

RLP 10: Pneumatic volume-flow controller

How energy efficiency is improved

Allows precise measuring of volume flows to optimise energy consumption in ventilation systems

Features

- Suitable for supply and return-air control in single rooms or duct pressures
- Controls constant, switchable or variable air volumes
- Static differential pressure sensor with large measuring range (10...250 Pa)
- Front plate printed with circuit diagrams for easy identification of the controller functions
- Thermoplastic housing suitable for fitting to walls or DIN rail (EN 60715)
- Compressed-air connection with Rp 1/8" female thread
- Low-pressure connections designed as a dual-diameter connector for soft plastic tubing (internal diameter: 4 mm and 6 mm)
- One input for command variables
- Two outputs
 - Actual value of volume flow
 - Control of damper actuator
- Two setpoint adjusters for maximum and minimum limitation of the volume flow

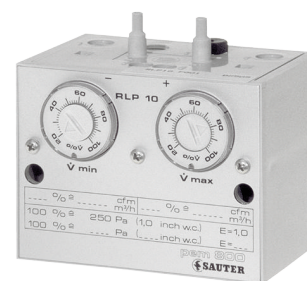
Technical data

Parameters		
	Output pressure	0.2...1.0 bar
	Setting range, volume flow	20...100% $\dot{V}$
	Setting range for pressure difference ¹⁾	10...250 Pa
	Air capacity	330 l _n /h
	Response sensitivity	0.5 Pa
	Supply pressure	1.3 bar $\pm$ 0.1
	Setpoint shift $\Delta \dot{V}$ ²⁾	20...100% $\dot{V} \pm 0.2...1.0$ bar
	Operating range P _{stat}	0...3 kPa
	Air consumption	44 l _n /h
	Linearity error and accuracy of root extraction ³⁾	2%
Ambient conditions		
	Ambient temperature	0...55 °C
Construction		
	Housing material	Thermoplastic
	Fitting	For wall mounting or DIN-rail mounting (DIN rail EN 60715)
	Weight	0.2 kg
Standards, directives		
	Type of protection	IP20
Overview of types		
Type	Description	Control action
RLP10F001	Integral volume-flow controller for supply air and return air	B
RLP10F905	Integral volume-flow controller for supply air and return air	A

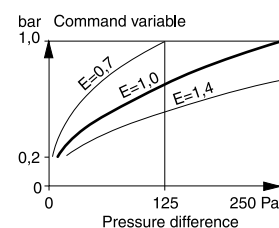
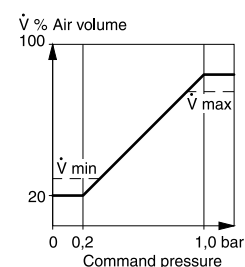
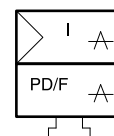
¹⁾ Factory setting 10...250 Pa; the range can be changed from 5...125 Pa (E = 0.7) to 20...500 Pa (E = 1.4) using the XYP 3 test unit

²⁾ For port 6, it is advisable to use temperature controllers without amplifier (TS*P 80, TK*P 80), since these controllers are supplied directly by the internal restrictor of the RLP

³⁾ The percentages given are based on 100% volume flow



RLP10F***



Accessories

Type	Description
0226551015	Scale 10...250 Pa when using as duct pressure controller
0226551017	Scale 20...500 Pa when using as duct pressure controller
0296936000	Fixing brackets for DIN rail: DIN rail EN 60715, 35 × 7.5 mm and 35 × 15 mm
0297354000	Short screw-in connector R 1/8", for soft plastic tubing Ø 4 mm (internal)

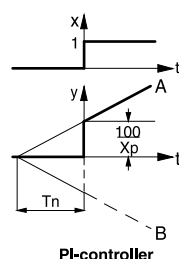
💡 0226551017: Factory setting 10...250 Pa; the range can be changed from 5...125 Pa ($E = 0.7$) to 20...500 Pa ($E = 1.4$) using the XYP 3 test unit

💡 0297354000: 3 pieces required

Description of operation

The square root transducer converts the pressure difference (10...250 Pa) produced at an orifice plate or a pitot tube into a standard signal (0.2...1.0 bar) that is linear to the flow. The command variable w at connection 6 (e.g. TSP 80 temperature controller) shifts the volume flow. It is limited by the " $\dot{v}$ min" and " $\dot{v}$ max" adjusters and compared with the actual value. With fixed-value control, no command variable w is connected and the " $\dot{v}$ min" adjuster is used for the setpoint.

The proportional-integral controller (PI controller) compensates for the control deviations with no persistent error.



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.

Improper use

The device is not suitable for use in potentially explosive atmospheres in accordance with Directive 2014/34/EU (ATEX).

Engineering and fitting notes

The regulations on the quality of the supply air, especially at low ambient temperatures, must be observed; see "Further information". The compressed air must be free of oil and solid particles.

Do not use flammable gases as propellants.

Only use original accessories for fitting.

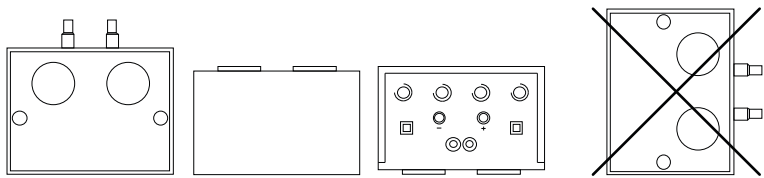
The following types are recommended as room temperature controllers: TS*P 80 and TK*P 80 (without amplifier). The temperature controller is supplied by an internal restrictor in connection 6 of the RLP.

Influence E: The output pressure 0.2...1.0 bar of the temperature controller (20...100% command variable) changes the volume flow setpoint in a range of 10...250 Pa (factory setting $E = 1.0$). Using a small internal screw, this setpoint range can be increased or reduced by a factor of 2.

- $E = 1.4$: 100% command variable results in 1.4 times the volume flow, pressure difference = 500 Pa
- $E = 0.7$: 100% command variable results in 0.7 times the volume flow, pressure difference = 125 Pa

An XYP 3 test unit is required to adjust the influence E. A positioner may not be installed between the integral controller (RLP 10) and the positioning or valve actuator. The output pressure must go directly to the actuator.

Fitting position
Upright fitting is not permitted.

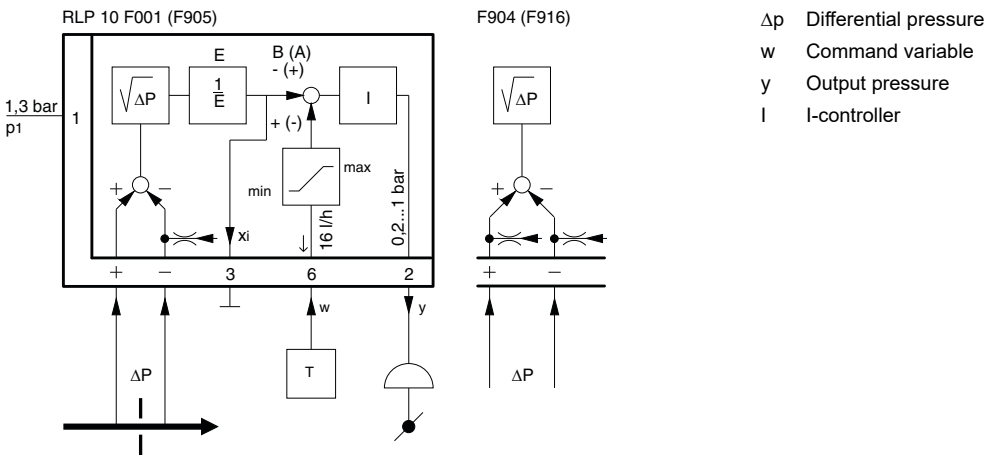


Additional information

	Document no./link
Fitting instructions	0505677033
VAV technical manual	7000621001 (on request)
Fitting instructions for pneumatic installations (with information on compressed air quality)	60.001/7160001003
Connection elements and installation material for the pneumatics	69.605/7169605001

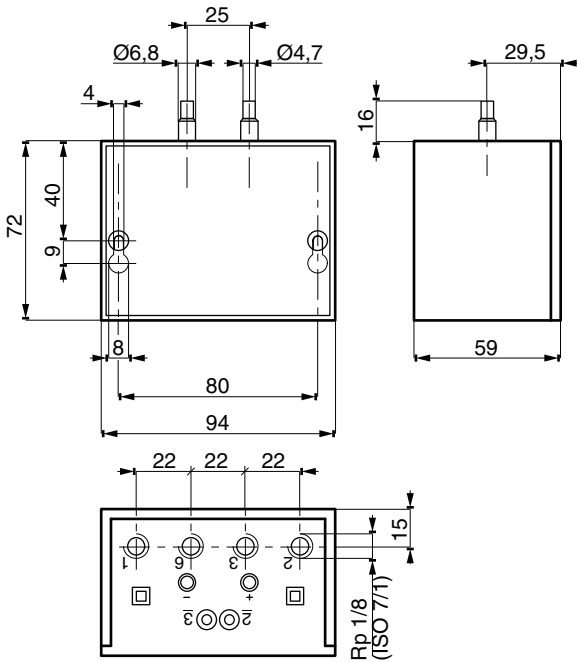
Disposal
When disposing of the product, observe the currently applicable local laws.
More information on materials can be found in the Declaration on materials and the environment for this product.

Connection diagram

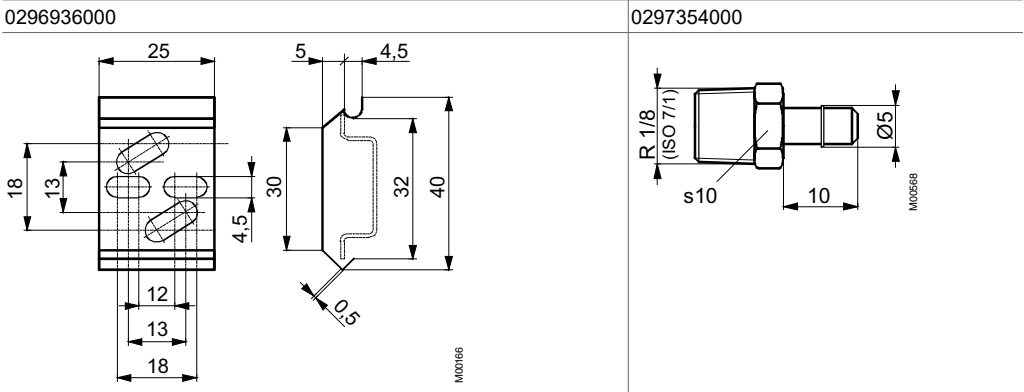


Dimension drawing

All dimensions in mm.

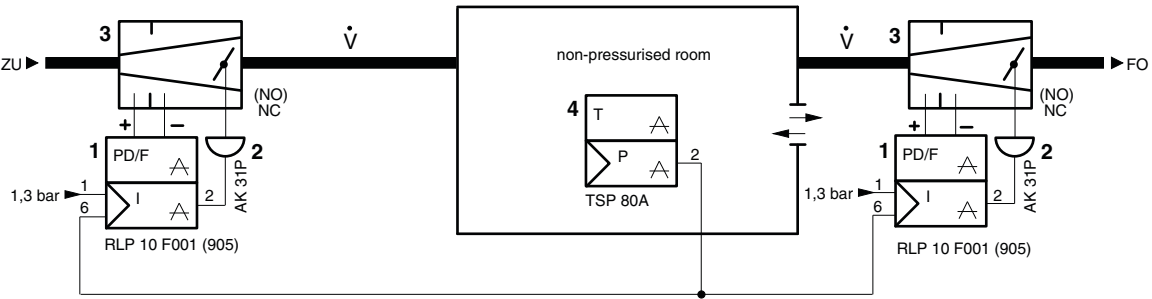


Accessories



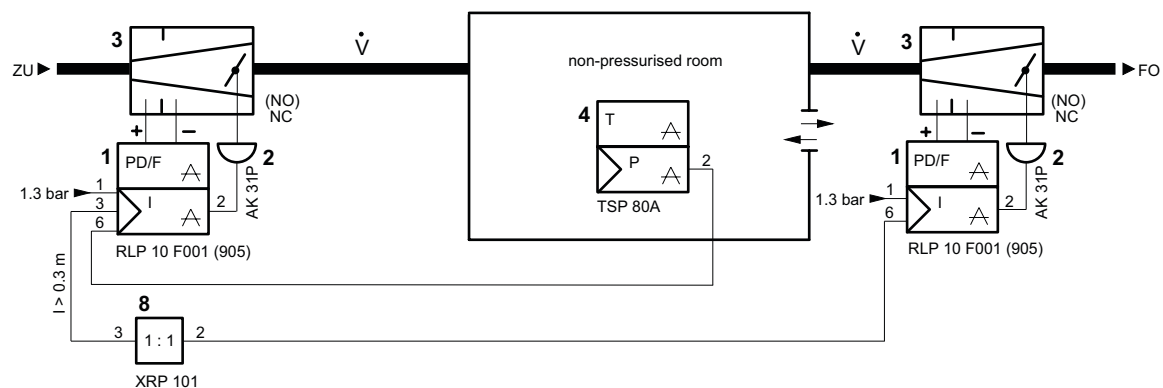
Example applications

Control facility for variable air volume (VAV) with transducer for “open rooms”.

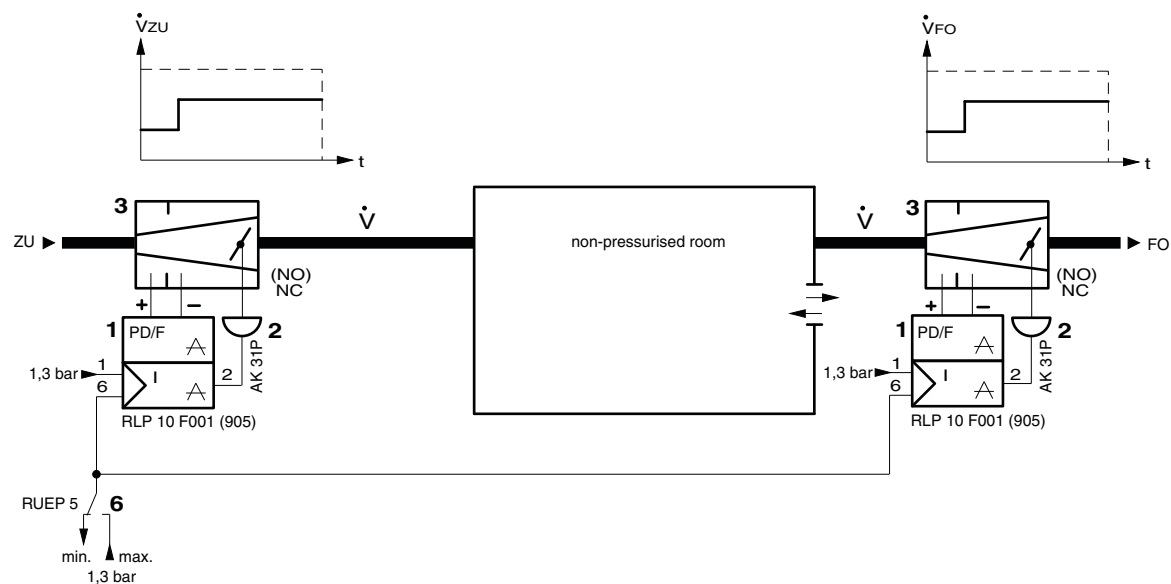


For key to illustration, see below

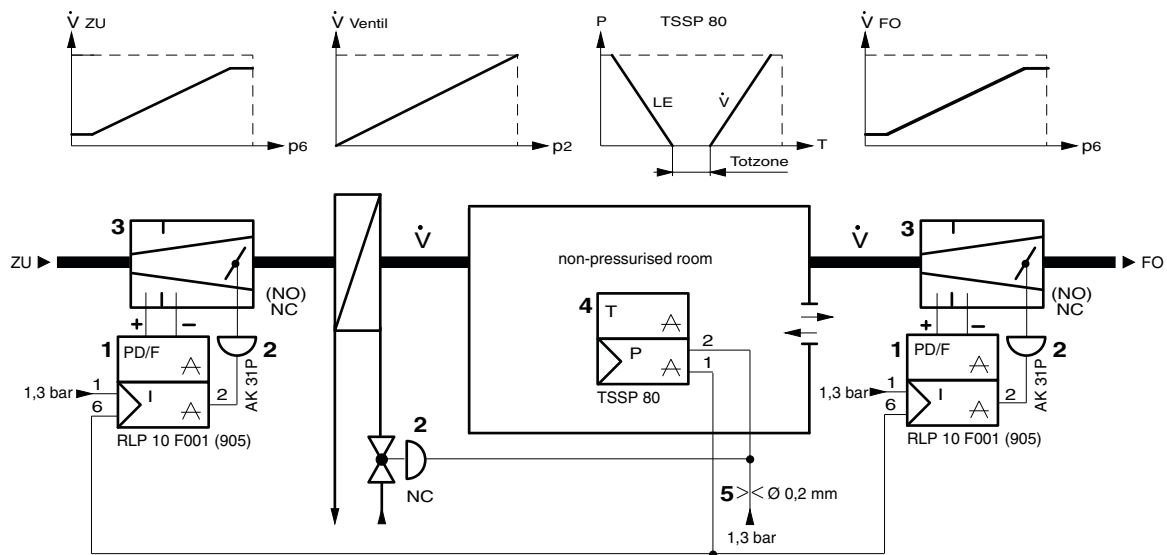
Control facility for variable air volume (VAV) for “open rooms”, return-air controller guided by the supply-air controller:



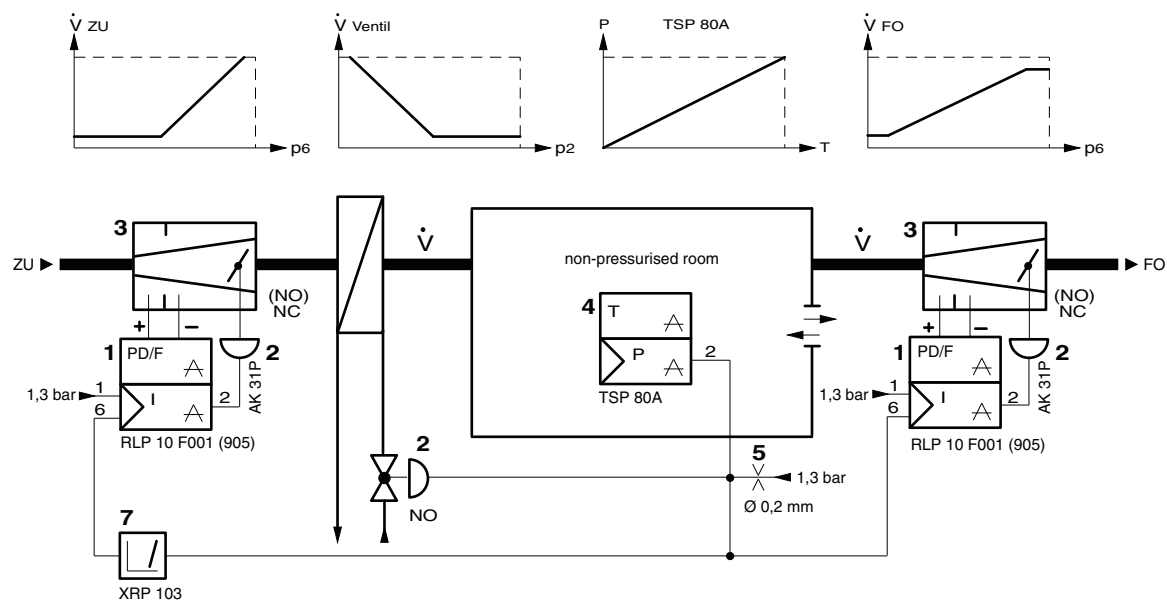
Control facility for constant air volume (CAV) for “open rooms” with switchable setpoint:



Control facility for variable air volume (VAV) with reheater for "open rooms" with dead zone, non-pressurised closed reheater, room temperature controller direction of operation A and B:



Control facility for variable air volume (VAV) with reheater for "open rooms", non-pressurised open reheater, room temperature controller direction of operation A:



Key to illustration

1	VAV controller	5	Ext. Line restrictor	NO = normally open (Open without pressure)
2	Damper/valve actuator	6	Electro-pneum. Relay	
3	Reducing box	7	Sequence relay	NC = normally closed (Closed without pressure)
4	Room temperature controllers	8	Interface relay	