

Proportional pressure regulator VPPE

FESTO



Characteristics

At a glance

- Design:
- Some selected types of the pressure regulator VPPE can be screwed onto a profile strip. This has the advantage that the profile strip can be used to create a central compressed air supply.
 - The air can be fed into the profile strip at one end, at both ends through end plates, or using an intermediate air supply module (for increased air requirements).
 - The holes for the profile strip must be drilled according to the assembly instructions. The pressure regulators VPPE are screwed to the profile strip using the mounting plate. The end plates are screwed to the profile strip on the front left and right. See the assembly instructions for further information: Internet: vppe

Compressed air supply on the profile strip:

- When using the profile strip as a central compressed air supply, make sure that the required compressed air supply is guaranteed. Bear in mind that an intermediate air supply module needs a valve position. The intermediate air supply module takes up one VPPE valve position.

Recommendation for compressed air supply:

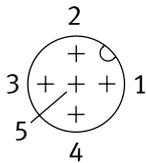
- For example, with tubing diameter \varnothing 16 mm with simultaneous max. flow rate for all valves, the following applies: Compressed air supply – number of valves: –At one end – max. 5 valves, At both sides – max. 10 valves, With intermediate air supply – max. 5 valves each
- Intermediate supply modules must always be placed centrally. Several intermediate supply modules must be evenly distributed.

Note:

- Only the following types of proportional-pressure regulators VPPE can be mounted on profile strips using a mounting plate: valve VPPE with display and top part turned 90°, VPPE-...-E1T
- Further information on mounting proportional-pressure regulators VPPE as well as intermediate supply modules on profile strips can be found in the assembly instructions: Internet: vppe

Series

[VPPE] Proportional pressure regulator



Pin 1: Supply 21.6 ... 26.4 V DC

Pin 2: Setpoint (-)

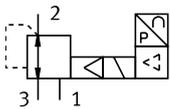
Pin 3: GND (-)

Pin 4: Setpoint (+) 0 ... 10 V DC / 4 ... 20 mA

Pin 5: Actual value output or switching output (can be selected via the operator panel)

Switching input/output

[M] 0 ... 10 V



Diagrams

The diagrams shown in this document are also available online. These can be used to display precise values.

Type code

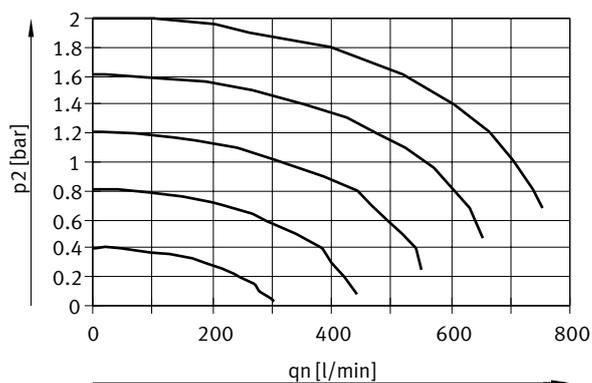
001	Series	
VPPE	Proportional pressure regulator	
002	Valve function	
3	3-way valve	
003	Valve function	
1	Normally closed	
004	Pneumatic connection	
1/8	Female thread G1/8	
1/4	Female thread G1/4	
005	Pressure regulation range	
2	0.02 ... 2 bar	
6	0.06 ... 6 bar	
10	0.1 ... 10 bar	

006	Setpoint input for individual valves	
005	0 ... 5 V	
010	0 ... 10 V	
420	4 ... 20 mA	
MR	Modbus® RTU via RS485	
007	Operator unit/interface	
	None	
E1	LED display, 7-segment	
008	Mounting	
	In-line valve	
T	Common supply manifold mounting (mounting rail)	
009	Special material properties	
	None	
F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A	

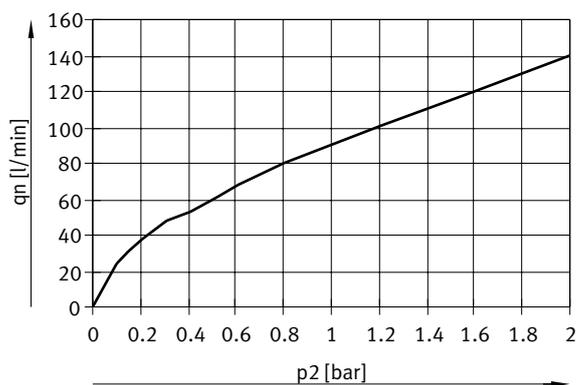
Datasheet

General technical data						
Pressure regulation range	0.002 ... 0.2 MPa		0.01 ... 1 MPa		0.006 ... 0.6 MPa	
Pressure regulation range	0.02 ... 2 bar		0.1 ... 10 bar		0.06 ... 6 bar	
Pneumatic connection, port 1	G1/8	G1/4	G1/8	G1/4	G1/8	G1/4
Pneumatic connection, port 2	G1/8	G1/4	G1/8	G1/4	G1/8	G1/4
Pneumatic connection, port 3	G1/8					
Design	Piloted diaphragm regulator					
Valve function	3-way proportional pressure regulator					
Safety instructions	Safety position VPPE: if the power supply cable is interrupted, output pressure is maintained unregulated.					
Sealing principle	Soft					
Type of actuation	Electric					
Type of mounting	With through-hole					
Mounting position	optional, Preferably vertical					
Nominal size, supply	5 mm					
Nominal size, exhaust	2.5 mm					
Standard nominal flow rate (standardised to DIN 1343)	310 l/min	700 l/min	1,250 l/min	2,300 l/min	800 l/min	1,700 l/min
Product weight	390 g					

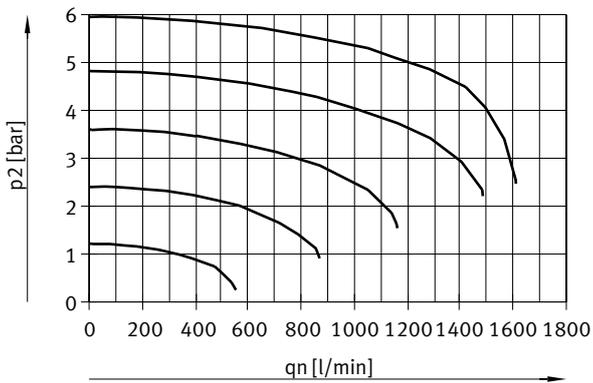
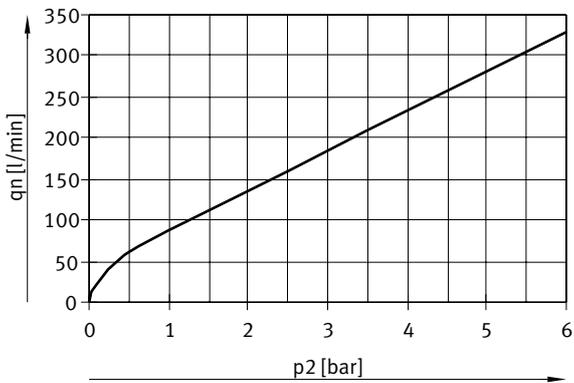
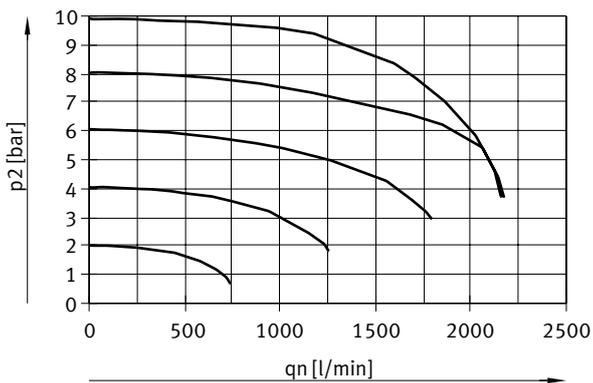
Flow rate q_n as a function of output pressure p_2 , VPPE-3-1-1/8-2-..., $q_n 1 \rightarrow 2$



Flow rate q_n as a function of output pressure p_2 , VPPE-3-1-1/8-2-..., $q_n 2 \rightarrow 3$

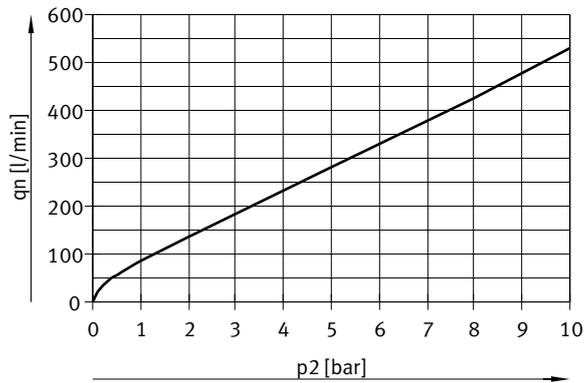


Datasheet

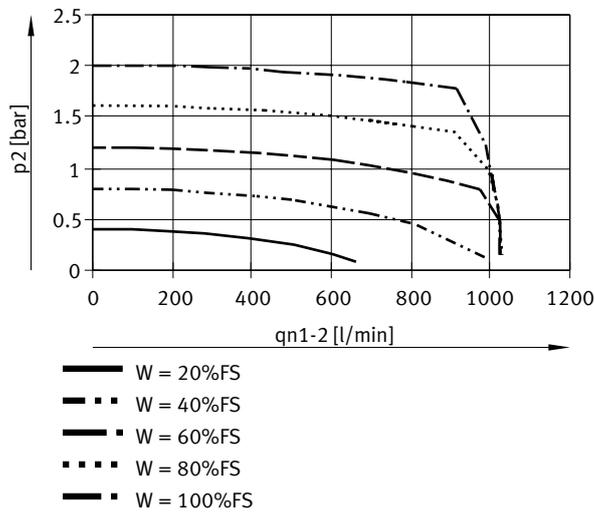
Flow rate q_n as a function of output pressure p_2 , VPPE-3-1-1/8-6-..., q_n 1 -> 2Flow rate q_n as a function of output pressure p_2 , VPPE-3-1-1/8-6-..., q_n 2 -> 3Flow rate q_n as a function of output pressure p_2 , VPPE-3-1-1/8-10-..., q_n 1 -> 2

Datasheet

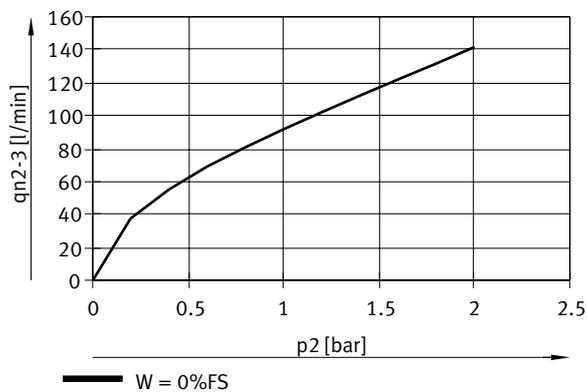
Flow rate q_n as a function of output pressure p_2 , VPPE-3-1-1/8-10-..., $q_n 2 \rightarrow 3$



Flow rate q_n as a function of output pressure p_2 , VPPE-3-1-1/4-2-..., $q_n 1 \rightarrow 2$

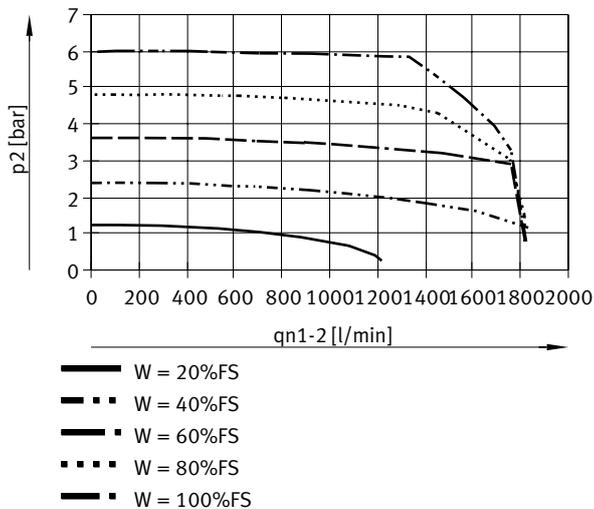


Flow rate q_n as a function of output pressure p_2 , VPPE-3-1-1/4-2-..., $q_n 2 \rightarrow 3$

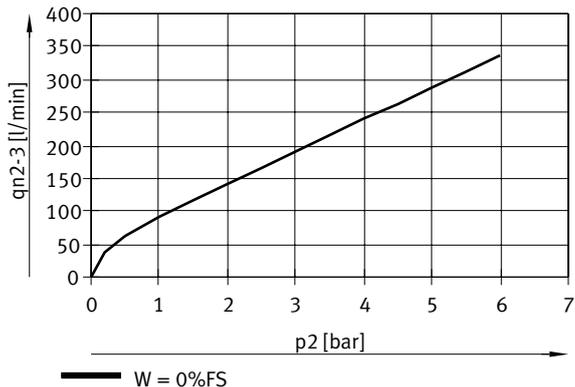


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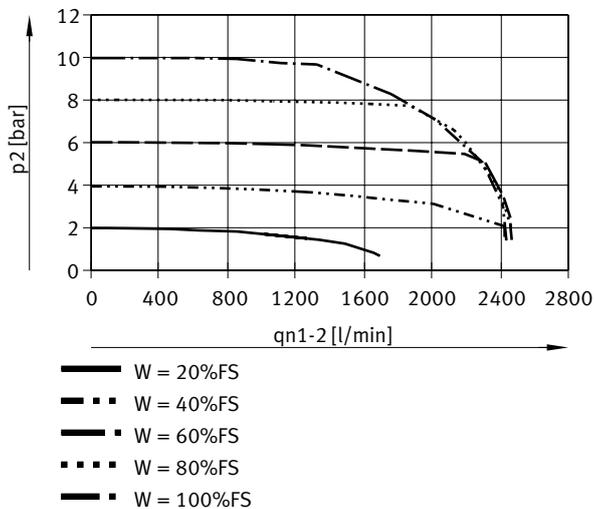
Flow rate q_n as a function of output pressure p_2 , VPPE-3-1-1/4-6-..., $q_n 1 \rightarrow 2$



Flow rate q_n as a function of output pressure p_2 , VPPE-3-1-1/4-6-..., $q_n 2 \rightarrow 3$

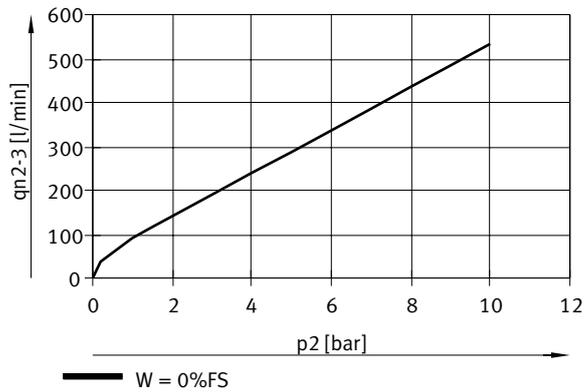


Flow rate q_n as a function of output pressure p_2 , VPPE-3-1-1/4-10-..., $q_n 1 \rightarrow 2$



Datasheet

Flow rate q_{n2-3} as a function of output pressure p_2 , VPPE-3-1-1/4-10-..., $q_n 2 \rightarrow 3$



Electrical data

Signal range analogue output	0 - 10 V		1 - 5 V		4 - 20 mA	
Signal range analogue input	0 - 10 V		0 - 5 V		4 - 20 mA	
Pneumatic connection, port 1	G1/8	G1/4	G1/8	G1/4	G1/8	G1/4
Electrical connection	5-pin, M12, Plugs					
Operational voltage range DC	21.6 ... 26.4 V					
Display type	LED indicator, 3-digit					
Residual ripple	10%					
Max. electrical power consumption	4.2 W					
Max. current consumption	160 mA					
Short circuit current rating	For all electrical connections					
Reverse polarity protection	For all electrical connections					
Switching output	PNP					
Degree of protection	IP65					
Type of serial interface	-					
Protocol	-					

Datasheet

Operating and environmental conditions						
Pressure regulation range	0.002 ... 0.2 MPa		0.01 ... 1 MPa		0.006 ... 0.6 MPa	
Pressure regulation range	0.02 ... 2 bar		0.1 ... 10 bar		0.06 ... 6 bar	
Pneumatic connection, port 1	G1/8	G1/4	G1/8	G1/4	G1/8	G1/4
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	0.3 ... 0.4 MPa		0.6 ... 1.1 MPa		0.6 ... 0.8 MPa	
Inlet pressure 1	3 ... 4 bar		6 ... 11 bar		6 ... 8 bar	
Max. pressure hysteresis	0.002 MPa		0.005 ... 0.007 MPa		0.003 ... 0.004 MPa	
Max. pressure hysteresis	0.02 bar		0.05 ... 0.07 bar		0.03 ... 0.04 bar	
Hysteresis	1 %FS		0.5 ... 0.7 %FS		0.5 ... 0.7 %FS	
Reproducibility	0.5 %FS, 1 %FS	1 %FS, 1.5 %FS	0.5 %FS		0.5 %FS, 0.6 %FS	0.5 %FS, 0.6 %FS, 0.7 %FS
Linearity	1 %FS					
Total accuracy	1.5%FS	1.25%FS, 1.5%FS	1.25%FS			
Temperature coefficient	0.04 %/K					
Duty cycle	100%					
Ambient temperature	0 ... 60°C					
Media temperature	10 ... 50°C					
Corrosion resistance class CRC ¹⁾	2 - Moderate corrosion stress					
CE mark (see declaration of conformity) ²⁾	To EU EMC Directive In accordance with EU RoHS Directive					
UKCA marking (see declaration of conformity) ³⁾	To UK instructions for EMC To UK RoHS instructions					
Approval	RCM trademark c UL us listed (OL)					

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

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.

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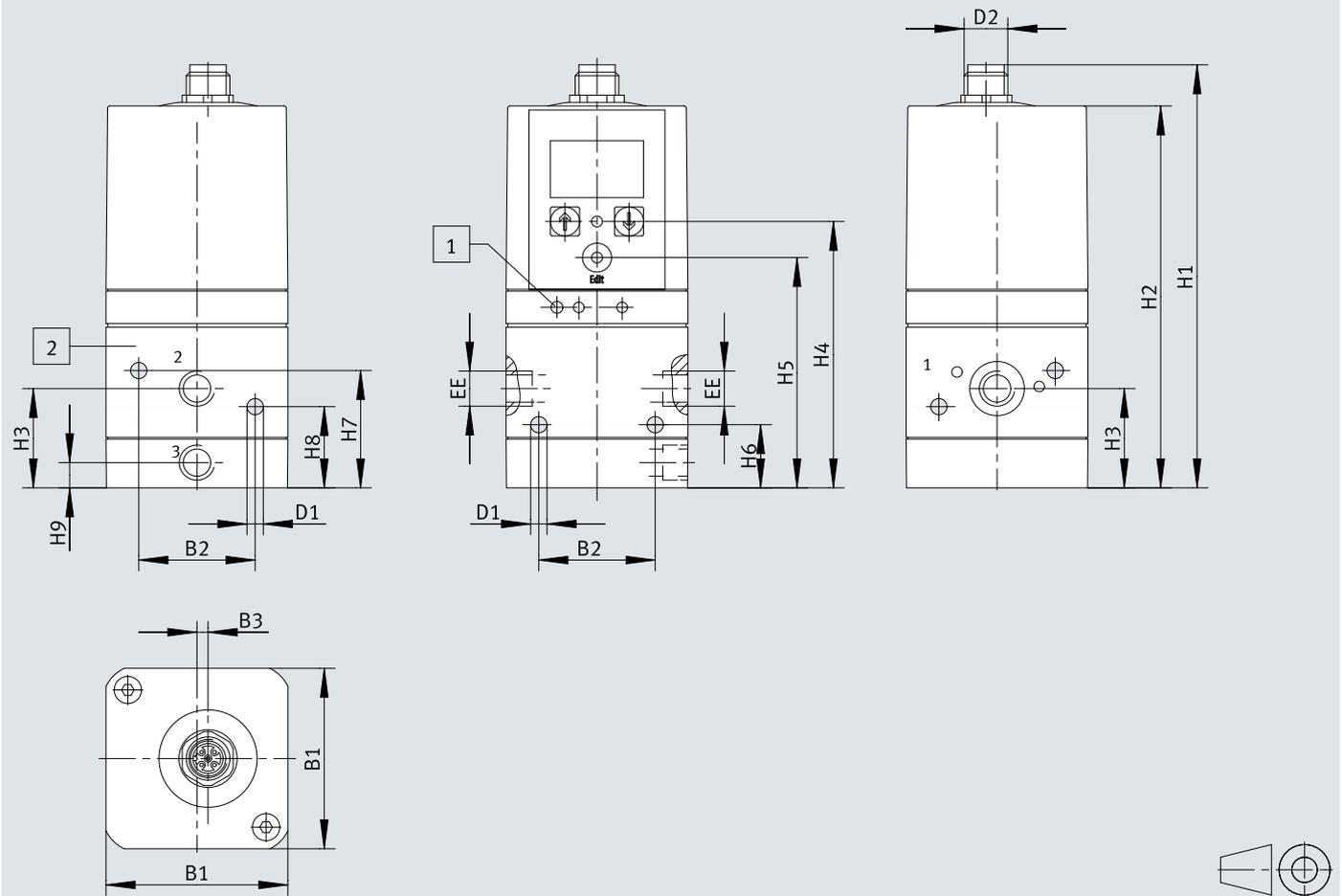
Materials, mounting plate (set)	
Material plate	Wrought aluminium alloy
Material seals	NBR
Material screws	Steel
Note on materials	RoHS-compliant
Corrosion resistance class CRC ¹⁾	2 - Moderate corrosion stress

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

Dimensions

Dimensions – VPPE

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[1] Earthing hole

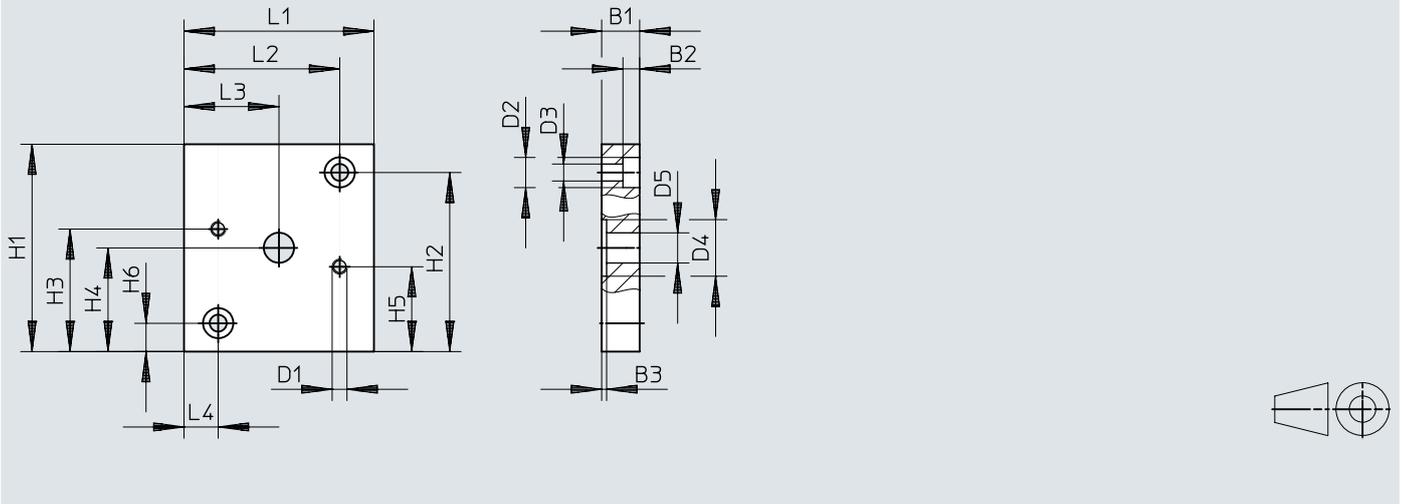
[2] Booster with variant VPPE-...-E1T rotated 90°

	B1	B2	B3	D1 ∅	D2	EE	H1	H2	H3	H4	H5	H6	H7	H8	H9
VPPE-3-1-1/8- ... E1 ...	50	32	3,1	4,5	M12x1	G1/8	117,2	105,8	27,5	73,8	63,8	17,5	32,5	22,5	7
VPPE-3-1-1/4- ... E1 ...						G1/4									

Dimensions

Dimensions – Mounting plate

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	B1	B2	B3	D1	D2 ∅	D3 ∅	D4 ∅	D5 ∅	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4
VAME-P5-MK	10	4,6	1,3	M4	8	4,5	15	8	55	47,5	32,5	27,5	22,5	7,5	50	41	25	9

Ordering data

VPPE, in-line valve						
	Pressure regulation range	Pressure regulation range	Signal range analogue output	Signal range analogue input	Part no.	Type
	0.002 ... 0.2 MPa	0.02 ... 2 bar	0 - 10 V	0 - 10 V	557771	VPPE-3-1-1/8-2-010-E1
			4 - 20 mA	4 - 20 mA	557774	VPPE-3-1-1/8-2-420-E1
	0.006 ... 0.6 MPa	0.06 ... 6 bar	0 - 10 V	0 - 10 V	557772	VPPE-3-1-1/8-6-010-E1
			4 - 20 mA	4 - 20 mA	557775	VPPE-3-1-1/8-6-420-E1
	0.01 ... 1 MPa	0.1 ... 10 bar	0 - 10 V	0 - 10 V	557773	VPPE-3-1-1/8-10-010-E1
			4 - 20 mA	4 - 20 mA	557776	VPPE-3-1-1/8-10-420-E1

VPPE, F1A, recommended for production plants for manufacturing lithium-ion batteries						
	Pressure regulation range	Pressure regulation range	Signal range analogue output	Signal range analogue input	Part no.	Type
	0.002 ... 0.2 MPa	0.02 ... 2 bar			8168527	VPPE-3-1-1/8-2-MR-E1-F1A
					8168528	VPPE-3-1-1/8-6-MR-E1-F1A
	0.006 ... 0.6 MPa	0.06 ... 6 bar	0 - 10 V	0 - 10 V	8156419	VPPE-3-1-1/8-6-010-E1-F1A
			1 - 5 V	0 - 5 V	8156421	VPPE-3-1-1/8-6-005-E1-F1A
			4 - 20 mA	4 - 20 mA	8156423	VPPE-3-1-1/8-6-420-E1-F1A
					8168529	VPPE-3-1-1/8-10-MR-E1-F1A
	0.01 ... 1 MPa	0.1 ... 10 bar	0 - 10 V	0 - 10 V	8156420	VPPE-3-1-1/8-10-010-E1-F1A
			1 - 5 V	0 - 5 V	8156422	VPPE-3-1-1/8-10-005-E1-F1A
			4 - 20 mA	4 - 20 mA	8156424	VPPE-3-1-1/8-10-420-E1-F1A

VPPE, F1A, recommended for production systems for the manufacture of Li-ion batteries, thread G1/4						
	Pressure regulation range	Pressure regulation range	Signal range analogue output	Signal range analogue input	Part no.	Type
	0.002 ... 0.2 MPa	0.02 ... 2 bar			8181689	VPPE-3-1-1/4-2-MR-E1-F1A
					8202577	VPPE-3-1-1/4-2-MR-E1T-F1A
			0 - 10 V	0 - 10 V	8181683	VPPE-3-1-1/4-2-010-E1-F1A
					8202571	VPPE-3-1-1/4-2-010-E1T-F1A
			1 - 5 V	0 - 5 V	8202568	VPPE-3-1-1/4-2-005-E1T-F1A
					8181680	VPPE-3-1-1/4-2-005-E1-F1A
			4 - 20 mA	4 - 20 mA	8181686	VPPE-3-1-1/4-2-420-E1-F1A
					8202574	VPPE-3-1-1/4-2-420-E1T-F1A
					8181690	VPPE-3-1-1/4-6-MR-E1-F1A
					8202578	VPPE-3-1-1/4-6-MR-E1T-F1A
	0.006 ... 0.6 MPa	0.06 ... 6 bar	0 - 10 V	0 - 10 V	8181684	VPPE-3-1-1/4-6-010-E1-F1A
					8202572	VPPE-3-1-1/4-6-010-E1T-F1A
			1 - 5 V	0 - 5 V	8181681	VPPE-3-1-1/4-6-005-E1-F1A
					8202569	VPPE-3-1-1/4-6-005-E1T-F1A
			4 - 20 mA	4 - 20 mA	8181687	VPPE-3-1-1/4-6-420-E1-F1A
					8202575	VPPE-3-1-1/4-6-420-E1T-F1A
					8181691	VPPE-3-1-1/4-10-MR-E1-F1A
					8202579	VPPE-3-1-1/4-10-MR-E1T-F1A
	0.01 ... 1 MPa	0.1 ... 10 bar	0 - 10 V	0 - 10 V	8181685	VPPE-3-1-1/4-10-010-E1-F1A
					8202573	VPPE-3-1-1/4-10-010-E1T-F1A
1 - 5 V			0 - 5 V	8181682	VPPE-3-1-1/4-10-005-E1-F1A	

Ordering data

VPPE, F1A, recommended for production systems for the manufacture of Li-ion batteries, thread G1/4

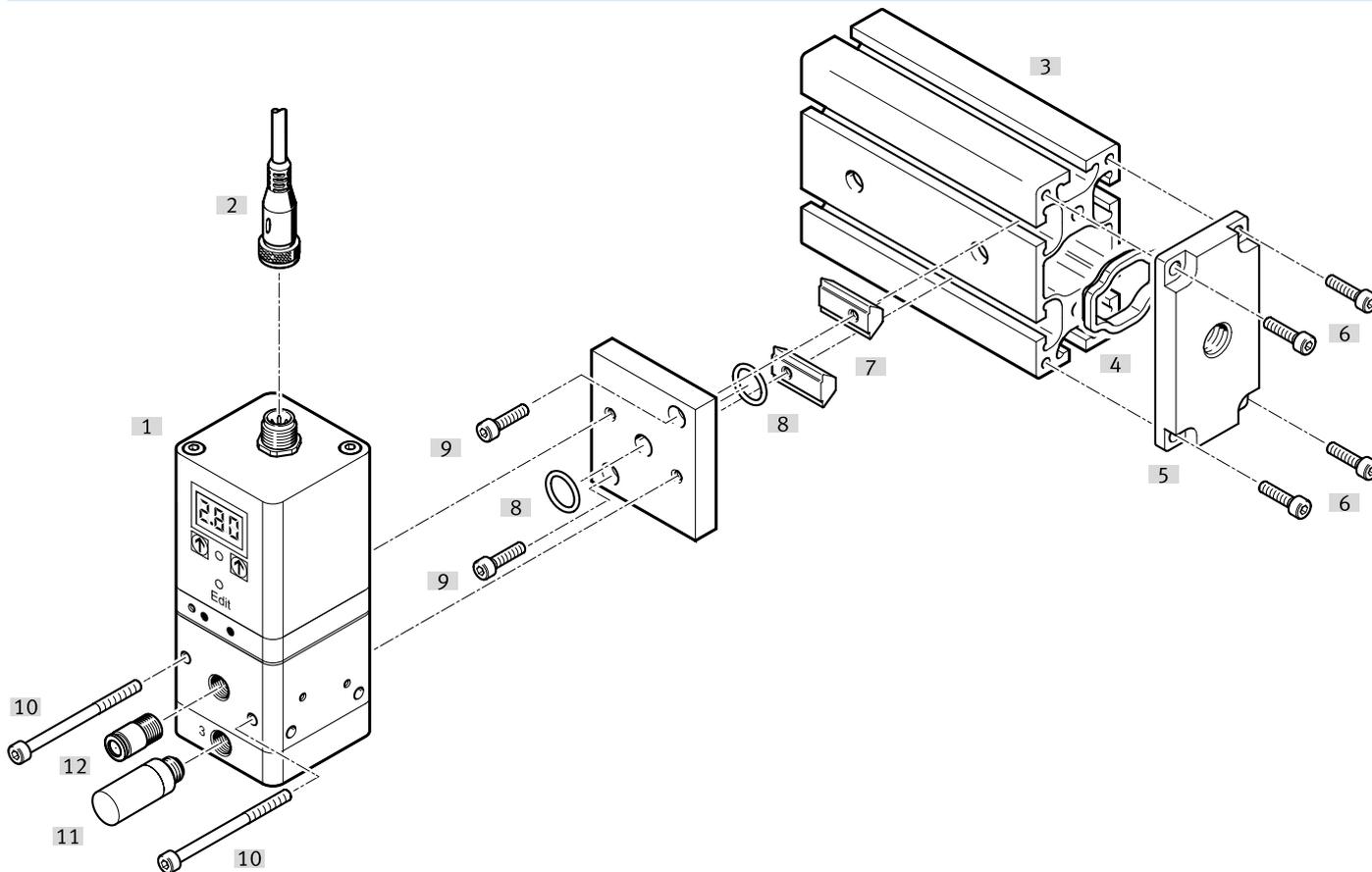
	Pressure regulation range	Pressure regulation range	Signal range analogue output	Signal range analogue input	Part no.	Type
	0.01 ... 1 MPa	0.1 ... 10 bar	1 - 5 V	0 - 5 V	8202570	VPPE-3-1-1/4-10-005-E1T-F1A
			4 - 20 mA	4 - 20 mA	8202576	VPPE-3-1-1/4-10-420-E1T-F1A
					8181688	VPPE-3-1-1/4-10-420-E1-F1A

VPPE, common supply manifold

	Pressure regulation range	Pressure regulation range	Signal range analogue output	Signal range analogue input	Part no.	Type
	0.002 ... 0.2 MPa	0.02 ... 2 bar	0 - 10 V	0 - 10 V	557777	VPPE-3-1-1/8-2-010-E1T
			4 - 20 mA	4 - 20 mA	557779	VPPE-3-1-1/8-2-420-E1T
	0.006 ... 0.6 MPa	0.06 ... 6 bar	0 - 10 V	0 - 10 V	567539	VPPE-3-1-1/8-6-010-E1T
			4 - 20 mA	4 - 20 mA	567540	VPPE-3-1-1/8-6-420-E1T
	0.01 ... 1 MPa	0.1 ... 10 bar	0 - 10 V	0 - 10 V	557778	VPPE-3-1-1/8-10-010-E1T
			4 - 20 mA	4 - 20 mA	557780	VPPE-3-1-1/8-10-420-E1T

Peripherals

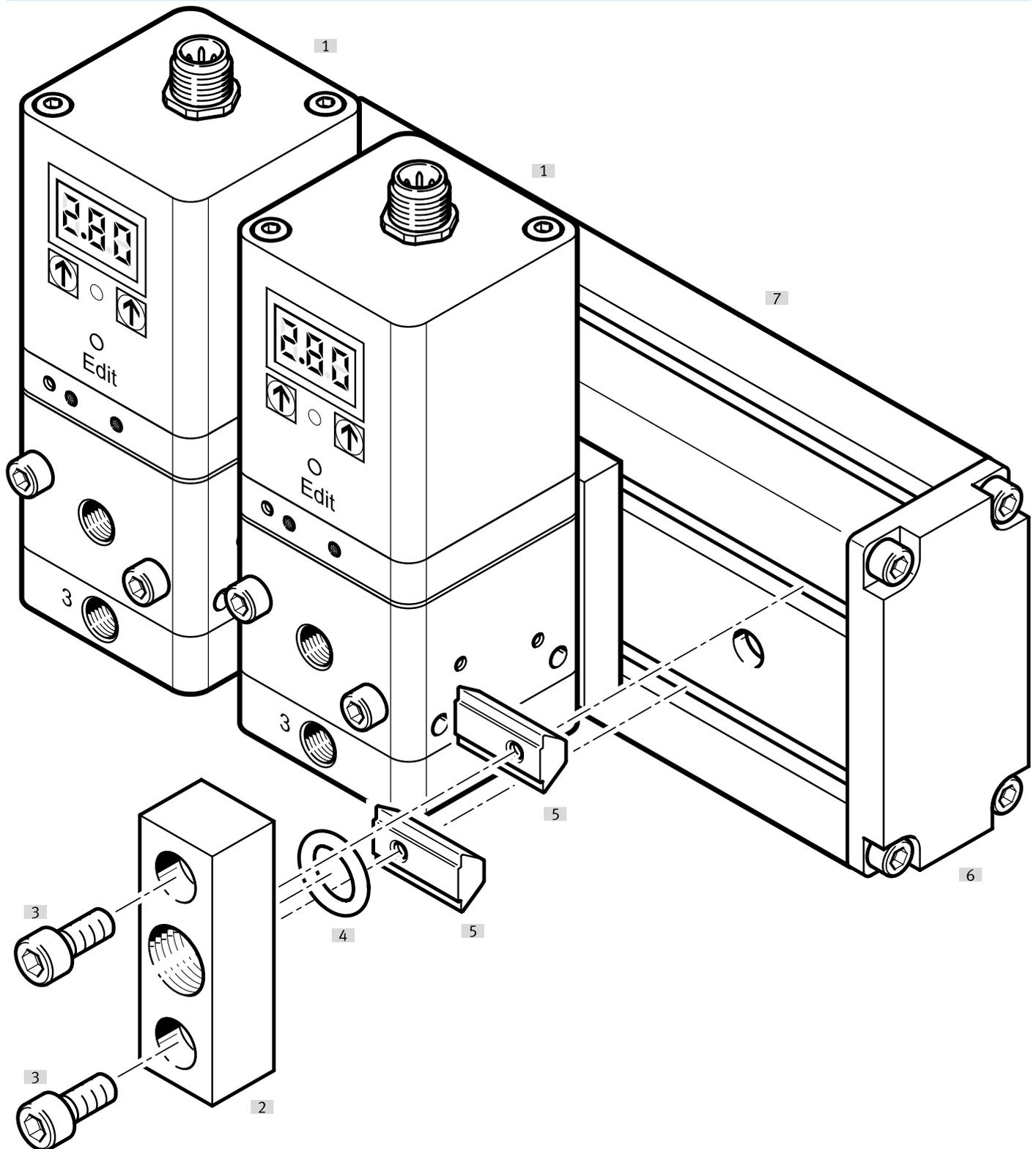
Peripherals overview



Accessories			→ Link
Type/order code	Description		
[1] Proportional pressure regulator	VPPE		-
[2] Connecting cable	With straight plug socket for actuating the VPPE		17
[3] Profile strip	Standard profile strip as central air supply		17
[4] Compressed air supply plate (set)	For supplying compressed air (consists of compressed air supply plate, screws and seal)		17
[5] Seal	-		-
[6] Socket head screw M5x12	For fitting pressure supply plate with profile strip		-
[7] Slot nuts	For fastening on the profile strip using clamps		-
[8] O-ring	For sealing		-
[9] Socket head screw M5x12	For fitting pressure supply plate with profile strip		-
[10] Socket head screw M4x16	For fitting the mounting plate to the slot nut		-
[11] Silencer	For mounting in exhaust ports		u
[12] Push-in fitting	For connecting tubing with standard O.D.		quick star

Peripherals

Additional supply



Accessories		→ Link
Type/order code	Description	
[1] Proportional pressure regulator	VPPE	-
[2] Additional supply (set)	For supplying compressed air (consists of compressed air supply plate, screws and seal)	18
[3] Socket head screw M6x20	For fitting pressure supply plate with slot nut	-
[4] O-ring	For sealing	-

Peripherals

Accessories		→ Link
Type/order code	Description	
[5] Slot nuts	For fastening on the profile strip using clamps	↗ -
[6] End plate (SET)	For sealing the profile strip (consists of an end plate, screws and seal)	17
[7] Profile strip	Standard profile strip as central air supply	17

Accessories

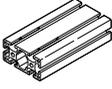
Connecting cable, straight

	Electrical connection 1, connector system	Cable length	Part no.	Type
	M12x1, A-coded to EN 61076-2-101	2.5 m	8078242	NEBA-M12G5-U-2.5-N-LE5
		5 m	8078243	NEBA-M12G5-U-5-N-LE5

Mounting plate set, consisting of: 1x mounting plate, 2x socket head screws M4X55, 2x socket head screws M4X16, 2x slot nut, 2x O-ring

	Product weight	Part no.	Type
	110 g	570966	VAME-P5-MK

Profile column (profile strip), made of aluminium, as central air supply, length: individually adjustable

	Mounting position	Part no.	Type
	optional	175964	HMBS-80/40- -

Set end plate closed, for sealing the profile strip, consisting of: 1x plate, 1x seal, 4x cylinder screws M5x12

	Product weight	Part no.	Type
	96 g	8021858	VABE-P5-C

Set pressure supply plate, with connecting thread G1/4, consisting of: 1x plate with connecting thread G1/4, 1x seal, 4x socket head screws M5x12

	Product weight	Part no.	Type
	85 g	8021861	VABF-P5-P3A3-G12
	87 g	8021860	VABF-P5-P3A3-G38
	88 g	8021859	VABF-P5-P3A3-G14

Pressure supply plate set, with connecting thread G3/8, consisting of: 1x plate with connecting thread G3/8, 1x seal, 4x socket head screws M5x12

	Product weight	Part no.	Type
	85 g	8021861	VABF-P5-P3A3-G12
	87 g	8021860	VABF-P5-P3A3-G38
	88 g	8021859	VABF-P5-P3A3-G14

Pressure supply plate set, with connecting thread G1/2, consisting of: 1x plate with connecting thread G1/2, 1x seal, 4x socket head screws M5x12

	Product weight	Part no.	Type
	85 g	8021861	VABF-P5-P3A3-G12
	87 g	8021860	VABF-P5-P3A3-G38
	88 g	8021859	VABF-P5-P3A3-G14

Additional supply set, with connecting thread G1/4, consisting of: 1x plate with G1/4 connection, 1x O-ring, 2x slot nut, 2x cylinder screws M6x20

	Product weight	Part no.	Type
	58 g	8021863	VABF-P5-P1A3-G38
	61 g	8021862	VABF-P5-P1A3-G14

Accessories

Additional supply set, with G3/8 connection, consisting of: 1x plate with G3/8 connecting thread, 1x O-ring, 2x slot nuts, 2x cylinder screws M6x20			
	Product weight	Part no.	Type
	58 g	8021863	VABF-P5-P1A3-G38
	61 g	8021862	VABF-P5-P1A3-G14