

Proportional pressure regulator VPPI

FESTO



Characteristics

At a glance

Special characteristics:

- Three predefined regulator presets, plus one custom preset can be selected
- Low noise
- Flexible
- Extremely dynamic up to 30 Hz
- The max. frequency of 30 Hz protects the system
- Precise and stable: the powerful exchange coil drive implements fast setpoint value changes easily and precisely
- Various pressure ranges
- Pressure regulation range: -0.1 ... 1.2 MPa

PWM operation: VPPI recognizes PWM signals, as provided by any machine controller, and adjusts automatically

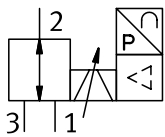
- Bluetooth interface available

Function:

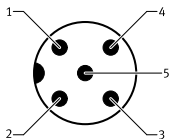
- The VPPI valve is a directly controlled proportional-pressure regulator based on two proportional 2/2-directional control valves.
- The valve regulates a pneumatic pressure to an electronically specified value. A cascaded pressure/displacement and current control is used for this purpose.
- Control is via an analog current or voltage signal, alternatively via a digital pattern (voltage version only) to adjustable setpoint values or also by means of a PWM signal (voltage version only).

Valve function

[1] Normally closed



Switching input/output



Pin assignment:

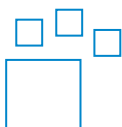
Analog:

- Pin 1: +24 V
- Pin 2: Setpoint (-)
- Pin 3: GND
- Pin 4: Setpoint (+) / PWM
- Pin 5: Actual value output

Analog (digital input) switchable with display variant:

- Pin 1: + 24V
- Pin 2: DI 1
- Pin 3: GND
- Pin 4: DI 0
- Pin 5: DI 2

Ordering data - modular system



Configurable product

This product and all its product options can be ordered online via the configurator.

Characteristics

Diagrams



The diagrams shown in this document are also available online. There, it is possible to display precise values.

Type code

001	Series	
VPPI	Proportional pressure control valve	

002	Nominal width [mm]	
1.8	1.8	
5	5	

003	Directional control valve type	
L	Inline valve	

004	Valve function	
3	3/3-way valve, normally closed	

005	Pneumatic connection	
G18	G1/8	

006	Lower pressure value of control range	
1V	-1 bar	
0L	0 bar	
...L	... bar	

007	Upper pressure value of control range	
0H	0 bar	
1H	1 bar	
2H	2 bar	
6H	6 bar	
10H	10 bar	
12H	12 bar	
...H	... bar	

008	Setpoint input for individual valves	
A4	4 ... 20 mA	
V1	0 ... 10 V	

009	Overall accuracy	
S1	1 %	

010	Operator unit/interface	
	Without	
D	Display	
BT	Bluetooth	

011	Certificate	
	Without	
T	Test report	

Datasheet

General technical data							
Pressure regulation range MPa	0 ... 1.2 MPa	-0.1 ... 0.1 MPa		0 ... 1 MPa	0 ... 0.2 MPa	0 ... 0.6 MPa	
Pressure regulation range	0 ... 12 bar	-1 ... 1 bar		0 ... 10 bar	0 ... 2 bar	0 ... 6 bar	
Nominal width pressurization	5 mm	1.8 mm	5 mm		1.8 mm	5 mm	
Valve function	3-way proportional pressure control valve						
Structural design	Poppet valve with spring return						
Reset method	Mechanical spring						
Dimensions W x L x H	42.2 mm x 95.3 mm x 94.3 mm						
Display type	Color TFT			LED, Color TFT	Color TFT	LED, Color TFT	
Safety instructions	Safety position VPPI, normally closed						
Display size	1.77"						
Display resolution	128x160 pixels						
Pneumatic connection 1	G1/8						
Pneumatic connection 2	G1/8						
Pneumatic connection 3	G1/8						
Normal nominal flow rate (normalized to DIN 1343)	1,630 l/min	80 l/min	150 l/min	1,400 l/min	150 l/min	280 l/min	900 l/min
Standard nominal flow rate 2-3	850 l/min	40 l/min	20 l/min	750 l/min	60 l/min	125 l/min	480 l/min
Sealing principle	Soft						
Flow direction	Non-reversible						
Actuation type	Electrical						
Type of control	directly						
Type of mounting	With through-hole for M4 screw, With DIN rail						
Mounting position	Any						
Degree of protection	IP65						
Corrosion resistance class (CRC) ¹⁾	2 - Moderate corrosion stress						
Product weight	370 g			365 ... 370 g	370 g	365 ... 370 g	
Max. tightening torque of pneumatic fitting	8.5 Nm						
Application note	The product is suitable for industrial purposes only. Radio interference suppression measures may be required in residential areas.						

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements in direct contact with a normal industrial environment.

Datasheet

Electrical data		
Analog output signal range	0 - 10 V	4 - 20 mA
Type code	VPPI	
DC operating voltage range	21.6 ... 27.6 V	
Nominal operating voltage DC	24 V	
Nominal current	0.15 A	
Max. current consumption	525 mA	
Max. electrical power consumption	14.5 W	
Reverse polarity protection	for all electrical connections	
Short-circuit protection	For all electrical connections	
Max. cable length	30 m	
Electrical connection 1	—	
Electrical connection 1, function	Actual value output, Setpoint input, Power supply	
Electrical connection 1, connection type	Plug	
Electrical connection 1, connection technology	M12x1 A-coded as per EN 61076-2-101	
Electrical connection 1, number of pins/wires	5	
Electrical connection 1, tightening torque	1.5 Nm	
Setpoint input	0 - 10 V, PWM, digital	4 - 20 mA, PWM, digital
Input resistance	100 kOhm	0.3 kOhm
Switching output	Push-pull	—
Max. output current	25 mA	—
Max. load resistance of current output	500 Ohm	
Max. load current at voltage output	—	
Overall accuracy	0.6%FS, 1.1%FS	

Datasheet

Operating and environmental conditions					
Pressure regulation range MPa	-0.1 ... 0.1 MPa	0 ... 1 MPa	0 ... 0.2 MPa	0 ... 1.2 MPa	0 ... 0.6 MPa
Pressure regulation range	-1 ... 1 bar	0 ... 10 bar	0 ... 2 bar	0 ... 12 bar	0 ... 6 bar
Inlet pressure 1	0 ... 6 bar	0 ... 13 bar	0 ... 4 bar	0 ... 13 bar	
Inlet pressure 1 MPa	0 ... 0.6 MPa	0 ... 1.3 MPa	0 ... 0.4 MPa	0 ... 1.3 MPa	
Burst pressure	40 bar				
Operating medium	Compressed air as per ISO 8573-1:2010 [7:4:4], Inert gases				
Information on operating and pilot media	Operation with oil lubrication not possible				
Temperature of medium	0 ... 50°C				
Ambient temperature	0 ... 50°C				
Storage temperature	-20 ... 70°C				
Climatic category	3K3 according to EN 60721				
Relative air humidity	0 - 85%, Non-condensating				
Nominal altitude of use above sea level	< 3000 m NHN				
Sound power level	62.5 dB(A)		–	62.5 dB(A)	
Sound power level at a distance of 1 m	51.9 dB(A)		–	51.9 dB(A)	
Linearity	0.5 %FS, 0.9 %FS	0.9 %FS	0.5 %FS	0.9 %FS	0.5 %FS, 0.9 %FS
Hysteresis	0.2 %FS, 0.4 %FS	0.4 %FS	0.2 %FS	0.4 %FS	0.2 %FS, 0.4 %FS
Reproducibility	0.2 %FS, 0.4 %FS	0.4 %FS	0.2 %FS	0.4 %FS	0.2 %FS, 0.4 %FS
Overall accuracy	0.6%FS, 1.1%FS	1.1%FS	0.6%FS	1.1%FS	0.6%FS, 1.1%FS
Temperature coefficient	0.02 %/K				
Total leakage	5 l/h				
Certification	RCM compliance mark, c UL us - Listed (OL)				
Certificate issuing authority	UL E322346				
Contamination level	2				
Cleanroom suitability, measured according to ISO 14644-14	Class 4 according to ISO 14644-1				
KC characters	KC-EMV				
CE marking (see declaration of conformity) ¹⁾	As per EU EMC directive As per EU RoHS directive				
UKCA marking (see declaration of conformity) ²⁾	To UK instructions for EMC To UK RoHS instructions				
For use in the food industry ³⁾	See supplementary material information				
Vibration resistance	Transport application test with severity level 2 as per FN 942017-4 and EN 60068-2-6				
Shock resistance	Shock test with severity level 2 as per FN 942017-5 and EN 60068-2-27				

1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/... → Support/Downloads.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/... → Support/Downloads.

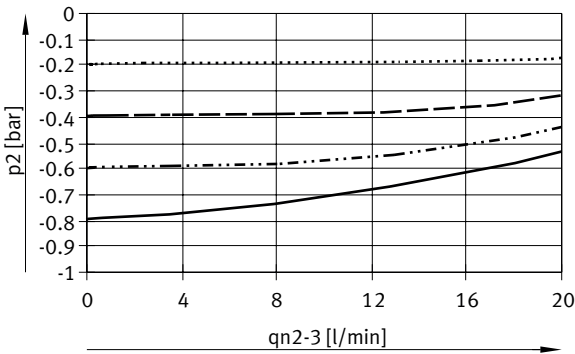
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

3) Further information www.festo.com/catalogue/... → Support/Downloads.

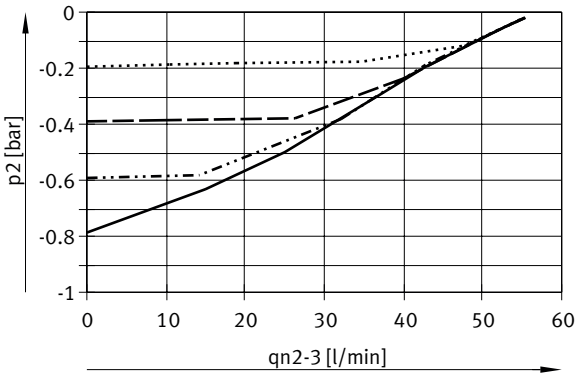
Materials	
Note on materials	RoHS compliant
Housing material	PA-reinforced
Seals material	HNBR, PTFE

Datasheet

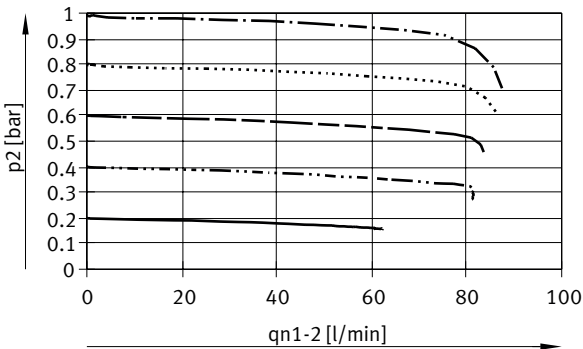
VPPI-1.8, flow rate q_n for valves with pressure control range -1 ... 0 bar and for valves with pressure control range -1 ... +1 bar, flow direction 2 > 3; depending on the outlet pressure p_2



VPPI-5, flow rate q_n for valves with pressure control range -1 ... 0 bar and for valves with pressure control range -1 ... +1 bar, flow direction 2 > 3; depending on the outlet pressure p_2

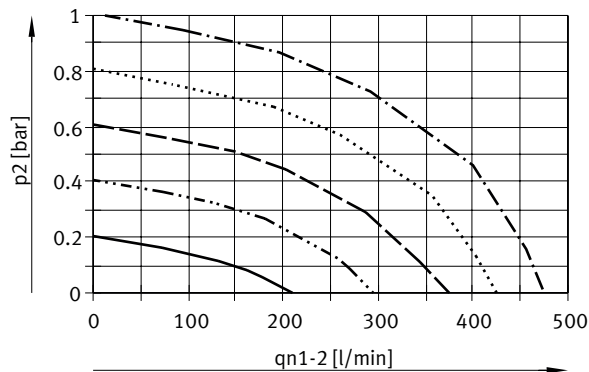


VPPI-1.8, flow rate q_n for valves with pressure control range -1 ... +1 bar, flow direction 1 > 2; depending on the outlet pressure p_2

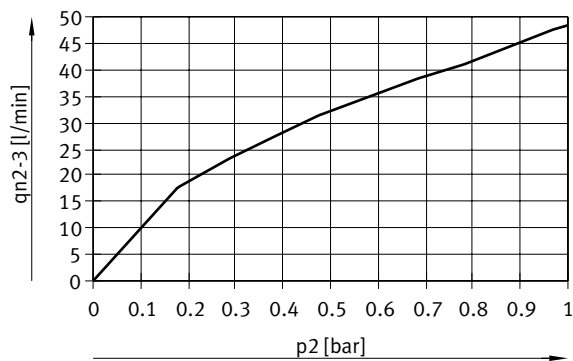


Datasheet

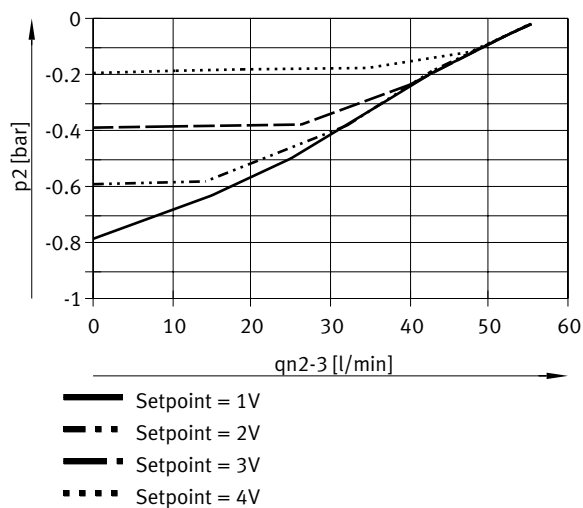
VPPI-5, flow rate q_n for valves with pressure control range -1 ... +1 bar, flow direction 1 > 2; depending on the outlet pressure p_2



VPPI-1.8, flow rate q_n for valves with pressure control range -1 ... +1 bar, flow direction 2 > 3; depending on the outlet pressure p_2

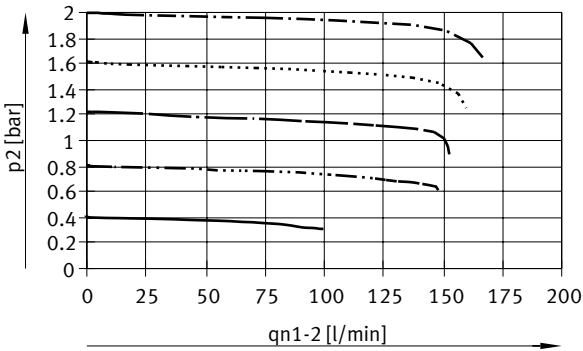


VPPI-5, flow rate q_n for valves with pressure control range -1 ... +1 bar, flow direction 2 > 3; depending on the outlet pressure p_2

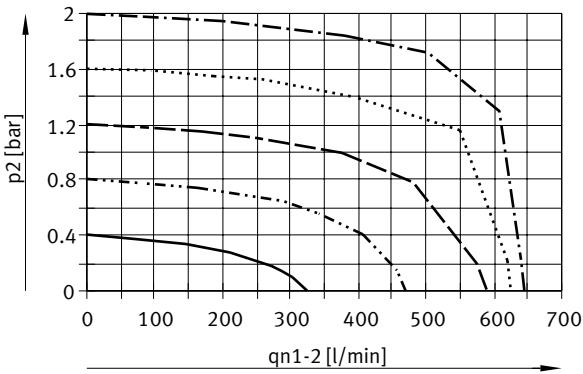


Datasheet

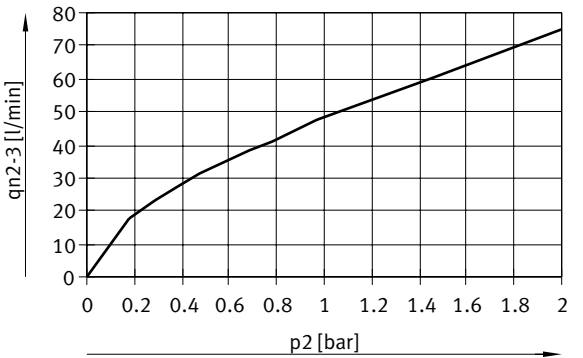
VPPI-1.8, flow rate qn for valves with pressure control range 0 ... 2 bar, flow direction 1 > 2; depending on the outlet pressure p2



VPPI-5, flow rate qn for valves with pressure control range 0 ... 2 bar, flow direction 1 > 2; depending on the outlet pressure p2

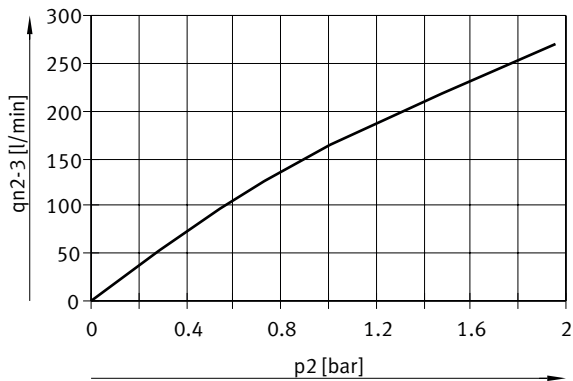


VPPI-1.8, flow rate qn for valves with pressure control range 0 ... 2 bar, flow direction 2 > 3; depending on the outlet pressure p2

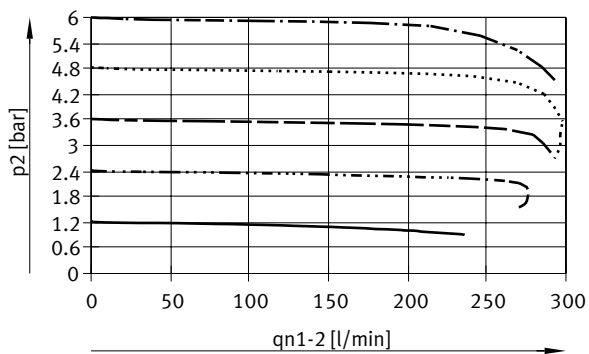


Datasheet

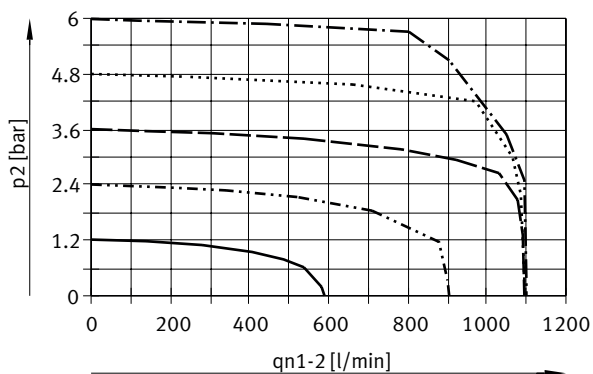
VPPI-5, flow rate q_n for valves with pressure control range 0 ... 2 bar, flow direction 2 > 3; depending on the outlet pressure p_2



VPPI-1.8, flow rate q_n for valves with pressure control range 0 ... 6 bar, flow direction 1 > 2; depending on the outlet pressure p_2

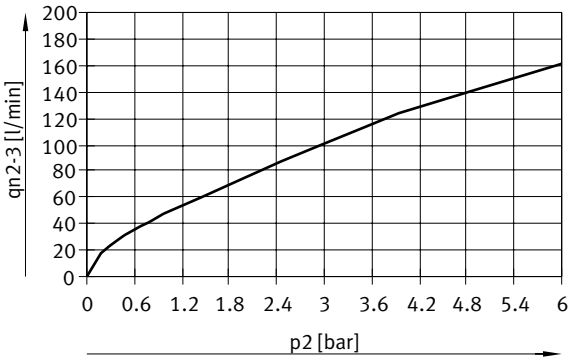


VPPI-5, flow rate q_n for valves with pressure control range 0 ... 6 bar, flow direction 1 > 2; depending on the outlet pressure p_2



Datasheet

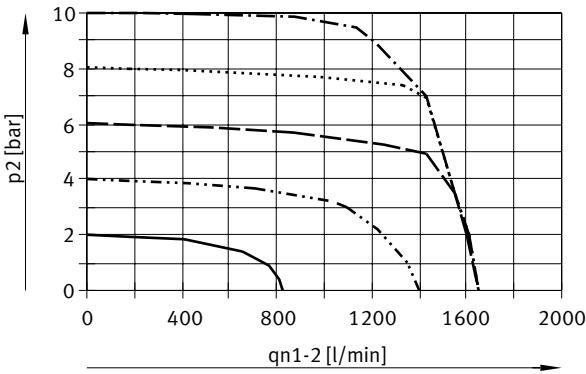
VPPI-1.8, flow rate q_n for valves with pressure control range 0 ... 6 bar, flow direction 2 > 3; depending on the outlet pressure p_2



VPPI-5, flow rate q_n for valves with pressure control range 0 ... 6 bar, flow direction 2 > 3; depending on the outlet pressure p_2

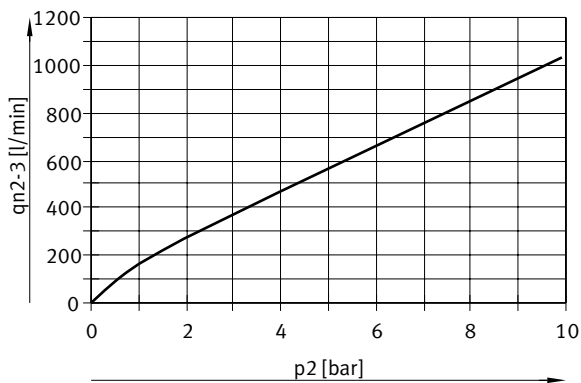


VPPI-5, flow rate q_n for valves with pressure control range 0 ... 10 bar, flow direction 1 > 2; depending on the outlet pressure p_2

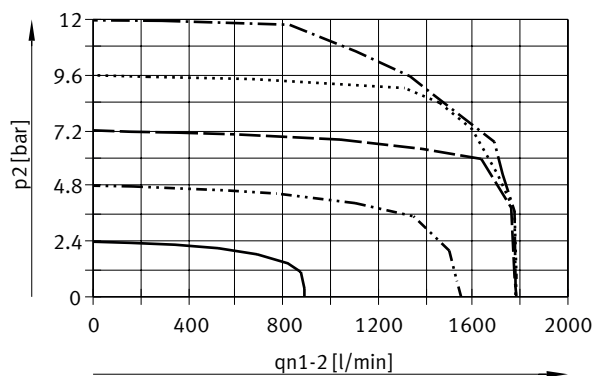


Datasheet

VPPI-5, flow rate q_n for valves with pressure control range 0 ... 10 bar, flow direction 2 > 3; depending on the outlet pressure p_2



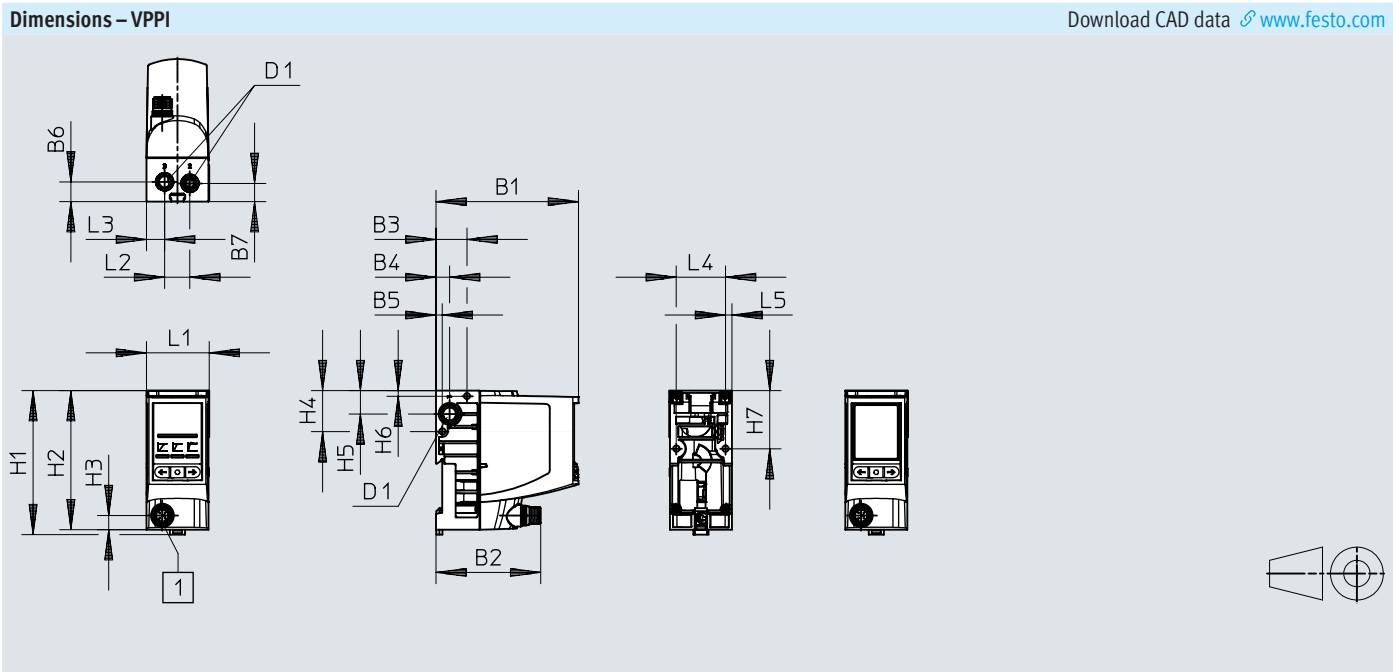
VPPI-5, flow rate q_n for valves with pressure control range 0 ... 12 bar, flow direction 1 > 2; depending on the outlet pressure p_2



VPPI-5, flow rate q_n for valves with pressure control range 0 ... 12 bar, flow direction 2 > 3; depending on the outlet pressure p_2



Dimensions



	B1	B2	B3	B4	B5	B6	B7	D1	H1	H2	H3	H4	H5	H6	H7
VPPI	94,3	69,3	20,5	9	4,2	13	12	G1/8	95,3	92	9,3	27,1	15,5	3,7	38,5

	L1	L2	L3	L4	L5
VPPI	41,2	16,7	12	32,6	4,2

Ordering data

Ordering data, proportional-pressure regulator without display

	Pressure regulation range MPa	Pressure regulation range	Setpoint input for individual valves	Product weight	Part no.	Type	
	0 ... 0.6 MPa	0 ... 6 bar	4 ... 20 mA	365 g	8230840	VPPI-1.8L-3-G18-0L6H-A4-S1	
			0 ... 10 V		8104664	VPPI-5L-3-G18-0L6H-V1-S1	
	0 ... 1 MPa	0 ... 10 bar			8230839	VPPI-1.8L-3-G18-0L6H-V1-S1	
					8104668	VPPI-5L-3-G18-0L10H-V1-S1	

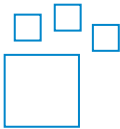
Ordering data, proportional-pressure regulator with Bluetooth

	Pressure regulation range MPa	Pressure regulation range	Setpoint input for individual valves	Product weight	Part no.	Type
--	-------------------------------	---------------------------	--------------------------------------	----------------	----------	------

Ordering data, proportional-pressure regulator with display

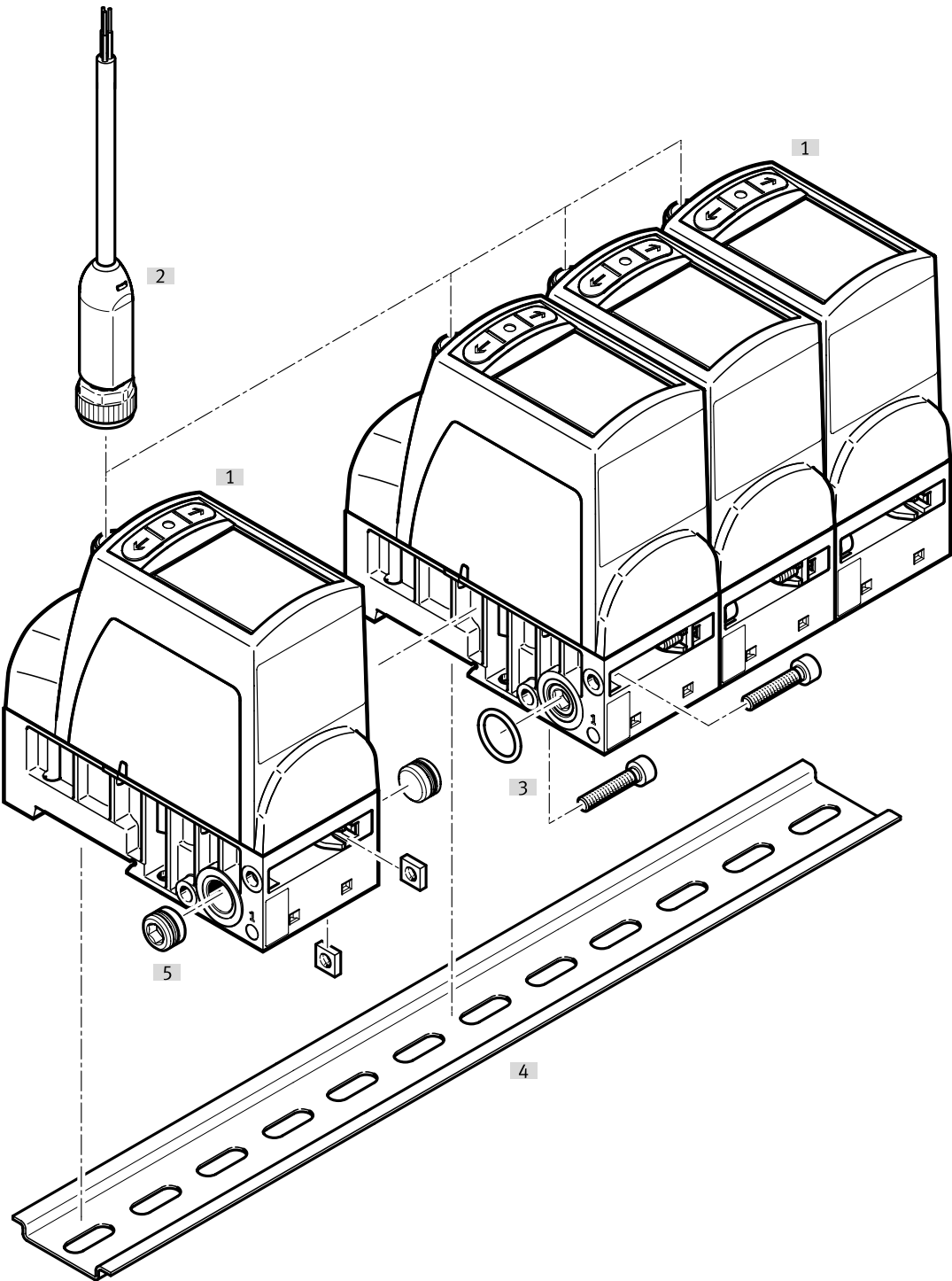
	Pressure regulation range MPa	Pressure regulation range	Setpoint input for individual valves	Product weight	Part no.	Type
	-0.1 ... 0.1 MPa	-1 ... 1 bar	4 ... 20 mA	370 g	8230850	VPPI-1.8L-3-G18-1V1H-A4-S1D
			0 ... 10 V		8230849	VPPI-1.8L-3-G18-1V1H-V1-S1D
	0 ... 0.2 MPa	0 ... 2 bar	4 ... 20 mA		8104673	VPPI-5L-3-G18-1V1H-V1-S1D
			0 ... 10 V		8230852	VPPI-1.8L-3-G18-0L2H-A4-S1D
	0 ... 0.6 MPa	0 ... 6 bar	4 ... 20 mA		8230851	VPPI-1.8L-3-G18-0L2H-V1-S1D
			0 ... 10 V		8104667	VPPI-5L-3-G18-0L6H-A4-S1D
	0 ... 1 MPa	0 ... 10 bar	4 ... 20 mA		8230842	VPPI-1.8L-3-G18-0L6H-A4-S1D
			0 ... 10 V		8104665	VPPI-5L-3-G18-0L6H-V1-S1D
	0 ... 1.2 MPa	0 ... 12 bar	4 ... 20 mA		8104670	VPPI-5L-3-G18-0L10H-A4-S1D
			0 ... 10 V		8104669	VPPI-5L-3-G18-0L10H-V1-S1D
					8104672	VPPI-5L-3-G18-0L12H-V1-S1D

Ordering data – Modular product system

	Pressure regulation range MPa	Pressure regulation range	Operator unit/interface	Setpoint input for individual valves	Part no.	Type
	-0.1 ... 1.2 MPa	-1 ... 12 bar	Without, Display, Bluetooth	4 ... 20 mA 0 ... 10 V	8074287	VPPI-

Peripherals overview

VPPI



Accessories		→ Page/Internet
Type/order code	Description	
[1] Proportional pressure regulator	VPPI	8 -
[2] Connecting cable	NEBA-M12...	17
[3] Connecting kit	VAME-P18-K-P5	17
[4] DIN mounting rail	NRH-35-2000	18
[5] Blanking plug	B	17

Accessories

Connecting cable, straight						
	Electrical connection 1, connection type	Electrical connection 1, cable outlet	Electrical connection 1, connection technology	Cable length	Part no.	Type
	Socket	Straight	M12x1 A-coded as per EN 61076-2-101	2.5 m	8078242	NEBA-M12G5-U-2.5-N-LE5
				5 m	8078243	NEBA-M12G5-U-5-N-LE5
				10 m	8078244	NEBA-M12G5-U-10-N-LE5

Connecting cable, angled						
	Electrical connection 1, connection type	Electrical connection 1, cable outlet	Electrical connection 1, connection technology	Cable length	Part no.	Type
	Socket	Angled	M12x1 A-coded as per EN 61076-2-101	2.5 m	8078251	NEBA-M12W5-U-2.5-N-LE5
				5 m	8078252	NEBA-M12W5-U-5-N-LE5
				10 m	8078253	NEBA-M12W5-U-10-N-LE5

Inscription label holder				
	Pack size	Part no.	Type	
	10	561115	VMPAL-ST-AP-20	

Inscription label			
	Type code	Part no.	Type
	IBS	18576	IBS-6X10

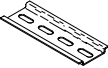
Connecting kit, for linking several proportional pressure regulators with common pressure supply			
	Pack size	Part no.	Type
	5	8108270	VAME-P18-K-P5

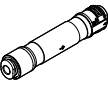
Blanking plug				
	Pneumatic connection 1	Pack size	Part no.	Type
	External thread G1/8	10	3568	B-1/8
		100	534213	B-1/8-100

Plug screw, for channel 1 of the valve for pressure zone separation			
	Pack size	Part no.	Type
	5	8108292	VAME-P18-BP-G18-P5
	10	8108271	VAME-P18-BP-G18-P10

Accessories

Silencer, for noise reduction at exhaust ports				
	Pack size	Pneumatic connection	Part no.	Type
		G1/8	2307	U-1/8
	1		161419	UC-1/8
	50		534222	U-1/8-50
			534219	UC-1/8-50

DIN mounting rail, H-rail according to EN 60715			
	Type code	Part no.	Type
	NRH	35430	NRH-35-2000

Inline filter				
	Nominal width	Pneumatic connection	Part no.	Type
	6 mm	For pneumatic tubing outside diameter 6 mm	8212640	OAF-A-C-Q6-E-F
			8212641	OAF-A-C-Q6-E-E
	8 mm	For pneumatic tubing outside diameter 8 mm	8212644	OAF-A-C-Q8-E-E
			8212643	OAF-A-C-Q8-E-F