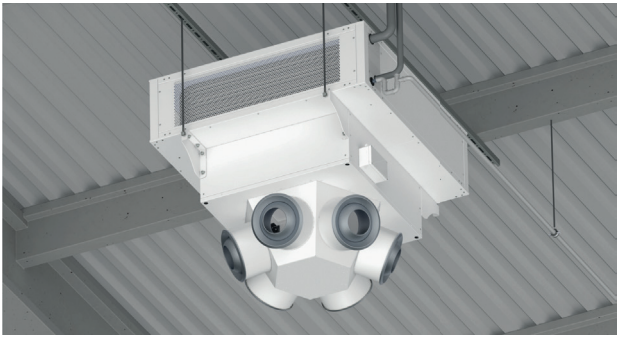
DITRONIC 2



En

USER MANUAL

for 2.10 or higher

INSTRUCTIONS FOR MOUNTING

Pages: 19 - 36

STAVOKLIMA®
s.r.o.

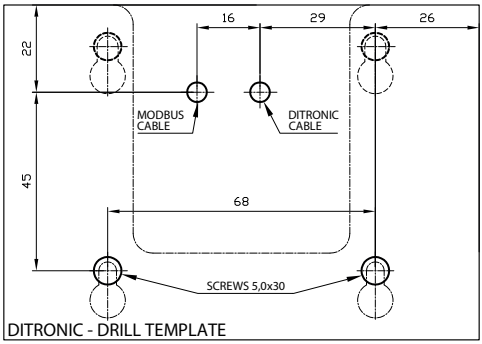
TABLE OF CONTENTS:

Unpacking	page. 21
Installation	page. 22
Controller and system description	page. 23
User and service functions setup	page. 24-35
MODBUS communication interface	page. 36

UNPACKING - INSTALLATION

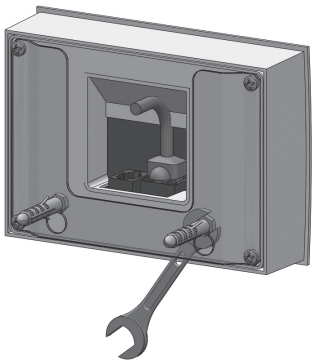
The Ditronic controller is available as a set with a room sensor, quick start guide, user manual, and installation accessories (dowels, screws), and a drill template. First, please check correct cable type *(recommended cable type is UTP – 8 wires; e.g. ROLINE U125H424- A, and more), then attach the drill template to mark the drilling holes. Make sure the cable is located correctly as shown on the template. Then, drill Ø 6mm holes for the dowels, fit the dowels and screws according to the drill template (Fig. 1). Screw the screws almost completely to the wall with about 1.5mm clearance to fix the controller anchoring plate (Fig. 2).

DRILL TEMPLATE (INCLUDED) FIG. 1



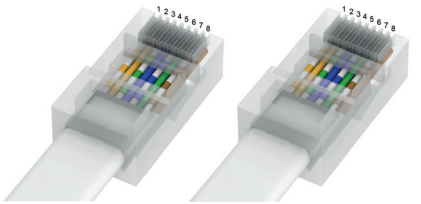
Now, shorten the 8-wire cable to about 10cm from the wall, and crimp the cable connector. Please pay attention to proper arrangement of the wires, see Fig. 3 (identical on both cable ends). Slide the connector to the socket inside the controller before fitting the controller on the wall. Make sure the cable does not cross the outline of the anchoring plate. Slide the controller with the anchoring plate on the screws and push down to finish the installation. As a security feature you can tighten the screws now (Fig. 2).

CONTROLLER WALL MOUNTING (included) Fig. 2



CONNECTION OF 8-PIN CONNECTOR (included) Fig. 3

1	white-orange	1
2	orange	2
3	white-green	3
4	blue	4
5	white-blue	5
6	green	6
7	white-brown	7
8	brown	8

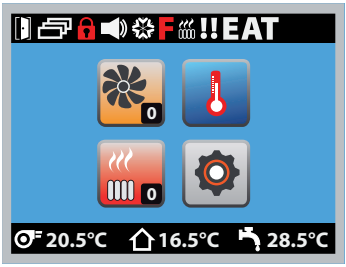


CONTROLLER AND SYSTEM DESCRIPTION

The Ditronic controller is a twin-processor controller intended for controlling of door air curtains. The controller is designed for wall mounting only in basic dry environment.

DESCRIPTION OF THE SYMBOLS ON THE CONTROLLER

- Door contact permitted – position of the door
- Master-Slave
- Keyboard lock active
- Sound on
- Anti-frost protection active
- Filter service
- Heat up mode active
- Compound failure
- Permitted external contact
- Automatic mode
- External thermostat



20.5°C Outlet air temperature

16.5°C Room temperature

28.5°C Medium median temperature

12.5°C Outdoor temperature

Controller application:

- door curtain with water, el. heating or cooling with water
- door curtain with outdoor unit with heating and/or cooling capability in refrigerant systems
- heating/cooling unit with water, el. heating or cooling with water
- heating/cooling unit with outdoor unit with heating and/or cooling capability in refrigerant systems

Door curtain with outdoor unit - mandatory controller setting*:

1) For optimum control of the outdoor unit in monosplit systems, operation in automatic mode is required, see page 30 (factory preset). The settings can be changed or reset by the user using the DEFAULT SETTINGS button, see page 25.
2) For optimum control of the outdoor unit in VRF systems, manual mode with door contact is recommended, see page 29 (factory preset). The settings can be changed or reset by the user using the DEFAULT SETTINGS button, see page 25. At the same time, deactivation of the ECO-COMFORT modes is required for the cooling zone by selecting the OFF option, see page 35 (factory preset).

Heating/cooling unit with outdoor unit - mandatory controller setting*:

1) The monosplit and VRF system can be operated in manual mode (factory preset) or in automatic mode see page 30. with the condition that a jumper is installed at the door contact terminals. The cooling band can be set using the OFF/ECO1/ECO2/COMFORT modes see page 35.

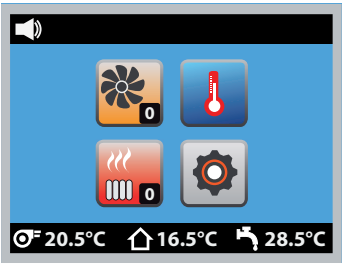
*Operating the unit without the mandatory settings may result in damage to the unit or a significant reduction in service life and void the warranty.

**The use of frost protection is not recommended in outdoor unit applications. For deactivation, see page 13 (factory preset).

***Reset settings must be manually reactivated.

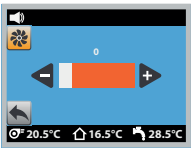
Technical conditions for operation of the controller:

max. surrounding temperature 35°C / IP 20
controller operation voltage 12V DC
operating voltage of the unit 230V (400V)-50Hz (unless requested otherwise)



FAN

Fan output is selected with „+“ and „-“ buttons; the output selected is then indicated with “X” symbol, and the output will be stored automatically in memory after 1 second.



FAN - EC

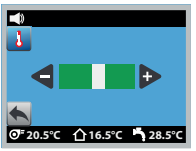
Select the fan speed with „+“ or „-“ buttons. Press the button shortly for the controller to either increase or decrease the fan speed by 10% (quick speed selection), and press the button longer for the controller to increase or decrease the fan speed continuously depending on whether „+“ or „-“ button is pressed (slow speed selection). In this menu the instant fan speed is displayed graphically and numerically in per cent. After return to main menu the configured fan speed is displayed in 0-100% range by the fan icon. In heat pump mode, the fan operation depends on the OFF / ECO1 / ECO2 / COMFORT mode.

REQUIRED TEMP SETTING

Here, you can set the required temperature from the selected sensor type

(default)

(room or outlet sensor type). Use „+“ or „-“ buttons to adjust the temperature. Preset temperature without correction will be loaded after the controller restart.

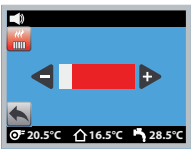


HEATING

The power can be selected in three levels via the buttons +/-. In heat pump mode, the power is controlled by the temperature difference.

COOLING

The power is controlled by the temperature difference.

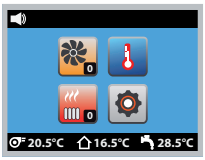


Heating or cooling is initiated only if needed based on real temperatures.

- E. HESTING *1(e.g. 7,5kW) *2(e.g. 12,5kW) *3(e.g. 20kW)
- WATER HEATING *1(100%/ON) *2(100%/ON) *3(100%/ON)
- HEATING / COOLING *0 -100%

SETTING

You can set other parameters here.



WEEKLY SWITCHING CLOCK

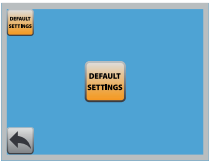
The controller offers the time mode control selected by the user. For real time and switching times setting, see below (chapters). If you wish to operate the controller with time mode control, select "ON".

TEMP PARAMETERS SETTING

You can set parameters of type of the control sensor, winter/summer operation type, antifrost protection, minimum outlet air temperature and correction, activation of the outdoor sensor.

DEFAULT SETTING OF THE PARAMETERS

Load factory settings (first setting).



DOOR CONTACT PARAMETERS

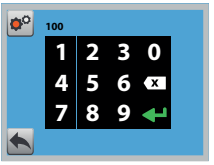
Here you can enable door contact function, select switching on/off contact including setting of the fan rundown after switching on.

HELP TRONIC

QR code display. Use a reader to get to the user manual to troubleshoot the Ditronic Touch. For more information go to: https://help.stavoklima-sw.eu

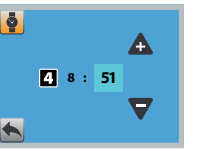
SETTINGS

You can set other parameters here.



TIME - CLOCK SETTING

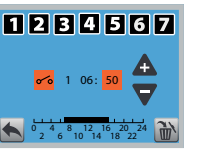
You can set (change) real time here – CLOCK.
The line is active only if time control is enabled.



4 "Weekday" setting **8** "Hour" setting **51** "Minutes" setting

---

SWITCHING TIMES AND PROGRAM SETTING



2 "Weekday" setting (the other day)
Time program start
Time program end
1 Time program number
06 Time program hours setting
51 Time program minutes setting

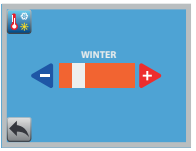
CONTROL SENSOR SELECTION

You can select from two sensors for temperature control. You can select from the room sensor (default) or outlet air sensor.

Room sensor

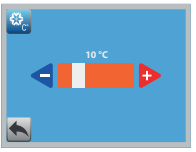
Outlet sensor

HEAT UP MODE SELECTION WINTER/SUMMER/COMBI/OFF



Most modern heating systems do not pre-heats heating medium during summertime for economic reasons. If you do not use a system like this and you DO NOT WANT HEATING in summertime in case of sudden temperature drop, select SUMMER=OFF. The heating will be passive in this mode (with the exception of anti-frost protection). A WINTER mode is also available, which turns off the cooling during the winter months. COMBI and OFF options are available only in the COOLING / HEATING mode.
** WINTER mode (default)

ANTI-FROST PROTECTION (AFP)



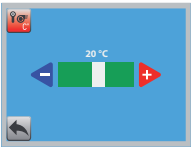
AFP - OUTLET SENSOR

At 4°C, the vavle is ful opened, closing fan to 85% power (EC) and failure realy is ON. In case the temperature further decreases, it will occur at a temperature of 1°C on the strainer exhaust to open the valve and stop the fan.

AFP - ROOM SENSOR

The tempereture can be set on the controller. At this temperature, full will occur opening the valve, switching the fan to 85% power (EC) and switching the failure realy is ON. If the temperature continues to drop, it will occur at a temperature of 4°C on the room sensor to open the valve a stop the fan.

MINIMUM OUTLET TEMPERATURE



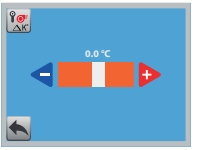
This feature makes the controller to keep minimum temperature at the outlet sensor regardless temperature of the control sensors.

CORRECTION OF TEMPERATURE SENSORS

"+","–"°C corrections setup for each temperature sensor.

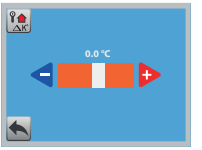
CORRECTION OF EXHAUST SENSOR

If the exhaust sensor measures fuzzily for some reason, you can use this correction to move the measured exhaust temperature +/– °C.



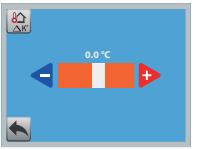
CORRECTION OF ROOM SENSOR

If you did not succeed in placing the spatial sensor for architectural or spatial reasons, and the sensor gives biased results, you can modify the measured temperature +/– °C by the correction. The correction is needed in case the sensor is either sunk in sunlight or cooled.



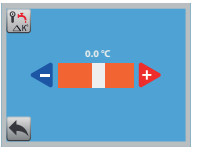
CORRECTION OF OUTDOOR SENSOR

If you did not succeed in placing the outdoor sensor for architectural or spatial reasons, and the sensor gives biased results, you can modify the measured temperature +/– °C by the correction. The correction is needed in case the sensor is either sunk in sunlight or cooled. The outdoor sensor must be enabled.



CORRECTION OF MEDIA SENSOR

If the media sensor measures fuzzily for some reason, you can use this correction to move the measured media temperature +/– °C. Out of order if the outdoor sensor is enabled.



ACTIVATION OF THE OUTDOOR SENSOR

Activation of the outdoor sensor displays current outdoor temperature. Automatic fan control based on the outdoor temperature can be activated in the service menu.

Outdoor sensor OFF

Outdoor sensor ON

Door contact OFF

PERMISSION OF THE DOOR CONTACT

Door contact ON

This function controls the air curtain depending on the door position (door contact). The icon signals door position (closed/open). Unless **automatic mode „A"** was enabled, the controller switches off (with time rundown) after the door is closed. The contact is potential-free. You can use automatic door sliding electronics for the contact or mechanic or magnetic door contact (optional accessories). Maximum door contact load 24V DC/3A.

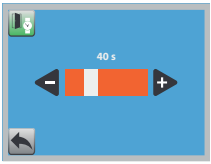
Door contact switching OFF

DOOR CONTACT POSITION SELECTION

Door contact switching ON

If the door contact (door position) you have selected does not respond to the signaled icon you must the inverse condition of the contact. Change the switching contact to switching off to get correct contact position to the controller icon. This setting is active only if the **door contact was enabled.**

DOOR CONTACT TIME RUNDOWN



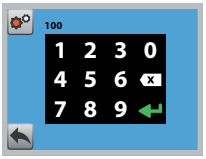
Considering lifecycle of the equipment and stable operation it is recommended that the optimum time rundown of the equipment following the door is closed be configured (switch off the door contact). Do not set time too short; recommended time is 60s – see factory setting. Setting range 10-240s in 5s increments. This setting is active only if the **door contact was enabled.** For **automatic mode** no time rundown is operational (or corresponds to 0s setting).

On condition

DOOR CONTACT VALVE FUNCTION SETTING

Off condition

Selecting OFF when door is closed makes sure the valve closes regardless heating start is needed or not based on the difference between set and measured temperatures. Selecting ON when door is closed keeps the valve in position depending on the controller temperature evaluation, i.e. the valve keeps open (in case heating request from the controller temperature requirements set and temperatures measured on the sensors) or closed (where there is no request for heating from set and measured temperatures).



After user code is entered
"1234"

Sound
OFF

TURNING SOUND ON

Selected fan and heating levels are signaled audibly. Level 1 = 1 sound. You can turn the sound off by selecting OFF.

Sound
ON

Sound
OFF

KEYBOARD LOCK

To avoid unauthorized access to the controller operation, the keyboard control may be locked. If you wish to lock the keyboard, select ON. The keyboard locks automatically after 60 seconds of inactivity. Enter a user code to unlock the keyboard **"5741"**.

Sound
ON

External
contact ON

EXTERNAL CONTACT

This feature permits external control (turning on enabled) from a superior point. If the contact (potential-free contact) is open, the device may not be turned on. A lit icon indicates that the contact is active. Maximum contact load 24VDC/3A.

External
contact OFF

Automatic
mode ON

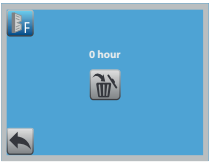
CONTROLLER AUTOMATIC MODE

This function enables automatic operation of the device according to the position of the door (door contact). When the door is closed, based on the difference between the desired temperature and the actual measured temperature, the The appropriate heating or cooling level (0, 1, 2, 3 / 0-100%) and fan speed are activated. If the difference is less than 2K (°C), the speed is automatically selected at 40%, if the difference is 3°C ÷ 5.5°C = 70% speed fan speed, if 6°C or more = 100% fan speed. Opening the door again will switch the to the selected speed*. The active mode is indicated by the illuminated icon of the upper status bar. Door contact is automatically enabled and set if A ="ON" is selected. *Power in HP/Heating and Cooling mode is is determined by the temperature difference. At the same time, the OFF / ECO1 / ECO2 / COMFORT setting is ignored for "A" mode.

Automatic
mode OFF

FILTER MAINTENANCE INTERVAL

The unit automatically signals the air filter cleaning request. Reset the fan operation counter after the filter cleaning.

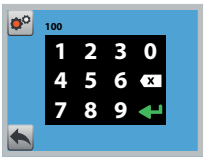


Heating up
mode ON

HEATING UP MODE

The heating up mode function is included in the controller for case sudden temperature losses need to be balanced in the space where the air curtain is installed. If the function is enabled the controller starts full fan and heating power available. The heating up mode operates for the term set in **heating up mode time** parameter. Activate the heating up mode by pressing HEATING button for 5 seconds.
Then, confirm the selection by pressing "ENTER" button. Press any button to deactivate the function, i.e. to return to previous setting.

Heating up
mode OFF



After service code is entered **"2345"**

Restricting thermostat OFF

RESTRICTING THERMOSTAT ENABLE

When the set temperature is achieved (outdoor or additional interior temperature), this function may be used to restrict the air curtain (fan and heating or heating only). **Function type selection,** see . The contact can be used to turn (restrict) off the heating based on equithermal control.

Restricting thermostat ON

Anti-frost protection ON

ANTI-FROST PROTECTION (AFP)

AFP off (for the heat exchanger* and the room)
*applies to hot water version only.

Anti-frost protection OFF

Fan at AFP is OFF

FAN OPERATION AT ANTI-FROST PROTECTION SELECTION (AFP)

This function enables control of the condition that occurs when AFP temperature is achieved. OFF = valve is full open and the fan is off. ON = valve is full open and the fan operates without change according to the controller. The function is active if the controller is not in the level 2 of the anti-frost protection. The AFP does never run in the level 2 to eliminate further drop. Recommendation: Always select OFF if the air curtain is used for heating as well (balances sudden thermal losses).

Fan at AFP is ON

RETAIN LOWEST TEMPERATURE OF OUTLET SENSOR

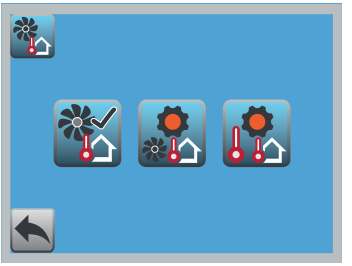
The controller can retain the lowest temperature achieved at the outlet sensor.
This data is used as information about medium temperature. For most customers this information can demonstrate that the heat exchanger has frozen.

FAN CONTROL SETTING BY OUTDOOR TEMPERATURE

Activation of the fan control by outdoor temperature and setting of the limit temperatures for switching between levels.

OTHER SETTINGS

You can set other parameters here.



Fan control by OT OFF

FAN CONTROL BY OUTDOOR TEMPERATURE

If activated, this function can control the fan speeds by outdoor temperature. This feature may be enabled only when door contact and outdoor sensor are enabled.

Fan control by OT ON

In default the following limit temperatures are configured for switching between the fan speeds:

0% ÷ 20%	10°C
20% ÷ 40%	5°C
40% ÷ 60%	-5°C
60% ÷ 80%	-7°C
80% ÷ 100%	-10°C

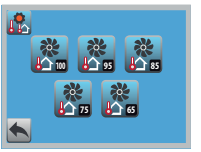
The function switch register allows reading the temperature from a physical sensor or from a modbus protocol register. The function is only available under Modbus Read+mode.

LIMIT TEMPERATURES FOR SWITCHING BETWEEN THE FAN SPEEDS

Temperatures at which each fan speeds are switched can be configured manually. Active only if the **fan control by outdoor temperature** is set to ON.

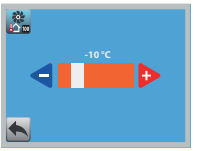
LIMIT TEMPERATURES FOR TRANSITION BETWEEN FAN SPEEDS

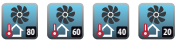
The limit temperatures for transition of fans to higher or lower revolution speeds may be user-defined. For example for EC motors, when speed 5 is configured, the limit temperature = −10°C and fan revolutions = 100%, which means that if −10°C or less is outputted from the outdoor sensor, the unit fans will rotate at 100% (depending on the door contact, rundown, and more).



LIMIT TEMPERATURE FOR SWITCHING THE FAN TO 100% REVS SPEED (EC)

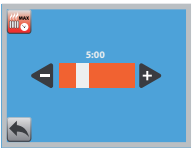
Manual configuration of outdoor temperature at which fan 100% revs speed (EC version) switches on automatically. The procedure for configuration of the outdoor temperatures for switching is identical.





HEATING UP MODE TIME SETTING

If you enabled the heating up mode you can set period of time for which the heating up mode will be functional. The range of setting 3-15 minutes. 0.5min increments.



Valve manually ON

MANUAL VALVE TEST

This function permits to check valve opening and closing without change to other parameters. This function is usually used to test valve opening and closing. (Available only for electro-thermal head.) This function operates for hot water air curtains only.

Valve manually OFF

Filter counter ON

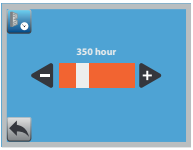
FILTER COUNTER DISPLAY ENABLE

This function enables activation of working hours counter of the fan for the filter maintenance interval.
Not available for the electric units.

Filter counter OFF

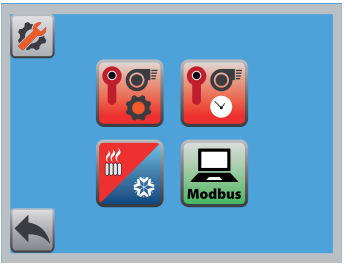
FILTER MAINTENANCE INTERVAL SETTING

This function can define the maintenance interval for cleaning of the filter according to working hours of the fan. The **F** symbol appears after the value is exceeded. Twenty hours before the interval ends the **F** symbol blinks as warning of approaching maintenance.

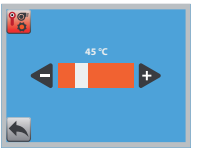


OTHER SETTINGS

You can set other parameters here.

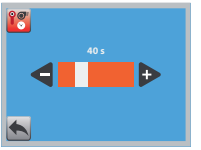


OUTLET SENSOR MINIMUM SWITCHING TEMPERATURE SETTING



This parameter enables to set temperature for short-term turning the electric heater off, provided that the temperature was achieved due to overheating of the heater or as protection or damage to some air curtain components often leading to fire. Temperature is always read from the outlet sensor. Time period the heater is off is set in outlet sensor response parameter.
This function is available for electric air curtains only.
Please proceed carefully when working with this function. 5°C increments, range 40-50°C.

DELAYED OUTLET SENSOR RESPONSE



Setting of time when the heater is off (additional cooling). 10s increments, range 10-120s. This function is available for electric air curtains only. Please proceed carefully when working with this function.

HEATING / COOLING MODE

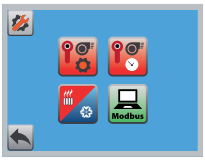
The mode interlocks entering of the power on the display. The current performance in percentage is expressed in the black field of the icon. The red icon indicates active haeting, the blue one is intended for cooling. Change to the CHANGE-OVER mode is indicated by the controller by contact making of terminals 13/14

Pay attention to selection of the mode.
The following modes may be enabled:

OFF: turning off the outdoor unit
COMBI: the outdoor unit heats up and cools down, and switches between the modes smoothly
WINTER: the outdoor unit heats up only (default)
SUMMER: the outdoor unit cools down only

MODBUS

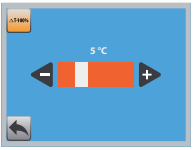
Configuration and system control permission from Modbus.



△T-100%

PERFORMANCE CURVE

Configured is the difference of the temperature required/real when the apparatus runs at 100% performance. 5°C (default)



EXAMPLE 1:

Performance curve dT = **5°C**, real temperature **15°C**, required temperature **20°C**
Output = request for performance of the outdoor unit 100% = 10V
Output = request for **HEAT UP** mode = terminals heat up/cool down **SWITCHE**

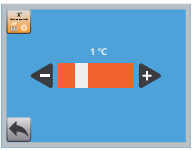
EXAMPLE 2:

Performance curve dT = **5°C**, real temperature **25°C**, required temperature **20°C**
Output = request for performance of the outdoor unit 100% = 10V
Output = request for **COOL DOWN** mode = terminals heat up/cool down **NOT SWITCHE**

X°

SWITCHING HYSTERESIS

A dead zone from the required temperature when the apparatus neither heats up nor cools down is determined by the hysteresis.
Range 0.5°C – 3.0°C.
1°C (default)



EXAMPLE 1:

Hysteresis 1°C

Real temperature **20°C**, required temperature **20°C**, switching of heating up/cooling down occurs again at **19°C/21°C**

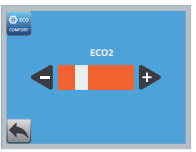
EXAMPLE 2:

Hysteresis 2,5°C

Real temperature **20°C**, required temperature **20°C**, switching of heating up/cooling down occurs again at **17.5°C/22.5°C**

ECO
COMFORT

BEHAVIOUR OF THE UNIT IN COOLING DOWN MODE

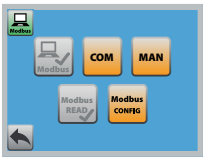


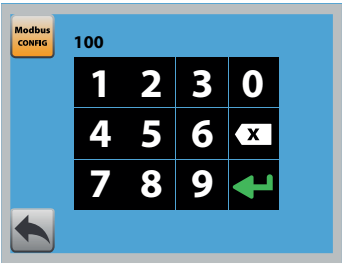
Eco1: (default) the unit cools down only when door is closed, fans at 33%

Eco2: the unit cools down only when door is closed, fans at 66%

Comfort: the air curtain cools down when door is closed, fans at 66%
the air curtain cools down when door is open, fans at 100%

OFF: the air curtain turns off after a time has elapsed after the door is closed.





Modbus OFF

MODBUS CONTROL ON

If you want to control the controller from the Modbus system select Modbus ON.

Modbus ON

Modbus READ+ OFF

MODBUS READ+

Select ModBus READ+ function for manual control combined with status feedback using ModBus parameters.

Modbus READ+ ON

MODBUS ADDRESS CONFIGURATION

You can assume the factory setting of the Modbus configuration or modify the configuration as you desire. Follow the procedure on page 18.

COMMUNICATION PARAMETERS

Selection of communication parameters MODBUS:

- 9600bps 8E1 (default)
- 9600bps 8E2
- 9600bps 8O1
- 9600bps 8N1
- 19200bps 8E1
- 19200bps 8N1
- 19200bps 8N2
- 19200bps 8O1
- 19200bps 8N1

Manual MODBUS (QR)

Download the MODBUS communication interface parameters from:
www.stavoklima.cz/download.html

STAVOKLIMA®
s.r.o.

Budějovická 450, 370 01 Homole
tel.: +420 387 001 931
e-mail: info@stavoklima.cz
www.stavoklima.cz