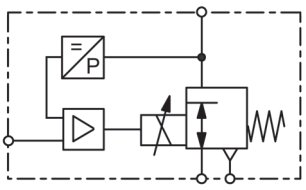
Piezo Proportional Pressure Regulator, Very Quick, 400 mW PRE

Description

Piezo-operated proportional pressure valve based on the principle of a piezo element which bends when voltage is applied. At the end of the piezo element is a flapper valve, which operates against a precision nozzle to create back pressure on the control diaphragm of a booster relay. A pressure transducer provides feedback of the outlet pressure compared with the setpoint value with correction by the electronic control system if necessary.

Minimal power consumption	• no self-heating, even none at pressure absence • safe battery operation over a long period	
Piezo element	• almost no power consumption necessary for regulation • extremely quick regulating operations • low-noise regulation especially for medical and laboratory technology	
Small and light design	• particularly suitable for portable devices in conjunction with battery operation • ideal for limited space conditions	
PRE1	DN 2.5, 350 l/min, coupling socket M8x1, 3-pin, monitor signal optionally 0…P_{2max} ≙ 0…10 V,	monitor signal, 4-pin max. 1 mA, R_a > 1kΩ
PRE2	DN 6, 1600 l/min, coupling socket M12x1.5, 5-pin monitor signal standard 0…P_{2max} ≙ 0…10 V,	max. 1 mA, R_a > 1kΩ



0…100 mbar / 10 bar
10 ms, 400 mW, 1600 l/min

General features

Description	Piezo-operated 3-port/2-way proportional pressure regulator with internal pressure sensor and closed loop.
Protection class	IP 30 for PRE1 according to DIN EN 60529 IP 65 for PRE2 according to DIN EN 60529 with coupling socket and tapped exhaust
Mounting position	any
Temperature range	0 °C to 50 °C / 32 °F to 122 °F
Material	Body: plastic Elastomer: NBR/Buna-N Inner valve: brass and spring steel

Pneumatic features

Media	dry, oil-free and 5 µm filtered compressed air or non-corrosive gases
Supply pressure	min. 1.5 bar or 1 bar above outlet pressure max. 2.5 to 12 bar, depending on pressure range according to chart
Flow rate	PRE1: max. 350 l/min at P_1 = 10 bar, P_2 = 6 bar and open outlet DN 2.5 PRE2: max. 1600 l/min at P_1 = 10 bar, P_2 = 6 bar and open outlet DN 6
Exhaust	PRE1: 180 l/min at P_2 = 6 bar, 20 l/min at P_2 = 200 mbar PRE2: 1000 l/min at P_2 = 6 bar, 400 l/min at P_2 = 2 bar
Air consumption	PRE1: < 0.4 l/min at 0...200 mbar, < 0.5 l/min at 0...2 bar, < 0.6 l/min at 0…8 bar PRE2: < 1.5 l/min independent of pressure range

Electrical features

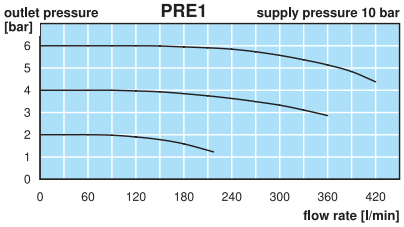
Supply voltage	PRE1: 24 V DC ± 10%, 0.4 W, current consumption max. 15 mA PRE2: 24 V DC ± 10%, 0.8 W, current consumption max. 30 mA
Command signal	4…20 mA or 0…10 V
Impedance	PRE1: 61 kΩ at voltage signal, 550 Ω at current signal PRE2: 55 kΩ at voltage signal, 500 Ω at current signal
Electrical connector	PRE1: coupling socket M8x1, 3-pin PRE1-R: coupling socket M8x1, 4-pin PRE2: coupling socket M12x1.5, 5-pin
Monitor signal	PRE1-R: as option 0…P_{2max} / 0…10 V, max. 1 mA, R_a > 1kΩ PRE2: standard 0…P_{2max} / 0…10 V, max. 1 mA
Electronic switch	PRE2 only, PNP, "on" when setpoint and actual value match in the tolerance range 0 V: off, 23 V = on, output current < 200 mA, tolerance P2: < 2%
Failsafe	If signal or electrical supply fails, outlet pressure falls to zero and the regulator exhausts.
Note	For long connection lines shielding is to be used. Pay attention to voltage drops. As the case may be, current signal is preferable.

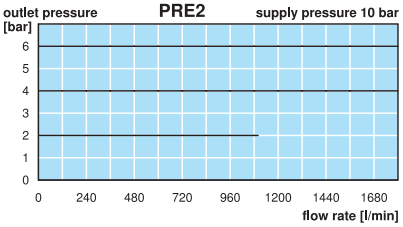
Accuracy

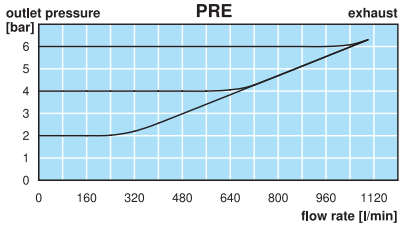
Linearity	< 0.5% FS,	at 0.1 and 0.2 bar range < 1 % FS	
Hysteresis	< 0.2% FS,	at 0.1 and 0.2 bar range < 0.5% FS	
Response sensitivity	< 0.1% FS,	at 0.1 and 0.2 bar range < 0.5% FS at PRE1	< 0.2% FS at PRE2
Repeatability	< 0.2% FS,	at 0.1 and 0.2 bar range < 0.5% FS	
Response time	10 ms		

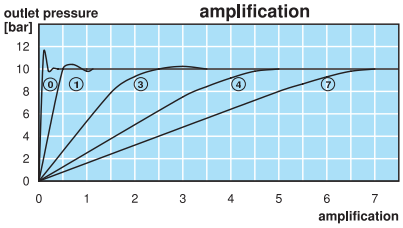
Adjustment

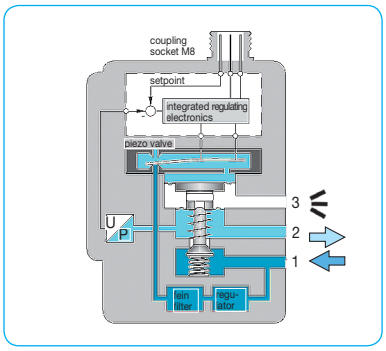
Zero point	calibration only by factory
Range	calibration only by factory



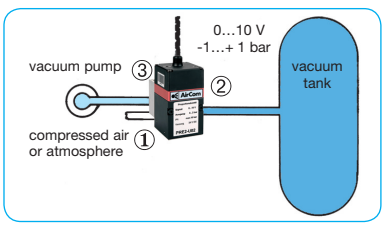








cross section PRE1



PRE2-V1 for vacuum

PDF CAD
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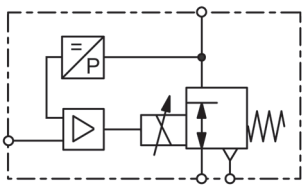
Technical features

• **Highly dynamic**	10 ms, critical frequency 43 Hz	• **Linearity**	< 0.5% or 1% FS
• **Low power consumption**	400 mW / 800 mW nominal power	• **Hysteresis**	< 0.2% or 0.5% FS
• **No self-heating**	due to low power consumption	• **Response sensitivity**	< 0.1% or 0.5% FS
• **Battery operation**	due to low power consumption	• **Repeatability**	< 0.2% or 0.5% FS
• **For portable devices**	up to 3 bar pressure range	• **Failsafe**	exhaust at power breakdown
• **No over-oscillation**	adjustable closed loop amplification	• **Protection class**	IP 30 or IP 65
• **No resonance oscillation**	adjustable closed loop amplification	• **Two-wire system**	for signal 4 ... 20 mA



0 ... 100 mbar / 10 bar
10 ms, 400 mW, 1600 l/min

Dimensions A mm	B mm	C mm	Supply pressure max. bar	Flow rate l/min*1	Connection thread G	Pressure range bar	Order number for output signal 4...20 mA	0...10 V
Proportional valve				supply voltage 24 V DC, constant bleed, with straight coupling socket and 5 m cable			**PRE**	**PRE**
36	61	54	2.5	50	G⅛	0...0.1	**PRE1-IA1**	**PRE1-UA1**
				100		0...0.2	**PRE1-IA2**	**PRE1-UA2**
			6.0	150		0.2...1	**PRE1-IE1**	
				200		0... 2	**PRE1-I02**	**PRE1-U02**
			10	250		0... 5	**PRE1-I05**	**PRE1-U05**
				280		0... 6	**PRE1-I06**	**PRE1-U06**
				350		0... 8	**PRE1-I08**	**PRE1-U08**
46	84	68	2.5	800	G¼	-1... 1	**PRE2-IV1**	**PRE2-UV1**
			7.0	900		0... 1	**PRE2-I01**	**PRE2-U01**
				1100		0... 2	**PRE2-I02**	**PRE2-U02**
			10	1300		0... 5	**PRE2-I05**	**PRE2-U05**
				1500		0... 6	**PRE2-I06**	**PRE2-U06**
			12	1700		0...10	**PRE2-I10**	**PRE2-U10**
			17	2400		0...16	**PRE2-I16**	**PRE2-U16**

PRE1

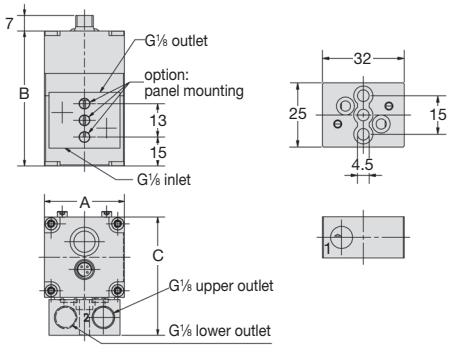
PRE2

Special options, add the appropriate letter

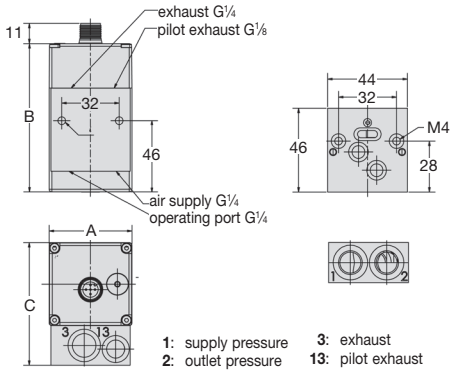
monitor signal	0...10 V, standard at PRE2	for PRE1	PRE1-...**R**
flange connection	without manifold		PRE.-...**F**
w/o coupling socket	and without cable		PRE.-...**H**
mounting clips	for DIN rail		PRE.-...**C**

Accessories, enclosed

coupling socket	with 5 m cable, angle	M8x1,	3-pin	for PRE1 **KM08-C3-5**
		M8x1,	4-pin	for PRE1-R **KM08-C4-5**
		M12x1.5,	5-pin	for PRE2 **KM12-C5-5**



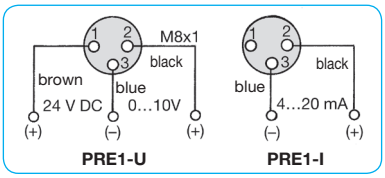
PRE1



1: supply pressure
2: outlet pressure
3: exhaust
13: pilot exhaust

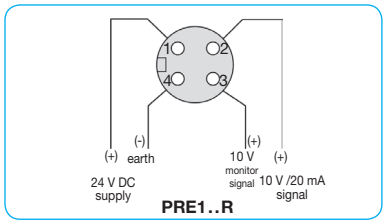
PRE2

*1 at open outlet



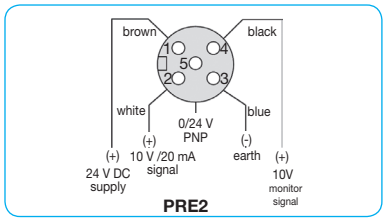
PRE1-U **PRE1-I**

connection diagram



PRE1..R

connection diagram



PRE2

connection diagram

PDF CAD
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Order example:
PRE1-IA1

Proport. pressure
10