

RDT 405, 410: Electronic controller for simple applications, flexotron400

How energy efficiency is improved

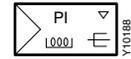
Options for controlling energy recovery and for reduced/OFF mode depending on the type of time programme

Features

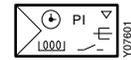
- Five different control models for each device, for temperature, pressure, CO₂, supply air cascade, heating
- Easy to operate with large, illuminated LCD and rotary knob
- Fast commissioning due to simple operating concept
- Weekly programme (depending on variant)
- External setpoint



RDT4**F*01



RDT405F201



RDT410F*01

Technical data

Power supply		
	Power supply	24 V~, ±15%, 50...60 Hz (RDT4**F201) 230 V~, +10%/-15% 50...60 Hz (RDT4**F301)
RDT 405	Power consumption	4 VA, 2 W
RDT 410	Power consumption	7.5 VA, 5 W
	Start-up current	16 A (2 ms) 24V~ devices 23 A (2 ms) 230 V~ devices
Parameters		
	Control characteristics	P/PI
	P-band X _p	0...99 K
	Integral action time	0...990 s
Setting and measuring ranges		
RDT 405	Measuring range, temperature	-20...60, 20...100, 60...140°C
RDT 410	Measuring range, temperature	5...80, -30...50°C
	Input for external setpoint	0...40°C
	Humidity	0...100% rh
	Humidity	0...100% rh
	CO ₂	10...9900 ppm for 100% signal
Ambient conditions		
	Admissible ambient temperature	0...50 °C
	Admissible ambient humidity	5...95% rh, no condensation
	Storage and transport temperature	-20...70 °C
Inputs/outputs		
	Universal inputs	Ni1000 (DIN 43760)
	Digital inputs	Potential-free contacts
	Analogue inputs	Ni1000 (DIN 43760) for temperature, setpoint
	Analogue outputs	0...10 V, 2 mA, protected against short circuit
	Digital outputs	RDT410F201: Triac 2 × 24 V~, 0.3 A 1 × 230 V~, 5 A RDT410F301: Triac 2 × 24 V~, 0.16 A 1 × 230 V~, 5 A
Construction		
	Dimensions W x H x D	123 × 99 × 64 mm
	Screw terminals	For electrical cables of up to 1.5 mm ²



Fitting	Top-hat rail, wall, panel
Housing material	PC+ABS

Standards and directives

Type of protection ¹⁾	IP20 (EN 60529)
Protection class	II (RDT410F301 only)
CE conformity according to	EMC Directive 2014/30/EU EN 61000-6-1, EN61000-6-3

Overview of types

Type	Analogue inputs	Digital inputs	Universal inputs	Analogue outputs	Digital outputs	Input for external setpoint	Week time-switch	Weight
RDT405F201	1	1	1	2	0	1	–	0.2 kg
RDT410F201	2	2	1	2	3	1	•	0.3 kg
RDT410F301	2	2	1	2	3	1	•	0.45 kg

💡 *Week time-switch: only RDT410F*01 (number of switching commands: 8)*

Accessories

Type	Description
XYE460F001	flexotron400 demo case
0460240001	flexotron400/800 pluggable terminal strips
0460240010	Cabinet fitting kit for flexotron400
EGT388F102	External setpoint adjuster, room operating unit with potentiometer and temperature sensor

Description of operation

The flexotron400 devices are digital, preconfigured controllers for ventilation systems in building automation.

The devices each have five different prepared applications and can be operated by means of the rotary knob. The display is language-neutral and uses symbols to display the operating statuses and their indicators.

The display is illuminated, with the illumination activated when the operating knob is used.

The flexotron400 devices are available as different models: RDT405 with 5 inputs/outputs and RDT410 with 10 inputs/outputs, with the latter as variants with a 24 V~ or 230 V~ power supply.

Intended use

This product is only suitable for the purpose intended by the manufacturer, as described in the "Description of operation" section.

All related product regulations must also be adhered to. Changing or converting the product is not admissible.

Engineering notes

3-point activation of the valves:

- With the RDT410F301, coupling relays must be used to activate the actuators.
- For actuators and devices with 24 V~, the LS terminal (24 V) of the RDT is connected to the MM terminal (ground in SAUTER devices) of the actuators. If additional components are connected in the system, you must be sure to avoid ground faults. If required, coupling relays are used to activate the actuators.
- For actuators with 24 V=, coupling relays must be used to activate the actuators.

The ground wiring for the analogue inputs and outputs and the universal inputs must be performed according to the diagram and separately in order to avoid measurement errors.

Configuration and parameterisation

The devices are configured and parameterised using the integrated display and the rotary knob.

Access rights

The devices have various access rights, which can be activated by means of the rotary knob. All devices have a configuration menu, and the RDT410 has an additional menu for the time programme.

You can access the relevant menus by pressing the rotary knob for 10 or 3 s.

¹⁾ *When installed*

External setpoint

Option EGT338F102 can be used to define an external setpoint of 12...28 °C. This signal is activated in the configuration menu.

Alarms

With the RDT410 devices, if there is an alarm the relevant symbol flashes in the display. Four different alarms can be displayed: Frost-protection, over-temperature, fan operating message and sensor error.

Time programme

Both variants of the RDT410 have a week time-switch. A total of four switch intervals are available, which can be assigned to individual working days or to all of the weekdays.

Activating the valves

With the RDT410, the valves can be operated with 0...10 V or alternatively via 3-point activation.

When a 3-point actuator is being used, the alarm output cannot be used.

With the RDT405, only the 0...10 V variant is possible.

Universal input for the RDT410

There are four different setting options for universal input UI1: Frost-protection on analogue output AO1, frost-protection on analogue output AO2, over-temperature limit switch or as non-assigned input.

Overview of control models

The flexotron400 controllers have the following control models:

RDT405:

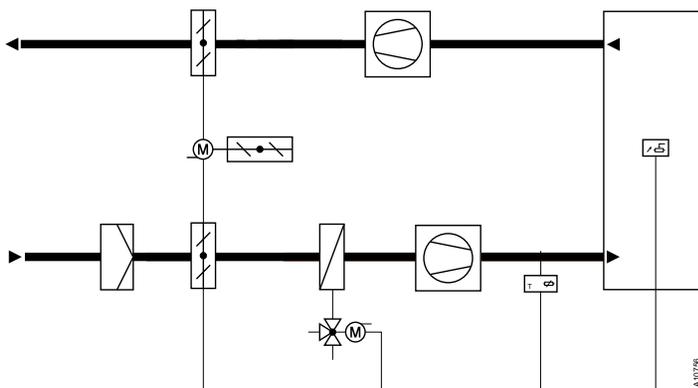
- Temperature control
- CO2 control
- Universal control, e.g. humidity
- Pressure control
- Pressure control based on outside temperature

RDT410:

- Supply-air temperature control
- Supply-air temperature control based on outside temperature
- Return-air (room) supply-air cascade control
- Heating circuit control with heating characteristic
- Domestic hot water control

Control models of the RDT405

1. Temperature control

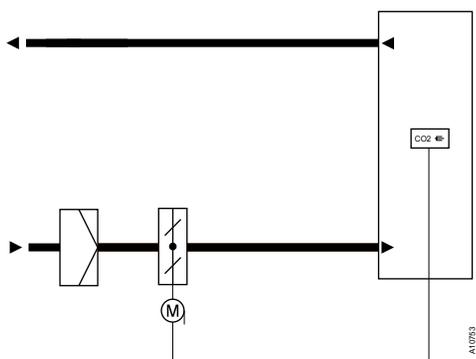


A PI control loop is used. The analogue outputs can be configured for the following combinations:

	AO1	AO2	Display symbols
1	Heating	-	☀
2	Cooling	-	❄

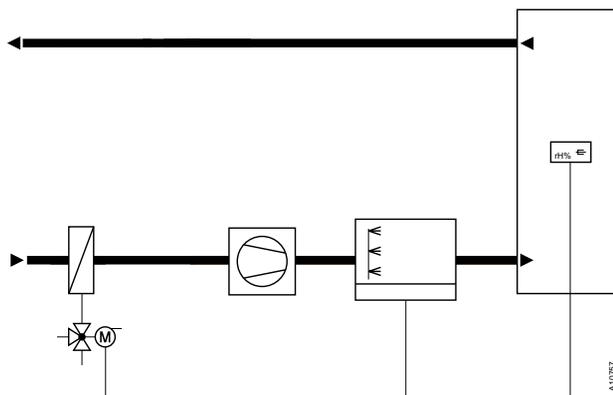
	AO1	AO2	Display symbols
3	Heating	Cooling	\\ / ☀ ❄
4	Heating	Heating	\\ / ☀ ☀
5	Cooling	Cooling	// / ❄ ❄
6	Heating	Dampers	\\ / ☀ ☑
7	Cooling	Dampers	\\ / ❄ ☑
8	Change-over contact	-	↻

2. CO2 control



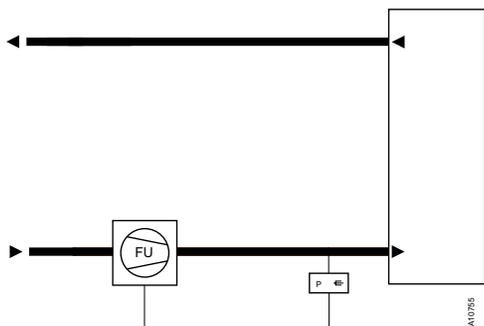
A PI control loop is used. A min/max limit for the output is possible.

3. Universal controller



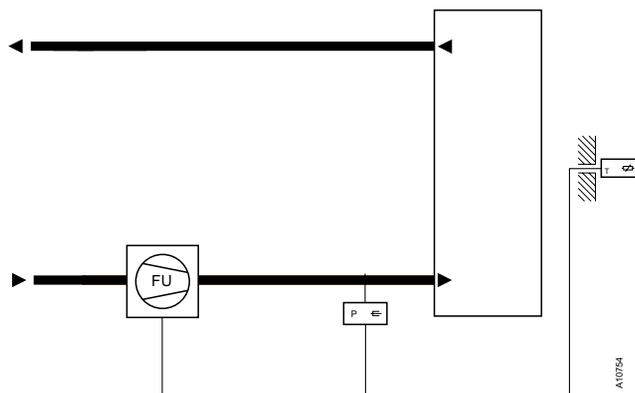
A PI-controller is used. With humidity control, AO1 is used to humidify (positive control) and AO2 is used to dehumidify (negative control).

4. Pressure control



A PI control loop is used. The pressure transmitter must have an output signal of 0...10 V. The measuring range can be set to up to 2500 kPa.

5. Pressure control based on outside temperature

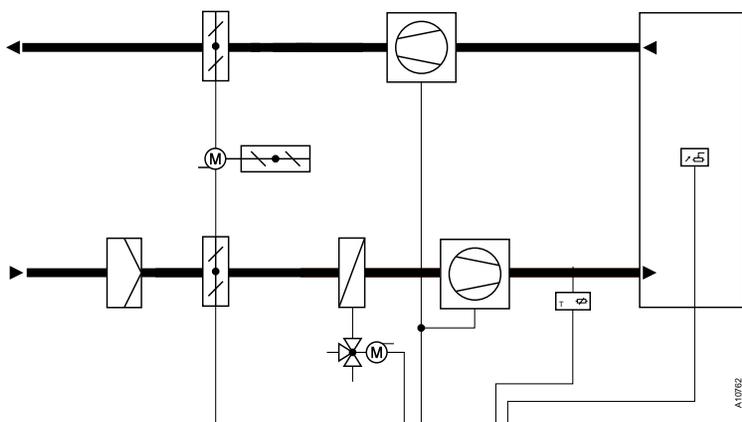


A PI control loop is used. The pressure setpoint is defined based on the outside temperature, and the temperature range is set to 20...60 °C. The pressure transmitter must have an output signal of 0...10 V. The measuring range can be set to up to 2500 kPa.

Control models of the RDT410

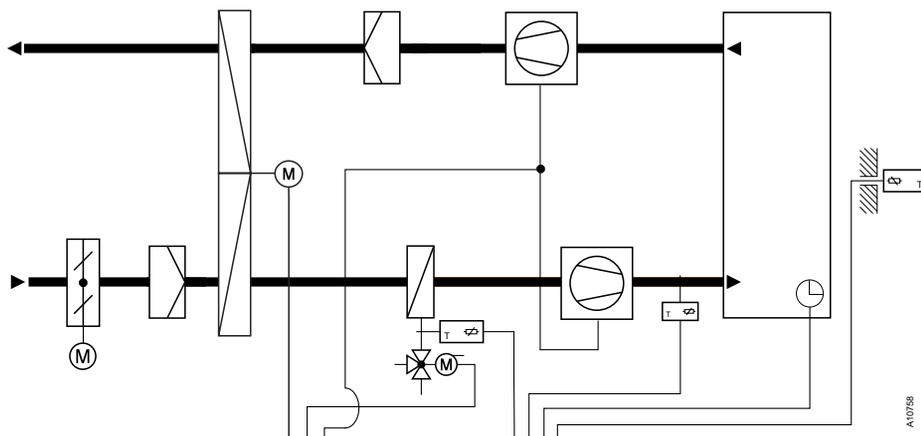
The control modes are for both variants of the RDT410, regardless of whether the 24V or 230V variant.

1. Supply-air control



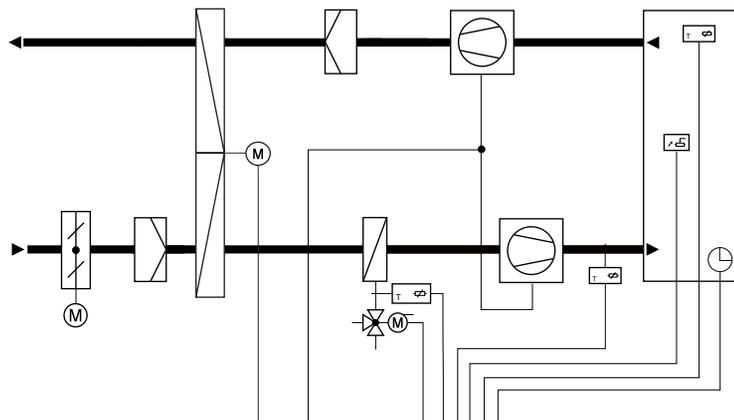
A PI control loop is used.

2. Outside-temperature-based supply-air control



A PI control loop is used. The setpoint is defined automatically depending on the outside temperature.

3. Room (return-air) supply-air cascade control

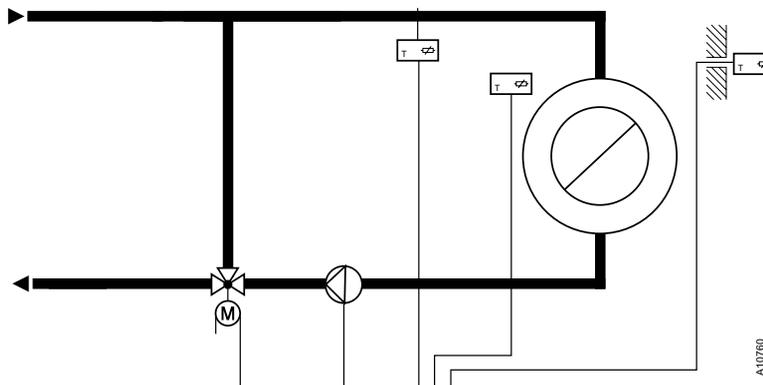


A P-PI cascade controller is used. Maximum and minimum limits can be set for the supply air. A return-air or room-temperature sensor must be used.

For control modes 1...3, the analogue outputs can be selected for the following combinations.

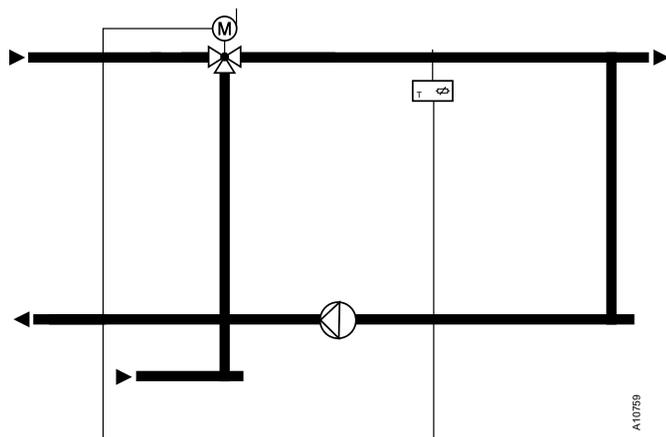
	AO1	AO2	Display symbols
1	Heating	-	\ / ☀
2	Cooling	-	/ \ ❄
3	Heating	Cooling	\ / ☀ ❄
4	Heating	Heating	\ \ ☀ ☀
5	Cooling	Cooling	// ❄ ❄
6	Heating	Dampers	\ / ☀ 📏
7	Cooling	Dampers	\ / ❄ 📏

4. Heating circuit control



A PI control loop is used. The setpoint for the supply temperature is defined automatically depending on the outside temperature.

5. Hot water control



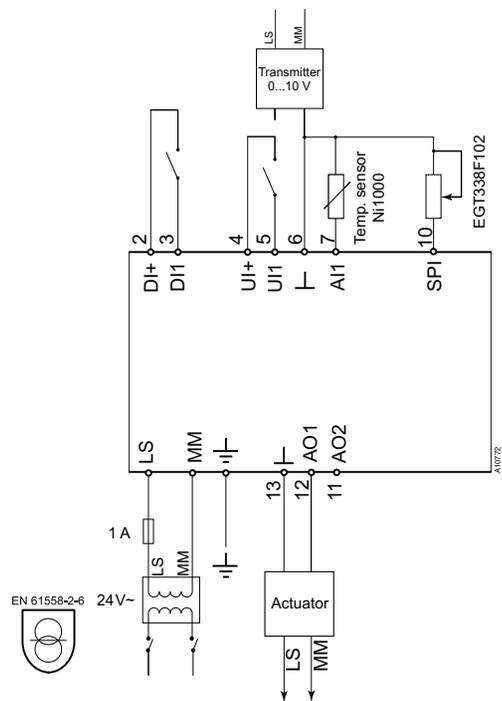
A PID control loop is used.

Disposal

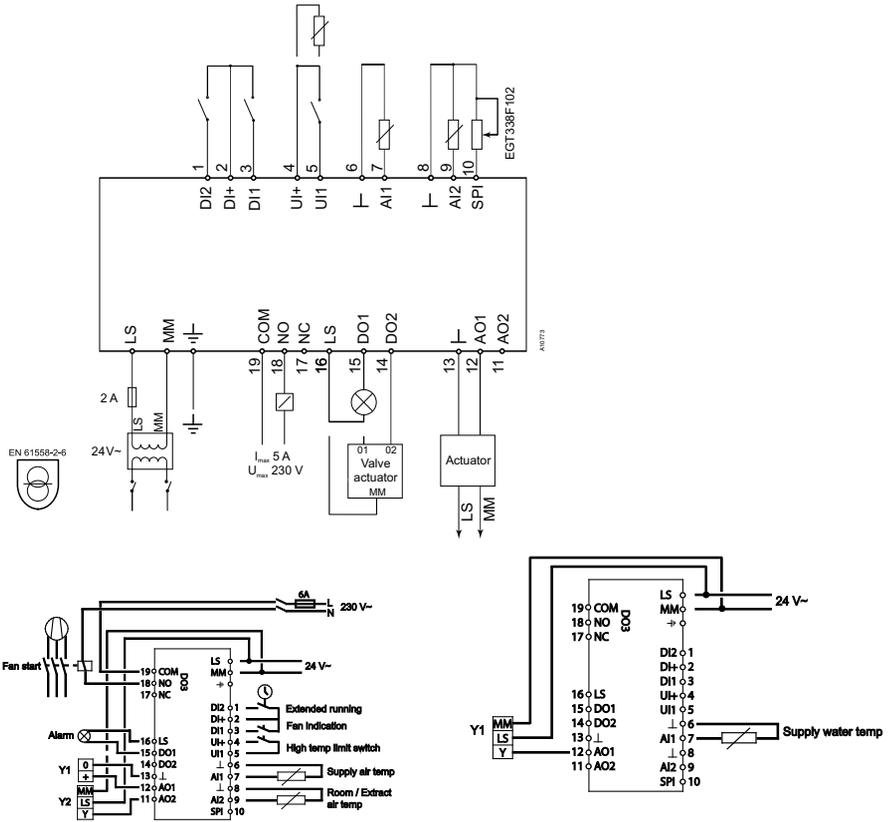
When disposing of the product, observe the currently applicable local laws. More information on materials can be found in the Declaration on materials and the environment for this product.

Connection diagram

RDT 405



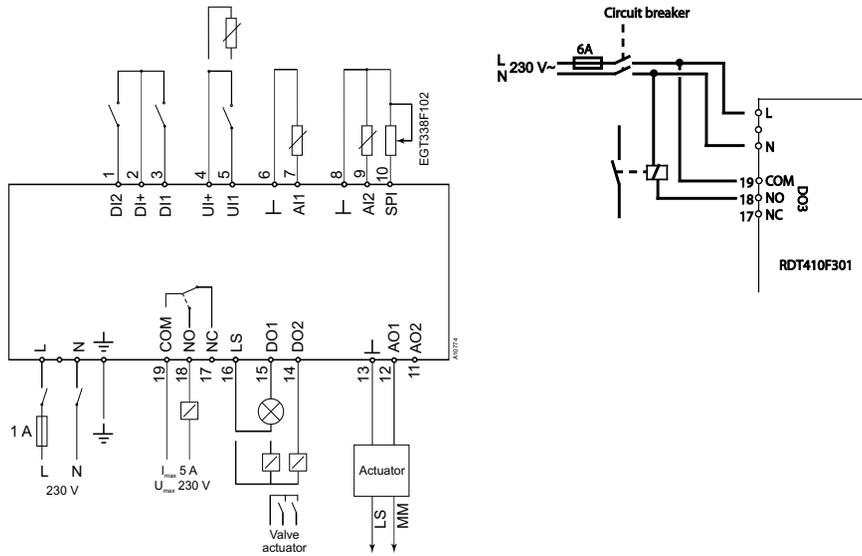
RDT410F201

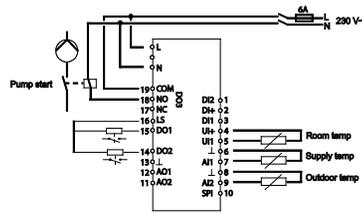
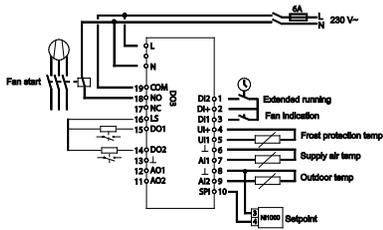


Terminal assignment: RDT410 with heater (electric) and dampers
Cascade control

Control mode 5: Terminal assignment for RDT410F201 with 0...10 V
Actuator

Connection diagram for RDT410F301





Terminal assignment for RDT410F301 with heater (wa-ter), floating point output. Supply-air temperature control based on outside temperature with external setpoint transmitter.

Control mode 4: Terminal assignment for RDT410F301 with 3-point actuator and room-temperature sensor (can also be used without room sensor)

Dimension drawing

