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

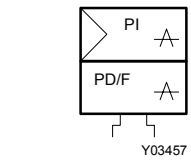
T03468

Used in conjunction with an orifice plate or a dynamic pressure sensor and two pneumatic damper drives for controlling the air volume in dual-channel air-conditioning systems. All the listed VAV transducers comply with EN 13463-1 and EN 1127-1 (Ex II 2 G T6) and can be employed in Zone 1 areas where there is a risk of explosion.
Baseplate of glass-fibre-reinforced thermoplastic with high-sensitivity measuring diaphragm; snap-on lid for protecting the pneumatics. Front plate with the adjusters for setpoint limitation and influence. Suitable for mounting in panels, (vertically) onto walls, onto rails (as per C-EN 50024) or elsewhere using the fixing bracket (accessory). Compressed-air connection Rp ⅛ with female thread. Low-pressure connections: 2 stepped push-on connectors for soft plastic tubing (internal Ø 4 and 6 mm). Measuring connection M4.

Type	Description	Weight kg
RLP 100 F916	constant air-volume controller (PI) for sequence drives	0.6
RLP 100 F918	VAV controller (Integral) for full-range drives	0.6
RLP 100 F910	Constant air-volume controller (PI) for full-range drives [1]	0.6

Output pressures	0.2...1.0 bar	Input: setpoint shift w_1, w_2	
Setpoint range for air volume	20...100% V̇	20...100% V̇	0.2...1.0 bar
Measuring range Δp (factory setting)	6.4...160 Pa		
reducible to	1...25 Pa	Usable range p_{stat}	0...3000 Pa
Response sensitivity	0.1 Pa	Permissible pressure	
Linearity; accuracy of root extraction	2% of 100% V̇	(low-pressure connect.)	3000 Pa

Supply pressure [2]	1.3 bar ± 0.1			Permissible amb. temp.		0...55 °C
Air capacity	**F916**	**F918**	**F910**	Degree of protection		IP 30
Output 2, cooling	100 l_n/h	120 l_n/h	400 l_n/h	Connection diagr.	F916	A02881
Output 7, heating	18 l_n/h	80 l_n/h	400 l_n/h		F918	A02882
Air consumption	60 l_n/h	80 l_n/h	53 l_n/h		F910	A08620
P-band (fixed)	400%	–	100%	Dimension drawing		M297570
				Fitting instructions	F916	MV 505338
					F918	MV 505262
					F910	MV 505089



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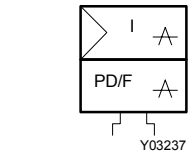

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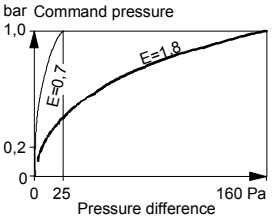

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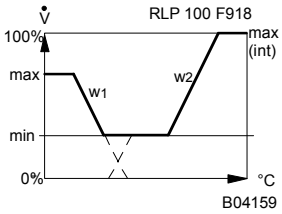

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Accessories

0297354 000* Short screw-type connector (Rp ⅛) 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.

*) Dimension drawing or wiring diagram are available under the same number

1) Can be used for mixing boxes made by *Hesco-Trox* and *Buensas*
2) 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.

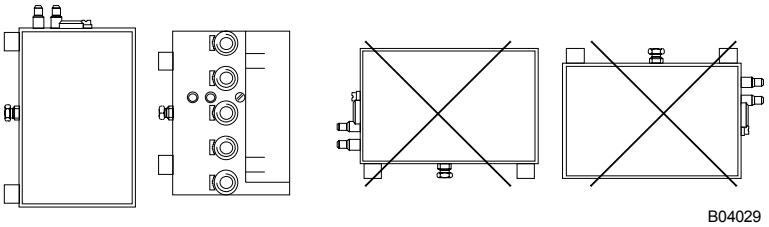
RLP 100 F916: The command variable *w* shifts the air volume (e.g. TSP 80 B temperature controller). An external setpoint signal can be fed in via connection 8 and limited by the $\dot{V}_{min}$ and $\dot{V}_{max}$ adjusters. When the connection is open, $\dot{V}_{min}$ is active; when closed, $\dot{V}_{max}$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

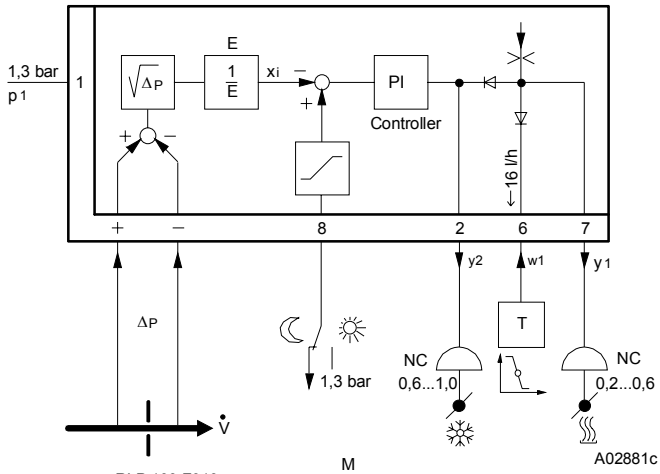
Additional information on accessories

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.

Connection diagrams

RLP 100 F916



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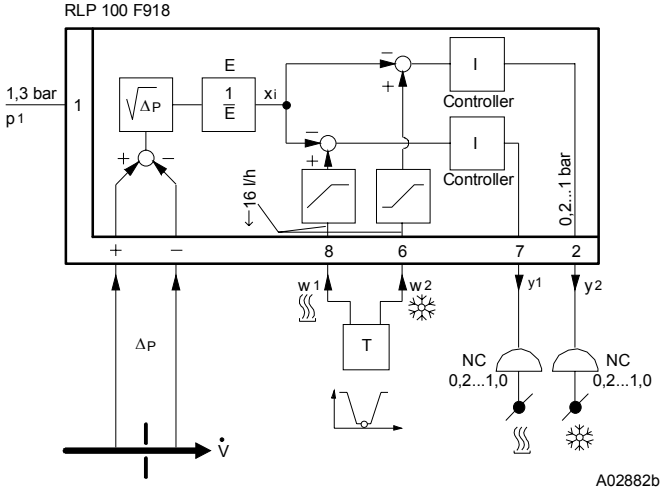
RLP 100 F918



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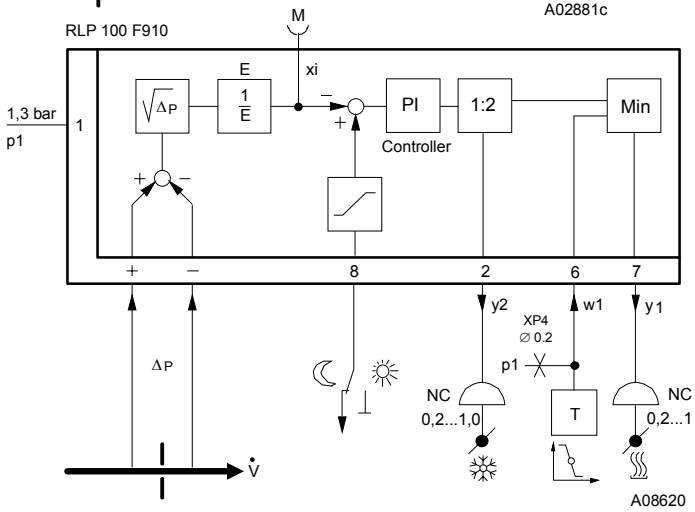
RLP 100 F910



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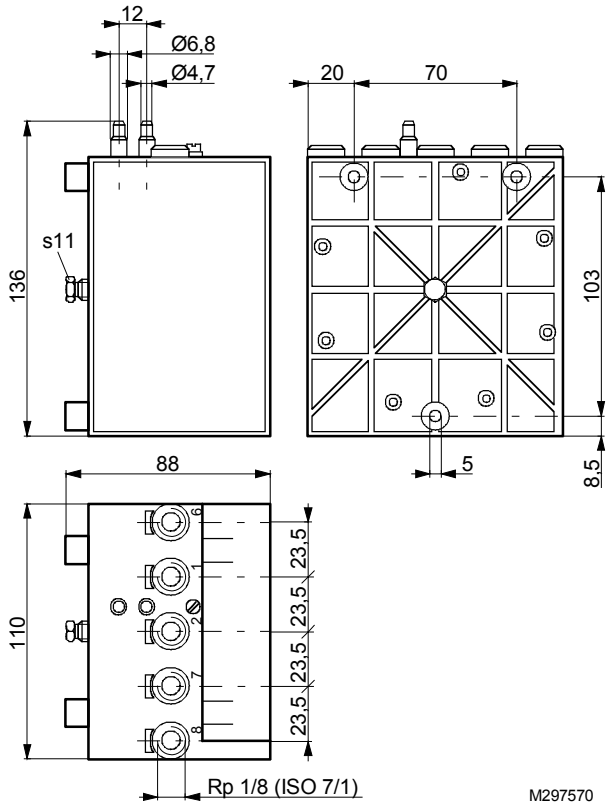
Dimension drawing



Accessories

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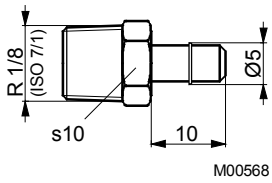
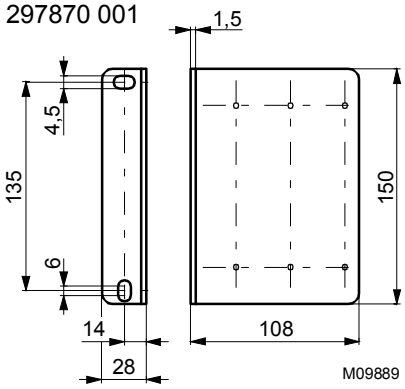
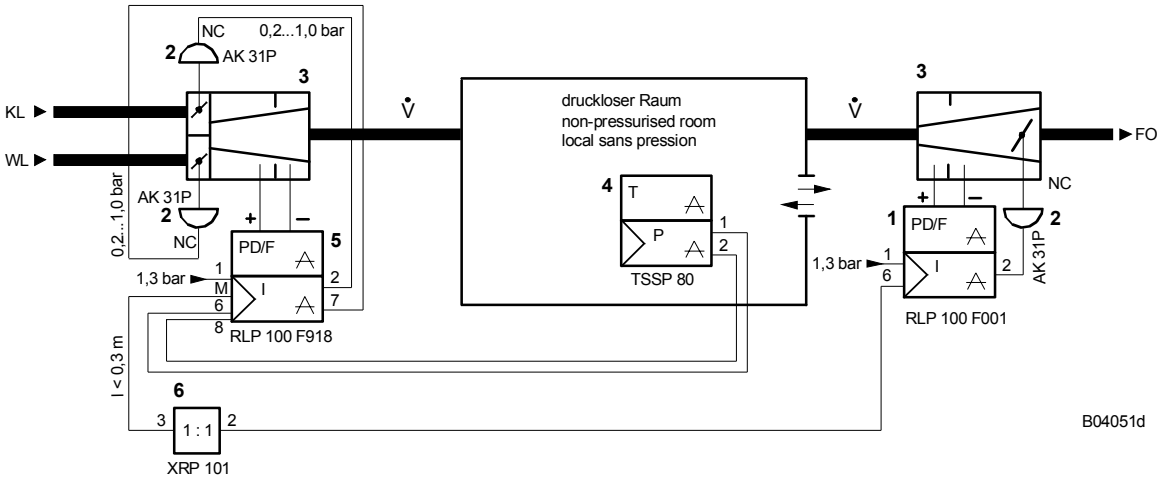


297870 001



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	nornally closed

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