T11101

SAUTER flexotron®400 - RDT405

Manual

P100012100

DISCLAIMER

TRADEMARKS

Table of contents

1 About this manual

This manual describes the controller flexotron®400 - RDT405.

More information

More information on RDT405 can be found in:

- **flexotron®RDT405 controllers** Sales brochure
- **RDT405** Installation instructions and abridged manual
- **RDT405** product sheet

The information can be downloaded from the Fr. Sauter AG website, http://www.sauter-controls.com/en.

2 Introduction to flexotron®400

2.1 flexotron®400 controllers

The controllers flexotron®400 is a range of pre-programmed, configurable controllers that can be set to handle everything from temperature to CO_2 control or pressure control. Features also include a general control usable for several different control modes, such as humidity control or other applications. The controller is intended to be used in residential, commercial and light-industrial locations.

RDT405 and RDT410

The flexotron®400 series comprises two different types, RDT405 and RDT410. The RDT405 has 5 inputs/outputs and can be configured to control Temperature, CO_2, Humidity or Pressure. There is a analogue input for connection of an external N i1000 setpoint device for control mode 1 (Temperature control).
The RDT410 has 10 inputs/outputs and can be configured to control Temperature (ventilation control with heating and cooling), Waterheated radiator-heating with outdoor temperature dependent control-curve or Domestic hot water control. There is a analogue input for connection of an external Ni1000 setpoint device for control modes 1…4. The RDT410 also has a week-based scheduler. The RDT410 is available in two versions, RDT410F201 with 24 V AC supply voltage and RDT410F301 with 230 V AC supply voltage. For more information, please refer to the separate RDT410 manual.

Mounting

The controllers flexotron®400 are designed primarily for DIN-rail mounting but can also be screw-mounted to any suitable surface. The controller is intended for stationary indoor use.

flexotron®400 – RDT405

The RDT405 is a pre-programmed, configurable controller.
All configuration and normal handling is done using the display and the knob on the front.

In- and Outputs

The RDT405 has:

- 1 analogue input, Ni1000
- 1 analogue input for an external setpoint device, Ni1000
- 1 universal input, 0…10 V DC or digital
- 1 digital input
- 2 analogue outputs, 0…10 V DC

Control modes

The RDT405 is pre-programmed with a choice of 5 different control modes:

- Temperature control
- CO_2 control
- General control
- Pressure control
- Pressure control with outdoor-temperature dependent compensation

3 Technical data

Supply voltage ..... 24 V AC ±15%, 50...60 Hz
Power consumption ..... 4 VA
Ambient temperature ..... 0...50°C
Ambient humidity ..... Max 95% RH
Storage temperature ..... –20...70°C
Terminals ..... Disconnectable, so-called lift type for cable cross-section 1.5 mm^2
Protection class ..... IP20, when fitted
Material casing ..... Polycarbonate plus ABS, PC+ABS
Colour
Cover ..... yellow
Bottom part ..... black
Weight ..... 215 g incl. terminals
Dimensions ..... 122 x 121 x 64 mm (WxHxD incl. terminals)

LVD, Low Voltage Directive
This product conforms with the requirements of European LVD standard IEC EN 61010-1.

EMC emissions an immunity standard
This product conforms with the requirements of European EMC standards CENELEC EN 61000-6-1 and EN 61000-6-3 and carries the CE mark

Inputs
AI ..... Resolution: 10 bit A/D
AI1 ... Ni1000-sensor, range -20…+140°C, divided into three measuring ranges, accuracy +/- 0.2°C
SPI ..... Ni1000 setpoint device, range 0…40°C
⊥ ..... Reference for AI and for UI when used as an analogue input
UI
AI ..... 0...10 V DC, accuracy +/- 0.15 % of full output
or DI ..... Closing potential-free contact
UI+ ..... Reference for UI when used as a digital input
DI ..... Closing potential-free contact
DI+ ..... Reference for DI

Output

AO1	0…10 V DC; 8 bit D/A short-circuit protected
AO2	0…10 V DC; 8 bit D/A short-circuit protected
⊥	Signal neutral for analogue outputs

Other data
Display ..... Numeric / graphic. Background illumination

Settings

	Range	Factory setting
Setpoint CO_2 General (GEN) Pressure (Pa) Temperature ranges	 0...100% of max set value on UI1 0...100% of max set value on UI1 0...100% of max set value on UI1 -20…+60°C 20…100°C 60…140°C	 1000 ppm 20% RH 2500 Pa 21°C 55°C 95°C
10 V DC in on UI1 CO_2 General Pressure	 0...9900 ppm 1...100% 100 Pa...2500 kPa	 2000 ppm 100% RH 5000 Pa
Neutral zone	12.5% of max	1°C (control mode 1) 5% (control mode 3)
P-band CO_2 General (GEN) Pressure (Pa)	 0...100% of UI1 0...100% of UI1 0...300% of UI1	 5% of UI1 5% of UI1 5% of UI1
I-time	0…990 s	10 s
Outdoor compensation start	-20…+60°C	0°C
Pressure at -20°C outdoor temperature	0 Pa...2500 kPa	1000 Pa

Accessories

External temperature sensors .....For example: EGT330, EGT346
Setpoint device EGT338F102
CO_2-sensor EGQ212
Humidity sensor (can be used for general control (3)) HSC120
Pressure sensor ..... DSU

The accessories are available from Fr. Sauter. For more detailed information, see product sheets and instructions which are available at http://www.sauter-controls.com/de.

4 Installation and wiring

4.1 Installation

The controller flexotron®400 must be mounted in a DIN-standard casing (minimum 7 modules) or in a cabinet, either on a DIN-rail or, using the two screw-pockets provided, by being screwed to any suitable flat surface in the cabinet.
The controller can also be mounted in a cabinet door or other control panel, using a suitable front-mounting kit.
Ambient temperature: 0…50°C.
Ambient humidity: max. 95 %RH, non-condensing.

4.2 Wiring

This section only describes general rules and technical limitations concerning the wiring.
In chapter 5 there are specific wiring diagrams for the different control modes. Choose the one suitable for the application on hand.
It is important to make sure that the wiring is correctly done, in accordance with the instructions given in this manual and in accordance with local legislation for this type of installation.

Terminal	Designation	Operation
-	LS	Supply voltage 24V~
-	MM	
-	⏚	
2	DI+	Reference for DI1
3	DI1	Digital input
4	UI+	Reference for UI1 digital mode
5	UI1	0…10V= or digital input
6	⊢	Ref. for AI1 and UI1 analogue
7	AI1	Ni1000 temp. sensor input
10	SPI	Input Ni1000 setpoint device
11	AO2	0…10V= Output
12	AO1	0…10V= Output
13	⊢	Ref. for AO1 and AO2

4.2.1 Supply voltage

24 V ~ ±15%, 50…60 Hz. 3 VA

If the RDT405 and active sensors and actuators connected to it share transformer, it is essential that the same transformer-pole is used as reference for all the equipment. Failure to do so will prevent the equipment from functioning as intended and may also lead to damages.

4.2.2 Inputs and outputs

⊢

All ground terminals are interconnected and also connected to MM.

Analogue input AI

The analogue inputs must refer to an ground terminal. AI1 is for Ni1000 temperature sensors only. Temperature range: -20…+140°C. SPI is only intended for a Ni1000 setpoint device, the range is 0...40°C.

For temperatures below -9.5°C, decimals will not be displayed. It is therefore important to differentiate between, for example, -1.5 (minus one point five) and -15 (minus fifteen).

Digital input DI

The digital input must refer to DI+ on terminal 2.
The digital input may only be wired to voltage-free contacts. Any external voltage applied to a digital input may seriously damage the unit.

Universal input UI

The universal input can, depending on the choice of application, be made to act as either an analogue input or as a digital input.
When used as an analogue input it is for 0...10 V DC input signals.
When the Universal input is used as an analogue input it must refer to the ⊥- terminal or directly to earth.
When used as a digital input it must refer to UI+ on terminal 4. It may then only be wired to voltage-free contacts.

Analogue outputs

Analogue outputs must refer to a ⊥- terminal or directly to MM.

If the RDT405 and active sensors and actuators connected to it share transformer, it is essential that the same transformer-pole is used as reference for all the equipment. Failure to do so will prevent the equipment from functioning as intended and may also lead to damages.

5 Control modes

flexotron®400 can be configured to any one of the following control modes.

1. Temperature control.
The temperature at the sensor is kept at the setpoint value by controlling the output signals on AO1 and AO2. A single PI control loop is used.
Three different temperature ranges can be selected:
-20…+60, 20…100, 60…140°C

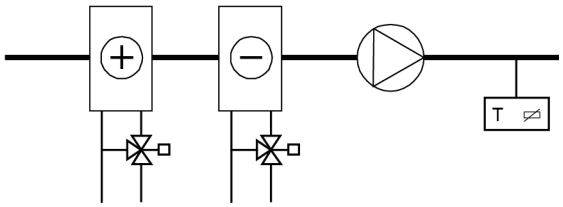
2. CO_2 control.
The CO_2-value at the sensor is kept at the setpoint value by controlling the output signal on AO1. A single PI control loop is used.

3. General control.
The actual value at the sensor is kept at the setpoint value by controlling the output signal on AO1 and AO2. AO1 is used for positive, direct-acting control, AO2 for negative, reverse-acting control. A single PI control loop is used.

4. Pressure control.
The pressure at the sensor is kept at the setpoint value by controlling the output signal on AO1. The AO1 inverted signal is received from AO2. A single PI control loop is used.

5. Pressure control with outdoor compensation.
The pressure at the sensor is kept at the setpoint value by controlling the output signal on AO1. The AO1 inverted signal is received from AO2. The setpoint is automatically adjusted according to the outdoor temperature. A single PI control loop is used.

5.1 Control mode 1, Temperature control



The analogue outputs can be configured to the following combinations:

AO1	/	**AO2**
1. Heating	/	-
2. Cooling	/	-
3. Heating	/	Cooling
4. Heating	/	Heating
5. Cooling	/	Cooling
6. Heating	/	Damper
7. Cooling	/	Damper
8. Change-over	/	(Seasonal change-over between heating and cooling)

When an external setpoint device is used, the setpoint is received via the SPI input, which has a resolution of 0…40°C.
In alternative 4, Heating-Heating AO2 will be activated first on increasing heat demand.
In alternative 5, Cooling-Cooling AO2 will be activated first on increasing cooling cemand.
In alternative 6, Heating-Damper, at temperatures above the setpoint the damper on AO2 will be fully open. On increasing heating demand, the damper on AO2 will first close to the set minimum value before the heating output on AO1 starts to increase.
In alternative 7, Cooling-Damper, at temperatures below the setpoint the damper on AO2 will be fully open. On increasing cooling demand, the damper on AO2 will first close to the set minimum value before the cooling output on AO1 starts to increase.
Temperature control is available for three selectable temperature ranges:
Low range (1): -20…+60°C
(Default SP= 21°C, minSP= -18°C, maxSP= +60°C)
Mid range (2): 20°C…100°C
(Default SP= 55°C, minSP= 22°C, maxSP= 100°C)
High range (3): 60…140°C
(Default SP= 95°C, minSP= 62°C, maxSP= 140°C)

DI1, Start signal

Normal control will only be activated when this input is activated, closed. Active signal is indicated by a fan-symbol in the display. When the start signal is deactivated the controller will set the outputs to 0.

This input must always be wired since it controls the starting and stopping of normal control.

Universal input UI1, outdoor

The change-over function will make a seasonal change of the function of the output signal on AO1. In summer the output will work as a cooling output and in winter as a heating output. This is used in applications (fan-coil units) where the same piping is used to transport hot water in the winter and chilled water in the summer.
The universal input UI1 is used for the change-over function in alternative 8. Wire the input as a digital input using either a manual switch or a thermostat

monitoring the supply water temperature to open/close the input. Open contact will give heating control and closed contact cooling control.

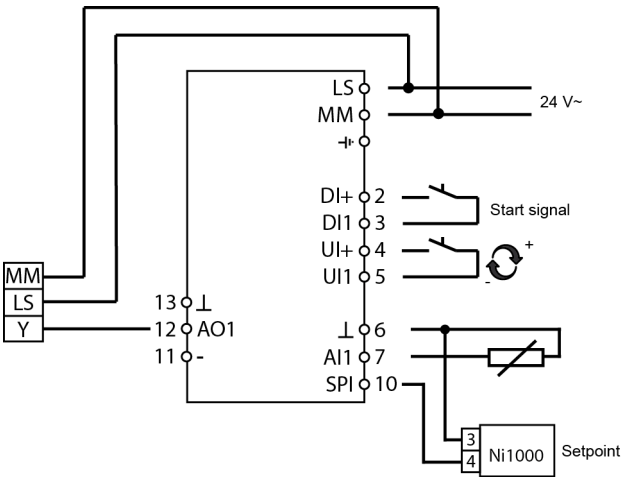
Damper

In applications with dampers it is often desirable to be able to set a minimum amount of fresh air. In the output alternatives 6 and 7 it is possible to set a minimum limit value to the damper output signal. The damper output will then not go lower than the set value during normal operation. When DI1=0, however, the signal will go to zero.
In the output mode heating – damper the damper will be fully open for temperatures higher than the setpoint. On increasing heat demand the damper will first close to the minimum value before the heating output starts to increase.
In the output mode cooling – damper the damper will be fully open for temperatures lower than the setpoint. On increasing cooling demand the damper will first close to the minimum value before the cooling output starts to increase.

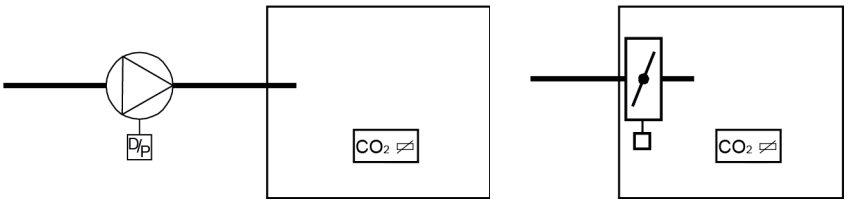
External setpoint

It is possible to use an external Ni1000 setpoint device. The setpoint device is connected between terminal 10 SPI and the reference for the analogue inputs, ⊥. For more information on configuration and setpoint reading, see chapters 7 and 8.

Wiring example: Heating / cooling with change-over function



5.2 Control mode 2, CO_2 control



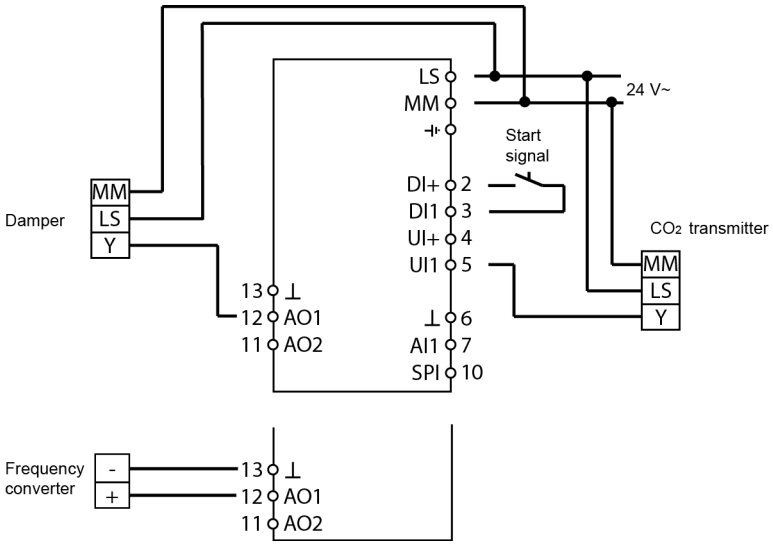
The output signal will increase when the CO_2-value rises above the setpoint value.
The CO_2-sensor must have a 0...10 V DC output for example:
EGT Room sensors
EGQ Duct sensor
The transmitter range cannot exceed 9900 ppm at 10 V DC output.
The output can be min./max. limited. The minimum value can be set between 0…99%, and the maximum value between 1…100%. If the min./max. parameters are accidentally set to overlap one another, the max. function will be disabled and the output will alternate between the min. value and 100%.

DI1, Start signal

Normal control will only be activated when this input is activated, closed. When the start signal is deactivated the controller will set the output to 0.

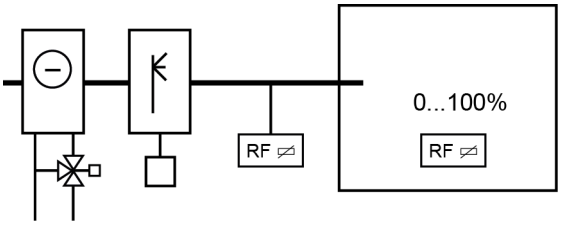
This input must always be wired since it controls the starting and stopping of normal control.

Wiring example: CO2-control using damper or frequency converter



5.3 Control mode 3, General control 0…100%

Humidity control has been selected as an example:



The control mode consists of a general control in sequence. A neutral zone can be set between AO1 and AO2.
The sensor must have an output signal of 0...10 V DC.
This control mode can be used for humidity control. If so, the following sensors are recommended:
EGH Room humidity transmitters
EGH Duct transmitters

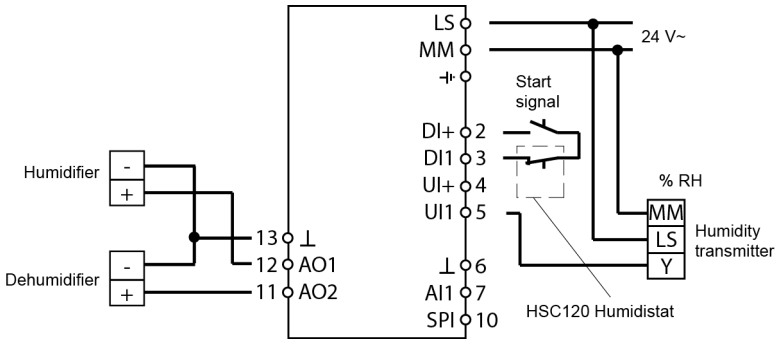
DI1, Start signal

Normal control will only be activated when this input is activated, closed. When the start signal is deactivated the controller will set the outputs to 0.

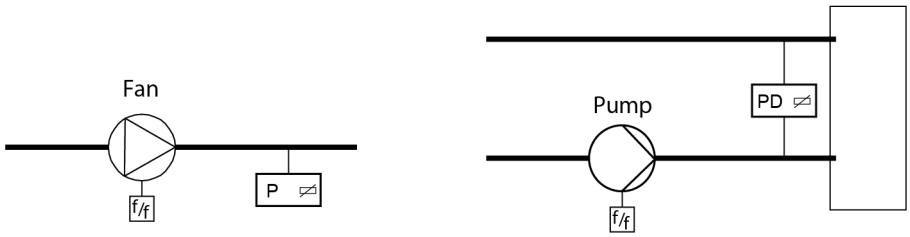
Maximum Limiting, RH Max

When running humidification with the main sensor in the room it is sometimes desirable to have some sort of maximum limiting on the humidity in the supply duct.
To create such a limiting function, place an on/off humidistat such as HSC in the supply air duct and wire it into the start signal circuit on DI1. The humidistat should be normally closed.
Opening of the contact when the humidity rises above the set maximum value will force the humidity output to 0.

Wiring example: Combined humidification / dehumidification



5.4 Control mode 4, Pressure control



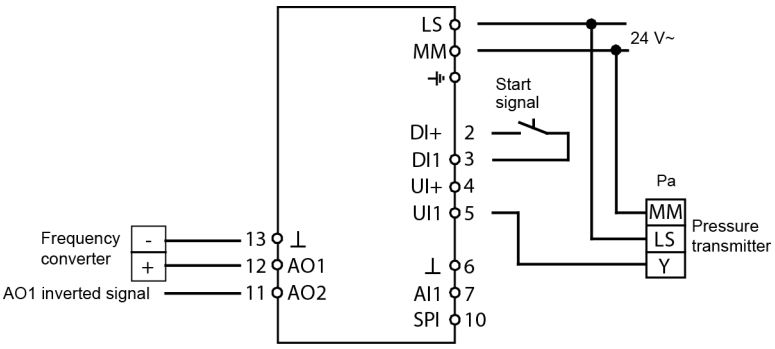
The output signal will increase when the pressure signal falls below the setpoint value.
The pressure transmitter must have an output signal of 0...10 V DC, for example: DSU.
Pressure ranges of up to 2500 kPa kan be set.
The AO1 inverted signal is received from AO2.

DI1, Start signal

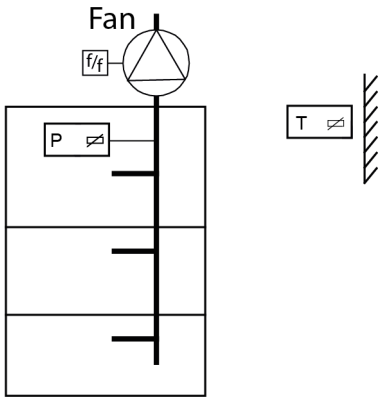
Normal control will only be activated when this input is activated, closed. When the start signal is deactivated the controller will set the output to 0.

This input must always be wired since it controls the starting and stopping of normal control.

Wiring example. Pressure control



5.5 Control mode 5, Pressure control with outdoor temperature compensation of the pressure setpoint.



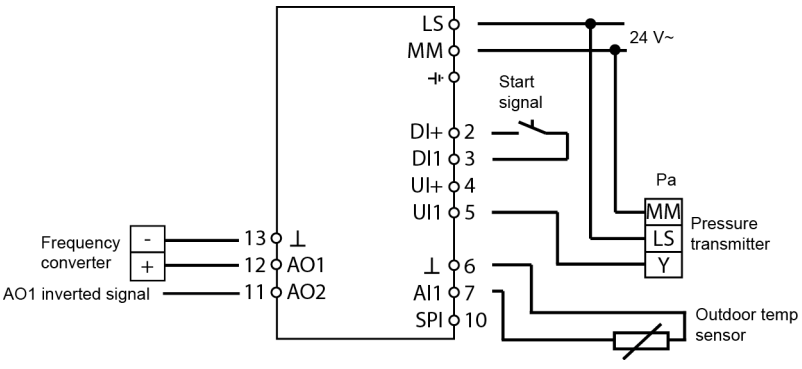
The output signal will increase when the pressure signal falls below the setpoint value.
The AO1 inverted signal is received from AO2.
The setpoint value follows a settable pressure-to-outdoor temperature relation.
The pressure transmitter must have an output signal of 0...10 V DC, for example: DSU
Pressure ranges of up to 2500 kPa kan be set.
The temperature range for outdoor temperature will be set to the low range for this control mode, -20…+60°C.

DI1, Start signal

Normal control will only be activated when this input is activated, closed. When the start signal is deactivated the controller will set the output to 0.

This input must always be wired since it controls the starting and stopping of normal control.

Wiring example: Outdoor temperature compensated pressure control



6 Display and encoder

All setting and configuration is done using the display and encoder.
The menu information on the display is organised in a tree fashion. Using the encoder you can move between menus, set values etc.
In any of the configuration menus, a click on the encoder will activate change mode. You can then rotate the encoder button to move between choices or set values. A second click of the button will accept the choice.
The menu system is divided into two levels: The Basic level and the 10-second level which contains all the configuration menus.

6.1 The Basic level

The Basic level comprises three sets of menu displays, the Base Display, the I/O Displays and the Setpoint Display.

Base Display

This is an example of the Base Display, the display that is normally shown when there is no operator activity.

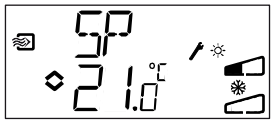
The upper line shows which control mode has been configured, in this case control mode 1, **T**emperature control. The bottom line shows the actual value of the main input parameter.
There are bar-graphs showing the current output levels. In control mode 1 there are symbols showing how the outputs have been configured (Heating, Cooling, Damper or Change-over).

I/O

When the Base Display is shown, by twisting the knob counter clockwise until the text I/O is displayed and then clicking on it, you can gain access to a menu where you can look at the values and states of all inputs and outputs.
To exit this menu again, click on the knob and then twist the knob clockwise and you will be returned to the Base display.

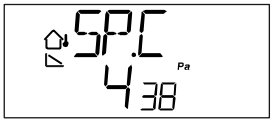
Setpoint

When in the Base Display, a click on the encoder button gives direct access to the Setpoint menu.
See chapter 7 Setpoint.



Calculated setpoint

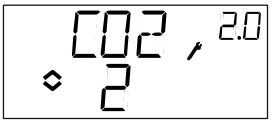
In control mode 4, Pressure control with outdoor compensation, the controller does not work towards a fixed setpoint value. Instead, it works towards a calculated setpoint, which varies with the outdoor temperature. The calculated setpoint is displayed by turning the knob clockwise when in the Base Display.



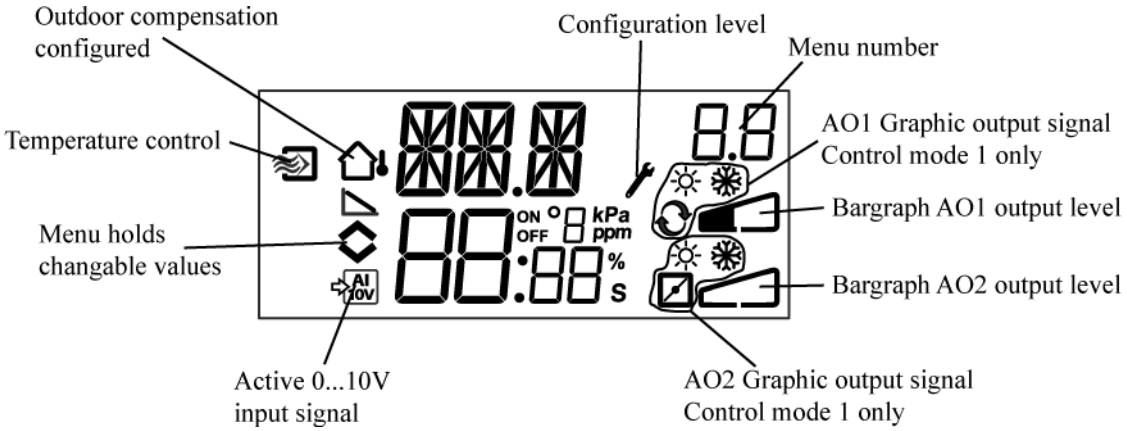
6.1.1 The 10-second level

This level is reached from the Base Display by pressing and holding the encoder button for 10 seconds. The 10-second level holds all the configuration menus. See chapter 8 Configuration.

The controller must display the Base Display when pressing the encoder knob to reach the 10-second level.

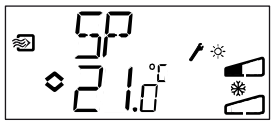


6.1.2 Display symbols



7 Setpoint

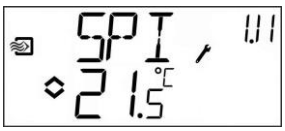
The setpoint menu is normally accessed from the Base Display by a clicking on the encoder knob.



If you wish to change the displayed value, click on the knob again and the change indicator (◇) will start to flash to show that you are now in change mode. Twist the knob clockwise to increase the value, or counter-clockwise to decrease. In applications with active input signals (control modes 2, 3, 4 and 5) the setpoint cannot be set higher than the value corresponding to 10 V DC input signal.
When the desired value is shown, click on the knob to acknowledge. To return to the Base display, twist the knob.
For configurations involving a single output signal the setpoint is the starting point for the output signal.
For configurations involving two diverging output signals with neutral zone (heating – cooling or general control in sequence) the setpoint is placed in the middle of the neutral zone.
For configurations involving two outputs without neutral zone (heating – heating, cooling – cooling, heating – damper or cooling – damper) the setpoint value is the starting point for the first sequence (Y2)

External setpoint (SPI)

When using an external setpoint device, the setpoint can be read by clicking on the knob while in the base display. If you click on the knob again, a symbol will start to blink, indicating that an external setpoint device is being used and that the setpoint cannot be changed via the display. External setpoint can be used for control mode 1. The SPI input can also be read via the I/O menu. The temperature range for an external setpoint device is 0…40°C.



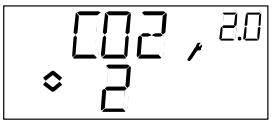
8 Configuration

All the configuration menus lie in the 10-seconds level. This level is accessed from the Base Display by pressing and holding the encoder button for 10 seconds. The display must light up before the button is depressed. It lights up when the button is touched.
There are numerous configuration menus covering all available options and combinations.
In some cases, making a certain choice in one menu will mean that you will only see certain other menus. For example, the menu for setting the damper minimum limit is only shown if you have configured AO2 to be a damper control output.

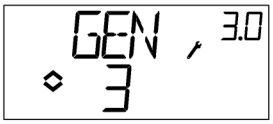
8.1 Menus 1.0 – 5.0

In the first set of configuration menus you choose which of the five control modes you wish to run. The upper text row, the lower text row number and the first digit in the menu-number show which control mode is at hand.

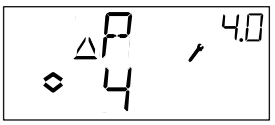
1. Temperature control



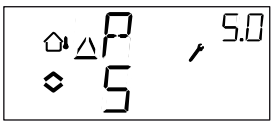
2. CO2-control



3. General control



4. Pressure control



5. Pressure control with outdoor compensation

8.1.1 Menu X.1

Output signals (Control mode 1)
Transmitter range (Control modes 2, 3, 4 and 5)

Control mode 1.

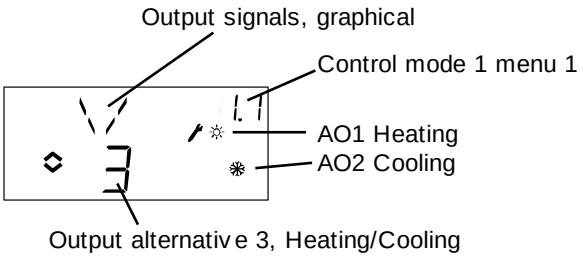
For temperature control there is a choice of 8 different output signal combinations. Select one fitting the application on hand.

AO1	/	**AO2**	Output symbol	Graphic symbol
1. Heating	/	-	\	
2. Cooling	/	-	/	
3. Heating	/	Cooling	\ /	
4. Heating	/	Heating	\ \	
5. Cooling	/	Cooling	/ /	
6. Heating	/	Damper	\ /	
7. Cooling	/	Damper	\ /	
8. Change-over	/	-		

In alternative 4, Heating-Heating AO2 will be activated first on increasing heat demand.
In alternative 5, Cooling-Cooling AO2 will be activated first on increasing cooling cemand.
In alternative 6, Heating-Damper, at temperatures above the setpoint the damper on AO2 will be fully open. On increasing heating demand, the damper on AO2

will first close to the set minimum value before the heating output on AO1 starts to increase.
In alternative 7, Cooling-Damper, at temperatures below the setpoint the damper on AO2 will be fully open. On increasing cooling demand, the damper on AO2 will first close to the set minimum value before the cooling output on AO1 starts to increase.

For each output alternative the number representing it is shown along with a graphic symbolisation of the output signals and also a symbol next to the bar-graph for each output.



Example, Menu 1.1
Temperature control with output alternative 3 Heating/Cooling

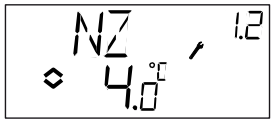
Control modes 2, 3, 4 and 5

For control modes using active 0…10 V DC transmitters you need to scale the input signal. For example, if you have a pressure transmitter that will give a 0…10 V output for a pressure range of 0 to 5000 Pa, set the value to 5000 Pa. Note that for pressure transmitters the pressure, depending on the range, may be given in Pa or kPa. Ranges up to 2500 kPa can be set. Also, not all values between 0 and 2500 kPa kan be set since this would involve a great amount of twisting on the encoder. In the low ranges the values are close together, but their distance progressively increase in size as they go up.
For CO_2 transmitters the range is set in ppm and for the general sensor in %.

Example, Menu 2.1
CO2-control with input signal 0…10 V
for CO2 value 0…2000 ppm.

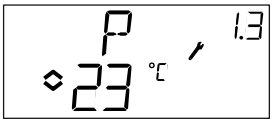
8.1.2 Menus X.2

Neutral zone (Control mode 1 and 3)
In two control modes involving diverging output signals (heating – cooling or general control) you can set a neutral zone between the outputs. The setpoint will be placed at the middle of the neutral zone.



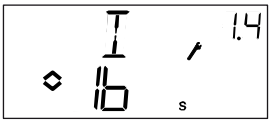
8.1.3 Menus X.3

P-band
Here you set the P-band (Proportional band) The P-band unit depends on the choice of control mode. The P-band is the control offset necessary to drive an output signal from 0 to 100%. In configurations involving two outputs the same P-band applies to both outputs.



8.1.4 Menus X.4

I-time
Here you set the Integration time (Reset time). If the I-time is set to 0 the integration function is disabled and the controller will act as a P-controller.



8.1.5 Menu 1.5

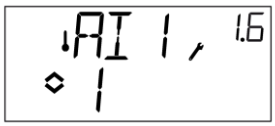
Damper minimum position (Control mode 1 only)
If you in menu 1.1 have configured output AO2 to be a damper, alternative 6 or 7, you can set a minimum value to the damper signal. . The damper output will then not go lower than the set value during normal operation. On shut-down however the signal will go to zero and fully close the damper.

8.1.6 Menu 2.5

Output min./max. limiting (Control mode 2)
The output can be min./max. limited. The minimum value can be set between 0…99% and the maximum value between 1…100%. If min./max. parameters are accidentally set to overlap one another, the max. function will be disabled and the output will assume control.

8.1.7 Menu 1.6

Choice of temperature ranges for AI1 (Control mode 1)



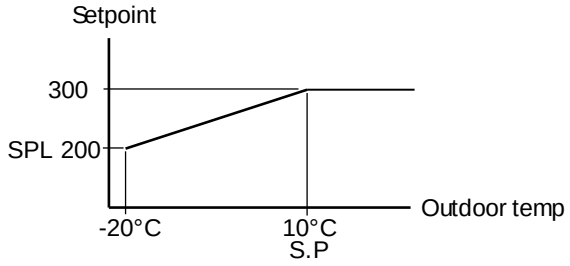
For control mode 1, it is possible to choose between three different temperature ranges:
Range 1: -20…+60°C
Range 2: 20…100°C
Range 3: 60…140°C

8.1.8 Menu 5.9

Start point for outdoor compensation (Control mode 5 only)
S.P is the outdoor temperature at which the setpoint compensation starts. At temperatures higher than S.P the normal setpoint value is maintained. When the outdoor temperature falls below S.P the pressure setpoint will change linearly on decreasing temperature to reach the pressure set by SPL in menu 5.9 below at an outdoor temperature of -20°C

8.1.9 Menu 5.9

Maximum compensation (Control mode 5 only)
SPL is the setpoint to be held at an outdoor temperature of -20°C. The setpoint shift starts when the outdoor temperature falls below the value set in S.P in menu 5.7 above and will change linearly with decreasing outdoor temperature reaching SPL when the outdoor temperature is -20°C. Note that SPL is not a setpoint shift value to be added to the normal setpoint value but the actual setpoint value at -20°C outdoor temperature.



Example: With an ordinary setpoint of 300 Pa, a starting point S.P of +10°C and a SPL of 200 Pa at -20°C you get the following setpoint-to-outdoor temperature relation

8.1.10 Menu 1.E

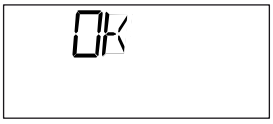
External setpoint (control mode 1)
In this menu, you set whether you want to use an external setpoint device or set the setpoint via the display. External setpoint can be used for control mode 1. An external setpoint device can be used for setpoints between 0…40°C.

8.1.11 Menus X.11

I/O
After the last configuration menu there is a menu where you can look at the actual values of all the inputs and outputs. This menu can also be accessed directly from the Base Display by twisting the encoder knob counter clockwise and then pressing. See chapter 6.

8.1.12 Menu OK

Last of the configuration level menus is the OK-menu. To leave the configuration level, go to this menu and press the encoder knob.



On exit from the configuration level you will be returned to the Basic level. There is also a time-out function that will automatically exit the configuration level after 5 minutes of inaction.

8.1.13 Storage of settings

All configuration settings become valid as soon as they are entered by klicking the encoder knob. They are however not written to the flash memory until you exit the configuration level either via the OK menu or via the time-out function. To exit the configuration level without saving the changes to flash memory, cut the supply voltage when still in the configuration level. All values will be kept as they were before you entered the configuration level.

8.1.14 Reset to factory setting

The RDT405 can be reset to factory settings by configuring general control (mode 3) and setting the transmitter range to 100% and the P-band to 99. Then cut the power supply. When power is reapplied all configuration settings will be reset to factory setting.

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Printed in Switzerland

Im Surinam 55
CH-4016 Basel
Tel. +41 61 - 695 55 55
Fax +41 61 - 695 55 10
www.sauter-controls.com
info@sauter-controls.com