

Description

Piezo-operated proportional pressure regulator 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
- almost no power consumption necessary for regulation
- extremely quick regulating operations
- low-noise regulation especially for medical and laboratory technology
- particularly suitable for portable devices in conjunction with battery operation
- ideal for limited space conditions

Piezo element

Small and light design

PRE1

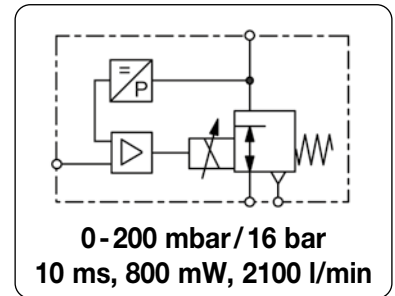
DN 2.5, 350 l/min, coupling socket M8x1, 3-pin,
monitor signal optionally 0... P_{2max} $\triangleq$ 0...10 V,
DN 6, 1600 l/min, coupling socket M12x1.5, 5-pin
monitor signal standard 0... P_{2max} $\triangleq$ 0...10 V,

monitor signal, 4-pin
max. 1 mA, $R_a > 1k\Omega$

PRE2

DN 2.5, 350 l/min, coupling socket M8x1, 3-pin,
monitor signal optionally 0... P_{2max} $\triangleq$ 0...10 V,
DN 6, 1600 l/min, coupling socket M12x1.5, 5-pin
monitor signal standard 0... P_{2max} $\triangleq$ 0...10 V,

max. 1 mA, $R_a > 1k\Omega$



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, PRE1 IXEF1022 PRE2 Grivity Gvx-65H Elastomer: NBR/Buna-N Inner valve: brass and spring steel

Pneumatic features

Media	dry, unlubricated and 5 μ m filtered compressed air or non-corrosive gases
Supply pressure	min. 1.5 bar (at $P_2 \leq 8$ bar) or 2 bar (at $P_2 \geq 8$ bar) and additional P_1 min. 1 bar greater than P_2 max. 2.5 bar up to 17 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 PRE2: max. 1600 l/min at $P_1 = 10$ bar, $P_2 = 6$ bar and open outlet DN 2.5 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: < 1.0 l/min independent of pressure range PRE2: < 1.0 l/min independent of pressure range

Electrical features

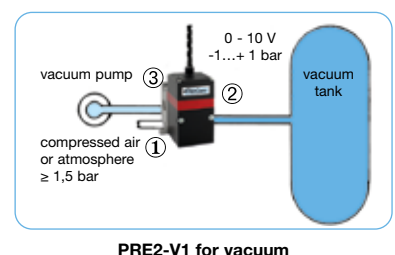
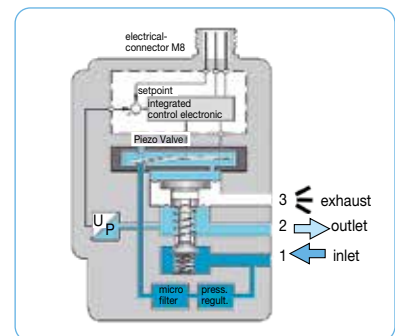
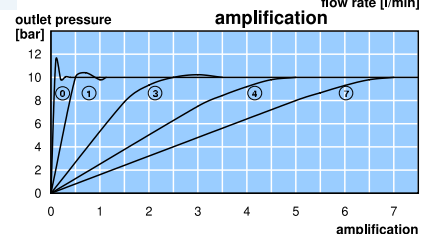
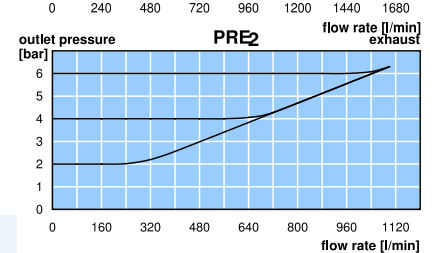
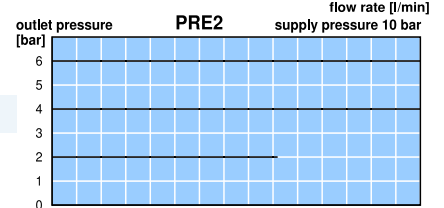
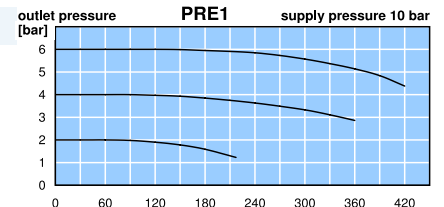
Supply voltage	PRE1: 24 V DC $\pm 10\%$, 0.4 W, current consumption max. 15 mA PRE2: 24 V DC $\pm 10\%$, 0.8 W, current consumption max. 30 mA
Command signal	4...20 mA or 0...10 V
Impedance	PRE1: $\geq 66 k\Omega$ at voltage signal, $\leq 500 \Omega$ at current signal PRE2: $\geq 55 k\Omega$ at voltage signal, $\leq 500 \Omega$ at current signal
Electrical connector	PRE1: coupling socket M8x1, 3-pin PRE1-R: coupling socket M8x1, 4-pin PRE2: coupling socket M12x1, 5-pin
Monitor signal	PRE1-U.R: as option 0... P_{2max} / 0...10 V, max. 1 mA, $R_a > 1k\Omega$ 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 DC = off, $U_N - 0.7$ V DC = on, output current < 200 mA, tolerance $P_2: \pm 2\%$
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 0.2 bar range	< 1 % FS
Hysteresis	< 0.2% FS, at 0.2 bar range	< 0.5% FS
Response sensitivity	< 0.1% FS, at 0.2 bar range	< 0.5% FS at PRE1 < 0.2% FS at PRE2
Repeatability	< 0.2% FS, at 0.2 bar range	< 0.5% FS
Response time	10 ms	
Over all accuracy	$\pm 0.2\%$ FS (Monitor signal $\pm 1.5\%$ FS)	

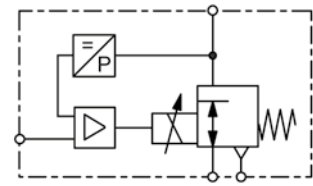
Adjustment

Zero point	calibration only by factory
Range	calibration only by factory



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...200 mbar / 16 bar
10 ms, 800 mW, 2400 l/min**

Dimensions			Supply pressure	Flow rate	Connection thread	Pressure range	Order number for inlet signal	
A	B	C	max. bar	l/min*1	G	bar	4-20 mA	0-10 V
mm	mm	mm						

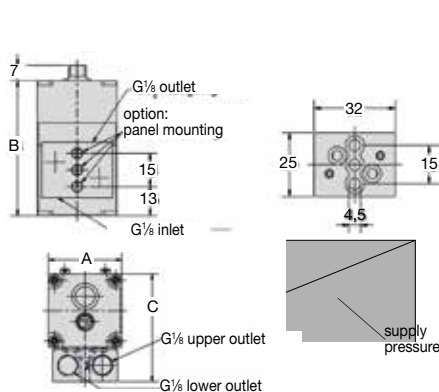
Proportional press. regl.						supply voltage 24 V DC, constant bleed, with angular coupling socket and 5 m cable		PRE	PRE
36	61	53	2.5	100	G $\frac{1}{8}$	0...0.2		PRE1-IA2	PRE1-UA2
			6.0	200		0... 2		PRE1-I02	PRE1-U02
			10	250		0... 5		PRE1-I05	PRE1-U05
				280		0... 6		PRE1-I06	PRE1-U06
				350		0... 8		PRE1-I08	PRE1-U08
46	84	68	2.5	800	G $\frac{1}{4}$	-1... 1		PRE2-I01V1	PRE2-U01V1
			10	1500		-1... 4		PRE2-I04V1	PRE2-U04V1
				1500		-1... 6		PRE2-I06V1	PRE2-U06V1
			12	1700		-1... 10		PRE2-I10V1	PRE2-U10V1
			2.5	500		0... 0.5		PRE2-IA5	PRE2-UA5
				900		0... 1		PRE2-I01	PRE2-U01
			7.0	1100		0... 2		PRE2-I02	PRE2-U02
				1100		0... 3		PRE2-I03	PRE2-U03
			10	1500		0... 4		PRE2-I04	PRE2-U04
				1500		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

Special options, add the appropriate letter

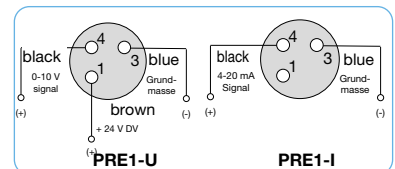
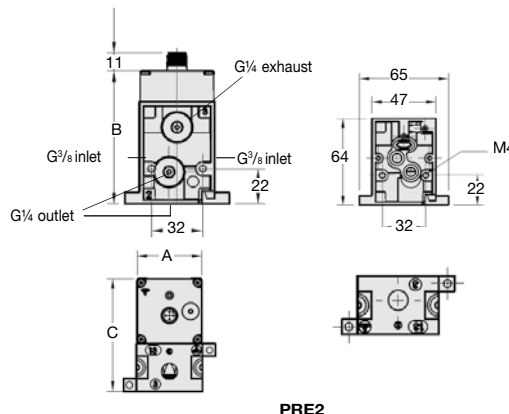
monitor signal	0-10 V, standard at PRE2	for PRE1-U	PRE1-...R
flange connection	without manifold		PRE-...F
w/o coupling socket	and without cable		PRE-...H
mounting clips	for DIN rail		PRE-...C
deviant pressure ranges			PRE-...XX
for oxygen*2	specialty cleaned		PRE-...15

Accessories, enclosed

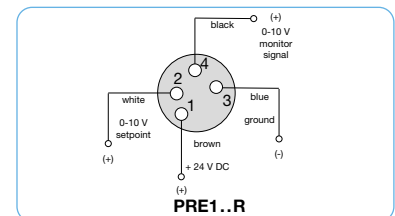
coupling socket	with 5 m cable, angular	M8x1, 3-pin	for PRE1	KM08-C3-5
		M8x1, 4-pin	for PRE1-R	KM08-C4-5
		M12x1, 5-pin	for PRE2	KM12-C5-5



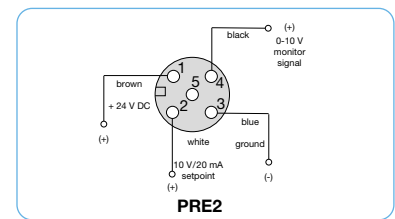
*1 at open outlet
*2 by PRE1 no tapped exhaust on the manifold



connection diagram



connection diagram



connection diagram

* Product group

Technical details: see previous page

PDF CAD
www.aircom.net



Order example:
PRE1-IA1