	Range
Nominal setpoint	Nominal target temperature	0.0 to 95.0 °C/°F (default 21.0°C)
ECO heating setpoint	ECO heating target temperature	0.0 to 95.0 °C/°F (default 19.0 °C)
ECO cooling setpoint	ECO cooling target temperature	0.0 to 95.0 °C/°F (default 24.0 °C)
Frost setpoint	Frost protection target temperature (OFF mode)	0.0 to 95.0 °C/°F (default 8.0 °C)
Min. setpoint adj.	Lowest configurable target temperature	0.0 to 95°C/°F (default 14.0)
Max. setpoint adj.	Highest configurable target temperature	0.0 to 95°C/°F (default 30.0)
Hysteresis	Hysteresis of the temperature main control circuit	0.0 to 20.0 °C/°F (default 1.0°C)
Control type	Heating and / or cooling control of the temperature main control circuit (cf. section main control circuit) NOTE: The changeover function is activated with value 2 (heating / cooling). Switchover between heating and cooling mode occurs via the digital input or via the bus.	0 = Heating (default) 1 = Cooling 2 = Heating / cooling
Min. limit	Lower limit value for floor heating (Cf. section Auxiliary control circuit)	0.0 to 95.0 °C/°F (default 18.0 °C)
Max. limit	Upper limit value for floor heating (Cf. section Auxiliary control circuit)	0.0 to 122.0°C/°F (default 30.0 °C)
Hysteresis limit	Hysteresis limit value for floor heating control (Cf. section Auxiliary control circuit)	0.0 to 10.0 (default 1.0)
Reset setpoint	Reset of the target temperature to the nominal setpoint upon switchover from OFF to standard mode	0 = Enabled (default) 1 = Disabled

INPUTS		
Parameter name	Description	Range
RI1 mode	Operating mode of the input RI1 for temperature measurement/control with an external NTC10k sensor or as a digital input (DI mode) Cf. section Modes for inputs RI1 and RI2 Status monitoring via the bus active for all operating modes.	0 = Disabled (default) 1 = Control (NTC10k) 2 = Min-Max (NTC10k) 3 = Outside (NTC10k) 4 = Network (NTC10k) 5 = IR control (not used) 6 = Close for ECO (DI mode) 7 = Open for ECO (DI mode) 8 = Close for OFF (DI mode) 9 = Open for OFF (DI mode) 10 = Network DI
RI2 mode	Operating mode of the input RI2 for temperature measurement / control with an external NTC10k sensor or as a digital input (DI mode) Cf. section Modes for inputs RI1 and RI2 Status monitoring via the bus active for all operating modes.	
Digital input mode DI operating mode	Operating mode of the digital input (Status monitoring via the bus active for all operating modes) NOTE: The control operating mode is switched (changeover) with the digital input with value 5 (heating / cooling). To this end, the control operating mode must also be configured to heating / control.	0 = Disabled 1 = Close for ECO (default) 2 = Open for ECO 3 = Close for OFF 4 = Open for OFF 5 = Heating / cooling 6 = Alarm 7 = Network
Digital input delay	Delay timer for digital input (transition from active to inactive)	0 to 7200 s (default 0s)
Outside temp. source	Source of the outside temperature indicator NOTE: "Built-in sensor" refers to the 2 physical inputs RI1 and RI2. If set to network, the parameters RI1 mode and RI2 mode must not be configured to outside. The name of the outside temperature is input via the parameter Zone 3 Text	0 = Built-in sensor (default) 1 = Network
Internal sensor cal.	1-point compensation for integrated temperature sensor	-10.0 to +10.0 °C/°F
RI1 Cal.	1-point compensation for temperature sensor on RI1 (NTC10K)	-10.0 to +10.0 °C/°F
RI2 Cal.	1-point compensation for temperature sensor on RI2 (NTC10K)	-10.0 to +10.0 °C/°F
Hum Cal.	1-point compensation of the humidity sensor (Units with RH option)	-10.0 to +10.0 % RH

OPERATING MODES		
Parameter name	Description	Range
Lock mode	Releases the lock icon to lock the display. Selects which functions are to be locked on the display (display lock) (0) Disabled: Icon for display lock hidden / inactive (1) On/Off Only: Display lock icon displayed / active, temperature adjustment not possible, cleaning, ECO and Holiday icon deactivated (2) Adjust Only: Display lock icon displayed / active, only temperature adjustment possible (3) No Input: Display lock icon displayed / active, no temperature adjustment or operation of the functions possible	0 = Disabled (default) 1 = ON/OFF Only 2 = Adjust Only 3 = No Input

OPERATING MODES		
Parameter name	Description	Range
Lock Code	PIN for enabling/disabling the display lock (0000: no PIN required)	0000 to 9999 (default 0000)
Cleaning Time	Cleaning mode (runtime) OFF mode is activated during this time. NOTE: The cleaning mode can be deactivated at any time by tapping on the switching icon.	0 to 480 min (default 0 = deactivated)
Relay1 Mode	Relay operating mode for the temperature control	0 = Control NO (default) 1 = Control NC
Relay2 Mode	Not active/settable	n/a
Boost Time	Boost mode runtime. The relay is switched on for the set time when you tap the switching icon.	0 to 480 min (default 0 = deactivated)
Holiday Mode	Activate Holiday mode to switch the unit to OFF or ECO mode. The duration of Holiday Mode must be specified during activation via the screen (1–31 days).	0 = OFF (default) 1 = ECO

DISPLAY		
Parameter name	Description	Range
Brightness Light intensity	Display lighting in standby	0 to 20 (default 5)
AC Air conditioning	Air conditioning icon enabling	0 = Disabled (default) 1 = Enabled
Lights/Blind	Enables the icon for lights or blind NOTE: If blind has been selected, blind mode and the blind configuration must be adjusted/checked at the same time.	0 = Disabled (default) 1 = Lights 2 = Blind
Blind Mode	Sets the increments for the blind when actuating the arrow keys on the screen. (1) On/Off: 0, 100% (2) 4 steps: 0, 25, 50, 75, 100% (3) 10 steps: 0, 10, 20, ..., 100% (4) infinite: 0, 1, 2, 3, ..., 100% Parameter 4 activates an automatic system which automatically changes the value using a long key press (see chapter "Blind control")	0 = Disabled (default) 1 = On/Off 2 = 4 steps 3 = 10 steps 4 = Infinite
Blind configuration	Enables the graphic depiction of the movement type of the blind and the relevant variables for manual control. (0) Level: translatory movement, UP/DOWN (1) Tilt: rotary movement, rotation (2) Level + tilt (see chapter "Blind control")	0 = Level (default) 1 = Tilt 2 = Level + Tilt
Enable Holiday	Enables the holiday icon on the secondary screen	0 = Disabled 1 = Enabled (default)
Humidity Display	Enables the humidity display (for units with RH option) The value is shown in the small action circle.	0 = Disabled 1 = Enabled (default)
Show Unit Swap Unit change via home screen (°C/°F)	Enables the icon on the main screen for toggling between °C and °F	0 = Disabled (default) 1 = Enabled

DISPLAY		
Parameter name	Description	Range
Zone 1 Text (Main control circuit)	Name of the room sensor for the main control circuit. NOTE: By default, the internal sensor of the unit is assigned to the main control circuit. Alternatively, R11/2 can be assigned (Inputs - R11/2 Mode - Control). If set to disabled, the temperature value continues to be shown, only the name is hidden. Default 1 = Room	0 = Disabled 1 = Room 2 = Floor 3 = Outside 4 = Zone 1 5 = Zone 2 6 = Zone 3 7 = Bathroom 8 = Sauna 9 = Bedroom 10 = Kitchen 11 = Cooler 12 = Flow 13 = Hot Water 14 = Boiler 15 = Pool
Zone 2 Text (Auxiliary control circuit/ floor heating)	If an external NTC10K sensor is connected to one of the inputs R11/2 and the R11/2 mode is configured to min-max, the name of the sensor can be input here (auxiliary control circuit). NOTE: If set to disabled, no temperature value and no name is displayed. Default 2 = Floor	
Zone 3 Text (Outside temperature)	If an external NTC10K sensor is connected to one of the inputs R11/2 and the R11/2 mode is configured to outside, the name of the sensor can be input here. Alternatively, the outside temperature can also be made available to the unit via the bus. To do this, the parameter "Outside Temp. Source" must be configured to network, and the value must be written in the relevant register. NOTE: If set to disabled, no temperature value and no name is displayed. Default 3 = Outside	
Show Off Icon OFF icon enable	Enables the OFF icon on the main screen	0 = Disabled 1 = Enabled (default)

SYSTEM		
Parameter name	Description	Range
Address	Modbus address (only Modbus devices) BACnet MAC address (only BACnet devices)	0 to 247 (default 1) 0 to 127 (default 1)
Baud Rate	Modbus / BACnet baud rate	0 = 9600 (default) 1 = 19200 2 = 38400 3 = 57600 4 = 76800
Parity	Parity (only Modbus / BACnet devices)	0 = None (default) 1 = Odd 2 = Even
Stop Bits	Stop bits (only Modbus / BACnet devices)	0 = 1 stop bit (default) 1 = 2 stop bit
Device ID	Unit ID (only for BACnet units)	0 to 4,194,303 (Default 0 = Auto = 651.001)
Service Pin	BACnet service pin. If enabled, the unit transmits a BACnet 'I-am' message	0 = Disabled (default) 1 = Enabled
Maintenance Code	PIN for setting mode (0000 requires no PIN)	0000 to 9999 (default 6666)
Staff Code	PIN to access secondary screen (for 0000: no PIN required)	0000 to 9999 (default 0000)

SYSTEM		
Parameter name	Description	Range
Language User interface language	Available languages for the user interface (Main screen)	0 = DE (default) 1 = EN 2 = FR 3 = ES 4 = IT
Show Language Swap Language change via home screen	Display of switching icon (code) for selecting the operating language on the main screen	0 = Disabled (default) 1 = Enabled
Screen Refresh Rate Display refresh rate	Refresh rate of the LCD display	0 = Fast 1 = Medium (default) 2 = Slow
Native units (defaults) °C/°F default	Default value of temperature displays in degrees Celsius or degrees Fahrenheit NOTE: Change leads to reloading of the default values	C = Celsius (default) F = Fahrenheit
Reload defaults	Reload factory settings (defaults)	0 = Off (default) 1 = On
Version	Software version	x.xx (Modbus/BACnet)



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