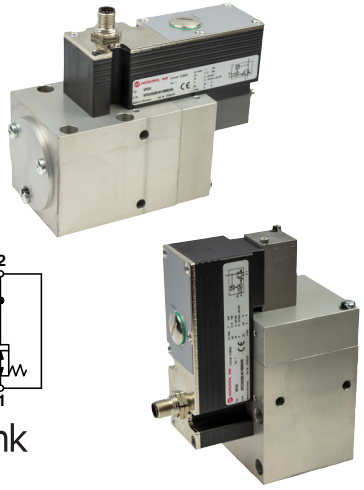
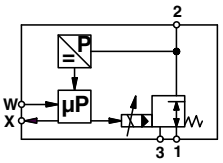
NORGREN

VP23, 3-way Proportional pressure control valves seat valve with µP-driven pressure control

- **Port size: G1/4 ... G3/4**
- **Pressure ranges 0...2, 0...10 and 0...16 bar**
- **Microprocessor-controlled closed-loop controller**
- **Setpoint: 4 to 20 mA, 0 to 10 V, IO-Link**





IO-Link

Technical features

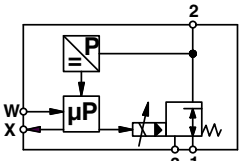
Medium:
Filtered (50 µm), unlubricated or lubricated condensate-free compressed air or neutral gases Due to the lubricants and their additives, use of lubricated compressed air can affect the dynamics and service life
Operation:
Proportional solenoid
Pressure range:
Operating pressure P1 max:
7 bar (101 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

Technical data, standard model

Symbol	Pressure Range	Nominal size (mm)	Max. Flow (l/min)	Set point (input)	Actual value (output)	Weight (kg)	Model
	0 ... 2 bar	8	850	0...10 V	0...10 V, 4...20 mA	1,1	VP2302BD761MB200
	0 ... 2 bar	8	850	4...20 mA	0...10 V, 4...20 mA	1,1	VP2302BD461MB200
	0 ... 2 bar	8	850	IO-Link	IO-Link	1,1	VP2302BDLL1MB200
	0 ... 2 bar	16	3.500	0...10 V	0...10 V, 4...20 mA	1,7	VP2302BE761MB200
	0 ... 2 bar	16	3.500	4...20 mA	0...10 V, 4...20 mA	1,7	VP2302BE461MB200
	0 ... 2 bar	16	3.500	IO-Link	IO-Link	1,7	VP2302BELL1MB200
	0 ... 10 bar	8	2.500	0...10 V	0...10 V, 4...20 mA	1,1	VP2310BD761MB200
	0 ... 10 bar	8	2.500	4...20 mA	0...10 V, 4...20 mA	1,1	VP2310BD461MB200
	0 ... 10 bar	8	2.500	IO-Link	IO-Link	1,1	VP2310BDLL1MB200
	0 ... 10 bar	16	12.500	0...10 V	0...10 V, 4...20 mA	1,7	VP2310BE761MB200
	0 ... 10 bar	16	12.500	4...20 mA	0...10 V, 4...20 mA	1,7	VP2310BE461MB200
	0 ... 10 bar	16	12.500	IO-Link	IO-Link	1,7	VP2310BELL1MB200
	0 ... 16 bar	8	3.000	0...10 V	0...10 V, 4...20 mA	1,1	VP2316BD761MB200
	0 ... 16 bar	8	3.000	4...20 mA	0...10 V, 4...20 mA	1,1	VP2316BD461MB200
	0 ... 16 bar	8	3.000	IO-Link	IO-Link	1,1	VP2316BDLL1MB200
	0 ... 16 bar	16	14.000	0...10 V	0...10 V, 4...20 mA	1,7	VP2316BE761MB200
	0 ... 16 bar	16	14.000	4...20 mA	0...10 V, 4...20 mA	1,7	VP2316BE461MB200
	0 ... 16 bar	16	14.000	IO-Link	IO-Link	1,7	VP2316BELL1MB200

IMI

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	**7**
IO-Link	**L**

Option	Substitute
Serial interface	**B200**
Connector	**Substitute**
M12 8 pin analogue Version 5 pin IO-Link Version	**M**
Actual value	**Substitute**
0 ... 10 V/4 ... 20 mA	**6**
IO-Link	**L**

Note: IO-Link cannot be combined with an analogue version

Function

The electronic pressure regulator is used for quickly and precisely set an output pressure on port 2 according to a specified setpoint (control signal) . Even with consumption of the medium (compressed air or neutral gases) the output pressure is retained constantly.

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

Design

The electronic pressure regulator consists of:
- Proportional solenoid
- pneumatic spool
- integrated pressure sensor
- Microprocessor driven controller
- USB-Interface

Configuration Software VP-Tool available on our Website.

Operating principle

The valve operates with a closed loop, thus the output pressure is constantly measured by the internal pressure sensor and compared with the specified setpoint

If the output presssure is lower than the specified output pressure or if a higher output pressure is specified, the pneumatic controlled plunger is actuated by the proportional solenoid. A connection between port 1 (inlet pressure) and port 2 (output pressure) is established until the output pressure corresponds to the specified setpoint.

If the output pressure is higher than the specified pressure set via setpoint, or if a lower pressure is required, the force on the control plunger is reduced by the proportional solenoid.

A connection between port 2 (outlet pressure) and port 3 (venting) is established, until the output pressure corresponds to the specified setpoint.

After switching off the supply voltage the last specified outlet pressure is vented down to 0 bar.

Fatigue strength against sinusoidal oscillations according to

DIN EN 60068-2-6: 10g at 10-500Hz in the switched-off state.

Durability under shock conditions according to DIN EN 60068-2-27:

30 g/10 shocks

Valves cannot be used in safety systems that require shut-off or venting valves.
Without power supply, pneumatic port 2 -> 3 is open

Electrical Parameters

Supply

Supply Voltage	UB resp.. VA and VS	18 ... 32 V DC
Residual ripple	[%]	10
Current consumption at 24V	Maximum, dynamic. [A]	< approx. 2,0 A
	static (balanced) at 25°C [A]	< approx. 0,7 A

Inputs (Signal)

Setpoint W (U/I switchable)

Setpoint W (U) analogue differential (V)	0 ... 10
Inputresistance RI (kΩ)	> 100
Setpoint W(I) analogue: **Current signal (mA) Burde (Ω)**	0 ... 20 / 4 ... 20 (default) 500
Max. Voltage Input (V)	-10 ... 40

Outputs (Signal)

Pressure Feedback Signal X(U)

Voltage signal of the pneumatic Output pressure (V)	0 ... 10 V = 0 ... max. p2

Pressure Feedback Signal X(I)

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

Output "Pressure reached" X (comparator)

Switching range (% max. p2)	+/-2% (default)
Digital output signal	SPS- Pegel (PLC- Level)
Outlet pressure out of the Switching range (X≠W)	Low (0V)
Pressure reached (X = W) (V)	High (+24V nom.)
Output current max. (mA)	10