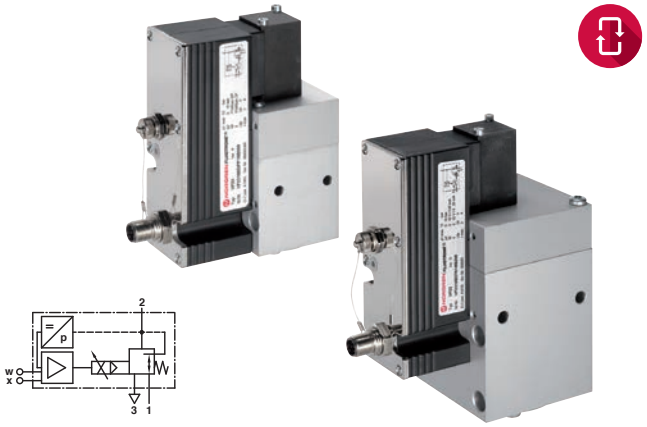
- **Port size: G1/4 ... G3/4**
- **All-digital control electronics**
- **Variable pressure control**
- **Optional: serial interface with VP-Tool Software**
- **Optional actuation via fieldbus (separate datasheet on request)**



Technical features

Medium:
Filtered (50 µm), unlubricated or lubricated condensate-free compressed air or neutral gases Due to the lubricants and their additives, use of lubricated compressed air can affect the dynamics and service life
Operation:
Proportional solenoid
Pressure range:
Operating pressure P1 max:
7 bar (101 psi), 12 bar (174 psi), 17 bar (246 psi)
Operating pressure P2:
0 (0,02) ... 2 bar (0 ... 29 psi)
0 (0,1) ...10 bar (0 ... 145 psi)
0 (0,16) ... 16 bar(0 ... 232 psi)

Flowrate:
See flow characteristics
Flow direction:
1 –> 2, 2 –> 3
Service life:
> 10 Million operations, max. stroke
Linearity:
< ± 1,0 % (p2 max.)
Control accuracy:
< ± 1,0 % (p2 max.)
Response accuracy:
< ± 0,2 % (p2 max.)
Hysteresis:
< ± 0,5 % (p2 max.)

Repeat accuracy:
< ± 0,5 % (p2 max.)
values related to 20°C and 24 V d.c. power supply
Ambient:
Valve series is designed for indoor use at normal industrial ambient
Ambient/Media temperature:
Media
-5 ... +50°C (+23 ... +122°F)
(no condensation permitted)
Ambient
-5 ... +60°C (+23 ... +140°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Materials:
Valve housing: Aluminium
Electronic housing: PAA
Seals: NBR, HNBR on request
Internal parts : PBT
Springs : Steel

Option selector

VP23★★B★★★1★★★★★

Pressure range	Substitute
0 ... 2 bar	**02**
0 ... 10 bar	**10**
0 ... 16 bar	**16**
Nominal size	**Substitute**
8 mm	**D**
16 mm	**E**
Set point	**Substitute**
4 ... 20 mA	**4**
0 ... 10 V/difference	**7**
Profibus DP	**P**

Option	Substitute
Serial interface	**B200**
Serial interface + LED-display *1)	**B201**
Connector	**Substitute**
M12/8 pin	**M**
Fieldbus spec. (on request)	**N**
Actual value	**Substitute**
0 ... 10 V/4 ... 20 mA	**6**
Profibus DP	**P**

*1) LED-display for bus version not available

Function
The electronic pressure controller is used in conjunction with an electric set-point (control signal) to quickly and precisely set a pressure at the pressure connection (2). Even with consumption of the medium (compressed air or neutral gases) the output pressure is controlled (see flow rate characteristics)

Proportional valves are used in many different applications across all sectors of industry. They are used anywhere where precise and fast direct or indirect control of pressure, force, rotational speed etc. is required.

Application example: Contact pressure control of welding electrodes in automotive manufacture

Assembly
The electronic pressure controller consists of:
- Proportional solenoid
- An integrated pressure sensor
- µP-driven control electronics
- Serial interface
- A pneumatic control plunger
- Optional:
  Fieldbus interface
  Configuration software VP-Tool (please order separately)
  LED display for the size of the output pressure

Operating principle
The valve has a closed loop controller, meaning that the output pressure is constantly being measured by the internal pressure sensor and compared to the specified set-point.

If the output pressure is lower than the set pressure or if a higher pressure is desired, the pneumatic control plunger is actuated by the electric proportional solenoid. A connection is then established between connection 1 (input pressure) and 2 (output pressure) until the pressure is the same as the specified set-point.

If the output pressure is higher than the set pressure or if a lower pressure is desired, the pneumatic control plunger is actuated by the electric proportional solenoid. A connection is then established between connection 1 (input pressure) and 3 (ventilation connection) until the pressure is the same as the specified set-point.

In addition, after the supply voltage is switched off, the output pressure set last is vented down to 0 bar.

Electrical parameters
Endurance limit in relation to oscillations to DIN EN 60068-2-6:
10g at 12-500Hz in switched-off-status

Durability under shock effect to DIN EN 68-2-67: 30 g/10 shocks
Valves should not be used in safety systems that require blocking or exhaust valves
Without power the pneumatic connection 2 -> 3 is open

Supply

Supply voltage	UB	18 ... 32 V d.c.
Residual ripple max.	[%]	10
Current consumption at 16 bar	NG 8,16 max. [A]	approx. 1,8 A at 24 V d.c.
	NG 8,16 static at 25°C (corrected) [A]	approx. 1,4 A at 24 V d.c.
Current consumption at 10 bar	NG 8,16 max. [A]	approx. 1,8 A at 24 V d.c.
	NG 8,16 static at 25°C (corrected) [A]	approx. 1,2 A at 24 V d.c.
Current consumption at 2 bar	NG 8,16 max. [A]	approx. 1,8 A at 24 V d.c.
	NG 8,16 static at 25°C (corrected) [A]	approx. 1,2 A at 24 V d.c.

Inputs (signal)
Set point W (+/-U d) analogue differential

Voltage signal UE (V)	0 ... 10
Input resistance RI (kΩ)	170
Set point W(I) analogue: **Current signal UE (mA)** **Burden (Ω)**	 4 ... 20 500
Max. input voltage (V)	-10 ... 40

Outputs (signal)
Output pressure actual value X(U)

Voltage signal of pneumatic output pressure UA (V)	0 ... 10 V = 0 ... max. p2
Output current max. IA (mA)	1

Output pressure actual value X(I)

Current signal of pneumatic output pressure IA (mA)	0 (4) ... 20 mA = 0 ... max. p2
Load resistance RL (Ω)	500 recommended

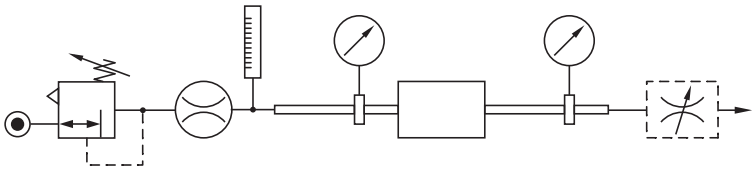
Output »pressure reached« X (comp)

Switching range (% max. p2)	+/-2%
Digital output signal	PLC-Level
Control pressure outside of switching range (X≠W)	Low
Pressure reached (X = W) (V)	High
Outout current max. (mA)	10

Pneumatic parameters
Recommended application area by nominal value:
NG8: Volume (closed) from 100 ... 1500 cm³
NG16: Volume (closed) from 1000 ... 8000 cm³

Residual ripple max.	[%]	10
Input pressure p1 max.	[bar]	17/12/7
Output pressure p2 max.	[bar]	0-16 / 0-10 / 0-2
Flow quantity NG 8	[l/min]	see diagram
Flow quantity NG16	[l/min]	see diagram
Switching times (10%-90%) nominal size 8 at volume 400 cm3		
Typical values for P1=12 bar		
Pressure build-up (tr) 1 bar ... 9 bar	100 [ms]	
Pressure build-up (tf) 4 bar ... 5 bar	50 [ms]	
Pressure drop (tr) 9 bar ... 1 bar	250 [ms]	
Pressure drop (tf) 5 bar ... 4 bar	50 [ms]	
Switching times (10%-90%), nominal size 16 at volume 1000 cm3		
Typical values for P1=12 bar		
Pressure build-up (tr) 1 bar ... 9 bar	100 [ms]	
Pressure build-up (tf) 4 bar ... 5 bar	50 [ms]	
Pressure drop (tr) 9 bar ... 1 bar	100 [ms]	
Pressure drop (tf) 5 bar ... 4 bar	50 [ms]	

Test assembly flow
CETOP RP 84 P.: flow characteristic of pneumatic devices



Step-response diagram