

Proportional pressure regulator VPPL

FESTO



Characteristics

At a glance

Directly actuated piston regulator

- Available in three variants: flanged valve, flanged valve with external pilot air supply, in-line valve
- For high-pressure applications

Variant

[1] Variant 1	[2] Variant 2
For use with booster PREL-186-...-1	For use with booster PREL-90-...-2
[3] Variant 3	[4] Variant 4
For use with booster PREL-90-...-3	For use with booster PREL-90-...-4
[5] Variant 5	[6] Variant 6
For use with booster PREL-90-...-5	In-line valve
[7] Variant 7	[8] Variant 8
In-line valve	For use with booster PREL-90-...-8

Type code

001	Series	
VPPL	Proportional pressure regulator	
002	Nominal width [mm]	
3	3 mm	
003	Mounting method	
	Standard	
Q	Flange	
004	Directional control valve type	
L	In-line valve	
F	Flanged valve	
005	Valve function	
3	3/3-way valve, normally closed	
006	Pneumatic connection	
	Flange	
G14	G1/4	
F	Flange/sub-base	
007	Lower pressure value of control range	
0L	0 bar	
2L	2 bar	

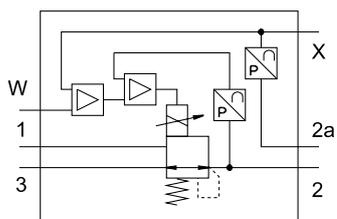
008	Upper pressure value of control range	
20H	20 bar	
40H	40 bar	
009	Setpoint input for individual valves	
A4	4 ... 20 mA	
V1	0 ... 10 V	
010	Electrical output 1	
A	4 ... 20 mA	
V	0 ... 10 V	
011	Overall accuracy	
S1	1 %	
012	Variant	
1	Variant 1	
2	Variant 2	
3	Variant 3	
4	Variant 4	
5	Variant 5	
6	Variant 6	
7	Variant 7	
8	Variant 8	

Datasheet

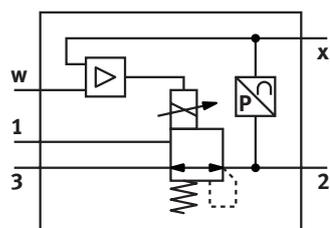
General technical data

Upper pressure value of control range	20 bar	40 bar
Pneumatic connection, port 1	Flange, G1/4	
Pneumatic connection, port 2	Flange, G1/4	
Pneumatic connection, port 3	Flange, G1/4	
Nominal size, supply	3	
Nominal size, exhaust	3	
Type of actuation	Electric	
Design	Directly actuated piston regulator	
Type of mounting	With through-hole	
Mounting position	optional, Preferably vertical	
Pressure regulation range	0.02 ... 2 MPa	0.04 ... 4 MPa
Pressure regulation range	0.2 ... 20 bar	0.4 ... 40 bar
Max. pressure hysteresis	0.01 MPa	0.04 MPa
Max. pressure hysteresis	0.1 bar	0.4 bar
Valve function	3-way proportional-pressure regulator, closed	
Type of reset	Mechanical spring	
Type of piloting	Direct	
Sealing principle	Soft	

Function sub-base valve



Function in-line valve



Flow characteristics

Standard nominal flow rate (standardised to DIN 1343) ¹⁾	245 l/min
C value	0.8 l/sbar
b value	0.25

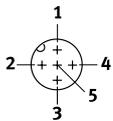
¹⁾ Measured at p₁ = 6 bar and p₂ = 5 bar, Δp = 1 bar

Datasheet

Electrical data		
Electrical output 1	4 ... 20 mA	0 ... 10 V
Electrical connection, IN	Plug connector, M12, 5-pin, A-coded	
Electrical connection, OUT	Plug connector, M12, 5-pin, A-coded	
Electrical connection diagnostics interface ¹⁾	Socket, M12, 5-pin, A-coded	
Operational voltage range DC	21.6 ... 27.6 V	
Signal range analogue input	0 - 10 V, 4 - 20 mA	0 - 10 V
Signal range analogue output	4 - 20 mA	0 - 10 V
SETPOINT/ACTUAL values	Voltage type 0 - 10 V Current type 4-20 mA	Voltage type 0 - 10 V
Degree of protection	IP65	
Duty cycle	100%	
Switching time off	654 ms	
Switching time on	428 ms	
Reverse polarity protection	For all electrical connections	
Short circuit current rating	no	
Max. cable length	30 m	
Display type	LED indicator	
Max. electrical power consumption	26.7 W	
Residual ripple	10%	

¹⁾ Diagnostics interface covered with a protective cap, for use only by Festo service staff.

Pin allocation



Output connection OUT (actual value):

- 1: not assigned
- 2: analogue OUT + (actual value)
- 3: not assigned
- 4: analogue OUT – (actual value)
- 5: functional earth

Input connection IN (setpoint value/power supply):

- 1: 24 V DC
- 2: analogue IN + (setpoint value)
- 3: 0 V
- 4: analogue IN – (setpoint value)
- 5: functional earth

Accuracy

Upper pressure value of control range	20 bar	40 bar
Linearity error in \pm %FS	0.5 %FS	1 %FS
Total accuracy	0.5% FS	1.5%FS
Temperature coefficient	0.04 %/K	
Repetition accuracy in \pm %FS	0.5 %FS	1 %FS

Datasheet

Operating and environmental conditions

Operating pressure	≤5 MPa
Operating pressure	≤50 bar
Operating pressure	≤725 psi
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4], Inert gases
Note on operating and pilot medium	Lubricated operation not possible
Inlet pressure 1	0 ... 5 MPa
Inlet pressure 1	0 ... 50 bar
Ambient temperature	5 ... 50°C
Media temperature	5 ... 50°C
Storage temperature	-10 ... 60°C
Corrosion resistance class CRC ¹⁾	2 - Moderate corrosion stress
Approval	c UL us listed (OL)
KC mark	KC-EMV
CE mark (see declaration of conformity) ²⁾	To EU EMC Directive
UKCA marking (see declaration of conformity) ³⁾	To UK instructions for EMC

1) More information www.festo.com/x/topic/kbk

2) More information www.festo.com/catalogue/vppl -> Support/Downloads. If the devices are subject to usage restrictions in residential, commercial or industrial environments as well as small businesses, further measures for reducing the emitted interference may be necessary.

3) More information www.festo.com/catalogue/vppl -> Support/Downloads. If the devices are subject to usage restrictions in residential, commercial or industrial environments as well as small businesses, further measures for reducing the emitted interference may be necessary.

Weight

Product weight	1,100 g
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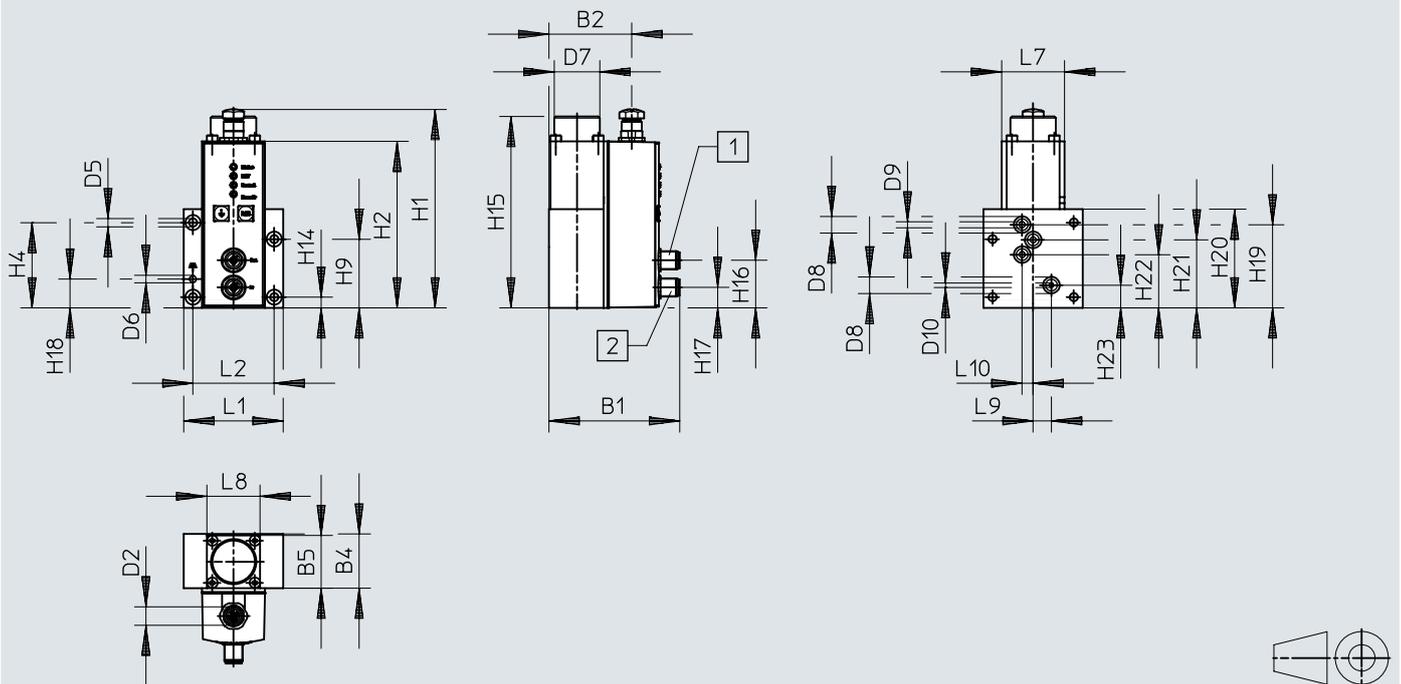
Materials

Material housing	Anodised wrought aluminium alloy
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364 zone III

Dimensions

Dimensions – Flanged valve

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[1] Output connection OUT (plug M12, 5-pin)

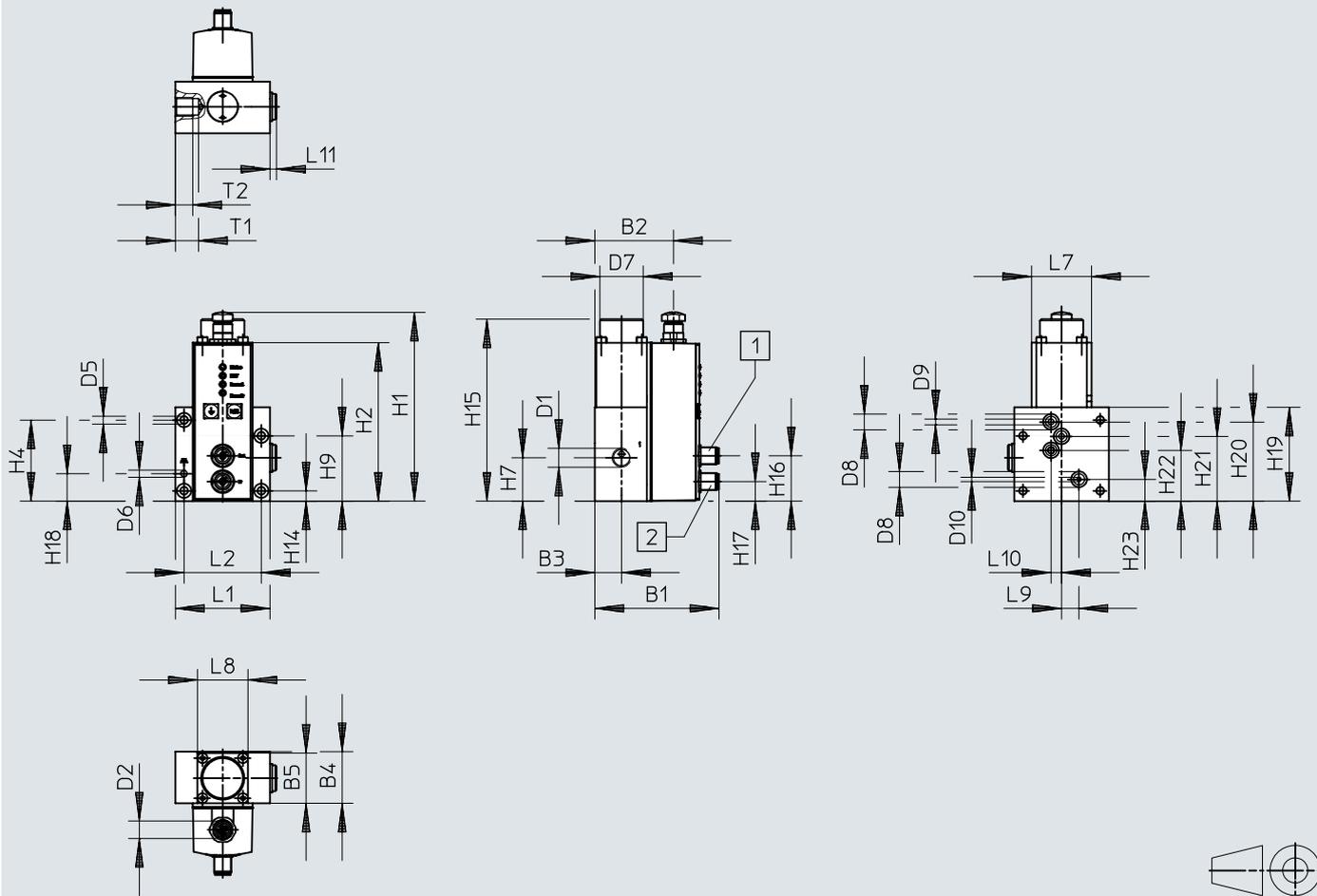
[2] Input connection IN (plug M12, 5-pin)

	B1	B2	B4	B5	D2	D5 ∅	D6	D7 ∅	D8 ∅	D9 ∅	D10 ∅
VPPL-3Q-3	86,1	54,5	36	35	M12	5,5	M5	30	11	4	3
	H1	H2	H4	H9	H14	H15	H16	H17	H18	H19	
VPPL-3Q-3	132	110,5	56,5	45,5	7,1	127	31,5	13,5	19,1	65,5	
	H20	H21	H22	H23	L1	L2	L7	L8	L9	L10	
VPPL-3Q-3	55,2	45,1	35,3	15,05	65,5	53,5	41,5	35	12,05	7,3	

Dimensions

Dimensions – Flanged valve with external pilot air

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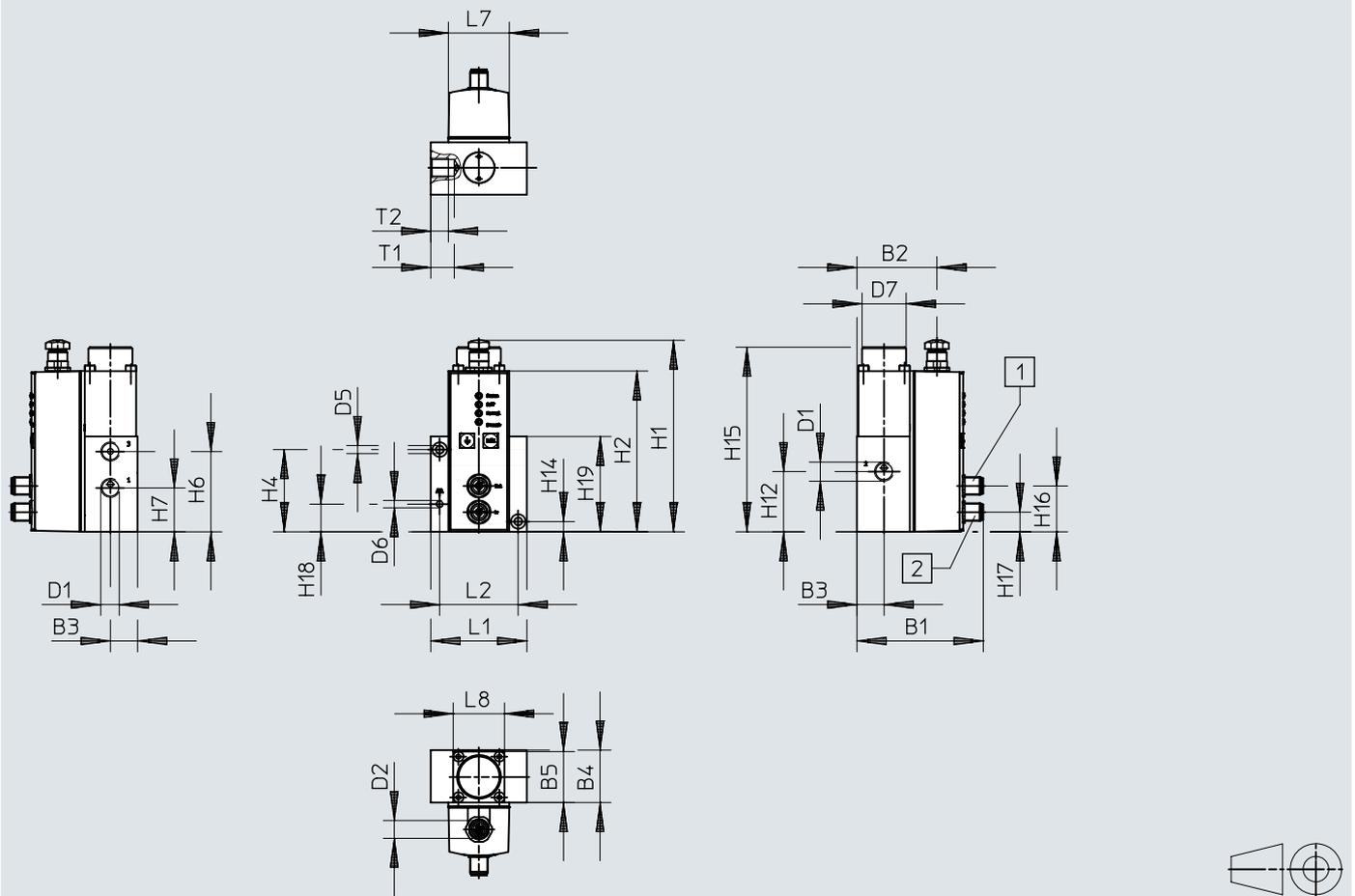
- [1] Output connection OUT (plug M12, 5-pin)
- [2] Input connection IN (plug M12, 5-pin)

	B1	B2	B3	B4	B5	D1	D2	D5 ∅	D6	D7 ∅	D8 ∅	D9 ∅	D10 ∅
VPPL-3Q-3-Z	86,1	54,5	18,5	36	35	G1/4	M12	5,5	M5	30	11	4	3
	H1	H2	H4	H7	H9	H14	H15	H16	H17	H18	H19	H20	
VPPL-3Q-3-Z	132	110,5	56,5	30,2	45,5	7,1	127	31,5	13,5	19,1	65,5	55,2	
	H21	H22	H23	L1	L2	L7	L8	L9	L10	L11	T1	T2	
VPPL-3Q-3-Z	45,1	35,3	15,05	65,5	53,5	41,5	35	12,05	7,3	4,5	16	12	

Dimensions

Dimensions – In-line valve

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[1] Output connection OUT (plug M12, 5-pin)

[2] Input connection IN (plug M12, 5-pin)

	B1	B2	B3	B4	B5	D1	D2	D5 ∅	D6	D7 ∅
VPPL-3L-3-G14	86,1	54,5	18,5	36	35	G1/4	M12	5,5	M5	30
	H1	H2	H4	H6	H7	H12	H14	H15	H16	
VPPL-3L-3-G14	132	110,5	56,5	55,2	30,2	41,4	7,1	127	31,5	
	H17	H18	H19	L1	L2	L7	L8	T1	T2	
VPPL-3L-3-G14	13,5	19,1	65,5	65,5	53,5	41,5	35	16	12	

Ordering data

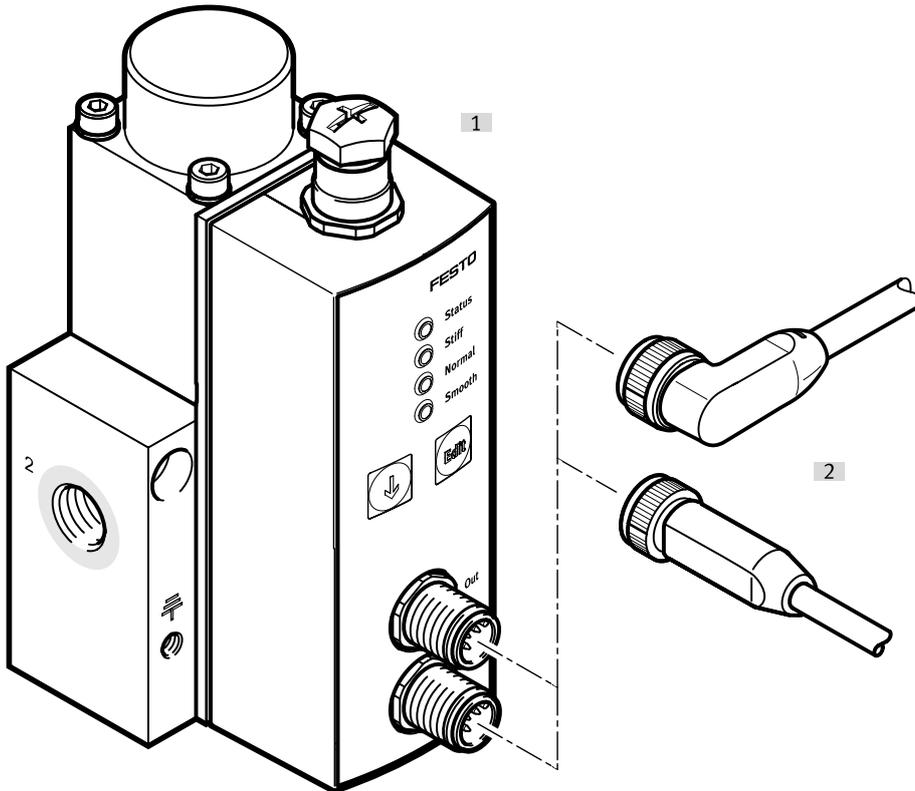
Ordering information sub-base valves						
	Pneumatic connection, port 1	Pressure regulation range	Signal range analogue input	Signal range analogue output	Part no.	Type
	Flange	0.02 ... 2 MPa	0 - 10 V	0 - 10 V	1635987	VPPL-3Q-3-0L20H-V1-V-S1-2
			4 - 20 mA	4 - 20 mA	1635984	VPPL-3Q-3-0L20H-V1-A-S1-2
				1635990	VPPL-3Q-3-0L20H-A4-A-S1-2	
		0.04 ... 4 MPa	0 - 10 V	0 - 10 V	1635979	VPPL-3Q-3-0L40H-V1-V-S1-3
				1635978	VPPL-3Q-3-0L40H-V1-V-S1-1	
			4 - 20 mA	4 - 20 mA	1635973	VPPL-3Q-3-0L40H-V1-A-S1-1
				1635985	VPPL-3Q-3-0L40H-V1-A-S1-3	
				1635981	VPPL-3Q-3-0L40H-A4-A-S1-1	
				1691730	VPPL-3Q-3-0L40H-A4-A-S1-3	

Ordering data Sub-base valves with external pilot air						
	Pneumatic connection, port 1	Pressure regulation range	Signal range analogue input	Signal range analogue output	Part no.	Type
	Flange, G1/4	0.02 ... 2 MPa	0 - 10 V	0 - 10 V	1635988	VPPL-3Q-3-Z-0L20H-V1-V-S1-4
			4 - 20 mA	4 - 20 mA	1635975	VPPL-3Q-3-Z-0L20H-V1-A-S1-4
				1635991	VPPL-3Q-3-Z-0L20H-A4-A-S1-4	
		0.04 ... 4 MPa	0 - 10 V	1635982	VPPL-3Q-3-Z-2L40H-V1-A-S1-5	
				1910709	VPPL-3Q-3-Z-0L40H-V1-A-S1-8	

Ordering data for in-line valves						
	Pneumatic connection, port 1	Pressure regulation range	Signal range analogue input	Signal range analogue output	Part no.	Type
	G1/4	0.02 ... 2 MPa	0 - 10 V	0 - 10 V	1635989	VPPL-3L-3-G14-0L20H-V1-V-S1-6
			4 - 20 mA	4 - 20 mA	1635986	VPPL-3L-3-G14-0L20H-V1-A-S1-6
				1635992	VPPL-3L-3-G14-0L20H-A4-A-S1-6	
		0.04 ... 4 MPa	0 - 10 V	0 - 10 V	1635980	VPPL-3L-3-G14-0L40H-V1-V-S1-7
				1635977	VPPL-3L-3-G14-0L40H-V1-A-S1-7	
			4 - 20 mA	4 - 20 mA	1635983	VPPL-3L-3-G14-0L40H-A4-A-S1-7

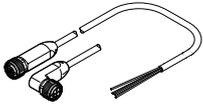
Peripherals

Peripherals overview



Accessories		→ Link
Type/order code	Description	
[1] Proportional-pressure regulator VPPL		vppl
[2] Connecting cables NEBA		12

Accessories

Connecting cable NEBA-M12						
	Electrical connection 1, connector system	Electrical connection 1, cable outlet	Electrical connection 1, used connections/cores	Cable length	Part no.	Type
	M12x1, A-coded to EN 61076-2-101	Straight	5	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
		Angled		2.5 m	8078251	NEBA-M12W5-U-2.5-N-LE5
				5 m	8078252	NEBA-M12W5-U-5-N-LE5