

PR - Régulation proportionnel de pression, Airtronic, pour une multitude d'applications industrielles

Description

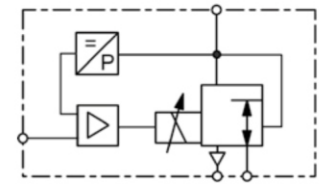
The pneumatic proportional pressure regulator controls the outlet pressure in proportion to an electrical command input signal. It comprises a complete closed loop servo system in a compact monoblock assembly with proportional solenoid valve, electronic regulator and internal pressure transducer.

In the process, the outlet pressure is transformed into a proportional electrical signal and compared with the input signal. If the outlet pressure exceeds the preset setpoint, the valve exhausts down to the pressure desired.

The valve has no constant bleed. At absence of input signal or supply voltage the valve exhausts. The power supply of the setpoint potentiometer is provided by the proportional regulator via connector pin number 5.

Pressure transducer Open transducers: 100 mbar, 500 mbar, 1/5/10/16/20/30/50 bar and vacuum

Application examples Proportional pressure regulators are being used for blowing machines, ultrasonic equipments, testing machines, painting systems, contouring systems, laser welding machines, textile machines, cheese presses, pneumatic brakes, clamping devices and medical engineering.



G¹/₈ up to G1

General technical features

Description	3-port/2-way pressure regulator with proportional magnet, integrated hybrid PCB and closed loop with pressure transducer in compact monoblock assembly.
Mounting position	any, preferably upright
Protection class	IP 54 with standard connector, IP 65 with special connector
Shock resistance	3G
Temperature range	0 °C up to 50 °C / 32 °F to 122 °F, high temperature version on request
Material	Body: brass (G ¹ / ₈) and aluminium (G ¹ / ₄ , G ¹ / ₂ u. G1) Inner valve: brass and SST Seals: NBR/Buna-N, on request EPDM or FKM FKM for 50 bar version

Pneumatic features

Media	dry, lubricated, unlubricated and 50 µm filtered compressed air or non-corrosive gases
Supply pressure	see chart, min. 10% above outlet pressure
Flow rate	see chart, at 6 bar inlet pressure and 5 bar outlet pressure
Exhaust	same nominal size as on inlet valve, thus same relief capacity
Air consumption	without air consumption

Electrical features

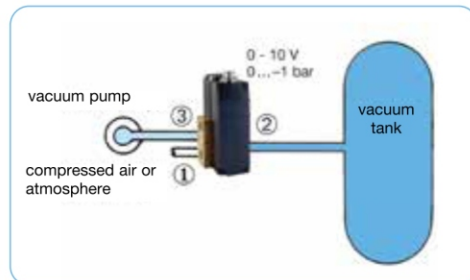
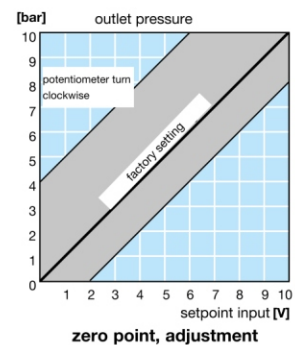
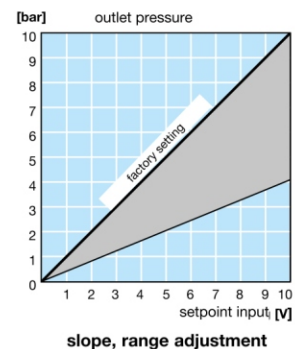
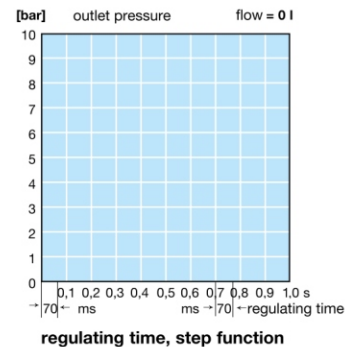
Supply voltage	24 V DC + 15% - 10%, residual ripple max. 10%
Power consumption	12 W at G ¹ / ₈ , 22 W at G ¹ / ₄ , 30 W at G ¹ / ₂ , 44 W at G1
Current consumption	0.5A at G ¹ / ₈ , 1.0A at G ¹ / ₄ , 1.25A at G ¹ / ₂ , 1.7A at G1
Command signal	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, digital or Profibus DB rising curve as standard, optionally declining curve
Impedance	100 kΩ at voltage signal (0.1 mA current consumption) 500 Ω at current signal
Electrical connector	circular plug according to DIN 43651, 7-pin plug for analogue signal 16-pin plug for digital signal

Accuracy

Linearity/Hysteresis	< 1% FS
Response sensitivity	< 0.1% FS
Repeatability	< 0.1% FS
Over all accuracy	± 0.5%
Regulating time	< 1 s over the range, 70 ms at 10 to 90% or 90 to 10% of the range

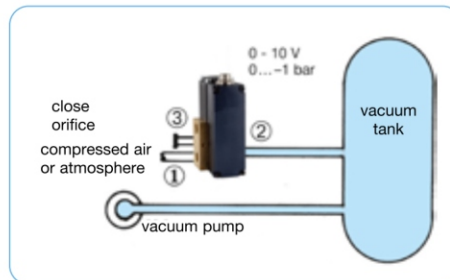
Adjustment

Zero point	calibration ± 10% FS via potentiometer P2
Range	calibration + 5% FS or -10% FS via potentiometer P1
Amplification	calibration 1:1 up to 1:10 via potentiometer P7



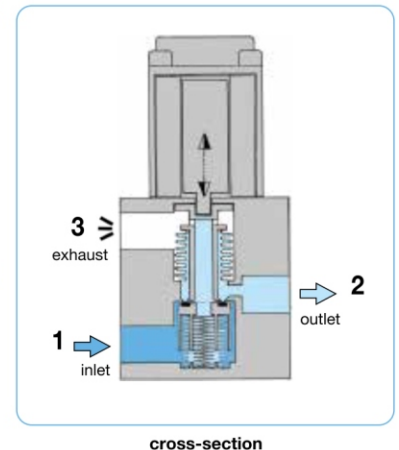
Downstream regulation (V1)

The vacuum pump saves energy and it is easy to fill the tank either with vacuum or pressure. A filter is recommended at orifice ①.



Upstream regulation (V2)

Upstream installation is preferred if rapid evacuation of a tank or system is required. A filter is recommended at orifice ①.

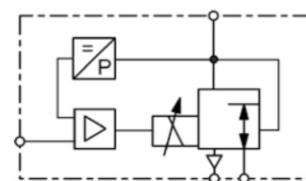


cross-section

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Technical features

• Pressure range	0 ... -1.0 bar to 0 ... 50 bar	• Linearity / Hysteresis	< 1% FS
• Command signal	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, digital	• Response sensitivity	± 0,5% FS
• Feedback signal	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA	• Repeatability	± 0,5% FS
• Adjustment	zero point, range and amplification	• Regulating time	< 1 s
• Pressure sensors	100 / 500 mbar, 1/5/10/16/20/30/50 bar	• Power consumption	12 / 22 / 30 / 44 W
• Flow rate	250 / 820 / 1700 / 6500 l/min	• Exhaust	full nominal size



G¹/₈ up to G1
0 ... 100 mbar/50 bar

Dimensions			Nominal size	K _v -value	Flow rate	Supply max.	Connection thread	Pressure range	Order number
A	B	C							
mm	mm	mm	DN	(m ³ /h)	l/min*1	bar	G	bar	

Proportional pressure regulator

0-10 V input signal, supply voltage 24 V DC, with coupling socket

PR

35	80	63	3	0.18	210	-1	G ¹ / ₈	0 ... -1.0	PRA00-00V1
						-1		0 ... -0.5	PRA00-00V1A5
						-1		0 ... -0.1	PRA00-00V1A1
						3		-1,0 ... 1.0	PRA00-01V1
						1		0 ... 0.1	PRA00-A100
						2		0 ... 0.5	PRA00-A500
						2		0 ... 1.0	PRA00-0100
						12		0 ... 6.0	PRA00-0600
						12		0 ... 10	PRA00-1000
						22		0 ... 20	PRA00-2000
52	105	74	6	0.6	700	-1	G ¹ / ₄	0 ... -1.0	PR000-00V1
						-1		0 ... -0.5	PR000-00V1A5
						-1		0 ... -0.1	PR000-00V1A1
						3		-1,0 ... 1.0	PR000-01V1
						1		0 ... 0.1	PR000-A100
						2		0 ... 0.5	PR000-A500
						2		0 ... 1.0	PR000-0100
						12		0 ... 6.0	PR000-0600
						12		0 ... 10	PR000-1000
						18		0 ... 16	PR000-1600
70	150	101	12	1.2	1400	-1	G ¹ / ₂	0 ... -1.0	PR100-00V1
						2		0 ... 1.0	PR100-0100
						12		0 ... 6.0	PR100-0600
						12		0 ... 10	PR100-1000
						14		0 ... 12	PR100-1200
96	190	115	20	4.8	5600	-1	G1	0 ... -1.0	PR200-00V1
						2		0 ... 1.0	PR200-0100
						12		0 ... 6.0	PR200-0600
						12		0 ... 10	PR200-1000
						14		0 ... 12	PR200-1200



PRA



PR0



PR1



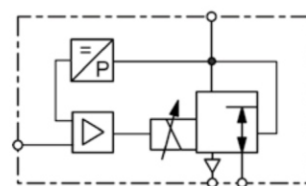
PR2

*1 at 6 bar supply pressure and 5 bar outlet pressure

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Technical features

• Pressure range	0...-1.0 bar to 0...50 bar	• Linearity / Hysteresis	< 1% FS
• Command signal	0...10 V, 0...20 mA, 4...20 mA, digital	• Response sensitivity	± 0,5% FS
• Feedback signal	0...10 V, 0...20 mA, 4...20 mA	• Repeatability	± 0,5% FS
• Adjustment	zero point, range and amplification	• Regulating time	< 1 s
• Pressure sensors	100 / 500 mbar, 1/5/10/16/20/30/50 bar	• Power consumption	12 / 22 / 30 / 44 W
• Flow rate	250 / 820 / 1700 / 6500 l/min	• Exhaust	full nominal size



G^{1/8} up to G1
0 ... 100 mbar/50 bar

Special options, add the appropriate letter or number

input signal	0-20 mA		PR . . 1-
	4-20 mA		PR . . 2-
	8 bit digital with hold function		PR . . 3-
feedback signal	Profibus DP	from G ^{1/4} on	PR . . 8-
	0-10 V		PR . . 1-
	0-20 mA		PR . . 2-
external feedback signal	4-20 mA		PR . . 3-
	0-10 V		PR . . 4-
	0-20 mA		PR . . 5-
deviant pressure range for vacuum	4-20 mA		PR . . 6-
	indicate on order		PR . . -XX. .
	Bypass version	G ^{1/8} and G ^{1/4}	PR V2
for absolute pressure		G ^{1/2}	PR1. . . . V2
		G1	PR2. . . . V2
			PR 0A
protection class IP65	special cable box, PRK-IP65		PR 06
body made of stainless steel	valve body and inner parts , 1.4304, EPDM seals, G ^{1/4} and G ^{1/2}		PR SS
body made of aluminium	nly valve body, max. 20 bar	G ^{1/4} only	PR 19
for oxygen	specially cleaned, FKM elastomer		PR 15



example: combination PR with booster

Accessories, enclosed

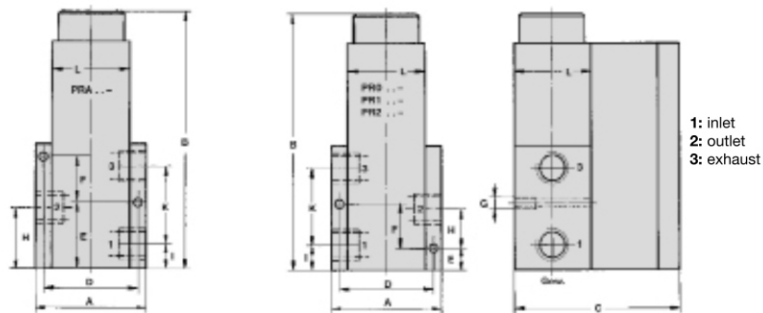
coupling socket	7-pin with 2 m cable	straight	PRK-A2L
	7-pin with 5 m cable	straight	PRK-A5L
	7-pin with 2 m cable, IP65	straight	PRK-I2L
	7-pin with 2 m cable	angular	PRK-C2L
	7-pin with 5 m cable	angular	PRK-C5L
other cable length	e.g. 10 m available		



PRK-A

PRK-C

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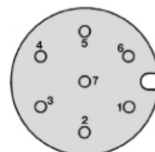
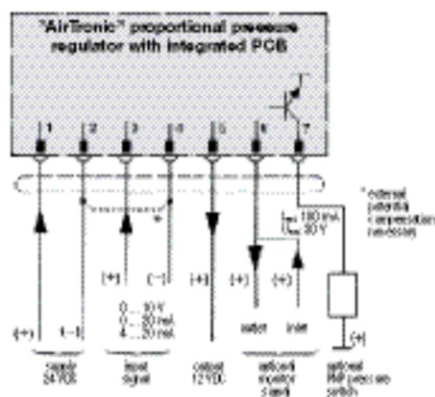
1: inlet
2: outlet
3: exhaust

Proport. regulator	thread	A	B	C	D	E
PRA . . .	G 1/8	35	80	63	29	18
PR0 . . .	G 1/4	52	105	74	43	10
PR1 . . .	G 1/2	70	150	101	57.5	12
PR2 . . .	G 1	96	190	115	79	15

Proport. regulator	F	G	H	I	K	L
PRA . . .	7	M 4	15	10	16.6	25
PR0 . . .	20	M 4	16	11*	34	36
PR1 . . .	28	M 6	23	15	48.5	45
PR2 . . .	33	M 8	30	20	60	60

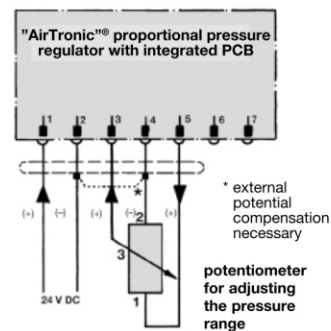
* 14 mm from 30 bar pressure range on

"AIRTRONIC"® PROPORTIONAL PRESSURE REGULATOR WITH INTEGRATED PCB



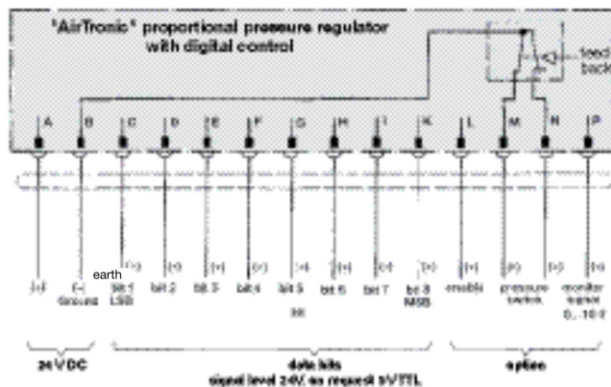
pin	4-wire	7-wire
1	white	grey
2	brown	blue
3	yellow	yellow
4	green	green
5	-	brown
6	-	white
7	-	pink

pin numbers seen from solder pin side

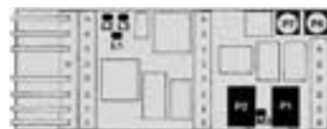


"AIRTRONIC"® CONNECTION DIAGRAM

CONNECTION DIAGRAM WITH POTENTIOMETER

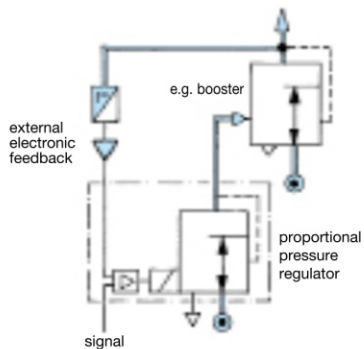


CONNECTION DIAGRAM FOR DIGITALLY CONTROLLED PROPORTIONAL PRESSURE REGULATOR

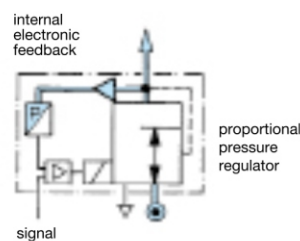


- P1 range: -10%...+5%
- P2 zero point: ± 10%
- P6 option pressure switch: 5...15%
- P7 proportional amplification: 1...11
- M3 measuring point offset zero
- L1 earth (GND)
- L2 solenoid: +24 V
- L3 solenoid (pulse width modulation): PWM

ADJUSTMENT OF THE PROPORTIONAL REGULATOR



EXTERNAL ELECTRONIC FEEDBACK 0 ... 10 V or 0/4 ... 20 mA



INTERNAL ELECTRONIC FEEDBACK as standard