

## RLP 100 F916, F918, F910: Dual-channel air-volume controller

### How energy efficiency is improved

For demand-led volume flow control of dual-channel systems in offices.

### Areas of application

Room air-conditioning using VAV in dual-channel ventilation systems.

### Features

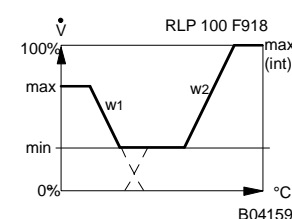
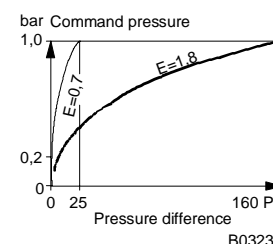
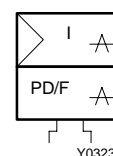
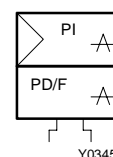
- Optimal use of energy thanks to RLP 100 dual-channel controller in combination with room control equipment in the TSP, TSFP, TSSP series
- Can be combined with virtually all mixing boxes currently on the market
- ATEX certification for use in Zone 1 potentially explosive areas
- Conformity tested as per EN 13463-1 and EN 1127-1 (Ex II 2 G T6)
- Control of constant, switchable or variable air volumes
- Highly accurate, static differential pressure sensor with large measuring range (1 to 160 Pa)
- Controller front panel is printed with circuit diagram for rapid identification of function
- Glass-fibre-reinforced thermoplastic housing suitable for wall or top-hat rail mounting (rail EN 60715)
- Compressed-air connections with Rp 1/8" female thread
- Special measuring connection for recording the volume flow with M4 connector
- Low-pressure connections in form of stepped nipples for flexible plastic hose (internal Ø 4 and 6 mm)
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

### Technical description

- Supply pressure 1.3 bar  $\pm$  0.1
- Response sensitivity of sensor 0.1 Pa
- Linearity, square root extraction accuracy 2%
- Two inputs for:
  - command variable
  - day/night changeover or heating/cooling signal
- Three outputs for:
  - actual value of air volume
  - activation of two damper drives, heating and cooling
- Adjuster for adjustment of the sensor measuring range
- Two setpoint adjusters for maximum and minimum limiting of volume flow



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Type	Description	Weight kg
<b>RLP 100 F916</b>	constant air-volume controller (PI) for sequence drives	0,6
<b>RLP 100 F918</b>	VAV controller (Integral) for full-range drives	0,6
<b>RLP 100 F910</b>	Constant air-volume controller (PI) for full-range drives <sup>1)</sup>	0,6
Output pressures	0,2...1,0 bar	Input: setpoint shift w <sub>1</sub> , w <sub>2</sub>
Setpoint range for air volume	20...100% $\dot{V}$	20...100% $\dot{V}$
Measuring range $\Delta p$ (factory setting)	6,4...160 Pa	Usable range p <sub>stat</sub>
reducible to	1...25 Pa	0...3000 Pa
Response sensitivity	0,1 Pa	Permissible pressure
Linearity; accuracy of root extraction	2% of 100% $\dot{V}$	(low-pressure connect.)
Supply pressure <sup>2)</sup>	1,3 bar $\pm$ 0,1	Permissible amb. temp.
Air capacity	<b>F916</b> <b>F918</b> <b>F910</b>	0...55 °C
Output 2, cooling	100 l <sub>n</sub> /h	Type of protection
Output 7, heating	18 l <sub>n</sub> /h	IP 30
Air consumption	60 l <sub>n</sub> /h	Connection diagr.
P-band (fixed)	400%	F916 <a href="#">A02881</a>
		F918 <a href="#">A02882</a>
		F910 <a href="#">A08620</a>
		Dimension drawing
		<a href="#">M297570</a>
		Fitting instructions
		F916 <a href="#">MV 505338</a>
		F918 <a href="#">MV 505262</a>
		F910 <a href="#">MV 505089</a>

### Accessories

**0297354 000\*** Short screw-type connector (R 1/8") for soft plastic tubing, internal Ø 4 mm; five pieces required.

**0297762 001** Restrictor Ø 0,8 mm for attenuating turbulent low-pressure signals; 2 pcs required

**0274571 000** Restrictor Ø 0,5 mm for attenuating turbulent low-pressure signals; 2 pcs required

**0297870 001\*** Fixing bracket for fitting the controller to ceilings, floors or panels.

<sup>\*)</sup> Dimension drawing or wiring diagram are available under the same number

<sup>1)</sup> Can be used for mixing boxes made by Hesco-Trox and Buensas

<sup>2)</sup> See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures

### Operation

The pressure difference (6,4...160 Pa) created at the orifice plate or dynamic pressure sensor is converted by the root-extracting transducer into a fluidic-linear standard signal (0,2...1,0 bar). The pressure difference of the setpoint range ( $E = 0,7...1,8$ ) is set via adjuster E. The integral controller compensates without lasting error for the control deviation.

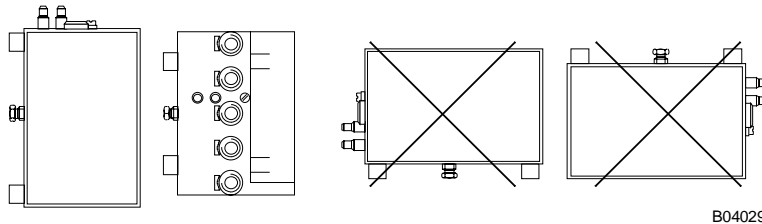
**RLP 100 F916:** The command variable  $w$  shifts the air volume (e.g. TSP 80 B temperature controller). An external setpoint signal can be fed in via connection 8 and limited by the  $\dot{V}_{\min}$  and  $\dot{V}_{\max}$  adjusters. When the connection is open,  $\dot{V}_{\min}$  is active; when closed,  $\dot{V}_{\max}$  is active.

**RLP 100 F918:** The command variables  $w_1$  (heating) and  $w_2$  (cooling) shift the air volume (e.g. TSSP 80 temperature controller). The  $\dot{V}_{\min}$  and  $\dot{V}_{\max}$  adjusters and the internal  $\dot{V}_{\max}$  (int.) adjuster allow the air volumes for heating and cooling to be limited individually.

**RLP 100 F910:** The command variable  $w$  shifts the air volume for heating (e.g. TSP 80 B temperature controller). The ratio of warm air to cold air is fixed at 1:2. An external setpoint signal can be fed via connection 8 and limited using adjusters  $\dot{V}_{\min}$  and  $\dot{V}_{\max}$ . When the connection is open,  $\dot{V}_{\min}$  is in force; when the connection is closed,  $\dot{V}_{\max}$  is in force.

### Engineering and fitting notes

The unit should not be fitted laterally (as depicted below, right).



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In order to prevent turbulence which, in the form of oscillations, affects the low-pressure signal, there should be a smoothing sector in front of the measuring cross for the measurement of differential pressure.

Where the flow may be problematical – e.g. right-angles, bends or junctions directly in front of the measuring cross –, a restrictor should be fitted into the plastic tubing of the '+' and '-' connection in order to attenuate turbulent low-pressure signals.

### Engineering and fitting notes

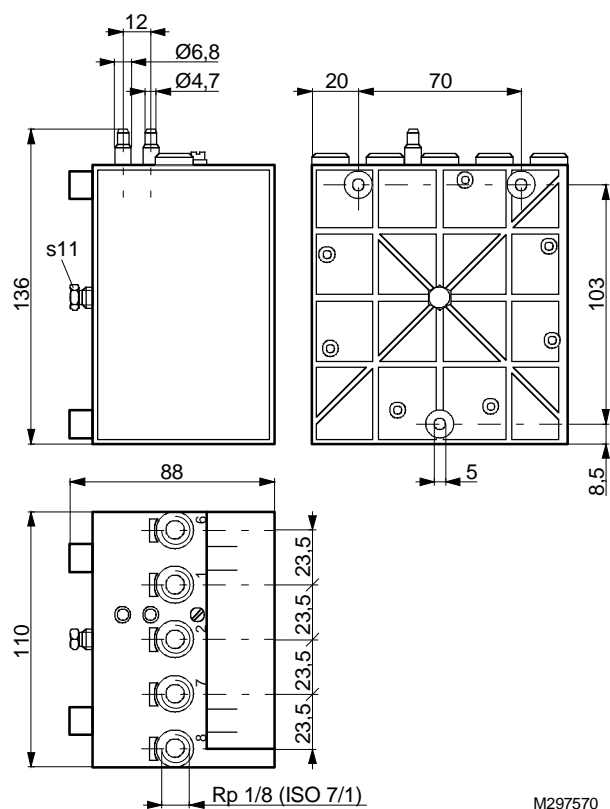
Technical manual: VAV 7 000 621 003

### Additional information on accessories

- 0297762 001** Restrictor (Ø 0,8 mm) for damping turbulent low-pressure signals; push-on connector for soft plastic tubing of Ø 4 mm internal. If the damping is insufficient, a Ø 0,5 mm restrictor can be used instead (accessory no. 0274571; not suitable for RLP 100 F908, F914, F123).
- 0274571 000** Restrictor (Ø 0,5 mm) for damping turbulent low-pressure signals; push-on connector for soft plastic tubing of Ø 4 mm internal. Used in extreme cases where the Ø 0,8 mm restrictor has proved to be inadequate. Unsuitable for any volume-flow controllers (RLP 100 F914 and F123) and transducers (RLP 100 F908) that have a very small amount of air fed constantly into the '+' and '-' low-pressure line, since the pressure signals in the lower part of the measuring range are falsified, and the positioning time of 1...2 seconds (RLP 100 F123) is not attained.

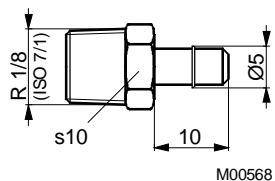


## Dimension drawing

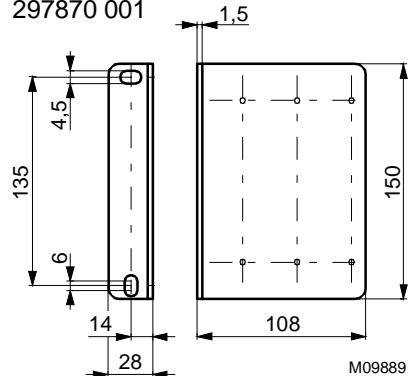


## Accessories

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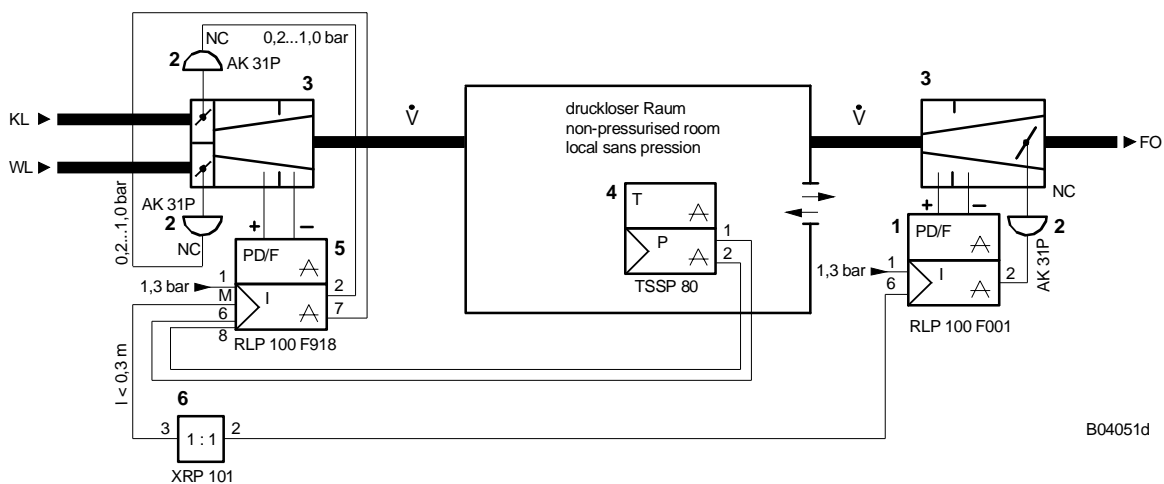


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### Example of use for RLP 100 F918

Control facility for a variable air volume for dual-channel systems with room temperature for heating-cooling



1	Volume-flow controller	4	Room-temperature controller	KL	Cold air
2	Damper drive	5	Dual-channel air-volume contr.	WL	Warm air
3	Pressure-release unit	6	Interface relay	FO	EA (exhaust air)
				NC	normally closed