

### 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

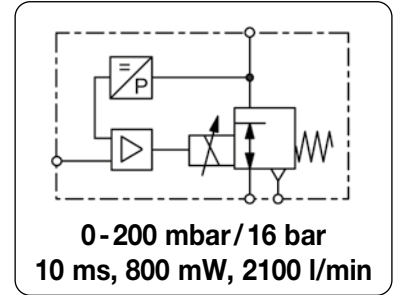
DN 2.5, 350 l/min, coupling socket M8x1, 3-pin,  
monitor signal optionally 0... $P_{2max}$   $\triangleq$  0...10 V,

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

### PRE2

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

<b>Description</b>	Piezo-operated 3-port/2-way proportional pressure regulator with internal pressure sensor and closed loop.		
<b>Protection class</b>	IP 30 for PRE1 according to DIN EN 60529 IP 65 for PRE2 according to DIN EN 60529 with coupling socket and tapped exhaust		
<b>Mounting position</b>	any		
<b>Temperature range</b>	0 °C to 50 °C / 32 °F to 122 °F		
<b>Material</b>	Body: plastic, PRE1 IXEF1022	PRE2 Grivity GVX-65H	Elastomer: NBR/Buna-N Inner valve: brass and spring steel

## Pneumatic features

<b>Media</b>	dry, unlubricated and 5 $\mu$ m filtered compressed air or non-corrosive gases		
<b>Supply pressure</b>	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		
<b>Flow rate</b>	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	
<b>Exhaust</b>	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		
<b>Air consumption</b>	PRE1: < 1.0 l/min independent of pressure range PRE2: < 1.0 l/min independent of pressure range		

## Electrical features

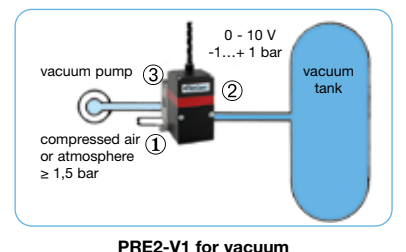
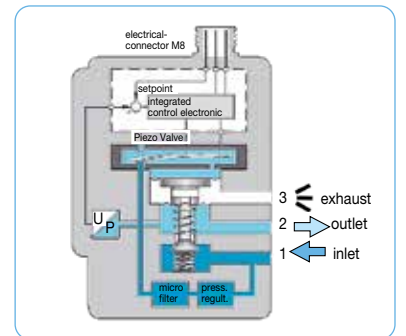
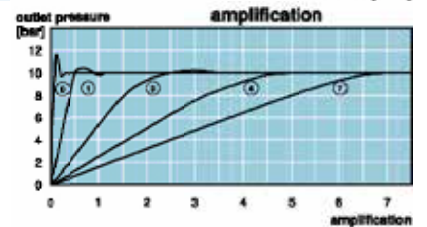
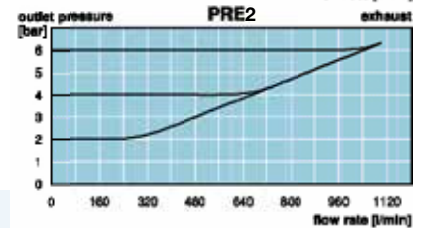
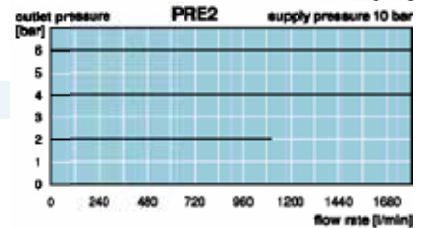
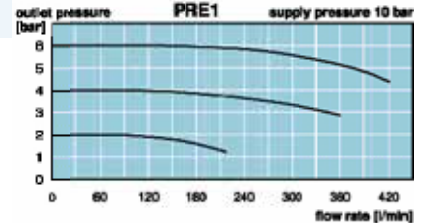
<b>Supply voltage</b>	PRE1: 24 V DC $\pm$ 10%, 0.4 W, current consumption max. 15 mA PRE2: 24 V DC $\pm$ 10%, 0.8 W, current consumption max. 30 mA		
<b>Command signal</b>	4...20 mA or 0...10 V		
<b>Impedance</b>	PRE1: $\geq 66 k\Omega$ at voltage signal, $\leq 500 \Omega$ at current signal		
	PRE2: $\geq 55 k\Omega$ at voltage signal, $\leq 500 \Omega$ at current signal		
<b>Electrical connector</b>	PRE1: coupling socket M8x1, 3-pin	PRE1-R: coupling socket M8x1, 4-pin	
	PRE2: coupling socket M12x1.5, 5-pin		
<b>Monitor signal</b>	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		
<b>Electronic switch</b>	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 $P_2: \pm 2\%$		
<b>Failsafe</b>	If signal or electrical supply fails, outlet pressure falls to zero and the regulator exhausts.		
<b>Note</b>	For long connection lines shielding is to be used. Pay attention to voltage drops. As the case may be, current signal is preferable.		

## Accuracy

<b>Linearity</b>	< 0.5% FS,	at 0.2 bar range	< 1 % FS
<b>Hysteresis</b>	< 0.2% FS,	at 0.2 bar range	< 0.5% FS
<b>Response sensitivity</b>	< 0.1% FS,	at 0.2 bar range	< 0.5% FS at PRE1 < 0.2% FS at PRE2
<b>Repeatability</b>	< 0.2% FS,	at 0.2 bar range	< 0.5% FS
<b>Response time</b>	10 ms		
<b>Over all accuracy</b>	$\pm 0.2\%$ FS (Monitor signal $\pm 1.5\%$ FS)		

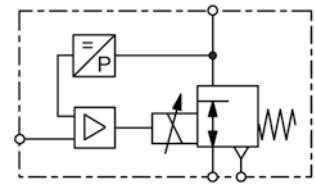
## Adjustment

<b>Zero point</b>	calibration only by factory
<b>Range</b>	calibration only by factory



### Technical features

- Highly dynamic** 10 ms, critical frequency 43 Hz
- Low power consumption** 400 mW / 800 mW nominal power
- No self-heating** due to low power consumption
- Battery operation** due to low power consumption
- For portable devices** up to 3 bar pressure range
- No over-oscillation** adjustable closed loop amplification
- No resonance oscillation** adjustable closed loop amplification
- Linearity** < 0.5% or 1% FS
- Hysteresis** < 0.2% or 0.5% FS
- Response sensitivity** < 0.1% or 0.5% FS
- Repeatability** < 0.2% or 0.5% FS
- Failsafe** exhaust at power breakdown
- Protection class** IP 30 or IP 65
- 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 straight coupling socket and 5 m cable		PRE	PRE
36	61	53	2.5	100	G <sup>1</sup> / <sub>8</sub>	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 <sup>1</sup> / <sub>4</sub>	-1... 1	PRE2-I01V1	PRE2-U01V1		
			10	1500		-1... 4	PRE2-I04V1	PRE2-U04V1		
			1500	-1... 6		PRE2-I06V1	PRE2-U06V1			
			1700	-1... 10		PRE2-I10V1	PRE2-U10V1			
			2.5	500		0... 0.5	PRE2-IA5	PRE2-UA5		
			900	0... 1		PRE2-I01	PRE2-U01			
			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		



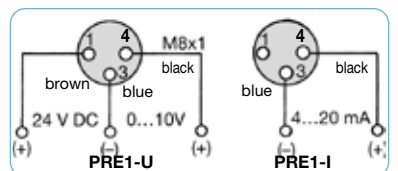
PRE1



PRE2

### Special options, add the appropriate letter

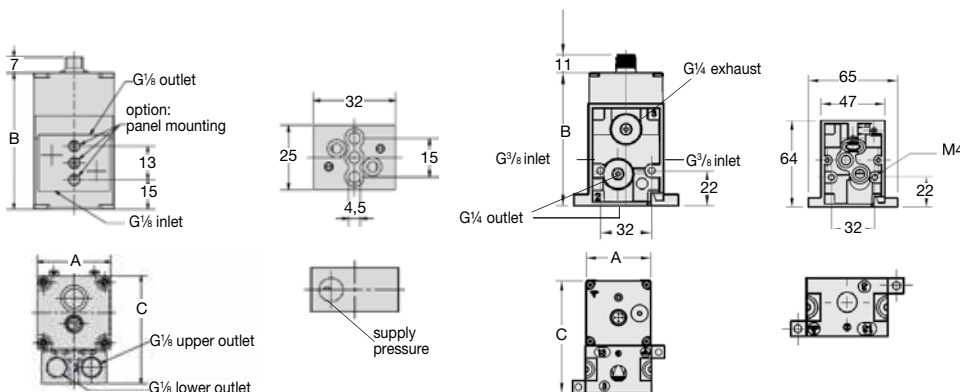
<b>monitor signal</b>	0-10 V, standard at PRE2	for PRE1-U	PRE1-...R
<b>flange connection</b>	without manifold		PRE-...F
<b>w/o coupling socket</b>	and without cable		PRE-...H
<b>mounting clips</b>	for DIN rail		PRE-...C
<b>deviant pressure ranges</b>			PRE-...XX
<b>for oxygen*2</b>	specially cleaned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



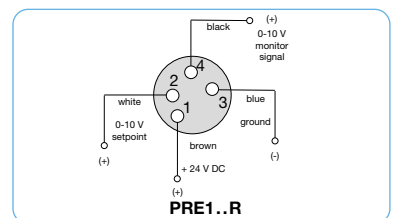
connection diagram

### Accessories, enclosed

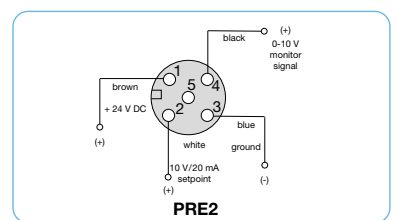
<b>coupling socket</b>	with 5 m cable, angular	M8x1, 3-pin	for PRE1	<b>KM08-C3-5</b>
		M8x1, 4-pin	for PRE1-R	<b>KM08-C4-5</b>
		M12x1.5, 5-pin	for PRE2	<b>KM12-C5-5</b>



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



connection diagram



connection diagram

\* Product group

Technical details: see previous page

PDF CAD  
 www.aircom.net



Order example:  
**PRE1-IA1**