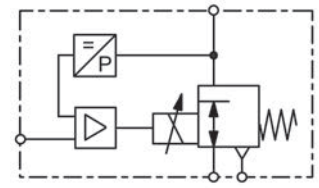


### Description

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.

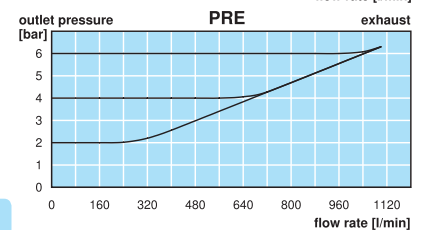
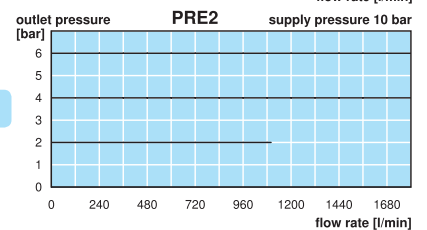
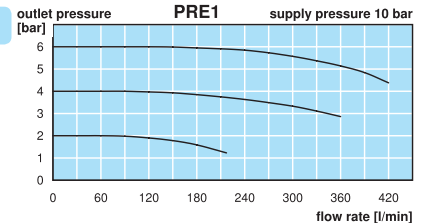
<b>Minimal power consumption</b>	<ul style="list-style-type: none"> <li>no self-heating, even none at pressure absence</li> <li>safe battery operation over a long period</li> </ul>
<b>Piezo element</b>	<ul style="list-style-type: none"> <li>almost no power consumption necessary for regulation</li> <li>extremely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



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

## 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	

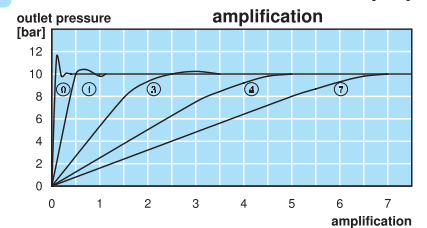


## Pneumatic features

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

<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: 61 kΩ at voltage signal, 550 Ω at current signal	
	PRE2: 55 kΩ at voltage signal, 500 Ω 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... $P_{2max} / 0 \dots 10 V$ , max. 1 mA, $R_a > 1k\Omega$
	PRE2: standard	0... $P_{2max} / 0 \dots 10 V$ , max. 1 mA
<b>Electronic switch</b>	PRE2 only, PNP, "on" when setpoint and actual value match in the tolerance range 0 V: off, 23 V = on, output current < 200 mA, tolerance $P_2: < 2\%$	
<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.	

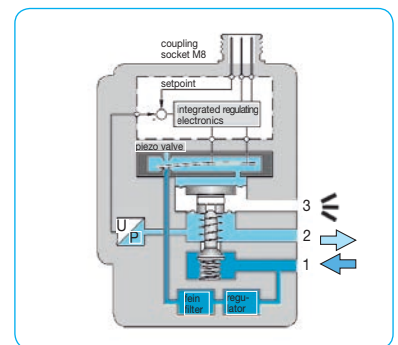


## Accuracy

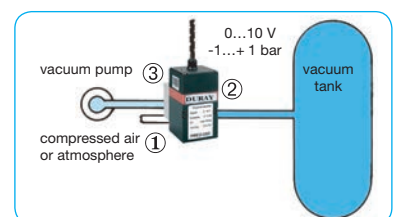
<b>Linearity</b>	< 0.5% FS,	at 0.1 and 0.2 bar range	< 1 % FS
<b>Hysteresis</b>	< 0.2% FS,	at 0.1 and 0.2 bar range	< 0.5% FS
<b>Response sensitivity</b>	< 0.1% FS,	at 0.1 and 0.2 bar range	< 0.5% FS at PRE1 < 0.2% FS at PRE2
<b>Repeatability</b>	< 0.2% FS,	at 0.1 and 0.2 bar range	< 0.5% FS
<b>Response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

## Adjustment

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



cross section PRE1



PRE2-V1 for vacuum

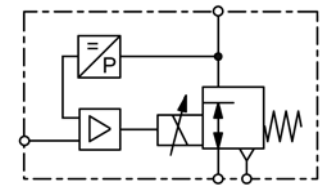


# Piezo Proportional Pressure Regulator, Very Quick, 400 mW

**PRE**

### 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 / 10 bar**  
**10 ms, 400 mW, 1600 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	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	G $\frac{1}{4}$	-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
				1600		0... 8	PRE2-I08	PRE2-U08
			12	1700		0... 10	PRE2-I10	PRE2-U10
			17	2400		0... 16	PRE2-I16	PRE2-U16



PRE1



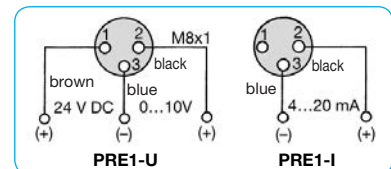
PRE2

### Special options, add the appropriate number

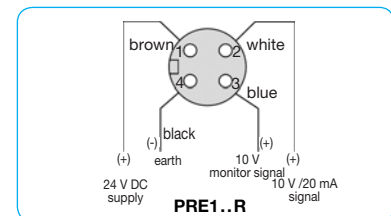
- monitor signal** 0-10 V, standard at PRE2 for PRE1 PRE1-...R
- flange connection** without manifold PRE-...F
- w/o coupling socket** and without cable PRE-...H
- mounting clips** for DIN rail PRE-...C

### Accessories, enclosed

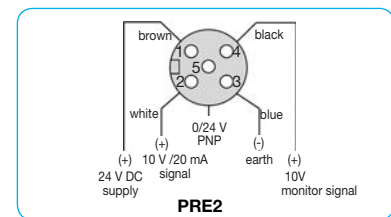
- coupling socket** with 5 m cable, angular M8x1, 3-pin for PRE1 **KM08-C3-5**
- M8x1, 4-pin for PRE1-R **KM08-C4-5**
- M12x1.5, 5-pin for PRE2 **KM12-C5-5**



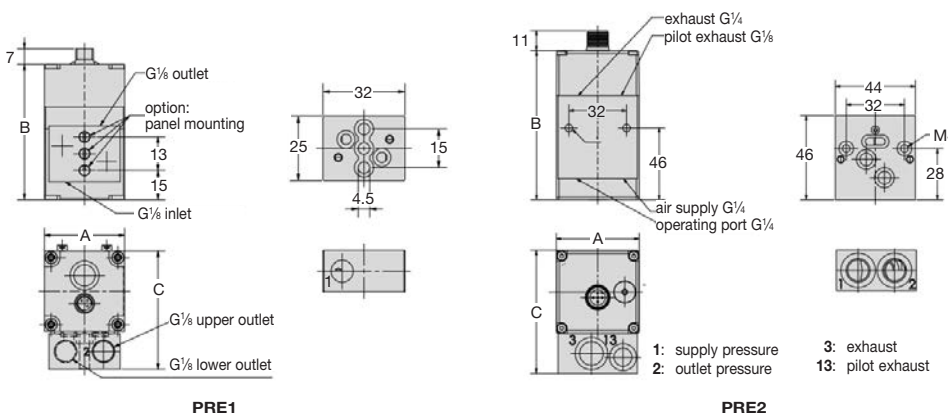
connection diagram



connection diagram



connection diagram



\*1 at open outlet



**Order number: PRE1-IA1**

China website: [www.duray-control.cn](http://www.duray-control.cn)

