SERIES

W60

Proportional pressure controllers

G1/8 Piezo-controlled
G1/4, G1/2 conventionally controlled

price query on:
pneumatikshop.de

Applications

Proportional pressure controllers

control the output pressure proportionally to an electrical input signal (0-10 V or 4-20 mA).

The proportional pressure controllers are used where different pressure ratios are required. As the highlight in this range we present the piezo-controlled proportional pressure controller which is, due to its piezo-technology, able to control a desired pressure very quick and very precise.

Features

- piezo-controlled proportional pressure controller (small, quick, precise, minimum piloting power)

- Proportionaldruckregler
  Display, 3 1/2 stellig
  Bedienfeld mit 3 Buttons
  RS-232 Schnittstelle serienmäßig
  Analoger Eingang mit Spannungs oder Stromsignal
  Analoger Ausgang in Volt (über Display wählbar)
  Analoger Ausgang im Ampere (über Display wählbar)
  Digitaler Ausgang
  7 Drücke einstellbar, mittels 7 digitaler Eingänge
  Druckregelung über 8 digitale Eingänge mittels binär code

Specifications

The specifications and the field of application are assigned to the respective article in the catalog.

type series 0:

Small high-tech proportional pressure controller piezo-controlled for low flow rates which should be controlled quickly and precisely

type series 1:

Conventional proportional pressure controller for medium flow rates in G1/4

type series 3:

Conventional proprotional pressure controller for high flow rates in G ½

Piezo-controlled proportional pressure controller G1/8

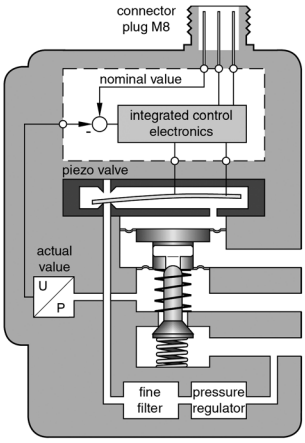
complete with connecting plate and cable kit

Application: With applications where the output pressure should be controlled proportionally to an electrical signal. The electrical signal can be provided voltage-controlled (0-10 V).

Function:
The piloting element in this proportional pressure controller is not as usual a solenoid system but a piezo valve - a closed piezo-ceramic unit according to the nozzle-deflector principle.

The effect which forms the basis of this unit causes the deformation of the piezo-ceramic material under the influence of an electric field.

An electronic control system which is integrated in the valve pilots the piezo valve that way that an adequate pressure is built up in the piloting chamber which is separated by a diaphragm. The force which is effected by this is transmitted to the main seat by a tappet. Thereby at the outlet a pressure is built up which is compared with a preset value by a sensor and if necessary adjusted by the electronics.



Specifications

Design	:	3-way proportional pressure control valve with piezo-piloting and pneumatical and electrical refeed
Behavior with power failure	:	connection 2 to 0 bar exhausting
Mounting type	:	flange
Connection size	:	NW 2,5 (without connecting plate); G1/8 (with connecting plate)
Mounting position	:	optional
Weight	:	0,100 kg (without connecting plate); 0,155 kg (with connecting plate)
Flow direction	:	ON: form 1 to 2; OFF: from 2 to 3
Temperature (ambie./medium)	:	0 up to + 50 °C
Medium	:	filtered, dry, [1]oiled or oil-free compressed air
Filtering	:	30 µm, recommended 5
Protection class	:	IP 30 according to DIN EN 60529
Piloting	:	voltage 0 - 10 V
Supply	:	24 V=
Nominal rating	:	max 0,4 W
Pressure ranges	:	0 - 8 bar
Flow rate	:	up to 350 l/min
Pressure control	:	through electrical output
Pneumatic connection	:	by flange
Electric connection	:	by DIN-plug

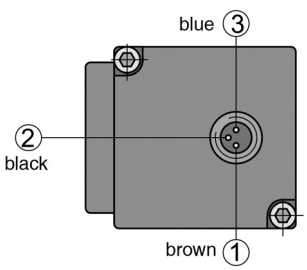
[1] For the operation of the valve oil-free air is recommended. If a construction-determined oiling is necessary, an economized lubrication (max. 30 mg/m³) is recommended.

Pneumatical characteristics *at p_1 = 10 bar, at p_2= 6,3 bar, Δp= 1 bar

type 0-8 bar

Inlet pressure range	:	$p_{1\,min}$ 1,5 bar $p_{1\,max}$ 10 bar	hysteresis	:	< 0,2% of the end value
Outlet pressure range	:	$p_{2\,min}$ 0 bar $p_{2\,max}$ 8 bar	repeatability	:	< 0,2% of the end value
Nominal flow rate	.	Nl/min 200	response sensitivity	:	< 0,1% of the end value
Max. flow rate	:	Nl/min 350*	linearity	:	< 2,5% of the end value
			internal air consumption	:	< 1 Nl/min

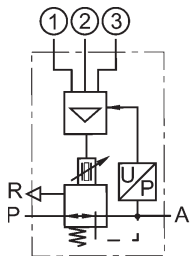
wiring diagram of 3-pole device socket



Voltage controlled 0-10 V

1 = Power supply 24 V DC / 10 mA
2 = nominal value 0-10 V
3 = reference point ground 0 V

schematic



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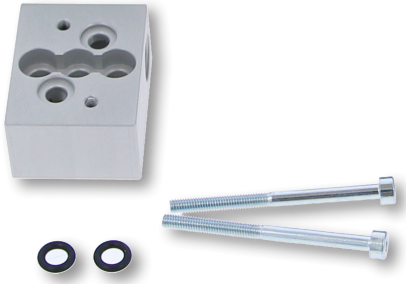
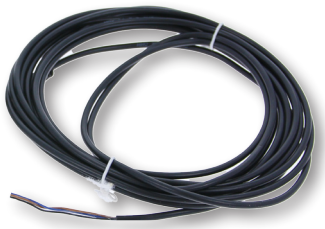
Piezo-controlled proportional pressure controller G1/8

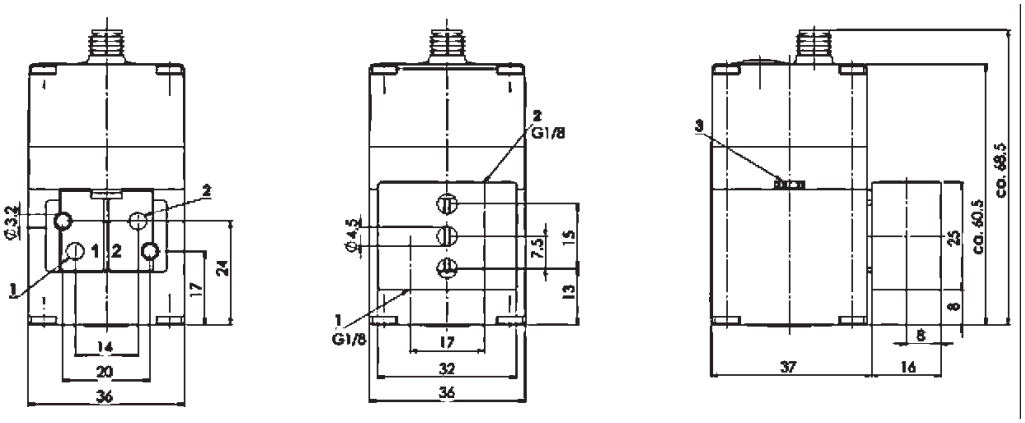
Order-no.	type	thread	series	pressure range	flow rate Nl /min	VPE
17970106	WH-PPR0-1/8-0-10V-0-8bar-easy	G1/8	0	0 - 8 bar	350	1

complete with connection plate and cable kit (angled plug)





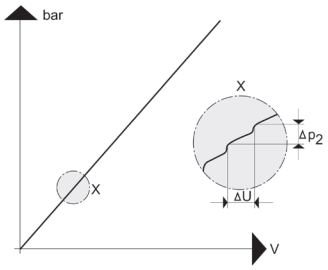
Dimensions (Version 3-pole device plug and connecting plate)



Some general terms are explained below:

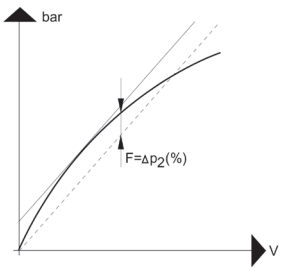
Response sensitivity

The smallest set point value difference which effects the changing of the output pressure is called response sensitive. Indicated in % of the maximum output pressure this value depending on the type is found between < 0,1 % and < 0,5 % of the end value. This effects a very sensitive adjustability of the output pressure.



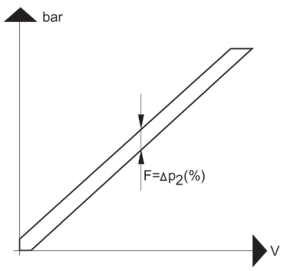
Linearity

Is the output pressure indicated depending on the set point value, an even (linear) characteristic curve (interrupted line) should result, so that it can be predicted which pressure is expected with the respective set point. The variation is calculated based on the maximum difference to this linear characteristic curve relating to the maximum possible output pressure.



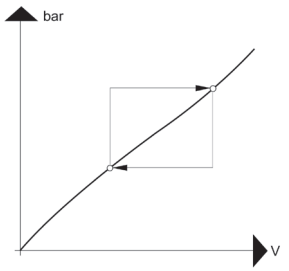
Hysteresis

The hysteresis is also called range of inversion and is caused by the friction and short-term deformation of elastic components. Therefore for the operation there are different output pressures at the same set point value, depending on wether the previous value has been higher or lower.
The electronically piloted pressure control valve has a deviation between < 0,2% and < 0,5% of the end value.



Repeatability

Control-technical components are more precise with the repetition of a once-set value than approaching absolute values. The reason is that from this point of view the non-linearity does not have any effect. Furthermore the repeatability is effected positively by a hystereris as small as possible.



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Electronically controlled proportional press. controller G1/4-G1/2

complete with conntecting plate and cable kit

Einsatz: with applications where the output pressure should be controlled proportionally to an electrical signal. The electrical input signal can be provided voltage-controlled (0-10 V) or current-controlled (4-20 mA).

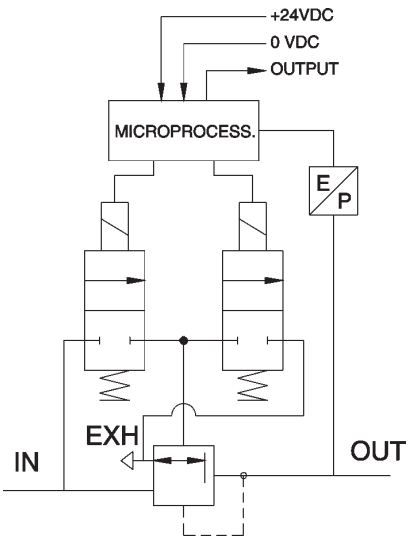
General characteristics

Design	:	piston proportional pressure controller with pneumatical and electrical refeed.
Connection	:	G1/4, G1/2
Temperature range	:	0°C up to 50°C
Medium	:	filtered, oiled or oil-free compressed air
Input pressure	:	0 up to 10 bar
Output pressure	:	0 up to 9 bar
Hysteresis	:	+/- 0,3%
Repeatability	:	< 0,3%
Response sensitivity	:	+/- 0,3%
Linearity	:	+/- 0,3%

Electrical characteristics

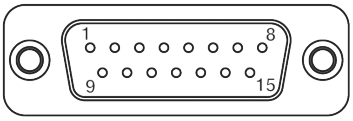
Power consumption	:	0,15 A	
Input impedance	:	10 kΩ	
Analog output signal (V)	:	0 - 10 V (0 - 5 V)	
Analog output signal (I)	:	4 - 20 mA (0 - 20 mA)	
Digital inlet	:	24 V DC +/- 10%	
Digital outlet	:	24 V DC PNP (max. current 50 mA)	
Plug	:	sub - D 15-pole	
Set point value - Input	:	voltage controlled	current-controlled
		0V → 0 bar	4 mA → 0 bar
		10V → 10 bar	20 mA → 10 bar

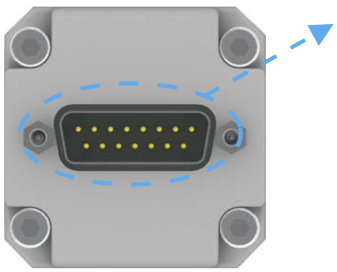
Schematic



Pin assignment

Pin assignment
top view





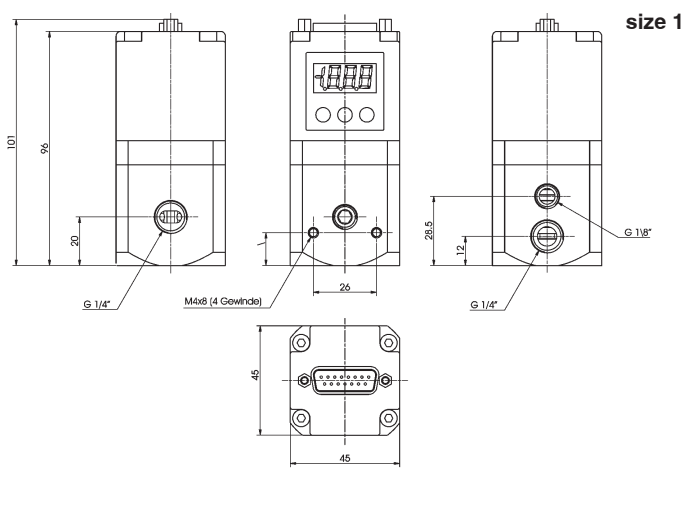
Pin assignment:
1 = digital input 1
2 = digital input 2
3 = digital input 3
4 = digital input 4
5 = digital input 5
6 = digital input 6
7 = digital input 7
8 = digital input 8 / analog input
9 = power supply (24V / DC)
10 = digital output (24V / DC PNP)
11 = analog output (A)
12 = analog output (V)
13 = Rx RS-232
14 = Tx RS-232
15 = GND

Proportinal pressure controller G1/4

Order-no.	type	thread	series	pressure range	flow rate Nl /min	VPE
17970150	WP-PPR1-1/4-0-10V	G1/4	1	0 - 9 bar	1100	1
17970151	WP-PPR1-1/4-4-20mA	G1/4	1	0 - 9 bar	1100	1

complete with connection plate and cable kit

size 1

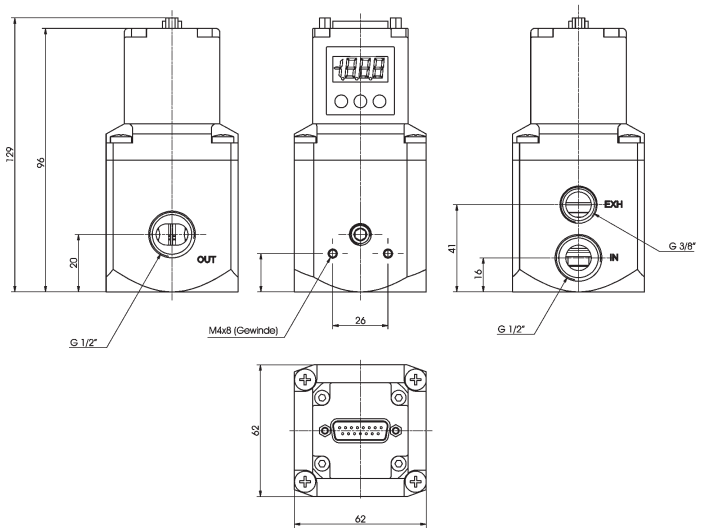


Proportinal pressure controller G1/2

Order-no.	type	thread	series	pressure range	flow rate Nl /min	VPE
17970154	WP-PPR3-1/2-0-10V	G1/2	3	0 - 9 bar	4000	1
17970155	WP-PPR3-1/2-4-20mA	G1/2	3	0 - 9 bar	4000	1

complete with connection plate and cable kit

size 3



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Notes