akribis

USER GUIDE

TRC-A-3A

Produal

Distributed by AKRIBIS





TRC-A-3A - Touchscreen apartment controller

User Guide

This user guide is for devices with the software version 5.02 or newer.

PRODUAL
measure-be sure.

Contents

1 Safety precautions....4
1.1 Intended use....4

2 Functional description....5
2.1 Control functions....5
2.1.1 Temperature control....5
2.1.2 Change-over function....5
2.1.3 High and low limit temperature control....6
2.1.4 Air flow control....6
2.1.5 Humidity control....6
2.1.6 CO_2 control....7
2.1.7 Condensation control....7
2.1.8 Maximum selection control....7
2.1.9 Lighting control....7
2.2 Operation modes....8
2.2.1 Home mode....8
2.2.2 Away mode....8
2.2.3 Lock mode....9
2.2.4 Boost mode....9
2.2.5 Eco mode....9
2.3 Inputs....9
2.3.1 Resistive inputs....9
2.3.2 Digital inputs....10
2.3.3 Analogue inputs....10
2.4 Outputs....11
2.4.1 Analogue outputs....11
2.4.2 Valve jam prevention function....11
2.5 User interface....12
2.5.1 Operation mode button....12
2.5.2 Main information view....13
2.5.3 Secondary information view and action button....13
2.5.4 Consumption data view....14
2.5.5 Display backlight....15
2.5.6 Temperature unit in display....15
2.5.7 Setpoint adjustment mode....16
2.5.8 Sensor fault view....16
2.5.9 Display language....17
2.5.10 Status information view....17

3 Commissioning....19
3.1 Mounting the product....19
3.2 Wiring....21
3.3 Configuring the device....22
3.3.1 Control settings menu....22
3.3.2 Inputs & outputs menu....24
3.3.3 Lights & Boost menu....27
3.3.4 Airflow menu....27
3.3.5 System menu....28

4 Modbus....30
4.1 Modbus properties....30
4.2 Modbus function codes....30
4.3 Modbus registers....30

4.3.1 Coils..... 30
4.3.2 Discrete inputs..... 31
4.3.3 Input registers..... 31
4.3.4 Holding registers..... 32

5 BACnet..... 39
5.1 BACnet properties..... 39
5.2 Analog input objects..... 39
5.3 Analog value objects..... 39
5.4 Multi state value objects..... 40
5.5 Binary input objects..... 40
5.6 Binary output objects..... 41
5.7 Proprietary objects..... 41
5.7.1 Config1 object..... 41
5.7.2 Config2 object..... 44

6 Disposal..... 49

1 Safety precautions

The product is developed, manufactured and tested according to high quality standards. However, instructions for safe use shall be taken account when installing, using or disposing the product or parts of product.

Read this user guide carefully before commissioning, using or servicing this device. To avoid any kind of damage to people or property, follow the instructions carefully. Produal is not liable for any hazards or damages to people or property which are caused by ignoring the using or installation instructions.

To avoid electrical shock or damage to equipment, disconnect power before installing or servicing the product. Use only a proper wiring rated for the full operating voltage and maximum current in the system even in the event of a fault.

To avoid potential fire and/or explosion, do not use the product in potentially flammable or explosive atmosphere.

The product condition must be checked before installation. Do not drop the product or use excessive force during installation. Do not use the product if any damages are visible.

After installation the product will be part of a system whose specifications and performance characteristics are not designed or controlled by Produal. Refer to national and local authorities to ensure that the installation is functional and safe.

The product should only be used in professionally designed applications. Unauthorised modifications are not allowed. The product must not be used in relation with any equipment that in case of a failure may threaten, directly or indirectly, human health or life or result in danger to human beings, animals or property.

In this document, there are different kind of warnings and notes. The warning and note types are defined in the following table.

Sign	Description
WARNING:	The warning symbol indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION:	The caution symbol indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.
Important:	The important symbol indicates a potentially hazardous situation which, if not avoided, could result in damage to the device or property.
Note:	The note symbol indicates a useful tip or a recommended way to complete a task. These notes also provide information that is useful but not critical to the user.

1.1 Intended use

TRC room controllers are intended to control temperature, humidity, CO_2 and air flow in room environment, for example.

This device is intended to be connected to building automation systems in the HVAC/R industry.

AKRIBIS · www.akribis.info · contacte@akribis.info

2 Functional description

2.1 Control functions

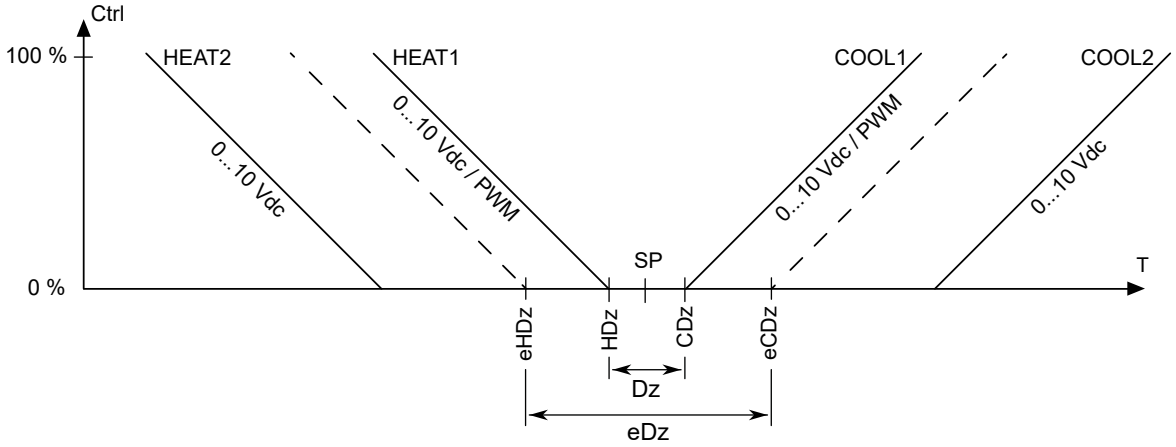
2.1.1 Temperature control

The temperature control can have up to two heating stages and cooling stages (as a default, one heating stage and one cooling stage), and can also automatically change-over from heating to cooling by using digital input, temperature measurement or network value.

There are various control configurations available:

- One or two stage heating control
- One or two stage cooling control
- One or two stage heating and one or two stage cooling control (up to three outputs)
- One stage change-over heating and cooling control

The controller modulates the heating and cooling demand outputs according to the setpoint (*SP*) and the measured temperature. The control can be P or PI control.



Between the first heating and cooling stages is a dead zone. In the dead zone, the cooling and heating control signals are 0 %. If the PI control is used, the temperature must remain in the dead zone for a prolonged period before the heating and cooling signals are controlled to 0 %. The controller has a function that prevents cooling and heating control to be on simultaneously.

The dead zone has individual settings (*HDz* and *CDz*) for heating and cooling, that allows asymmetrical setting. For example, in some applications it is important that the cooling starts to respond to temperature changes faster than heating.

The temperature setpoint can be adjusted by pressing temperature setpoint adjustment buttons or via the network.

The setpoint and dead zone change according to the operating modes as follows:

- Home/boost mode; temperature setpoint is adjusted by the user (or via the network) and viewed on the display. The user setpoint adjustment range can be limited (default range is ±3 °C).
- Away mode; the nominal setpoint remains unchanged. The user adjustment is disabled and the away mode dead zone settings (*eDz*) are used.

The control outputs can be set to direct or reverse. The reversed control output changes the actuator running direction (e.g. valve drives from 100 % to 0 %). The output direction can be configured individually for each control stage.

2.1.2 Change-over function

In the change-over mode, the controller can switch between heating or cooling mode depending on the status of an input. Change-over function is suitable for 2-pipe control systems, where different water

AKRIBIS · www.akribis.info · contacts@akribis.info

temperature are used according to the time of the year. For example, in wintertime the water is used for heating (water is hot) and in the summertime the water is used for cooling (water is cold).

The change-over function uses the heating stages 1 and 2, and cooling stages 1 and 2.

An input (DI1/RI1/RI2) can be selected to control change-over function under controller settings. Input can control the change-over function according to temperature value or a contact switch. The input can be also controlled directly from BMS system in models with communication bus.

If RI1 or RI2 is selected to be used with change-over, the controller switches to heating when the temperature exceeds 25 °C and to cooling when the temperature drops below 20 °C. These temperature limits are adjustable.

2.1.3 High and low limit temperature control

If an external NTC 10 sensor is connected (to RI1 or RI2) and the temperature limit function is selected for the input, the device controls the temperature also according to set high and/or low limits. The limit function is enabled by setting the *Limit Ratio* parameter (default value is 0.0 = disabled).

Note: The setpoint on the display is not changed during the limitation. symbol indicates active limitation.

In high limit control, if the external temperature exceeds the high limit setpoint, the main control setpoint is reduced by the amount set in *Limit Ratio* parameter. For example, if the value is 2.0, for every degree that the external temperature exceeds the high limit setpoint, the main control setpoint is lowered by 2.0 degrees.

The low limit control works in reverse. If the external temperature drops below the low limit setpoint, the main control setpoint is increased by the amount set in *Limit Ratio* parameter for every degree that the external temperature is below the low limit setpoint.

The setpoint is adjusted by using the following formula: Setpoint adjustment = (limit setpoint - measured temperature) * *Limit Ratio*

Note: The function is disabled in off operation mode.

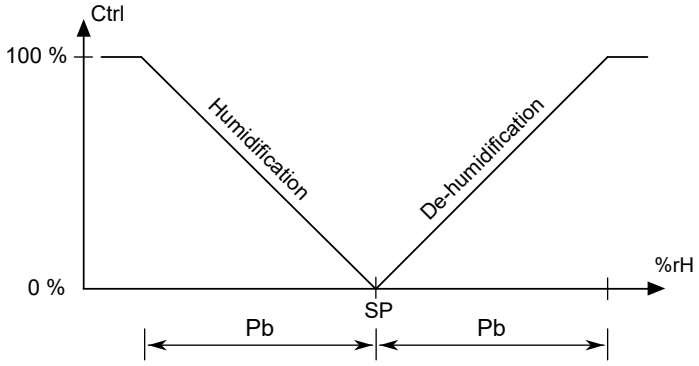
2.1.4 Air flow control

The controllers can control the supply and extract air flow via analogue outputs. The air flow control settings can be set individually for all operation modes to balance air flow.

The digital input can also to be configured to boost air flow. There are separate parameters for both supply and extract settings. This function is typically used with extractor fans to balance air flow. The digital input boost is active in all operation modes and overrides the air flow settings.

2.1.5 Humidity control

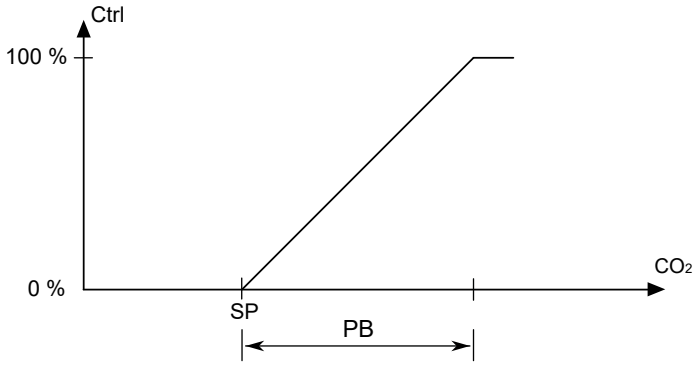
The humidity measurement and control is available in -RH models. The humidity control can be used in demand based control applications to increase the fresh air supply, for example when the humidity level is high. The controller can control both de-humidification and humidification and the control signals can be directed to any of the analogue outputs (Y1, Y2, or Y3). The direction of the outputs can also be reversed.



In away mode, the humidity output is set to 0 %.

2.1.6 CO_2 control

The CO_2 measurement and control is available in -CO2 models. The CO_2 control can be used in demand based control applications to increase the fresh air supply, for example when the CO_2 level is high. The control signal can be directed to any of the analogue outputs (Y1, Y2, or Y3), or it can be used in maximum demand control (*MAX VAV* option). The direction of the outputs can also be reversed.



The CO_2 control output (*Ctrl*) corresponds to the CO_2 setpoint (*SP*) and the CO_2 proportional band (*PB*). If the output is configured to be direct, When the CO_2 level rises above the setpoint, the output starts to rise to 100 %. The proportional band defines how fast the control output rises 100 %. The CO_2 control supports both P and PI control.

In the away mode, the CO_2 control output is set to 0 %.

2.1.7 Condensation control

The controller have three different methods for condensation control in cooling applications. When the condensation is detected, the cooling is switched off until the condensation has been cleared. The condensation control methods are as follows:

- Using the digital input (DI1): Select *Disable Cooling* in the input settings. In this case when the input closes the cooling is switched off. Connect a condensation switch (e.g. KA 10) to the input.
- Using a resistive input (RI1/RI2): Select *Condensation* in the input settings. When the resistance drops below approx. 110 kΩ, the condensation condition is activated. When the resistance increases above approx 150 kΩ, the controller returns to normal operation. Connect a condensation sensor (e.g. KEK 1) to the input.
- Using analogue outputs (only available in -RH models): Select *CLG1 + CONDENSATION* or *CLG2 + CONDENSATION* in output settings. The controller takes the minimum of the cooling stage 1 or cooling stage 2 output (depends on configuration) and the humidity control output. The cooling reduces proportionally when the humidity increases above the setpoint (= humidity setpoint - proportional band)

2.1.8 Maximum selection control

All analogue outputs can be configured to be controlled according to maximum value of the selected control values.

With *Max. VAV* selection, the corresponding output takes the maximum of the CO_2 and cooling control. This is typically used in demand based ventilation (VAV) to control fresh air supply when there is either demand for more fresh air, or demand for cooling.

2.1.9 Lighting control

The lighting control can be used to control lighting level via analogue output (Y1/Y2/Y3) and it is also available as a network value.

The light level can be adjusted by pressing button in all operation modes. The switch off delay can be adjusted (0...1800 s, factory setting 30 s). The symbol is red during the switch off delay.

The following options are available:

Selection	Description
Disabled	The function is disabled.
0-1	On/off control (0 %, 100 %).
0-1-2	Three step control (0 %, 50 %, 100 %).
0-1-2-3	Four step control (0 %, 33 %, 66 %, 100 %).

The lighting can also be controlled according to the operation mode changes. The following options are available:

Selection	Description
Disabled	Operation modes don't affect to the lighting control.
HOME	The lights output level is set automatically to 100 % when the home mode activates. When the away mode activates, the lights output level is set to 0 %.
HOME+AWAY	The lights output level is set automatically to 100 % when the home mode activates. When the away mode activates, the lights output doesn't change.

2.2 Operation modes

The device has four operation modes that have their own control settings. The operation modes are called home, away, boost, and lock modes.

The operation modes can be controlled by the following functions:

- Using device's display buttons
- Using a digital input (e.g. occupancy detection)
- Using bus communication

2.2.1 Home mode

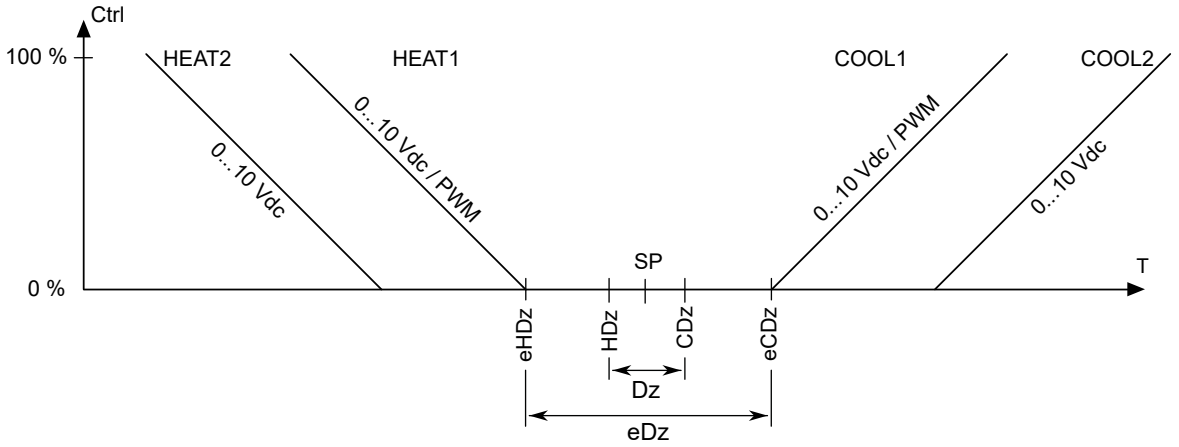
The home mode is the base operating mode that allows user to control the device functions. In home mode, the temperature setpoint is adjusted by the user (or via the network) and viewed on the display. The user setpoint adjustment range can be limited (default range is ±3 °C).

The supply and extract air flow control outputs are controlled according to the home mode settings.

2.2.2 Away mode

The device can be switched to away mode via network, via digital input (e.g. occupancy detection) or via display button.

In the away mode the controller controls the temperature according to away mode dead zone (*eDz*) and the user setpoint adjustment is reset.



In the away mode the CO_2 and humidity controls are set to 0 %. The lights are switched off, or continued to be left at the same level as in home mode according to the settings.

The away mode can be activated by pressing the operation mode button and selecting the away mode ( ). The away mode can be cancelled by pressing the operation mode button and selecting another operation mode.

2.2.3 Lock mode

Lock mode locks the selected controls from the user. Lock mode can be activated by pressing button on the additional settings view.

The following options are available:

Selection	Description
Disabled	Function is disabled.
Mode Only	Operation mode button available.
Adjust Only	Temperature setpoint buttons available.
No Input	All buttons unavailable.

A lock mode protection code can be set via the configuration mode. If the lock code is not 0000 (factory setting), the code is required to activate and deactivate the lock mode.

The lock mode status doesn't change after power failure.

2.2.4 Boost mode

Boost mode can be set to boost air flow control. The temperature control follows the home mode settings. The device can be switched to boost mode via network, via digital input (e.g. occupancy detection) or via display button ( ).

The boost time can be adjusted to 0...480 minutes. If the time is set to 0, the boost mode stays active until either cancelled through the display or over the network.

Digital input can be set to operate another independent boost function. Digital input boost has it's own settings that are activated when the digital input closes (input setting is *Close for Airflow Boost*). The function can be used for kitchen hood boost, for example. Digital input boost can't be cancelled through the display, and the boost is active until the input state changes. When the digital input boost is activated, *Balanced* is viewed on the display.

2.2.5 Eco mode

The device has an eco control function for temperature. The device can be switched to eco mode via network or via digital input (e.g. occupancy detection).

In the eco mode the controller controls the temperature according to away mode dead zone (*eDz*) and the user setpoint adjustment is reset. Air flow settings don't change.

In the eco mode the CO_2, humidity and auxiliary controls are set to 0 %. The lights are switched off, or continued to be left at the same level according to the settings.

2.3 Inputs

2.3.1 Resistive inputs

RI1 and RI2 inputs can be used to connect NTC 10 sensor to device and the sensor information can be used for different control and display purposes. Inputs can also be used as potential free contact inputs and analogue inputs in AI models.

Note: When the resistive inputs are used as digital inputs, the input state changing has approx. ten seconds delay. These inputs are not suitable for fast switching applications.

The following options are available:

Selection	Description
Disabled	Input is disabled.
Room	The input is used for the main temperature control (NTC 10). This allows external temperature sensor to be used for the main temperature control. The internal temperature sensor is disabled from the control.
Floor	The input is used for high and low temperature limit. When *Floor* is selected, the secondary information view starts to display the temperature (the measurement text is selectable). If both resistive inputs are set to *Floor*, RI1 takes precedence.
Outside	The input is used for external temperature measurement (NTC 10).
Heating/ Cooling	The input is used for switching between cooling and heating modes according to the measured temperature (changeover function)
Network NTC10	The input is available over the communication network as temperature measurement (NTC 10).
Network 0-10V	The input is available over the communication network as temperature measurement (0...10 Vdc = 0...100 %). This function is available in -AI models.
Supply Airflow	The input is used for supply air flow monitoring (0...10 V). This function is available in -AI models.
Extract Airflow	The input is used for extract air flow monitoring (0...10 V). This function is available in -AI models.
Close for ECO	The input is used as a contact for activating the eco mode. The eco mode activates when the contact closes.
Open for ECO	The input is used as a contact for activating the eco mode. The eco mode activates when the contact opens.
Condensation	The input is used for resistive condensation sensors to disable cooling when condensation is detected. If the condensation input is used, don't set a digital input for disabling the cooling.
Network DI	The input is available over the communication network as digital input.

2.3.2 Digital inputs

The potential free contact input can be configured for different functions. The switching delay from active to passive can be adjusted.

The following options are available:

Selection	Description
Close for ECO	The input is used as a contact for activating the eco mode. The eco mode activates when the contact closes.
Open for ECO	The input is used as a contact for activating the eco mode. The eco mode activates when the contact opens.
Change-Over	The input is used for changing between heating and cooling in the change-over mode. The device works in the heating mode when the contact is open, and in the cooling mode when the contact is closed.
Disable Cooling	The input is used to disable cooling. The cooling is disabled when the contact is closed.
DI Contact Alarm	When the contact closes, "DI Contact Alarm" alarm message is viewed on the display.
Network	The input is available over the communication network as digital input.
Close for Airflow Boost	The input is used for activating the air flow boost. The air flow boost activates when the contact closes.

2.3.3 Analogue inputs

RI1 and RI2 inputs are analogue (0...10 Vdc) inputs in -AI models. Input information can be used for different control and display purposes.

The following options are available:

Selection	Description
Network 0-10V	The input is available over the communication network (0...10 Vdc = 0...100 %).
Supply Airflow	The input is used for supply air flow monitoring (0...10 V).
Extract Airflow	The input is used for extract air flow monitoring (0...10 V).

2.4 Outputs

2.4.1 Analogue outputs

The controller has three analogue 0...10 Vdc outputs that are typically used as control outputs.

The following options are available:

Selection	Description
Network	The output is controlled via communication network.
Htg Stage 1	The output is controlled by heating stage 1.
Htg Stage 2	The output is controlled by heating stage 2.
Clg Stage 1	The output is controlled by cooling stage 1.
Clg Stage 2	The output is controlled by cooling stage 2.
Lights	The output is controlled by lighting control output.
CO2	The output is controlled by CO_2 control output.
Max. VAV	The output is controlled by maximum selection of cooling stage 1 and CO_2 control output.
Humidification	The output is controlled by humidification control output.
De-Humidification	The output is controlled by de-humidification control output.
Supply Airflow	The output is controlled by supply air flow control output.
Extract Airflow	The output is controlled by extract air flow control output.
Clg1+Condensation	The output is controlled by minimum selection of cooling stage 1 and humidity control output.
Clg2+Condensation	The output is controlled by minimum selection of cooling stage 2 and humidity control output.

2.4.1.1 Analogue output scaling

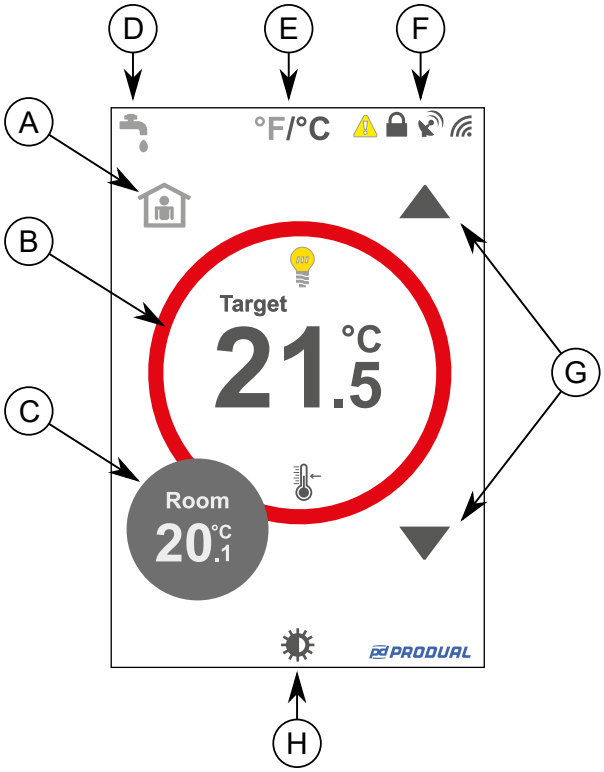
Each of the analogue outputs (Y1, Y2, Y3) can have minimum and maximum output voltage (percentage). The connected control output is scaled from minimum voltage to maximum voltage.

The values are also readable/writable via the communication network.

2.4.2 Valve jam prevention function

Valve jam prevention function monitors actuator outputs for inactivity. If the actuators have been fully closed or fully open longer than the set period, the controller will open/close the outputs to by 30 % for a short period of time.

2.5 User interface



A. Operation mode button
B. Main information view
C. Secondary information view and action button
D. Consumption view button
E. Temperature unit selection button
F. Status information
G. Temperature setpoint adjustment buttons
H. Backlight level selection button

The user interface includes touch sensitive areas that can be used to change the device settings.

- Temperature setpoint adjustment buttons can be used to adjust the temperature setpoint.
- Backlight level selection button can be used to dim the display or turn it off.
- Temperature unit selection button can be used to change the temperature unit on the display.
- Secondary information view works also as a button that is used to access additional settings view.

2.5.1 Operation mode button

The operation mode button shows the current operation mode. When the button is pressed, the operation mode selection view is displayed.



AKRIBIS · www.akribis.info · contacte@akribis.info

Symbol	Description
	Boost mode.
	Home mode.
	Away mode.

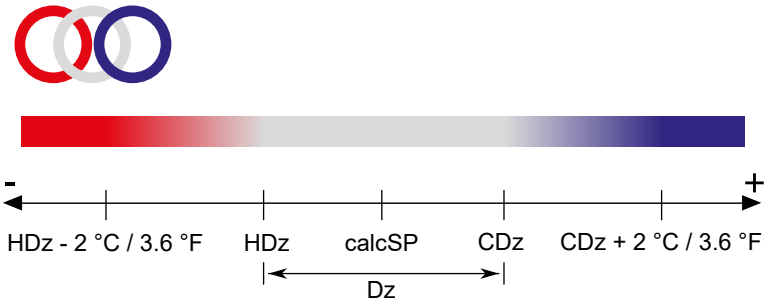
2.5.2 Main information view



Symbol	Description
	Energy ring. The energy ring colour illustrates how far the measured temperature is from the setpoint.
	Lighting button. The button can be used to control lighting (on/off, 2 levels or 3 levels)
21.5 °C Target	Setpoint view.
	Low and high temperature limit indicator.
	Eco mode symbol.

2.5.2.1 Energy ring colours

The colour of the energy ring indicates the heating/cooling demand. The energy ring is white at dead zone (*Dz*). The density of red/blue on the energy ring modulates based on how far from the effective setpoint (*calcSP*) the temperature is. When the difference is 2 °C / 3.6 °F the energy ring colour is at full density.



2.5.3 Secondary information view and action button

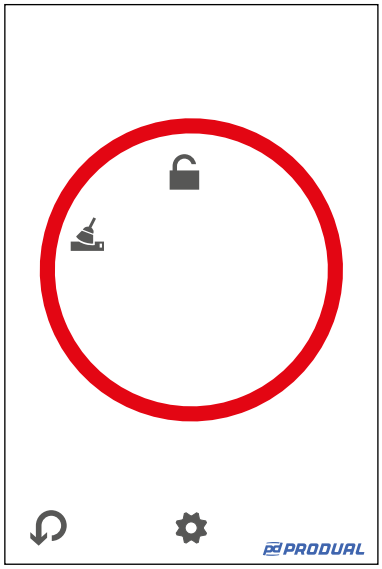
Secondary information view shows measurement information.



The secondary information view is also used as a button to access additional settings view. Entering the additional settings view can be protected by setting password in configuration mode (*Staff Code*). The password is 0000 by default, which means that the password is not required to access the additional settings view.

2.5.3.1 Additional settings view

The additional settings view can be accessed by pressing the secondary information view.



Symbol	Description
	Cleaning mode button. The button is used to activate the cleaning mode.
	Locking button. The button is used to disable some of the display buttons.
	Configuration mode button. The button is used to access configuration mode.
	Escape button. The button is used to exit the additional settings view.

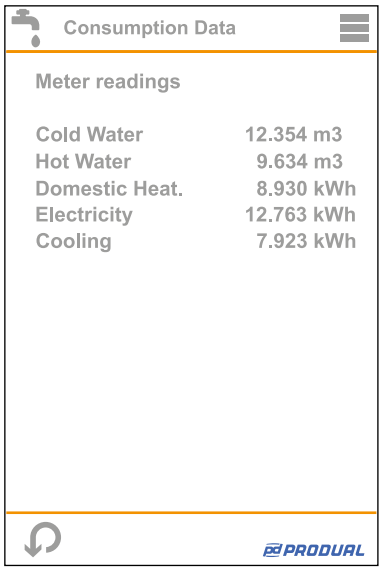
2.5.3.2 Cleaning mode

Cleaning mode can be activated via additional settings view by pressing button. The device enters to display cleaning mode, where all display presses are ignored and 30 second countdown timer is displayed. This allows cleaning the touchscreen display.



2.5.4 Consumption data view

Consumption data view shows the consumption data that is written via communication bus. The view can be view by pressing consumption data view button ( ). Consumption data view is available in -CD models.



The viewed data and displaying order can be selected by pressing button.

2.5.5 Display backlight

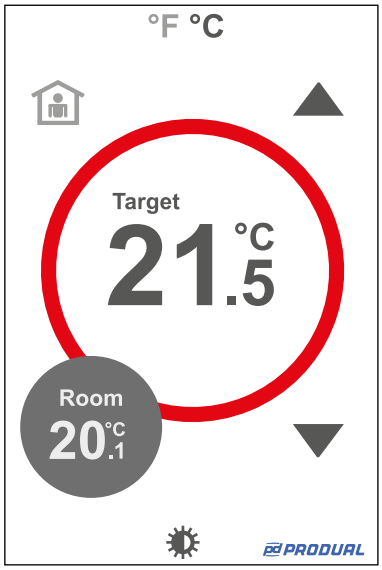
The display backlight has three levels, normal, stand-by, and off. The backlight is in normal level when the display is touched. The display dims to the stand-by level after the display is not touched for 30 seconds. If the backlight stand-by level is set to 0, the screen backlight switches off.

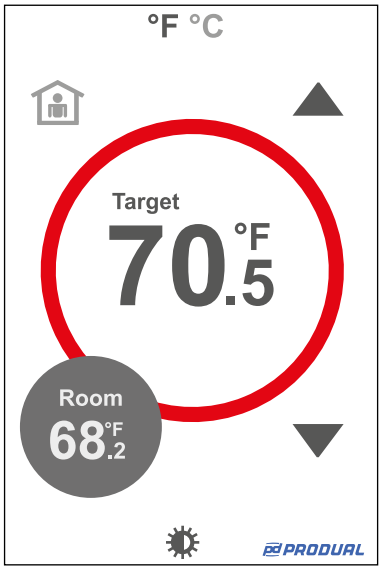
The backlight level can also be controlled by pressing button. Pressing the button when the display backlight is in normal level, the backlight changes to stand-by level. Pressing the button when the backlight is in stand-by level, the backlight switches off.

The display backlight stand-by level can be adjusted through the configuration mode.

2.5.6 Temperature unit in display

If temperature unit selection button (°F °C) is enabled through the configuration mode, it is possible to change the temperature unit by pressing the button. This option is particularly useful in hospitality applications where the client base is expected to be international.





It is also possible to select temperature unit for the display at the commissioning through the configuration mode (*Native Units (Defaults)*).

Important: After changing the unit here, the controller reloads defaults for all settings. Select the native units when starting the commissioning.

2.5.7 Setpoint adjustment mode

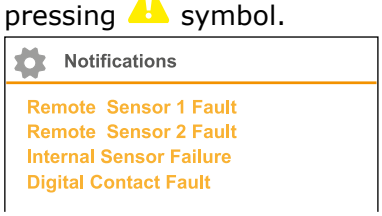
As a factory setting, the main information view shows the temperature setpoint value. It is possible to change the view to display the measured room temperature or relative setpoint.

The available setpoint modes:

Setting	Description
Temperature	Main information view shows the setpoint as absolute temperature. 
Temperature Rel.	Main information view shows the setpoint as relative temperature. 
None	Main information view shows the measured temperature. If only the temperature measurement is available, ⚙ button is shown instead of the secondary information view. 

2.5.8 Sensor fault view

The device shows error information about the connected sensors. The sensor faults are indicated with ⚠ symbol. The error details can be viewed by pressing the secondary information view and then pressing ⚠ symbol.



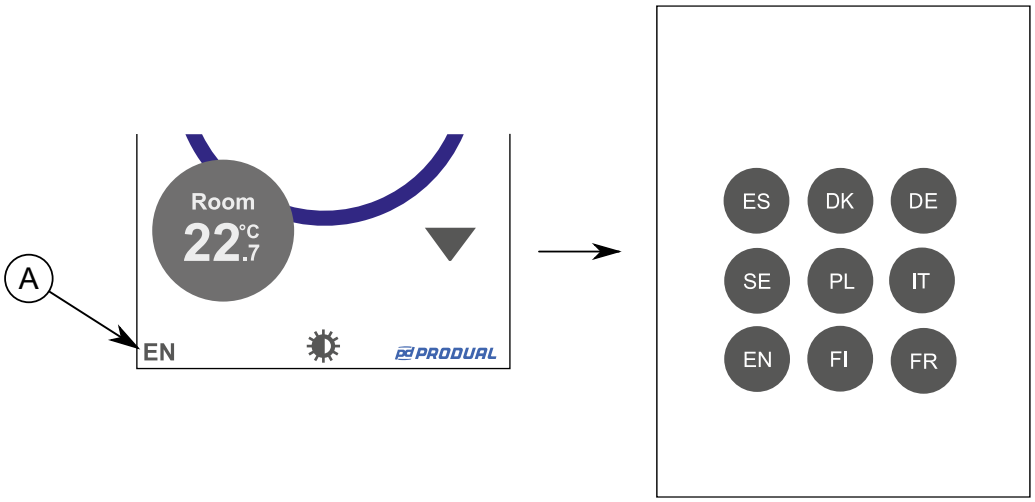
The typical alarms are listed in the following table.

Alarm	Reason
External sensor 1 fault	The RI1 sensor resistance is out of range.

Alarm	Reason
External sensor 2 fault	The RI2 sensor resistance is out of range.
Internal sensor failure	The internal sensor is defective.
Digital contact fault	Digital input is defective.
Supply Airflow Fault	The supply air flow input (*AI1* or *AI2*) value is below the alarm limit.
Extract Airflow Fault	The extract air flow input (*AI1* or *AI2*) value is below the alarm limit.

2.5.9 Display language

The user interface can be displayed in different languages. The language can be selected via configuration mode or by using language selection button that can be activated for the user.



A. Language selection button

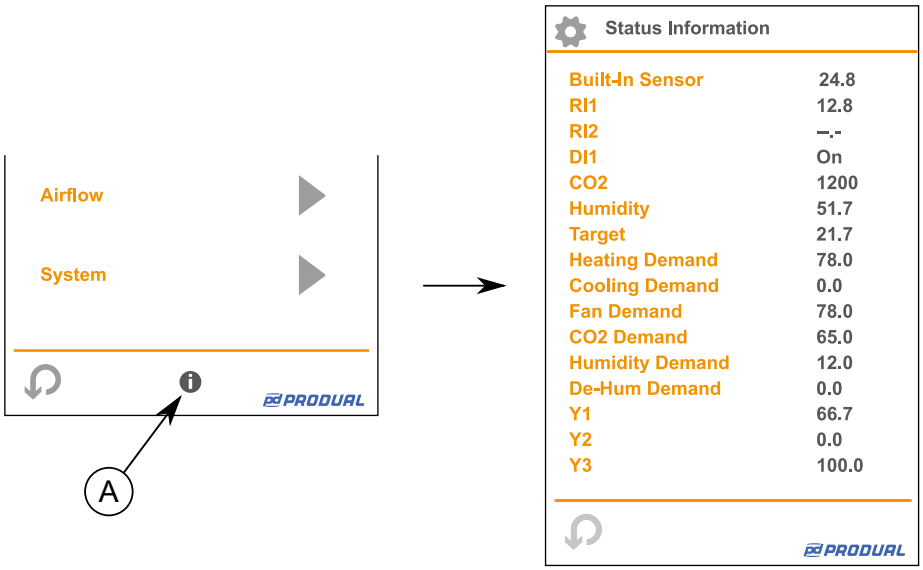
The following languages are available.

ES	Spanish
DK	Danish
FR	French
IT	Italian
PL	Polish
EN	English
FI	Finnish
SE	Swedish
DE	German

2.5.10 Status information view

Status information view shows the current measurement and output information. The view can be accessed via configuration view by pressing status information button (ⓘ).

AKRIBIS · www.akribis.info · contacte@akribis.info



A. Status information button

3 Commissioning

3.1 Mounting the product

WARNING: Handle the product with care. Dropping the product may cause internal damage and unwanted functions in the connected system.

1. Check that the product is not damaged during transportation.
2. Select the mounting location.

   WARNING: Don't install this product near a life support apparatus.

   WARNING: Don't install this product into a space containing flammable or explosive substances.

   CAUTION: Place the product outside the reach of children and animals.

   The device can be located in dry surroundings (IP20) with pollution degree 1 or 2. The device is mounted by using screws on the standard flush mounting box. The recommended installation height is 150...180 cm.

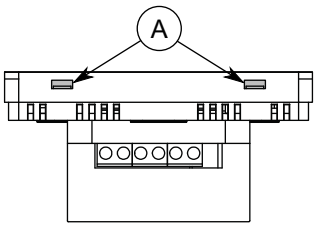
   The device location should be selected carefully. All the error factors that can affect to the measurements should be eliminated as well as possible. The following list defines the typical measurement error factors.

   - direct sun light
   - occupant proximity
   - air flow coming from windows or doors
   - air flow coming from ventilation nozzles
   - air flow coming from the flush mounting box
   - differential temperature caused by external wall

   Important: The product may only be installed in a location where the ambient conditions meet the operating condition requirements.

Operating conditions	
Temperature	0...50 °C (32...122 °F)
Humidity	0...95 %rH (non-condensing)

3. Remove the cover.
   a. Use a small flat head screwdriver to open the bottom locking clips.

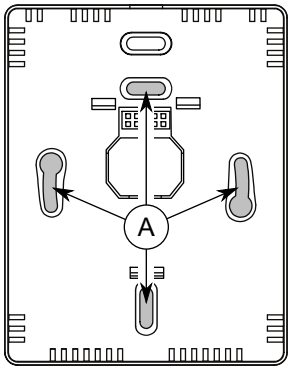


   A. Locking clips

   Important: Don't use excessive force when pushing the clips. The plastic cover is damaged easily.

   b. Carefully detach the cover from the bottom.
4. Make the wirings.

5. Mount the product on flush mounting box using the mounting points.

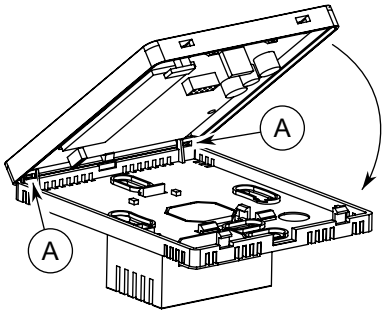


A. Mounting points

The maximum screw diameter is 4.3 mm.

Important: Don't use excessive force when tightening the mounting screws.

6. Carefully fit the cover.
Align the cover fixing clips with bottom part holes and close the cover.



A. Fixing clips and holes

3.2 Wiring

WARNING: Device wiring and commissioning can only be carried out by qualified professionals. Always make the device wirings in de-energised electricity network.

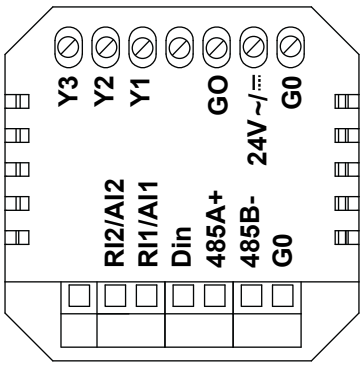
WARNING: This product is appliance class III product according to IEC 60664-1. The product may only be connected to SELV (safety extra low voltage) electricity network.

CAUTION: The product may only be connected to overvoltage category I or II electricity network according to IEC 60664-1. Use external overvoltage protection if the device is connected to the overvoltage category III electricity network.

CAUTION: The used cables must have minimum of 230 Vac insulation for SELV wiring, if the mounting box includes also 230 Vac voltage wirings.

CAUTION: Use single stranded wires or use wire end sleeves if multi stranded wires are used.

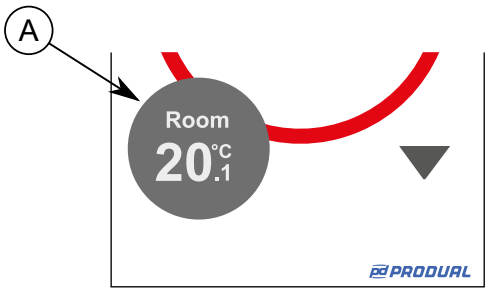
CAUTION: Don't connect fan motors in parallel. One product can control only one fan motor.



Y3	Analogue output 3, 0...10 Vdc, configurable (the default function is extract flow)	**Important:** The maximum wire length is 30 m.
Y2	Analogue output 2, 0...10 Vdc, configurable (the default function is supply flow)	
Y1	Analogue output 1, 0...10 Vdc, configurable (the default function is heating stage 1)	
G0	0 V, common	
24V	Supply, 24 Vac/dc	
G0	0 V, common	
RI2/AI2	External temperature sensor input 2, NTC 10 (0...10 Vdc with AI option)	**Important:** The maximum wire length is 3 m.
RI1/AI1	External temperature sensor input 1, NTC 10 (0...10 Vdc with AI option)	
Din	Digital input, potential free contact	
485A+	Modbus RTU / BACnet MS/TP, RS-485	
485B-	**Note:** The bus is not galvanically isolated.	
G0	0 V, common	

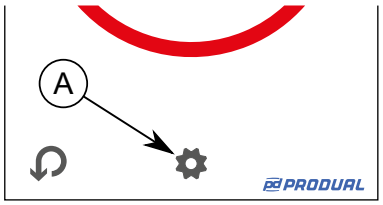
3.3 Configuring the device

1. Press the action button on the main view.

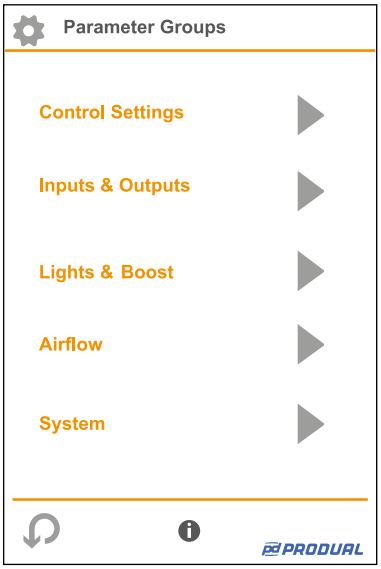


A. Action button

2. Press the configuration mode button.



3. Input the configuration mode password.
   The factory setting for the password is 6666.
4. Make the required settings.



   You can navigate in the menu by pressing ▶, ▼ and ▲ buttons. The values can be changed by pressing the value. See the following chapters for more information about the available settings.
5. Exit the configuration mode by pressing ↩ button.
6. Return to main view by pressing ↩ button.
   The device restarts before the main view is displayed.

3.3.1 Control settings menu

Menu item	Available values	Factory setting	Description
Nominal SP	*0.0...95.0*	*21.0*	Temperature control setpoint (°C/°F).

Menu item	Available values	Factory setting	Description
Heating DZ COMFORT	*0.0...25.0*	*0.5*	Heating control dead zone in home mode (°C/°F).
Cooling DZ COMFORT	*0.0...25.0*	*0.5*	Cooling control dead zone in home mode (°C/°F).
Heating DZ ECO	*0.0...25.0*	*4.0*	Heating control dead zone in away and eco mode (°C/°F).
Cooling DZ ECO	*0.0...25.0*	*4.0*	Cooling control dead zone in away and eco mode (°C/°F).
SP Adj. Max.	*0.0...20.0*	*3.0*	Temperature setpoint adjustment high limit (°C/°F).
SP Adj. Min.	*-20.0...0.0*	*-3.0*	Temperature setpoint adjustment low limit (°C/°F).
PB	*1.0...50.0*	*4.0*	Temperature control proportional band (°C/°F).
IA	*0...1200*	*600*	Temperature control integral time (seconds). Set the value to 0 to disable integration.
Heating Stages	*1-Stage / 2-Stages*	*1-Stage*	Number of heating stages.
Heating Stage 1 Dir	*Direct / Reverse*	*Reverse*	Heating stage 1 direction.
Heating Stage 2 Dir	*Direct / Reverse*	*Reverse*	Heating stage 2 direction.
Cooling Stages	*1-Stage / 2-Stages*	*1-Stage*	Number of cooling stages.
Cooling Stage 1 Dir	*Direct / Reverse*	*Direct*	Cooling stage 1 direction.
Cooling Stage 2 Dir	*Direct / Reverse*	*Direct*	Cooling stage 2 direction.
Aux. SP	*0.0...95.0*	*21.0*	Auxiliary temperature control setpoint (°C/°F).
Aux. PB	*1.0...50.0*	*4.0*	Auxiliary temperature control proportional band (°C/°F).
Aux. IA	*0...1200*	*600*	Auxiliary temperature control integral time (seconds). Set the value to 0 to disable integration.
Aux. Dir.	*Direct / Reverse*	*Direct*	Auxiliary temperature control actuator direction.
CO2 SP	*0...5000*	*1000*	CO_2 control setpoint (ppm).
Limit High	*0.0...95.0*	*35.0*	High limit control setpoint (°C/°F).
Limit Low	*0.0...95.0*	*16.0*	Low limit control setpoint (°C/°F).
Limit Ratio	*0.0...5.0*	*0.0*	Low/high limit control ratio. Set the value to 0.0 to disable ratio.
CO2 PB	*10...5000*	*300*	CO_2 control proportional band (ppm).
CO2 IA	*0...10000*	*0*	CO_2 control integral time (seconds). Set the value to 0 to disable integration.
CO2 Dir	*Direct / Reverse*	*Direct*	CO_2 control actuator direction.
Humidity SP	*0.0...100.0*	*50.0*	Humidity control setpoint (%rH).
Humidity PB	*0.1...100.0*	*20.0*	Humidity control proportional band (%rH).
Humidity IA	*0...10000*	*0*	Humidity control integral time (seconds). Set the value to 0 to disable integration.
Humidity Dir	*Direct / Reverse*	*Direct*	Humidity control actuator direction.
DeHum Dir	*Direct / Reverse*	*Direct*	De-humidification control actuator direction.
Changeover Low	*0.0...95.0*	*20.0*	Changeover function cooling mode limit.
Changeover High	*0.0...95.0*	*25.0*	Changeover function heating mode limit.

AKRIBIS · www.akribis.info · contacte@akribis.info

3.3.2 Inputs & outputs menu

Menu item	Available values	Factory setting	Description
Room Sensor Text	*Disabled / Room / Floor / Outside / Zone 1...3 / Bathroom / Sauna / Bedroom / Kitchen / Cooler / Flow / Hot Water / Tank / Pool / Cabin*	*Room*	Internal temperature sensor text. See the texts in other languages from the chapter Display text translations on page 26.
Floor Sensor Text		*Floor*	RI1 temperature sensor text.
Outside Sensor Text		*Outside*	RI2 or network temperature sensor text.
Humidity Display	*Enabled / Disabled*	*Enabled*	Enable or disable the humidity measurement view on the display. The selection is available only in -RH models.
Digital Input Mode	*Close for ECO / Open for ECO / Change-Over / Disable Cooling / DI Contact Alarm / Network / Close for Airflow Boost*	*Close for ECO*	Digital input usage. *Close for ECO* — Eco mode activates when the contact closes. *Open for ECO* — Eco mode activates when the contact opens. *Change-Over* — Changes between heating and cooling in changeover control. *Disable Cooling* — Cooling is disabled when the contact is closed. *DI Contact Alarm* — Alarm contact. *Network* — Network value. *Close for Airflow Boost* — Air flow boost activates when the contact closes.
Digital Input Delay	*0...28800*	*0*	Input delay when the contact changes from active to passive (seconds).

AKRIBIS · www.akribis.info · contacte@akribis.info

Menu item	Available values	Factory setting	Description
RI1 Mode *RI2 Mode*	*Disabled / Room / Floor / Outside / Heating/Cooling / Network NTC10 / Network 0-10V / Supply Airflow / Extract Airflow / Main Loop / Close for ECO / Open for ECO / Network DI / Condensation*	*Disabled*	Resistive input usage. *Disabled* — The input is not in use. *Room* — Temperature for temperature control (NTC10). *Floor* — Temperature for low and high limit control (NTC10). *Outside* — External temperature measurement (NTC 10). *Heating/ Cooling* — Temperature for changeover control (NTC10). *Network NTC10* — Measurement for communication network (NTC10). *Network 0-10V* — Measurement for communication network (0...10 V). Available only in -AI models. *Supply Airflow* — Supply air flow monitoring (0...10 V). Available only in -AI models. *Extract Airflow* — Extract air flow monitoring (0...10 V). Available only in -AI models. *Close for ECO* — Eco mode activates when the contact closes. *Open for ECO* — Eco mode activates when the contact opens. *Network DI* — Cooling is disabled when the contact is closed. *Condensation* — Changes between heating and cooling in changeover control.
Outside Temp. Source	*Built-In Sensor / Network Temp*	*Built-In Sensor*	Outside temperature sensor source. *Built-In Sensor* — Connected temperature sensor. *Network Temp* — Temperature from communication bus.
Mode Screen Sensor	*Disabled / Room / Floor / Outside / Rotate*	*Disabled*	Measurement value shown in mode selection view. *Disabled* — Viewing is disabled. *Room* — Built-in temperature measurement. *Floor* — The input value that has value *Floor* in input usage (RI1 or RI2) *Outside* — The input value that has value *Outside / Network NTC10 / Network 0-10V* in input usage (RI1 or RI2) *Rotate* — All measurement values are shown in turns.
Internal Sensor Cal.	*-10.0...10.0*	*0*	Internal temperature sensor tuning (°C/°F).
RI1 Cal.	*-10.0...10.0*	*0*	RI1 temperature sensor tuning (°C/°F).
RI2 Cal.	*-10.0...10.0*	*0*	RI2 temperature sensor tuning (°C/°F).
CO2 Cal.	*-500...500*	*0*	CO_2 sensor tuning (ppm).
Hum Cal.	*-10.0...10.0*	*0*	Humidity sensor tuning (%rH).

AKRIBIS · www.akribis.info · contacte@akribis.info

Menu item	Available values	Factory setting	Description
Y1	*Network / Htg Stage 1 / Htg Stage 2 / Clg Stage 1 / Clg Stage 2 / Lights / CO2 / Max. VAV / Humidification / De-Humidification / Clg1+ Condensation / Clg2+ Condensation*	*Htg Stage 1*	Y1/Y2/Y3 output control source. *Network* — The output is controlled via communication network. *Htg Stage 1* — Heating stage 1 analogue output. *Htg Stage 2* — Heating stage 2 analogue output. *Clg Stage 1* — Cooling stage 1 analogue output. *Clg Stage 2* — Cooling stage 2 analogue output. *Lights* — Lighting control output. *CO2* — CO_2 control output. *Max. VAV* — Maximum of VAV control output. *Humidification* — Humidification control output. *De-Humidification* — De-humidification control output. *Supply Airflow* — Supply air flow control output. *Extract Airflow* — Extract air flow control output. *Clg1+Condensation* — Minimum of cooling stage 1 and humidity control output. *Clg2+Condensation* — Minimum of cooling stage 2 and humidity control output.
Y2		*Supply Airflow*	
Y3		*Extract Airflow*	
Y1 Min.	*0.0...100.0*	*0.0*	Output scaling (%)
Y1 Max.		*100.0*	
Y2 Min.		*0.0*	
Y2 Max.		*100.0*	
Y3 Min.		*0.0*	
Y3 Max.		*100.0*	
Anti-JAM	*0...14*	*0*	Valve jam prevention function frequency. Set the value to 0 to disable function.

3.3.2.1 Display text translations

English	Finnish	Swedish	French	Polish	Italian	Spanish	Catalan	Basque	German
Room	*Huone*	*Rum*	*Pièce*	*Pokój*	*Stanza*	*Sala*	*Sala*	*Gela*	*Raum*
Floor	*Lattia*	*Golv*	*Plancher*	*Podłoga*	*Pavimento*	*Suelo*	*Terre*	*Lurzoruan*	*Ebene*
Outside	*Ulko*	*Utomhus*	*Ext*	*Zewnątrz*	*Esterno*	*Exterior*	*Exterior*	*Kanpo*	*Aussen*
Zone 1	*Vyöhyke1*	*Zon 1*	*Zone 1*	*Strefa 1*	*Zona 1*	*Zona 1*	*Zona 1*	*1. Gunea*	*Zone 1*
Zone 2	*Vyöhyke2*	*Zon 2*	*Zone 2*	*Strefa 2*	*Zona 2*	*Zona 2*	*Zona 2*	*2. Gunea*	*Zone 2*
Zone 3	*Vyöhyke3*	*Zon 3*	*Zone 3*	*Strefa 3*	*Zona 3*	*Zona 3*	*Zona 3*	*3. Gunea*	*Zone 3*
Bathroom	*Pesuh.*	*Badrum*	*SdB*	*Łazienka*	*Bagno*	*Baño*	*Bany*	*Bainugela*	*Bad*
Sauna	*Sauna*	*Bastu*	*Sauna*	*Sauna*	*Sauna*	*Sauna*	*Sauna*	*Sauna*	*Sauna*
Bedroom	*Makuuh*	*Sovrum*	*Chambre*	*Sypialnia*	*St. Letto*	*Habit.*	*Habit.*	*Logela*	*Schlafen*
Kitchen	*Keittiö*	*Kök*	*Cuisine*	*Kuchnia*	*Cucina*	*Cocina*	*Cuina*	*Sukaldea*	*Küche*
Cooler	*Jääkaappi*	*Kylare*	*Clim*	*Chłodnica*	*Cond.*	*Chiller*	*Chiller*	*Hotzgailua*	*Kühler*
Flow	*Virtaus*	*Flöde*	*Débit*	*Przepływ*	*Flusso*	*Caudal*	*Cabal*	*Ur-emarial*	*Fluß*

AKRIBIS · www.akribis.info · contacte@akribis.info

English	Finnish	Swedish	French	Polish	Italian	Spanish	Catalan	Basque	German
Hot water	*Käyttövesi*	*Vatten*	*Eau Ch.*	*Woda*	*Acq. Calda*	*A. Cal.*	*A. Cal.*	*Ur beroa*	*Warmw.*
Tank	*Tankki*	*Tank*	*Réservoir*	*Zasobnik*	*Serbatoio*	*Depósito*	*Dipòsit*	*Ur tanga*	*Boiler*
Pool	*Allas*	*Bassäng*	*Piscine*	*Basen*	*Piscina*	*Piscina*	*Piscina*	*Igerilegua*	*Pool*
Cabin	*Hytti*	*Hytt*	*Cabine*	*Kabina*	*Cabina*	*Cabina*	*Cabina*	*Aldagela*	*Zimmer*

3.3.3 Lights & Boost menu

Menu item	Available values	Factory setting	Description
Mode Button	*Screen / Rotate / None*	*Screen*	Operation mode button function. *Screen* — The mode selection view opens. *Rotate* — The modes change in turns when the button is pressed. *None* — The button is not viewed.
Boost Time	*0...480*	*0*	Boost mode running time (minutes). If the value is 0, the boost mode is active until manually stopped.
Lights Off Delay	*0...1800*	*30*	The delay after lights switch off (seconds).
Lights Mode	*Disabled / 0-1 / 0-1-2 / 0-1-2-3*	*0*	Lighting control method. *Disabled* — The function is disabled. *0-1* — On/off control (0 %, 100 %). *0-1-2* — Three step control (0 %, 50 %, 100 %). *0-1-2-3* — Four step control (0 %, 33 %, 66 %, 100 %).
Lights Interlock	*Disabled / HOME / HOME +AWAY*	*Disabled*	Lighting control according to operation mode. *Disabled* — Operation modes don't affect to the lighting control. *HOME* — The lights output level is set automatically to 100 % when the home or boost mode activates. When the away mode activates, the lights output level is set to 0 %. *HOME+AWAY* — The lights output level is set automatically to 100 % when the home or boost mode activates.

3.3.4 Airflow menu

Menu item	Available values	Factory setting	Description
Home Supply Flow	*0...100*	*60*	Supply air flow setting in home mode (%). The value is used if the analogue output setting is *Supply Airflow*.
Home Extract Flow	*0...100*	*60*	Extract air flow setting in home mode (%). The value is used if the analogue output setting is *Extract Airflow*.
Away Supply Flow	*0...100*	*20*	Supply air flow setting in away mode (%). The value is used if the analogue output setting is *Supply Airflow*.
Away Extract Flow	*0...100*	*20*	Extract air flow setting in away mode (%). The value is used if the analogue output setting is *Extract Airflow*.

Menu item	Available values	Factory setting	Description
Boost Supply Flow	*0...100*	*100*	Supply air flow setting in boost mode (%). The value is used if the analogue output setting is *Supply Airflow*.
Boost Extract Flow	*0...100*	*100*	Extract air flow setting in boost mode (%). The value is used if the analogue output setting is *Extract Airflow*.
DI Supply Flow	*0...100*	*100*	Supply air flow setting when the boost mode is activated with digital input. The value is used if the digital output setting is *Close for Airflow Boost*.
DI Extract Flow	*0...100*	*70*	Extract air flow setting when the boost mode is activated with digital input. The value is used if the digital output setting is *Close for Airflow Boost*.
Airflow Alarm Limit	*0...100*	*50*	Air flow alarm limit (%).
Airflow Alarm Delay	*0...60*	*3*	Air flow alarm delay (minutes).
Airflow Test	*0 - 1*	*0*	Air flow testing function. Sets the supply and extract air flow controls to 100 %. 0. Disabled 1. Enabled

3.3.5 System menu

Menu item	Available values	Factory setting	Description
Address	*0..247* (MOD models) / *0...127* (BAC models)	*1*	Communication bus address.
Baud Rate	*9600 / 19200 / 38400 / 57600 / 76800*	*9600*	Communication bus speed.
Parity	*None / Odd / Even*	*None*	Communication bus parity.
Stop Bits	*1 Stop Bit / 2 Stop Bit*	*1 Stop Bit*	Number of stop bits.
Device ID	*0...4194303*	*Auto*	Device ID (*Auto* = 651001). The setting is available only in BAC models.
Service Pin	*Disabled / Enabled*	*Disabled*	BACnet service pin. *Disabled* — Function is disabled. *Enabled* — The device sends BACnet I-AM message.
Brightness	*0...20*	*5*	Display backlight brightness level.
Show Unit Swap	*Disabled / Enabled*	*Disabled*	Measurement unit swap button visibility.
Lock Mode	*Disabled / Mode Only / Adjust Only / No Input*	*Disabled*	Lock mode. *Disabled* — Function is disabled. *Mode Only* — Operation mode button available. *Adjust Only* — Temperature setpoint buttons available. *No Input* — All buttons unavailable.

Menu item	Available values	Factory setting	Description
Setpoint mode	*Temperature / Temperature Rel. / None*	*Temperature*	Setpoint adjustment method. *Temperature* Temperature value. *Temperature Rel.* Relative temperature value. Shows the deviation from the setpoint. *None* Measured room temperature is viewed. Setpoint shows only when pushing the setpoint adjustment buttons.
Lock Code	*0000...9999*	*0000*	Lock mode password (0000 = no password).
Maintenance Code	*0000...9999*	*6666*	Configuration mode password (0000 = no password).
Staff Code	*0000...9999*	*0000*	Additional settings view password (0000 = no password).
Language	*EN / FI / FR / SE / PL / IT / ES / DK / DE*	*EN*	Display language. *EN* English *FI* Finnish *FR* French *SE* Swedish *PL* Polish *IT* Italian *ES* Spanish *DK* Danish *DE* German
Screen Refresh Rate	*Fast / Medium / Slow*	*Fast*	Display refresh rate.
Native Units (Defaults)	*Celsius / Fahrenheit*	*C*	Default temperature unit (Celsius / Fahrenheit). **Important:** After changing the unit here, the controller reloads defaults for all settings. Select the native units when starting the commissioning.
Show Consumption Icon	*Disabled / Enabled*	*Enabled*	Consumption view button visibility. Available only in -CD models.
Show Language Swap	*Disabled / Enabled*	*Disabled*	Language selection button visibility.
Reload Default	*Off / On*	*Off*	Reload factory settings. **Important:** The factory defaults are loaded immediately when pressing the menu item.
Version	*x.xx BACnet / x.xx Modbus*	-	Firmware version.

AKRIBIS · www.akribis.info · contacte@akribis.info

4 Modbus

4.1 Modbus properties

The Modbus communication is available only in MOD models.

Protocol	RS-485 Modbus RTU
Bus speed	9600*/19200/38400/56000/76800 bit/s
Data bits	8
Parity	none*/odd/even
Stop bits	1* / 2
Modbus ID	1*
Unit load	1/2 UL
	* factory setting

4.2 Modbus function codes

The device supports the following Modbus function codes.

Decimal	Hexa-decimal	Function
1	0x01	Read Coils
3	0x03	Read Holding Registers
4	0x04	Read Input Registers
5	0x05	Write Single Coil
6	0x06	Write Single Register
16	0x10	Write Multiple Registers

4.3 Modbus registers

4.3.1 Coils

Regis-ter	Parameter description	Data type	Values	Range	Default
100	Away mode override.	Bit	*0 - 1*	0. Off 1. On	*0*
101	Digital input boost override.	Bit	*0 - 1*	0. Off 1. On	*0*
102	Eco mode override.	Bit	*0 - 1*	0. Off 1. On	*0*
103	Heating/cooling mode selection (change-over function).	Bit	*0 - 1*	0. Heating 1. Cooling	*0*
104	Air flow testing mode status (controls supply and extract airflow output to 100 %.	Bit	*0 - 1*	0. Off 1. On	*0*

Regis-ter	Parameter description	Data type	Values	Range	Default
105	Boost mode override.	Bit	*0 - 1*	0. Off 1. On	*0*

4.3.2 Discrete inputs

Register	Parameter description	Data type	Values	Range
100	Digital input 1 status (DI1).	Bit	*0 - 1*	0. Off 1. On
101	Screen locking status.	Bit	*0 - 1*	0. Off 1. On
102	Boost status.	Bit	*0 - 1*	0. Off 1. On
103	Eco mode status.	Bit	*0 - 1*	0. Off 1. On
104	Digital input 2 status (RI1).	Bit	*0 - 1*	0. Off 1. On
105	Digital input 3 status (RI2).	Bit	*0 - 1*	0. Off 1. On

4.3.3 Input registers

Register	Parameter description	Data type	Values	Range
100	Temperature measurement.	S16	*-400...3020*	-40.0...302.0 °C/°F
101	External temperature measurement, resistive input 1.	S16	*-400...3020*	-40.0...302.0 °C/°F
102	External temperature measurement, resistive input 2.	S16	*-400...3020*	-40.0...302.0 °C/°F
103	Current calculated setpoint.	S16	*-400...3020*	-40.0...302.0 °C/°F
104	Current temperature control mode.	U16	*0 - 1*	0. Comfort 1. Eco
105	Relative humidity measurement.	U16	*0...1000*	0.0...100.0 %rH
106	CO_2 measurement.	U16	*0...5000*	0...5000 ppm
107	Output 1 value (Y1).	U16	*0...1000*	0.0...100.0 %
108	Output 2 value (Y2).	U16	*0...1000*	0.0...100.0 %
109	Output 3 value (Y3).	U16	*0...1000*	0.0...100.0 %
110	Current function mode.	U16	*0 - 1 - 2*	0. Home 1. Away 2. Boost
113	Lighting level.	U16	*0...1000*	0.0...100.0 %
114	Analogue input 1 (RI1) value.	U16	*0...1000*	0.0...100.0 %
115	Analogue input 2 (RI2) value.	U16	*0...1000*	0.0...100.0 %
200	Firmware version.	U16	-	-

AKRIBIS · www.akribis.info · contacts@akribis.info

4.3.4 Holding registers

Register	Parameter description	Data type	Values	Range	Default
100	Nominal temperature setpoint.	U16	*0...950*	0.0...95.0 °C/°F	*200*
101	Comfort mode heating dead zone.	U16	*0...250*	0.0...25.0 °C/°F	*5*
102	Comfort mode cooling dead zone.	U16	*0...250*	0.0...25.0 °C/°F	*5*
103	Eco mode heating dead zone.	U16	*0...250*	0.0...25.0 °C/°F	*40*
104	Eco mode cooling dead zone.	U16	*0...250*	0.0...25.0 °C/°F	*40*
106	Temperature setpoint adjustment range, low limit	S16	*-200...0*	-20.0...0.0 °C/°F	*-30*
107	Temperature setpoint adjustment range, high limit	S16	*0...200*	0.0...20.0 °C/°F	*30*
108	Temperature control proportional band.	U16	*10…500*	1.0…50.0 °C/°F	*40*
109	Temperature control integration time.	U16	*0…1200*	0…1200 s	*600*
110	Number of heating stages.	U16	*0 - 1 - 2*	0. None 1. 1 stage 2. 2 stages	*1*
111	Heating stage 1, direction.	U16	*0 - 1*	0. Reversed 1. Direct	*0*
112	Heating stage 2, direction.	U16	*0 - 1*	0. Reversed 1. Direct	*0*
113	Number of cooling stages.	U16	*0 - 1 - 2*	0. None 1. 1 stage 2. 2 stages	*1*
114	Cooling stage 1, direction.	U16	*0 - 1*	0. Reversed 1. Direct	*1*
115	Cooling stage 2, direction.	U16	*0 - 1*	0. Reversed 1. Direct	*1*
116	Setpoint, high limit	U16	*0...950*	0.0...95.0 °C/°F	*350*
117	Setpoint, low limit	U16	*0...950*	0.0...95.0 °C/°F	*160*
118	Setpoint limit ratio.	U16	*0...50*	0.0...5.0 °C	*0*
119	CO_2 control setpoint.	U16	*0…5000*	0...5000 ppm	*1000*
120	CO_2 control proportional band.	U16	*10…5000*	10...5000 ppm	300
121	CO_2 control integration time.	U16	*0…10000*	0…10000 s	*0*
122	CO_2 output direction.	U16	*0 - 1*	0. Reversed 1. Direct	*1*
123	Humidity control setpoint.	U16	*0...1000*	0.0...100.0 %rH	*500*
124	Humidity control proportional band.	S16	*10...1000*	1.0...100.0 %rH	*200*
125	Humidity control integration time.	U16	*0…10000*	0…10000 s	*0*
126	Humidification output direction.	U16	*0 - 1*	0. Reversed 1. Direct	*1*

AKRIBIS · www.akribis.info · contacte@akribis.info

Regis-ter	Parameter description	Data type	Values	Range	Default
127	De-humidification output direction.	U16	*0 - 1*	0. Reversed 1. Direct	*1*
128	Mode view sensor.	U16	*0 - 1 - 2 - 3*	0. Disabled 1. Room (internal sensor) 2. Floor (RI1) 3. Outside (RI2)	*0*
131	Y1 output mode.	U16	*0 - 1 - 2 ... - 13*	0. Network value 1. Heating stage 1 2. Heating stage 2 3. Cooling stage 1 4. Cooling stage 2 5. Lighting control 6. CO_2 control 7. Maximum VAV 8. Humidification 9. De-humidification 10. Supply air flow 11. Extract air flow 12. Cooling 1 with condensation 13. Cooling 2 with condensation	*1*
132	Y2 output mode.	U16	*0 - 1 - 2 ... - 13*		*10*
133	Y3 output mode.	U16	*0 - 1 - 2 ... - 13*		*11*
134	Y1 output override value.	U16	*0...1000*	0.0...100.0 % (0.00...10.00 V)	*0*
135	Y2 output override value.	U16	*0...1000*	0.0...100.0 % (0.00...10.00 V)	*0*
136	Y3 output override value.	U16	*0...1000*	0.0...100.0 % (0.00...10.00 V)	*0*
137	Minimum Y1 output.	U16	*0...1000*	0.0...100.0 %	*0*
138	Maximum Y1 output.	U16	*0...1000*	0.0...100.0 %	*1000*
139	Minimum Y2 output.	U16	*0...1000*	0.0...100.0 %	*0*
140	Maximum Y2 output.	U16	*0...1000*	0.0...100.0 %	*1000*
141	Minimum Y3 output.	S16	*0...1000*	0.0...100.0 %	*0*
142	Maximum Y3 output.	U16	*0...1000*	0.0...100.0 %	*1000*
143	Valve jam prevention interval.	U16	*0 - 1 - 2 … - 14*	0 = function disabled, 1...14 days	*0*

AKRIBIS · www.akribis.info · contacte@akribis.info

Register	Parameter description	Data type	Values	Range	Default
144	RI1 input mode.	U16	*0 - 1 - 2 … - 12*	0. Disabled 1. Room (NTC 10 control) 2. Floor (NTC 10 high/low limit) 3. Auxiliary loop 4. Heating / cooling (NTC 10 change-over) 5. Network NTC 10 6. Network 0...10 V 7. Supply air flow 8. Extract air flow 9. Close for Eco mode (digital input) 10. Open for Eco mode (digital input) 11. Network digital input 12. Condensation	*0*
145	RI2 input mode.	U16	*0 - 1 - 2 … - 12*		*0*
146	Outdoor temperature source.	U16	*0 - 1*	0. Internal sensor 1. Network sensor	*0*
147	Outdoor temperature network value. If the outdoor temperature source is set to 1, and a valid (within range) value is set to this register, the display shows outdoor temperature in the secondary information view.	S16	*-580...1220*	-58.0...122.0 °C/°F	*0*
148	Digital input mode.	U16	*0 - 1 - 2 ... - 6*	0. Close for Eco mode 1. Open for Eco mode 2. Heating / cooling change-over 3. Disable cooling 4. Alarm contact 5. Network measurement 6. Close for balanced air flow boost	*0*
149	Digital input delay.	U16	*0...28800*	0...28800 s	*0*
150	Internal temperature measurement tuning.	S16	*-100...100*	-10.0...10.0 °C/°F	*0*
151	RI1 input tuning.	S16	*-100...100*	-10.0...10.0 °C/°F	*0*
152	RI2 input tuning.	S16	*-100...100*	-10.0...10.0 °C/°F	*0*
153	CO_2 measurement tuning.	S16	*-500...500*	-500...500 ppm	*0*
154	Humidity measurement tuning.	S16	*-100...100*	-10.0...10.0 %rH	*0*

AKRIBIS · www.akribis.info · contacts@akribis.info

Register	Parameter description	Data type	Values	Range	Default
155	Lock mode	U16	*0 - 1 - 2 - 3*	0. Disabled 1. On/off button available. 2. Temperature setpoint buttons available. 3. All buttons unavailable.	*0*
156	Lock mode password.	U16	*0...9999*	0000...9999	*0000*
157	Mode button operation.	U16	*0 - 1 - 2*	0. Opens mode selection view 1. Toggle between modes 2. Button is not viewed	*1*
158	Boost mode duration.	U16	*0...480*	0 = permanent boost mode, 1...480 min	*0*
159	Lighting delay.	U16	*0...1800*	0...1800 s	*30*
160	Lighting mode.	U16	*0 - 1 - 2 - 3*	0. Disabled 1. 0 - 1 2. 0 - 1 - 2 3. 0 - 1 - 2 - 3	*0*
161	Lighting interlocking.	U16	*0 - 1 - 2*	0. Disabled 1. Home mode 2. Home and away mode	*0*
163	Display backlight level.	U16	*0...20*	0...20	*5*
164	Humidity display.	U16	*0 - 1*	0. Disabled 1. Enabled	*1*
165	Temperature unit changing button.	U16	*0 - 1*	0. Disabled 1. Enabled	*0*
166	Zone 1 room sensor text on the display.	U16	*0 - 1 - 2 ... - 16*	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.*Tank* 15.*Pool* 16.*Cabin*	*1*
167	Zone 2 floor sensor text on the display.	U16	*0 - 1 - 2 ... - 16*		*2*
168	Zone 3 outdoor sensor text on the display.	U16	*0 - 1 - 2 ... - 16*		*3*

Register	Parameter description	Data type	Values	Range	Default
177	Lighting override. After overriding the register returns to 0. The lights object takes the last action (network or user). Override Level 1 is the next level after 0 % and depends on the configuration. For On/Off = 100 %, for 3-levels = 50 %, for 4-levels = 33 %. And so on.	U16	*0 - 1 - 2 - 3 - 4*	0. None 1. Override level 0 (0 %) 2. Override level 1 (100 % - on/off, 50 % - 3 levels, 33 % - 4 levels) 3. Override level 2 (100 % - 3 levels, 66 % - 4 levels) 4. Override level 3 (100 % - 4 levels)	*0*
179	Override locking.	U16	*0 - 1 - 2*	0. No override 1. Override on 2. Override off	*0*
180	Configuration mode password.	U16	*0...9999*	0000...9999	*6666*
181	Staff mode password.	U16	*0...9999*	0000...9999	*0000*
185	Heating / cooling change-over, minimum temperature.	U16	*0...950*	0.0...95.0 °C/°F	*200*
186	Heating / cooling change-over, maximum temperature.	U16	*0...950*	0.0...95.0 °C/°F	*250*
189	Home mode supply air flow.	U16	*0...100*	0...100 %	*60*
190	Home mode extract air flow.	U16	*0...100*	0...100 %	*60*
191	Away mode supply air flow.	U16	*0...100*	0...100 %	*20*
192	Away mode extract air flow.	U16	*0...100*	0...100 %	*20*
193	Boost mode supply air flow.	U16	*0...100*	0...100 %	*100*
194	Boost mode extract air flow.	U16	*0...100*	0...100 %	*100*
195	Digital input supply air flow.	U16	*0...100*	0...100 %	*100*
196	Digital input extract air flow.	U16	*0...100*	0...100 %	*70*
197	Air flow alarm limit.	U16	*0...100*	0...100 %	*50*
198	Air flow alarm delay.	U16	*0...60*	0...60 min	*3*
200	Bus address.	U16	*0...247*	0...247	*1*
201	Bus speed.	U16	*0 - 1 - 2 - 3 - 4*	0. 9600 bits/s 1. 19200 bits/s 2. 38400 bits/s 3. 57600 bits/s 4. 76800 bits/s	*0*
202	Bus parity.	U16	*0 - 1 - 2*	0. None 1. Odd 2. Even	*0*
203	Stop bits.	U16	*0 - 1*	0. 1 stop bit 1. 2 stop bits	*0*
300	Reset device.	U16	*0 - 1*	0. N/A 1. Reset device	*0*
301	Non volatile memory update.	U16	*0 - 1*	0. N/A 1. Update memory	*0*

AKRIBIS · www.akribis.info · contacts@akribis.info

Register	Parameter description	Data type	Values	Range	Default
303	Reset to factory defaults.	U16	*0 - 1*	0. N/A 1. Reset to defaults	*0*
304	Language.	U16	*0 - 1 - 2 ... - 8*	0. English 1. Finnish 2. French 3. Swedish 4. Polish 5. Italian 6. Spanish 7. Danish 8. German	*0*
307	Show language changing button on display.	U16	*0 - 1*	0. Disabled 1. Enabled	*0*
308	Setpoint mode.	U16	*0 - 1 - 2*	0. Temperature value 1. Relative temperature value 2. No setpoint. Setpoint shows only when pushing the setpoint adjustment buttons.	*0*
400	Enable consumption button.	U16	*0 - 1*	0. Disabled 1. Enabled	*1*
401	Consumption data 1 on display.	U16	*0 - 1 - 2 ... - 5*	0. Disabled 1. Cold water (m^3) 2. Hot water (m^3) 3. Domestic heating (kWh) 4. Electricity (kWh) 5. Cooling (kWh)	*0*
402	Consumption data 2 on display.	U16	*0 - 1 - 2 ... - 5*	0. Disabled 1. Cold water (m^3) 2. Hot water (m^3) 3. Domestic heating (kWh) 4. Electricity (kWh) 5. Cooling (kWh)	*0*
403	Consumption data 3 on display.	U16	*0 - 1 - 2 ... - 5*	0. Disabled 1. Cold water (m^3) 2. Hot water (m^3) 3. Domestic heating (kWh) 4. Electricity (kWh) 5. Cooling (kWh)	*0*

AKRIBIS · www.akribis.info · contacte@akribis.info

Regis-ter	Parameter description	Data type	Values	Range	Default
404	Consumption data 4 on display.	U16	*0 - 1 - 2 ... - 5*	0. Disabled 1. Cold water (m^3) 2. Hot water (m^3) 3. Domestic heating (kWh) 4. Electricity (kWh) 5. Cooling (kWh)	*0*
405	Consumption data 5 on display.	U16	*0 - 1 - 2 ... - 5*	0. Disabled 1. Cold water (m^3) 2. Hot water (m^3) 3. Domestic heating (kWh) 4. Electricity (kWh) 5. Cooling (kWh)	*0*
431	Cold water consumption value, high part.	U16	*0...9999*	0...9999 x 10 m^3	*0*
432	Cold water consumption value, low part.	U16	*0...9999*	0...9999 x 1/1000 m^3	*0*
433	Hot water consumption value, high part.	U16	*0...9999*	0...9999 x 10 m^3	*0*
434	Hot water consumption value, low part.	U16	*0...9999*	0...9999 x 1/1000 m^3	*0*
435	Domestic heating consumption value, high part.	U16	*0...9999*	0...9999 x 10 kWh	*0*
436	Domestic heating consumption value, low part.	U16	*0...9999*	0...9999 x 1/1000 kWh	*0*
437	Electricity consumption value, high part.	U16	*0...9999*	0...9999 x 10 kWh	*0*
438	Electricity consumption value, low part.	U16	*0...9999*	0...9999 x 1/1000 kWh	*0*
439	Cooling consumption value, high part.	U16	*0...9999*	0...9999 x 10 kWh	*0*
440	Cooling consumption value, low part.	U16	*0...9999*	0...9999 x 1/1000 kWh	*0*

AKRIBIS · www.akribis.info · contacts@akribis.info

5 BACnet

5.1 BACnet properties

The BACnet communication is available only in BAC models.

Protocol	BACnet MS/TP
Device profile	BACnet Application specific controller (B-ASC)
Bus speed	9600*/19200/38400/56000/76800 bit/s
Stop bits	1
Unit load	1/2 UL
	* factory setting

5.2 Analog input objects

ID	Object name	Values	Reso-lution	Units
AI:0	*Built-In Sensor*	*-40...302*	*0.1*	*degrees-celsius (62)*
AI:1	*RI1*	*-40...302*	*0.1*	*degrees-celsius (62)*
AI:2	*RI2*	*-40...302*	*0.1*	*degrees-celsius (62)*
AI:3	*Target*	*-40...302*	*0.1*	*degrees-celsius (62)*
AI:4	*Humidity*	*0...100*	*0.1*	*percent-relative-humidity (29)*
AI:5	*CO2*	*0...5000*	*1.0*	*parts-per-million (96)*
AI:6	*Fan Demand*	*0...100*	*0.1*	*percent (98)*
AI:7	*Lights Demand*	*0...100*	*0.1*	*percent (98)*

5.3 Analog value objects

ID	Object name	Values	Reso-lution	Units
AV:0	*Nominal SP*	*-40...302*	*0.1*	*degrees-celsius (62)*
AV:1	*Heating DZ COMFORT*	*0...25*	*0.1*	*degrees-celsius (62)*
AV:2	*Cooling DZ COMFORT*	*0...25*	*0.1*	*degrees-celsius (62)*
AV:3	*Heating DZ ECO*	*0...25*	*0.1*	*degrees-celsius (62)*
AV:4	*Cooling DZ ECO*	*0...25*	*0.1*	*degrees-celsius (62)*
AV:5	*Y1 Min.*	*0...100*	*0.1*	*percent (98)*
AV:6	*Y1 Max.*	*0...100*	*0.1*	*percent (98)*
AV:7	*Y2 Min.*	*0...100*	*0.1*	*percent (98)*
AV:8	*Y2 Max.*	*0...100*	*0.1*	*percent (98)*
AV:9	*Y3 Min.*	*0...100*	*0.1*	*percent (98)*
AV:10	*Y3 Max.*	*0...100*	*0.1*	*percent (98)*
AV:11	*PB*	*1...50*	*0.1*	*degrees-celsius (62)*
AV:12	*IA*	*0...1200*	*1.0*	*seconds (73)*

AKRIBIS · www.akribis.info · contacts@akribis.info

ID	Object name	Values	Reso-lution	Units
AV:13	*Brightness*	*0...20*	*1.0*	*no-units (95)*
AV:14	*Network Temp.*	*-58...122*	*0.1*	*degrees-celsius (62)*
AV:15	*CO2 SP*	*0...5000*	*1.0*	*parts-per-million (96)*
AV:16	*Humidity SP*	*0...100*	*0.1*	*percent-relative-humidity (29)*
AV:17	*Y1*	*0...100*	*0.1*	*percent (98)*
AV:18	*Y2*	*0...100*	*0.1*	*percent (98)*
AV:19	*Y3*	*0...100*	*0.1*	*percent (98)*

5.4 Multi state value objects

ID	Object name	Values	State text	Default
MSV:0	*Device Mode*	*1 - 2 - 3*	1. Home mode 2. Away mode 3. Boost mode	*1*
MSV:1	*Alarm*	*1 - 2 ... - 64*	7-bit binary value. Bits are designated as follows: 0. Internal sensor (1) 1. RI1 input (2) 2. RI2 input (4) 3. Humidity sensor (8) 4. DI1 input (16) 5. Supply air flow (32) 6. Extract air flow (64) The alarm value is the binary value + 1.	*1*
MSV:2	*Lights*	*1 - 2 - 3 - 4*	1. Off 2. Level 1 3. Level 2 4. Level 3	*1*

5.5 Binary input objects

ID	Object name	Values	Inactive/Active_Text	Default
BI:0	*DI1*	*0 - 1*	0. Off 1. On	*0*
BI:1	*Boost Status*	*0 - 1*	0. Off 1. On	*0*
BI:2	*DI2*	*0 - 1*	0. Off 1. On	*0*
BI:3	*DI3*	*0 - 1*	0. Off 1. On	*0*

5.6 Binary output objects

ID	Object name	Values	Inactive/Active_Text	Default
BO:0	*ECO Status*	*0 - 1*	0. Off 1. On	*0*
BO:1	*Lock*	*0 - 1*	0. Off 1. On	*0*
BO:2	*Change-Over*	*0 - 1*	0. Off 1. On	*0*
BO:3	*Update Nonvol*	*0 - 1*	0. Off 1. On	*0*
BO:4	*TestMode*	*0 - 1*	0. Off 1. On	*0*

5.7 Proprietary objects

5.7.1 Config1 object

Required object properties:

Property name	Properties	Value
Object identifier	Read	proprietary-128
Object name	Read / write	Config1
Object type	Read	proprietary-128

Optional properties: none

Property ID	Values	Default	Description
40106	*-20.0...0.0*	*-3.0*	Temperature setpoint adjustment range, low limit (°C/°F)
40107	*0.0...20.0*	*3.0*	Temperature setpoint adjustment range, high limit (°C/°F).
40110	*0 - 1 - 2*	*1*	Number of heating stages. 0. None 1. 1 stage 2. 2 stages
40111	*0 - 1*	*0*	Heating stage 1, direction. 0. Reversed 1. Direct
40112	*0 - 1*	*0*	Heating stage 2, direction. 0. Reversed 1. Direct
40113	*0 - 1 - 2*	*1*	Number of cooling stages. 0. None 1. 1 stage 2. 2 stages

AKRIBIS · www.akribis.info · contacts@akribis.info

Property ID	Values	Default	Description
40114	*0 - 1*	*1*	Cooling stage 1, direction. 0. Reversed 1. Direct
40115	*0 - 1*	*1*	Cooling stage 2, direction. 0. Reversed 1. Direct
40116	*0...95.0*	*35.0*	Setpoint, high limit (°C/°F).
40117	*0...95.0*	*16.0*	Setpoint, low limit (°C/°F).
40118	*0.0...5.0*	*0.0*	Setpoint limit ratio.
40120	*10...5000*	*300*	CO_2 control proportional band (ppm).
40121	*0...10000*	*0*	CO_2 control integration time (seconds).
40122	*0 - 1*	*1*	CO_2 output direction. 0. Reversed 1. Direct
40124	*1.0...100.0*	*20.0*	Humidity control proportional band (%rH).
40125	*0...10000*	*0*	Humidity control integration time (seconds).
40126	*0 - 1*	*1*	Humidification output direction. 0. Reversed 1. Direct
40127	*0 - 1*	*1*	De-humidification output direction. 0. Reversed 1. Direct
40128	*0 - 1 - 2 - 33*	*0*	Mode view sensor. 0. Disabled 1. Room (internal sensor) 2. Floor (RI1) 3. Outside (RI2)
40131	*0 - 1 - 2 ... - 13*	*5*	Y1 output mode. 0. Network value 1. Heating stage 1 2. Heating stage 2 3. Cooling stage 1 4. Cooling stage 2 5. Lighting control 6. CO_2 control 7. Maximum VAV 8. Humidification 9. De-humidification 10.Supply air flow 11.Extract air flow 12.Cooling 1 with condensation 13.Cooling 2 with condensation

AKRIBIS · www.akribis.info · contacts@akribis.info

Property ID	Values	Default	Description
40132	*0 - 1 - 2 ... - 13*	*1*	Y2 output mode. 0. Network value 1. Heating stage 1 2. Heating stage 2 3. Cooling stage 1 4. Cooling stage 2 5. Lighting control 6. CO_2 control 7. Maximum VAV 8. Humidification 9. De-humidification 10.Supply air flow 11.Extract air flow 12.Cooling 1 with condensation 13.Cooling 2 with condensation
40133	*0 - 1 - 2 ... - 13*	*3*	Y3 output mode. 0. Network value 1. Heating stage 1 2. Heating stage 2 3. Cooling stage 1 4. Cooling stage 2 5. Lighting control 6. CO_2 control 7. Maximum VAV 8. Humidification 9. De-humidification 10.Supply air flow 11.Extract air flow 12.Cooling 1 with condensation 13.Cooling 2 with condensation
40143	*0...14*	*0*	Valve jam prevention interval (days).
40144	*0 - 1 - 2 … - 11*	*0*	RI1 input mode. 0. Disabled 1. Room (NTC 10 control) 2. Floor (NTC 10 high/low limit) 3. Auxiliary loop 4. Heating / cooling (NTC 10 change-over) 5. Network NTC 10 6. Network 0...10 V 7. Supply air flow 8. Extract air flow 9. Close for Eco mode (digital input) 10.Open for Eco mode (digital input) 11.Network digital input 12.Condensation

AKRIBIS · www.akribis.info · contacts@akribis.info

Property ID	Values	Default	Description
40145	*0 - 1 - 2 … - 11*	*0*	RI2 input mode. 0. Disabled 1. Room (NTC 10 control) 2. Floor (NTC 10 high/low limit) 3. Auxiliary loop 4. Heating / cooling (NTC 10 change-over) 5. Network NTC 10 6. Network 0...10 V 7. Supply air flow 8. Extract air flow 9. Close for Eco mode (digital input) 10.Open for Eco mode (digital input) 11.Network digital input 12.Condensation
40146	*0 - 1*	*0*	Outdoor temperature source. 0. Internal sensor 1. Network sensor
40148	*0 - 1 - 2 … - 6*	*0*	Digital input mode. 0. Close for Eco mode 1. Open for Eco mode 2. Heating / cooling change-over 3. Disable cooling 4. Alarm contact 5. Network measurement 6. Close for balanced air flow boost
40149	*0...28800*	*0*	Digital input delay (seconds).
40150	*-10.0...10.0*	*0.0*	Internal temperature measurement tuning (°C/°F).
40151	*-10.0...10.0*	*0.0*	RI1 input tuning (°C/°F).
40152	*-10.0...10.0*	*0.0*	RI2 input tuning (°C/°F).
40153	*-500...500*	*0*	CO_2 measurement tuning (ppm).
40154	*-10.0...10.0*	*0.0*	Humidity measurement tuning (%rH).

5.7.2 Config2 object

Required object properties:

Property name	Properties	Value
Object identifier	Read	proprietary-128
Object name	Read / write	Config2
Object type	Read	proprietary-128

Optional properties: none

Property ID	Values	Default	Description
40155	*0 - 1 - 2 - 3*	*1*	Lock mode. 0. Disabled 1. On/off button available. 2. Temperature setpoint buttons available. 3. All buttons unavailable.
40156	*0000...9999*	*0000*	Lock mode password.

Property ID	Values	Default	Description
40157	*0 - 1 - 2*	*0*	Mode button operation. 0. Opens mode selection view 1. Toggle between modes 2. Button is not viewed
40158	*0...480*	*0*	0 = permanent boost mode, 1...480 min
40159	*0...1800*	*30*	Lighting delay (seconds).
40160	*0 - 1 - 2 - 3*	*0*	Lighting mode. 0. Disabled 1. 0 - 1 2. 0 - 1 - 2 3. 0 - 1 - 2 - 3
40161	*0 - 1 - 2*	*0*	Lighting interlocking. 0. Disabled 1. Home mode 2. Home and away mode
40164	*0 - 1*	*1*	Humidity display. 0. Disabled 1. Enabled
40165	*0 - 1*	*0*	Temperature unit changing button. 0. Disabled 1. Enabled
40166	*1 - 2 … - 16*	*1*	Zone 1 sensor text on the display. 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.*Tank* 15.*Pool* 16.*Cabin*

AKRIBIS · www.akribis.info · contacts@akribis.info

Property ID	Values	Default	Description
40167	*0 - 1 - 2 … - 16*	*2*	Zone 2 sensor text on the display. 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.*Tank* 15.*Pool* 16.*Cabin*
40168	*0 - 1 - 2 … - 16*	*3*	Zone 3 sensor text on the display. 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.*Tank* 15.*Pool* 16.*Cabin*
40180	*0000...9999*	*6666*	Configuration mode password.
40181	*0000...9999*	*0000*	Staff mode password.
40182	-	-	Not in use.
40185	*0.0...95.0*	*20.0*	Heating / cooling change-over, minimum temperature (°C/°F).
40186	*0.0...95.0*	*25.0*	Heating / cooling change-over, maximum temperature (°C/°F).
40189	*0...100*	*60*	Home mode supply air flow (%).
40190	*0...100*	*60*	Home mode extract air flow (%).
40191	*0...100*	*20*	Away mode supply air flow (%).
40192	*0...100*	*20*	Away mode extract air flow (%).
40193	*0...100*	*100*	Boost mode supply air flow (%).
40194	*0...100*	*100*	Boost mode extract air flow (%).
40195	*0...100*	*100*	Digital input supply air flow (%).
40196	*0...100*	*70*	Digital input extract air flow (%).
40197	*0...100*	*50*	Air flow alarm limit (%).
40198	*0...60*	*3*	Air flow alarm delay (minutes).

AKRIBIS · www.akribis.info · contacte@akribis.info

Property ID	Values	Default	Description
40200	*0...127*	*1*	Bus address.
40201	*0 - 1 - 2 - 3 - 4*	*0*	Bus speed. 0. 9600 bits/s 1. 19200 bits/s 2. 38400 bits/s 3. 57600 bits/s 4. 76800 bits/s
40202	*0 - 1 - 2*	*0*	Bus parity. 0. None 1. Odd 2. Even
40203	*0 - 1*	*0*	Stop bits. 0. 1 stop bit 1. 2 stop bits
40300	*0 - 1*	*0*	Reset device. 0. N/A 1. Reset device
40301	*0 - 1*	*0*	Non volatile memory update. 0. N/A 1. Update memory
40303	*0 - 1*	*0*	Reset to factory defaults. 0. N/A 1. Reset to defaults
40304	*0 - 1 - 2 … - 8*	*0*	Language. 0. English 1. Finnish 2. French 3. Swedish 4. Polish 5. Italian 6. Spanish 7. Danish 8. German
40307	*0 - 1*	*0*	Show language changing button on display. 0. Disabled 1. Enabled
40308	*0 - 1 - 2*	*0*	Setpoint mode. 0. Temperature value 1. Relative temperature value 2. No setpoint. Setpoint shows only when pushing the setpoint adjustment buttons.
40400	*0 - 1*	*1*	Enable consumption button. 0. Disabled 1. Enabled

AKRIBIS · www.akribis.info · contacts@akribis.info

Property ID	Values	Default	Description
40401	*0 - 1 - 2 … - 5*	*0*	Consumption data 1 on display. 0. Disabled 1. Cold water (m^3) 2. Hot water (m^3) 3. Domestic heating (kWh) 4. Electricity (kWh) 5. Cooling (kWh)
40402	*0 - 1 - 2 … - 5*	*0*	Consumption data 2 on display. 0. Disabled 1. Cold water (m^3) 2. Hot water (m^3) 3. Domestic heating (kWh) 4. Electricity (kWh) 5. Cooling (kWh)
40403	*0 - 1 - 2 … - 5*	*0*	Consumption data 3 on display. 0. Disabled 1. Cold water (m^3) 2. Hot water (m^3) 3. Domestic heating (kWh) 4. Electricity (kWh) 5. Cooling (kWh)
40404	*0 - 1 - 2 … - 5*	*0*	Consumption data 4 on display. 0. Disabled 1. Cold water (m^3) 2. Hot water (m^3) 3. Domestic heating (kWh) 4. Electricity (kWh) 5. Cooling (kWh)
40405	*0 - 1 - 2 … - 5*	*0*	Consumption data 5 on display. 0. Disabled 1. Cold water (m^3) 2. Hot water (m^3) 3. Domestic heating (kWh) 4. Electricity (kWh) 5. Cooling (kWh)
40431	*0...9999*	*0*	Cold water consumption value, high part (0...9999 x 10 m^3).
40432	*0...9999*	*0*	Cold water consumption value, low part (0...9999 x 1/1000 m^3).
40433	*0...9999*	*0*	Hot water consumption value, high part (0...9999 x 10 m^3).
40434	*0...9999*	*0*	Hot water consumption value, low part (0...9999 x 1/1000 m^3).
40435	*0...9999*	*0*	Domestic heating consumption value, high part (0...9999 x 10 kWh).
40436	*0...9999*	*0*	Domestic heating consumption value, low part (0...9999 x 1/1000 kWh).
40437	*0...9999*	*0*	Electricity consumption value, high part (0...9999 x 10 kWh).
40438	*0...9999*	*0*	Electricity consumption value, low part (0...9999 x 1/1000 kWh).
40439	*0...9999*	*0*	Cooling consumption value, high part (0...9999 x 10 kWh).
40440	*0...9999*	*0*	Cooling consumption value, low part (0...9999 x 1/1000 kWh).

AKRIBIS · www.akribis.info · contacts@akribis.info

6 Disposal

The device is considered as electrical and electronic equipment for disposal in terms of the applicable European Directive. At the end of life the product must enter the recycling system at an appropriate collection point.

- The device must be disposed through channels provided for this purpose.
- The disposal must be completed according to the local and currently applicable laws and regulations.

Generally all metals can be recycled as material. Plastics and cardboard packaging material can be used in energy recovery. Printed circuit boards need selective treatment according to IEC 62635 guidelines. To aid recycling, plastic parts are marked with an appropriate identification code. Contact your local Produal distributor for further information on environmental aspects and recycling instructions for professional recyclers.



AKRIBIS · www.akribis.info · contacts@akribis.info