

# VP60, 5/3

## Proportional flow and directional control spool valve



- > Nominal size: 8 mm
- > High flow rate - low pressure loss
- > Calibrated, linear flow characteristic with zero crossover
- > Variety of setpoint input: 4 to 20 mA, 0 to 10 V,  $\pm 5$  V, IO-Link
- > Instant dynamic response



 **IO-Link**

### Technical features

#### Medium:

Air acc. to ISO8573-1  
Grouping: 2-3-1, filtered (recommended < 3  $\mu$ m), dried, non lubricated.

The dynamic performance and service life of the valve may be significantly reduced if using unfiltered air containing water and oil!

**Operating pressure on all ports:**  
-1 ... 16 bar (-14 ... 232 psi)

**Pneumatical flow coeff.:**  
C = 290 NI/(min bar)

**Critical pressure ratio:**  
b = 0,1 ... 0,4

#### Calibrated flow rate (Qmax.):

1200 NI/min at P1 = 6 bar (87 psi),  
P2, P4 = 5 bar (72 psi)  
Imperial vals. for 8 NI/min ->  
0.0081 Cv

#### Leakage:

Typical value: 8 NI/min  
at (P1 = 10 bar (145 psi),  
P2/P4 = 0 bar)

#### Port size:

G1/4, 1/4 NPT or flange  
mounted  
according ISO 1

#### Spool deadtime:

3 ms max

#### Risetime 10 ... 90%:

5 ms

#### Threshold frequency -3dB:

105 Hz

#### Service life:

> 250 million full stroke operations with recommended air quality

#### Ambient/Media temperature:

Ambient:

0 ... +60°C (+32 ... +140°F)

Media:

+5 ... +60°C (+41 ... +140°F)

#### Storage temperature:

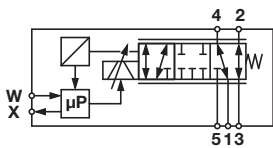
-20 ... +80°C (-4 ... +176°F)

Condensation not permitted!  
Air supply must be dry enough to avoid ice formation at temperatures below +5°C (+41°F).

#### Materials:

Electronic enclosure: PAA  
Valve housing and internal parts: anodised aluminium  
Other static seals: NBR  
Actuator magnet: Fe, surface refined

### Technical data, standard model

Symbol	Pneumatic Port	Flow (l/min)	Set point (input)	Actual value (output)	Weight (kg)	Model
	G1/4	1200	4 ... 20 mA	0 ... 10 V, 4 ... 20 mA	1,25	VP6010LJ461MB200
	G1/4	1200	-5 ... +5 V	0 ... 10 V, 4 ... 20 mA	1,25	VP6010LJ661MB200
	G1/4	1200	0 ... 10 V	0 ... 10 V, 4 ... 20 mA	1,25	VP6010LJ761MB200
	G1/4	1200	IO-Link	IO-Link	1,25	VP6010LJLL1MB200
	1/4 NPT	1200	IO-Link	IO-Link	1,25	VP6010LKLL1MB200

### Option selector

VP6010L\*\*\*1\*B200

Pneumatic port	Substitute	Electrical connection	Substitute
G1/4	J	M12	M
1/4 NPT	K	8 pin analogue Version	
ISO 1	T	5 pin IO-Link Version	
Set point	Substitute	Output	Substitute
4 ... 20 mA	4	0 ... 10 V/4 ... 20 mA	6
-5 V ... +5 V differential	6	IO-Link	L
0 ... 10 V differential	7		
IO-Link	L		

Note: Analogue configurations not applicable to IO-Link variant.

### Construction data:

**Vibration resistance:**  
DIN EN 60068-2-6, 10 g at  
12-500 Hz switched off.  
When working more than > 1 g  
function interference.

**Shock resistance:**  
DIN EN 60068-2-67,  
30g /18 shocks.

**Weight:**  
1,25 kg

### Electrical parameters

**Supply voltage (U<sub>b</sub>):**  
21 ... 32 V d.c.

**Residual ripple:**  
10%

**Switch-on point:**  
21 V

**Switch-off point:**  
18 V

**Voltage across diff. inputs:**  
-10 ... +32 V

**Current input:**  
4 ... 20 mA

**Working resistance:**  
500 Ω

**Differential voltage input:**  
± 5 V

0 ... 10 V

**Internal impedance:**  
> 100 kΩ

**Current output:**  
4 ... 20 mA

**Voltage output:**  
0 ... 10 V

**Current consumption at 24 V  
setpoint, static:**

0,2 A

**Setpoint ±100%, 50 Hz sinus:**  
0,4 A

**abs. max. for 10s:**

1,5 A

**IO-Link Port class:**  
B

### Accessories

#### Connection cables - Analogue versions



#### Description

M12x1, 8 pin, 5 meter long, open end - straight

M12x1, 8 pin, 5 meter long, open end - 90°

#### Model

0250811

0250813

Note: Cable material PUR shielded

#### Analogue version serial interface cable



#### Description

USB-C Adaptor cable

#### Model

0253875

#### Connection cables - IO-Link versions



#### Description

Cable 5 Pin A-coded M12 - M12 x 0.6 metre long

Cable 5 Pin A-coded M12 - M12 x 1 metre long

Cable 5 Pin A-coded M12 - M12 x 2 metre long

Cable 5 Pin A-coded M12 - M12 x 5 metre long

Cable 5 Pin A-coded M12 - Open End x 5 metre long

#### Model

NC-125FS-125MS-A

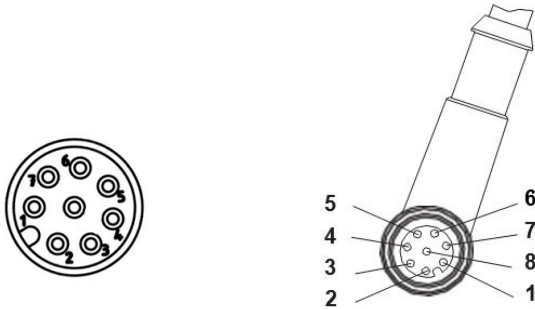
NC-125FS-125MS-1

NC-125FS-125MS-2

NC-125FS-125MS-5

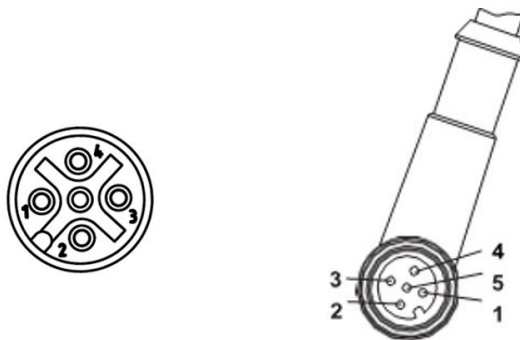
NC-125FS-00000-5

### Pin assignment analogue version:

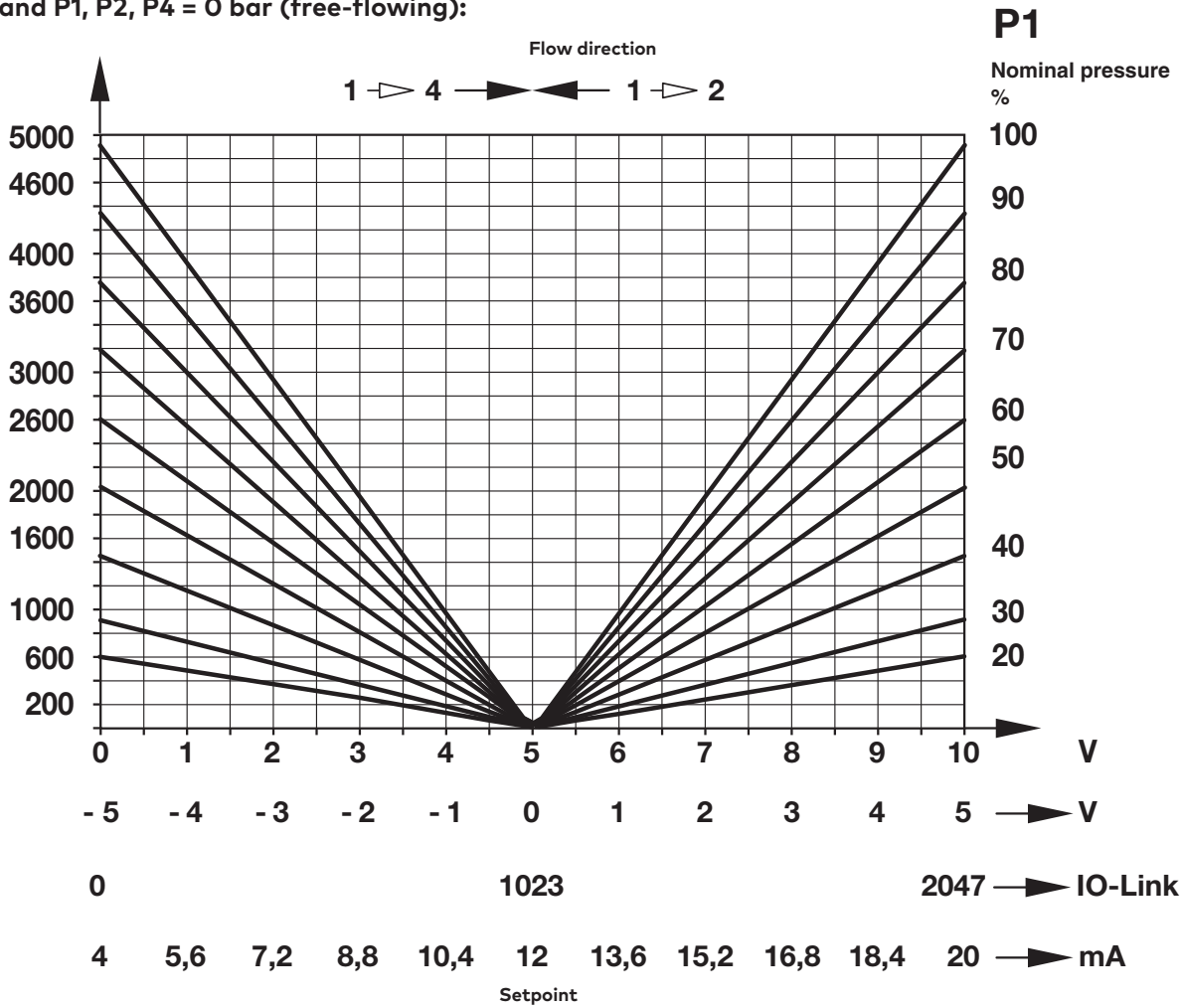
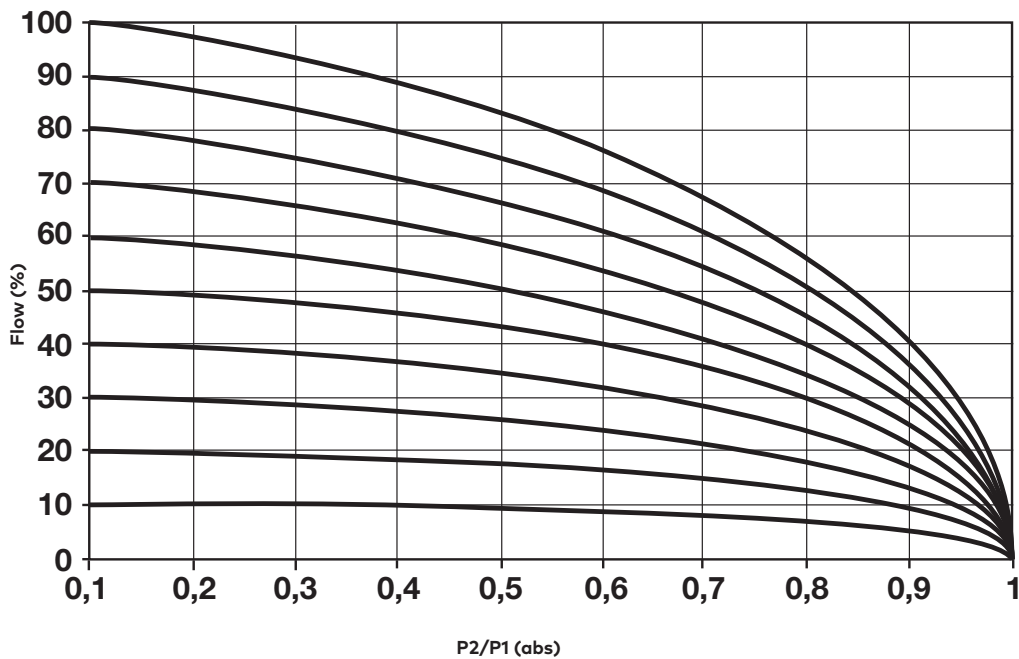


Pin	Colour	Name	Function
1	white	lin	Setpoint input, current 4 ... 20 mA (500 Ω working resistor to GND)
2	brown	Fault	Fault output (current limited to 15 mA from Ub)
3	green	-Ud	Setpoint input, differential voltage, reference potential
4	yellow	+Ud	Setpoint input, differential voltage, 0 ... 10 V / ± 5 V signal
5	grey	Iout	Current output, actual value, 4 ... 20 mA from Ub
6	pink	Ub	Supply voltage +24 V d.c.
7	blue	GND	Supply ground GND
8	red	Uout	Voltage output, actual value 0 ... 10 V (referenced to GND)

### Pin assignment IO-Link version

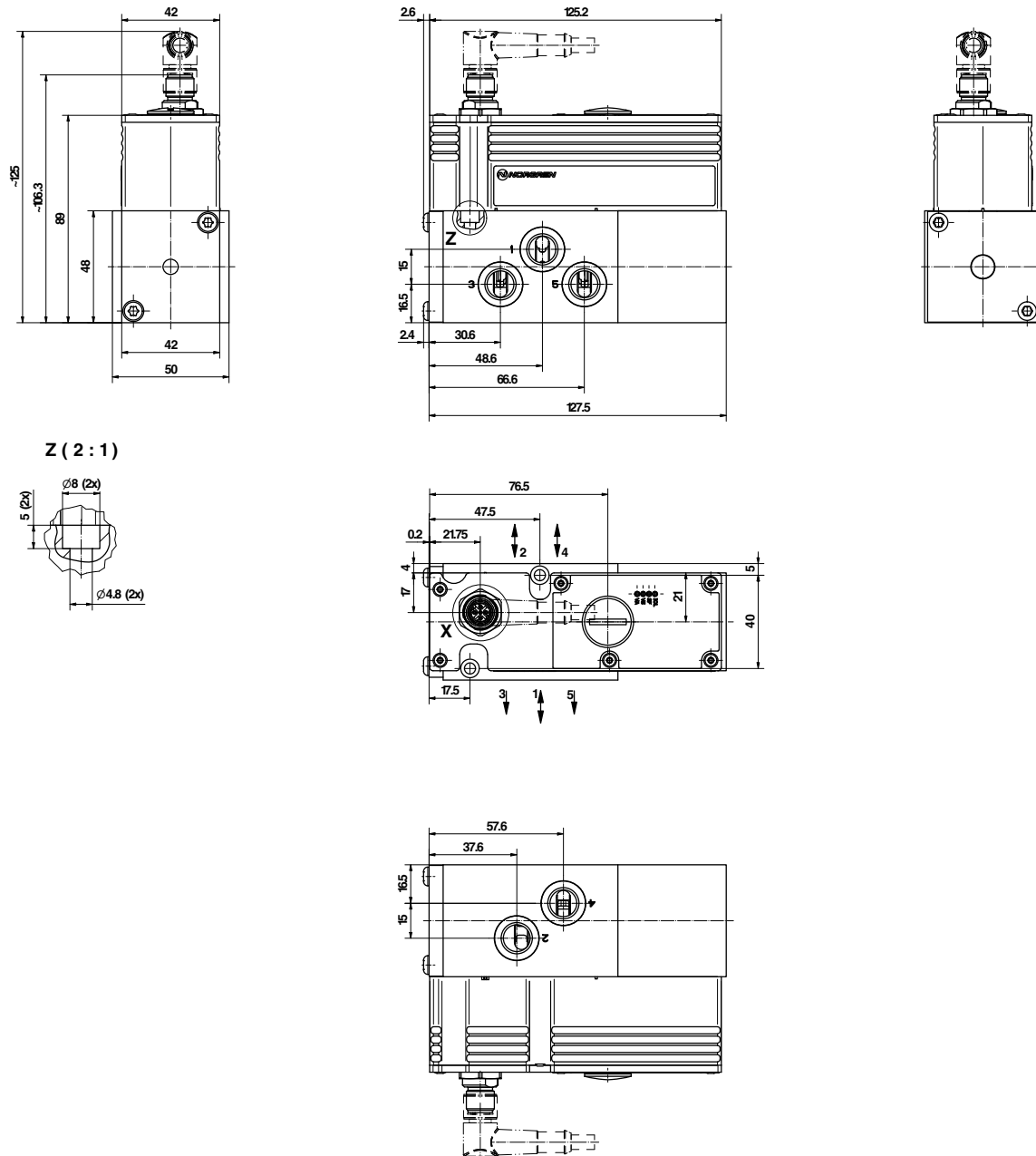


Pin	Colour (typ.)	Function
1	brown	Supply voltage +24V ( Vs )
2	white	Supply voltage 2L+ ( VA )
3	blue	Supply ground ( Vs GND)
4	black	Signal (C/Q)
5	gr/(gn/ge)	Supply ground 2M ( VA GND)

**Curves**
**Flow-rate as a function of setpoint value  
and P1, P2, P4 = 0 bar (free-flowing):**

**Flow-rate as a function of the pressure ratio  
P2/P1 for setpoint values 10, 20, ...100%**


## Basic dimensions Standard model G1/4 and 1/4 NPT

Dimensions in mm  
Projection/First angle



1 Valves are delivered with M4 x 50 mounting screws

### Warning

These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under »**Technical features/data**«.

Before using these products with fluids other than those specified, for non-industrial applications, life-support systems or other applications not within published specifications, consult Norgren Ltd.

Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes.

The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.

System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.

System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products.