

### 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

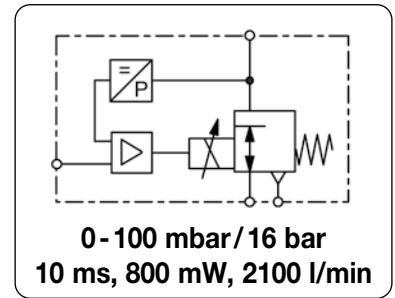
DN 2.5, 350 l/min, coupling socket M8x1, 3-pin,  
monitor signal optionally 0... $P_{2max}$   $\triangleq$  0...10 V,

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 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

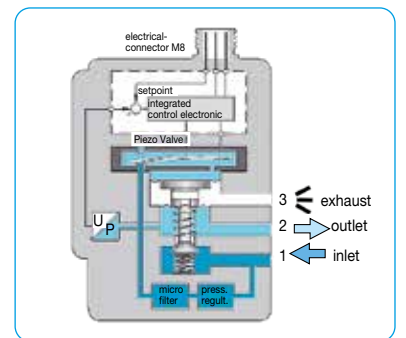
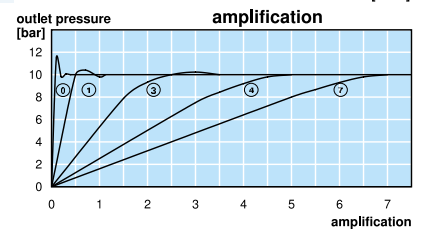
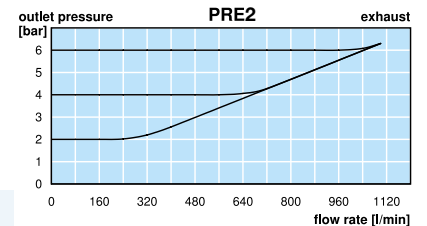
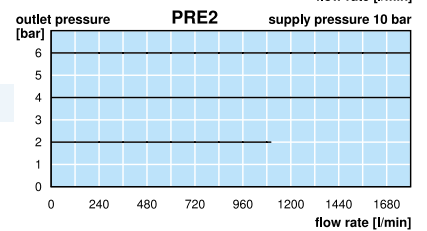
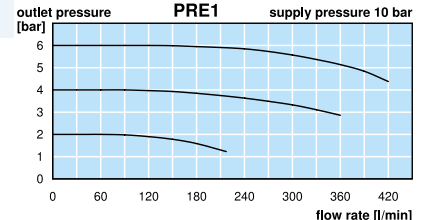
<b>Supply voltage</b>	PRE1: 24 V DC $\pm$ 10%, 0.4 W, current consumption max. 15 mA PRE2: 24 V DC $\pm$ 10%, 0.8 W, current consumption max. 30 mA
<b>Command signal</b>	4...20 mA or 0...10 V
<b>Impedance</b>	PRE1: $\geq 66 k\Omega$ at voltage signal, $\leq 500 \Omega$ at current signal PRE2: $\geq 55 k\Omega$ 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-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

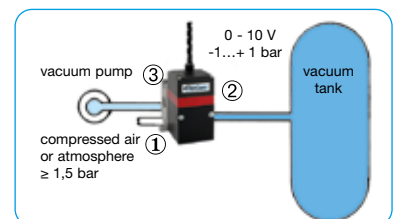
<b>Linearity</b>	< 0.5% FS, at 0.1 and 0.2 bar range < 1 % FS
<b>Hysteresis</b>	< 0.2% FS, at 0.1 and 0.2 bar range < 0.5% FS
<b>Response sensitivity</b>	< 0.1% FS, at 0.1 and 0.2 bar range < 0.5% FS at PRE1 < 0.2% FS at PRE2
<b>Repeatability</b>	< 0.2% FS, at 0.1 and 0.2 bar range < 0.5% FS
<b>Response 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



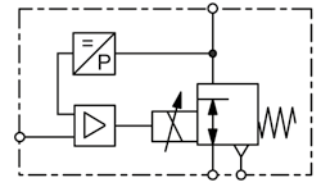
cross-section PRE1



PRE2-V1 for vacuum

### 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 ... 100 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

Proportional valve							PRE	PRE
supply voltage 24 V DC, constant bleed, with straight coupling socket and 5 m cable								
36	61	54	2.5	50	G $\frac{1}{8}$	0...0.1	PRE1-IA1	PRE1-UA1
				100		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-IV1	PRE2-UV1
			10	1500		-1... 6	PRE2-I06V1	PRE2-U06V1
			12	1700		-1... 10	PRE2-I10V1	PRE2-U10V1
			2.5	300		-0.2... 0.2	PRE2-IA2V1	PRE2-UA2V1
			2.5	900		0... 1	PRE2-I01	PRE2-U01
			7.0	1100		0... 2	PRE2-I02	PRE2-U02
			10	1500		0... 6	PRE2-I06	PRE2-U06
			12	1700		0... 10	PRE2-I10	PRE2-U10
			17	2400		0... 16	PRE2-I16	PRE2-U16



PRE1



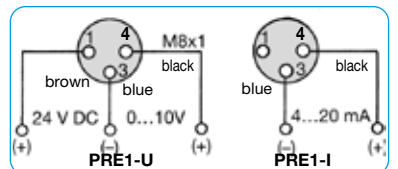
PRE2

### Special options, add the appropriate letter

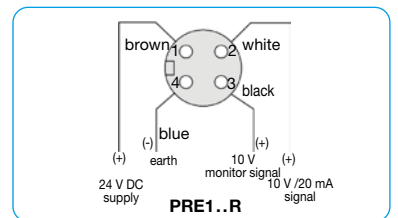
- monitor signal** 0-10 V, standard at PRE2 for PRE1 PRE1...R
- flange connection** without manifold PRE...F
- w/o coupling socket** and without cable PRE...H
- mounting clips** for DIN rail PRE...C
- deviant pressure ranges** PRE...XX

### Accessories, enclosed

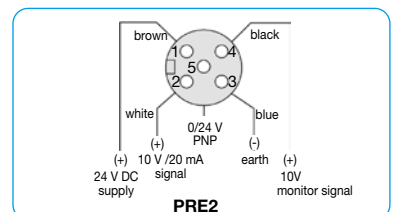
- coupling socket** with 5 m cable, angular
  - M8x1, 3-pin for PRE1 **KM08-C3-5**
  - M8x1, 4-pin for PRE1-R **KM08-C4-5**
  - M12x1.5, 5-pin for PRE2 **KM12-C5-5**



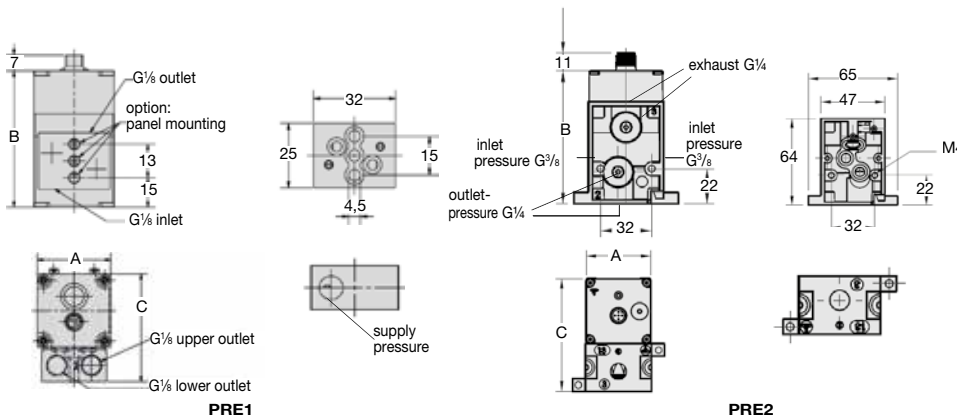
connection diagram



connection diagram



connection diagram



\*1 at open outlet

Technical details: see previous page

PDF CAD  
www.aircom.net



Order example:  
PRE1-IA1