

Proportional pressure regulators VPPE

FESTO



Proportional pressure regulators VPPE

Product range overview

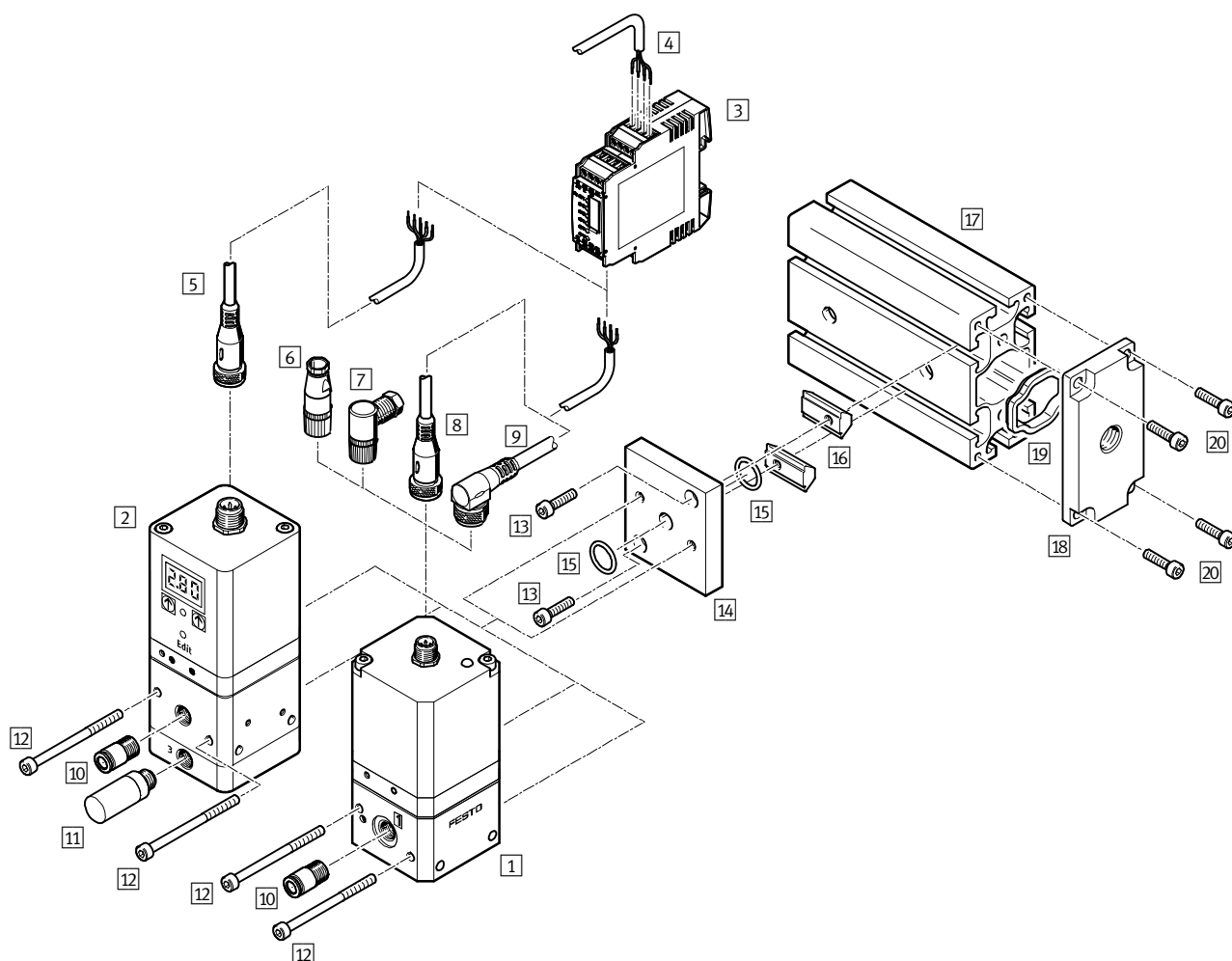
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Function	Version	Pneumatic connection	Nominal size for pressurisation/ exhaust [mm]	Pressure regulation range [bar]	Setpoint input		→ Page/ Internet
					Voltage type 0 ... 10 V	Current type 4 ... 20 mA	
Proportional pressure regulator	Without display						
		G1/8	5/2.5	0.15 ... 6	■	—	6
	With display						
		G1/8	5/2.5	0.02 ... 2	■	■	10
				0.06 ... 6			
0.1 ... 10							

Proportional pressure regulators VPPE

Peripherals overview

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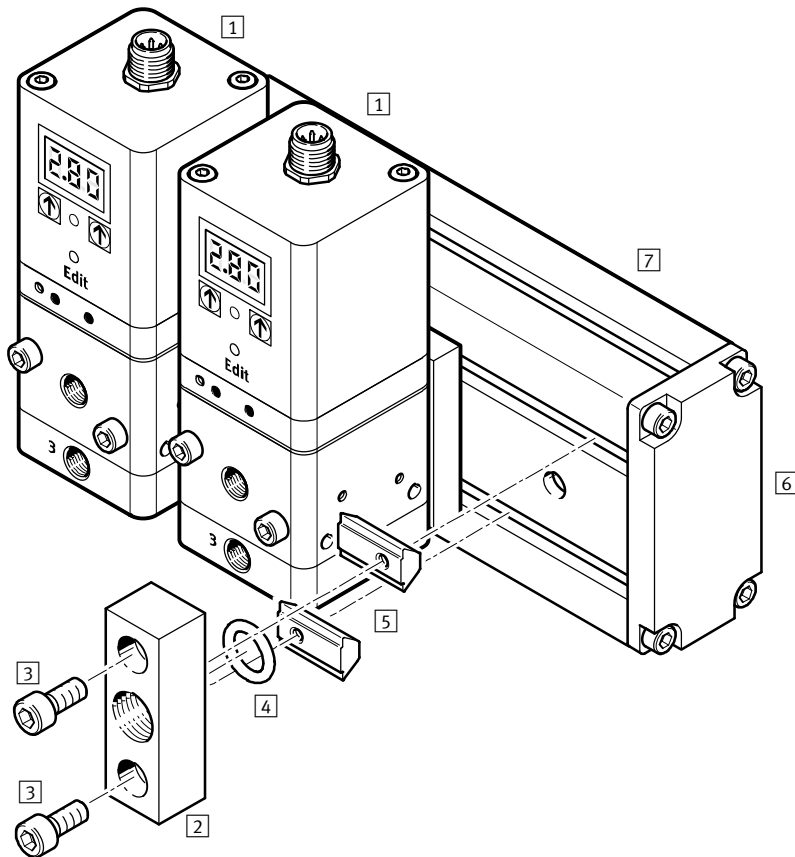


Accessories		Type	Brief description	→ Page/Internet
1	Prop. pressure regulator	VPPE...	–	8
2	Prop. pressure regulator with display	VPPE ... E1	–	13
3	Setpoint module	MPZ	For generating 6+1 analogue voltage signals	8, 13
4	Digital input/output	–	For actuating the setpoint module	–
5	Connecting cable	SIM-M12-5GD-...-PU	With straight plug socket for actuating the VPPE...E1	13
6	Plug socket	SIE-GD	Straight plug socket for actuating the VPPE	8
7	Plug socket	SIE-WD-TR	Angled plug socket for actuating the VPPE	8
8	Connecting cable	SIM-M12-4GD-5PU	With straight plug socket for actuating the VPPE	8
9	Connecting cable	SIM-M12-4WD-5PU	With angled plug socket for actuating the VPPE	8
10	Push-in fitting	QS	For connecting compressed air tubing with standard O.D.	quick star
11	Silencer	U	For fitting in exhaust ports	u
12	Socket head screw M4x55	–	For screwing the VPPE to the mounting plate	15
13	Socket head screw M4x16	–	For screwing the mounting plate to the slot nut	15
14	Mounting plate (set)	VAME-P5-MK	For attaching the VPPE to the mounting rail (consists of mounting plate, slot nuts, screws and seals)	15
15	O-ring	–	For sealing	15
16	Slot nuts	–	For clamp fitting components on the mounting rail	15
17	Mounting rail	–	Standard mounting rail as central air supply	15
18	Compressed air supply plate (set)	VABF-P5-P3A3...	For supplying compressed air (consists of compressed air supply plate, screws and seal)	15
19	Seal	–	–	15
20	Socket head screw M5x12	–	For screwing a compressed air supply plate to the mounting rail	15

Proportional pressure regulators VPPE

Peripherals overview – Additional power supply

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Accessories			
	Type	Brief description	→ Page/Internet
1	Prop. pressure regulator with display	VPPE ... E1	–
2	Additional power supply module (set)	VABF-P5-P1A3...	For supplying compressed air (consists of compressed air supply plate, screws and seal)
3	Socket head screw M6x20	–	For screwing a compressed air supply plate to the slot nut
4	O-ring	–	For sealing
5	Slot nuts	–	For clamp fitting components on the mounting rail
6	End plate (set)	VABE-P5-C	For sealing the mounting rail (consists of an end plate, screws and seal)
7	Mounting rail	IPM-PN-08-40x80-AL	Standard mounting rail as central air supply

Proportional pressure regulators VPPE without display

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Type codes

		VPPE	–	3	–	1/8	–	6	–	010
Type										
VPPE	Proportional pressure regulator with switching valve head									
Valve function										
3	3-way pressure regulator									
Pneumatic connection										
1/8	G1/8 female thread									
Pressure regulation range										
6	0.15 ... 6 bar									
Analogue setpoint input										
010	0 ... 10 V									

Proportional pressure regulators VPPE without display

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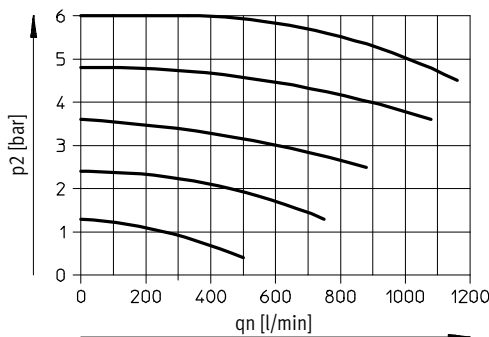
Technical data

-  Flow rate
850 l/min
 -  Voltage
21.6 ... 26.4 V DC
 -  Pressure regulation range
0.15 ... 6 bar
- Variants
- Setpoint input as analogue voltage
signal 0 ... 10 V



General technical data			
Pneumatic connection 1 and 2		G1/8	
Design, valve function		Piloted piston regulator, 3-way proportional pressure regulator, closed	
Sealing principle		Soft	
Actuation type		Electric	
Type of control		Piloted via 2/2-way valves	
Type of mounting		Via through-hole	
Mounting position		Any, preferably vertical	
Nominal size	Pressurisation	[mm]	5
	Exhaust	[mm]	2.5
Standard nominal flow rate		[l/min]	→ Graph
Product weight		[g]	445

Flow rate qn as a function of output pressure p2

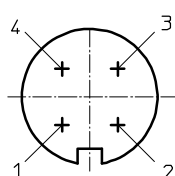


Note

Output pressure is maintained unregulated if the power supply cable is interrupted.

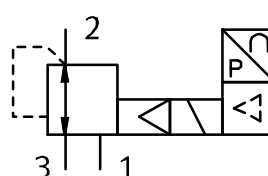
Electrical data	
Electrical connection	Plug, round design, 4-pin, M12x1
Operating voltage range	[V DC] 21.6 ... 26.4
Power supply indicator	LED
Residual ripple	[%] 10
Max. electrical power consumption	[W] 3.6
Max. current consumption	[mA] 150
Setpoint input signal	[V DC] 0 ... 10
Switching time on/off	[ms] 550/1300
Protection against short circuit/polarity reversal	For all electrical connections
Protection class	IP65

M12x1 – Pin allocation for VPPE



- 1 Supply
21.6 ... 26.4 V DC
- 2 Setpoint value (-)
- 3 GND (-)
- 4 Setpoint value (+) 0 ... 10 V DC

Circuit symbol



Proportional pressure regulators VPPE without display

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Technical data

Operating and environmental conditions	
Operating medium	Compressed air according to ISO 8573-1:2010 [7:4:4] Inert gases
Note on operating/pilot medium	Lubricated operation not possible
Supply pressure 1	[bar] 7 ... 8
Pressure regulation range	[bar] 0.15 ... 6
Max. pressure hysteresis	[bar] 0.15
Ambient temperature	[°C] 10 ... 50
Temperature of medium	[°C] 10 ... 50
Corrosion resistance class CRC ¹⁾	2
CE marking (see declaration of conformity)	In accordance with EU EMC Directive ²⁾
Certification	RCM trademark c UL us - Listed (OL)

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

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

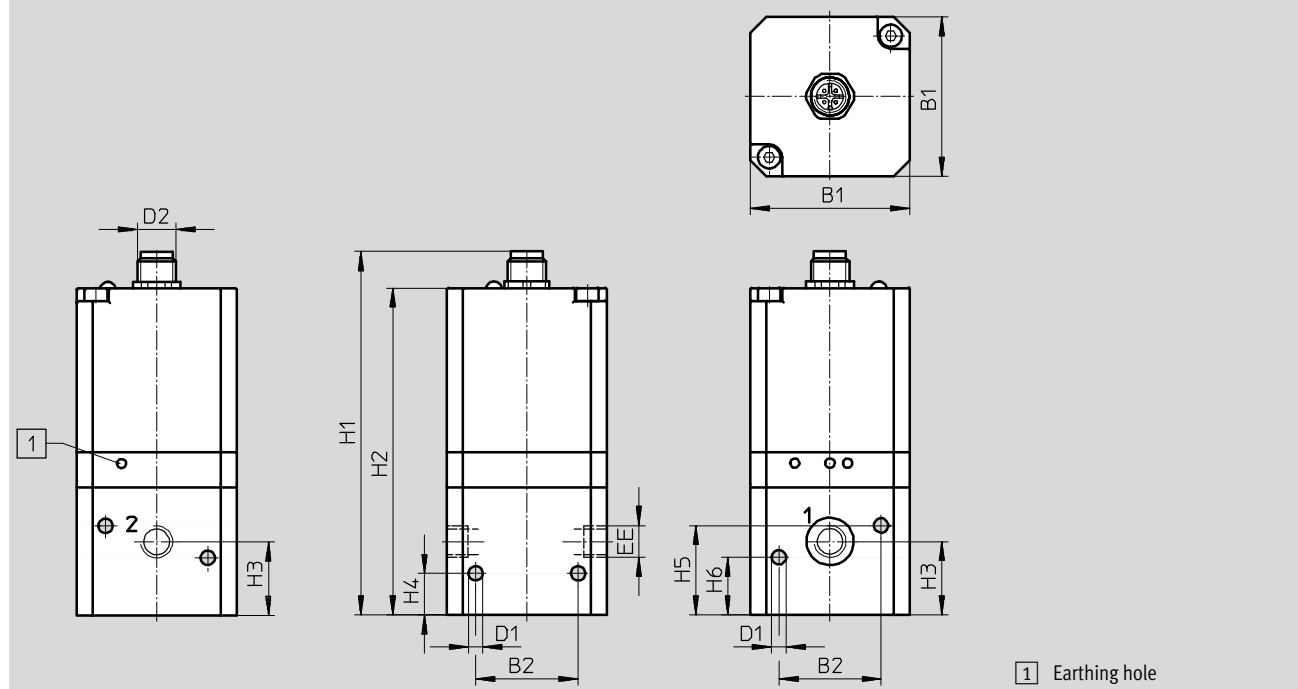
2) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp → User documentation.

If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Materials	
Housing	Wrought aluminium alloy
Diaphragm	NBR
Note on materials	RoHS-compliant

Dimensions

Download CAD data → www.festo.com

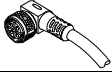
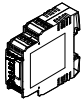


Type	B1	B2	∅ D1	D2	EE	H1	H2	H3	H4	H5	H6
VPPE-3-1/8-6-010	50	32	4.5	M12x1	G1/8	114	102	23	13	28	18

Proportional pressure regulators VPPE without display

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Ordering data

Ordering data		Part No.	Type
Proportional pressure regulator VPPE without display			
	- Pressure regulation range: 0 ... 6 bar - Pneumatic connection: G1/8	539639	VPPE-3-1/8-6-010
Plug socket with cable		Technical data → Internet: nebu	
	- Straight socket, M12x1, 5-pin - Open end, 4-wire, cable length 5 m	164259	SIM-M12-4GD-5-PU
	- Angled socket, M12x1, 5-pin - Open end, 4-wire, cable length 5 m	164258	SIM-M12-4WD-5-PU
Plug socket		Technical data → Internet: sie-gd	
	Straight socket, M12x1, 4-pin	18494	SIE-GD
	Angled socket, M12x1, 4-pin	12956	SIE-WD-TR
Setpoint module		Technical data → Internet: mpz	
	Setpoint module for generating 6 + 1 analogue voltage signals	546224	MPZ-1-24DC-SGH-6-SW

Proportional pressure regulators VPPE with display

Type codes

		VPPE	–	3	–	1	–	1/8	–	6	–	010	–	E1	T
Type															
VPPE	Proportional pressure regulator with switching valve head														
Directional control function															
3	3-way pressure regulator														
Valve function															
1	Normally closed														
Pneumatic connection															
1/8	G1/8 female thread														
Pressure regulation range															
2	0.02 ... 2 bar														
6	0.06 ... 6 bar														
10	0.1 ... 10 bar														
Analogue setpoint input															
010	0 ... 10 V														
420	4 ... 20 mA														
Operator unit															
E1	Segmented LED display														
Assembly															
–	In-line valve														
T	Common supply manifold assembly (mounting rail)														

Proportional pressure regulators VPPE with display

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Technical data

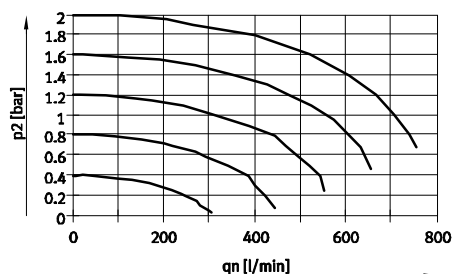
-  Flow rate
310 ... 1250 l/min
 -  Voltage
21.6 ... 26.4 V DC
 -  Pressure regulation range
0.02 ... 2 bar
0.06 ... 6 bar
0.1 ... 10 bar
- Variants
- Setpoint input as analogue voltage signal 0 ... 10 V
 - Setpoint input as analogue current signal 4 ... 20 mA
 - Assembly as in-line valve or on mounting rail
 - 3-digit LED display



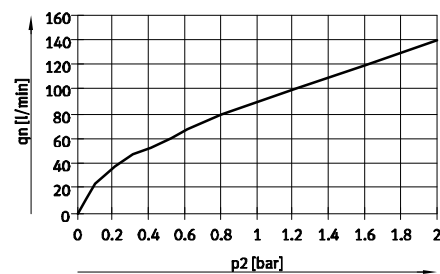
General technical data				
Pneumatic connection 1, 2, 3			G1/8	
Design, valve function			Piloted diaphragm regulator, 3-way proportional pressure regulator	
Sealing principle			Soft	
Actuation type			Electric	
Reset method			Mechanical spring	
Type of control			Piloted via 2/2-way valves	
Type of mounting			Via through-hole	
Mounting position			Any, preferably vertical	
Nominal size	Pressurisation	[mm]	5	
	Exhaust	[mm]	2.5	
Standard nominal flow rate			→ Graphs	
Product weight			390	

Flow rate q_n as a function of output pressure p_2

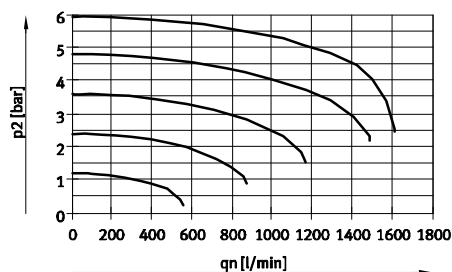
VPPE- ... -2- ... $q_n 1 \rightarrow 2$



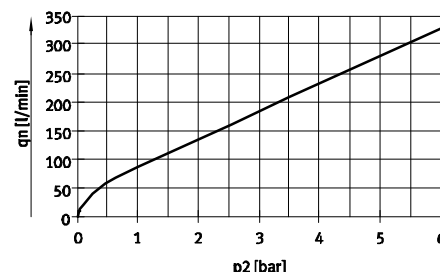
$q_n 2 \rightarrow 3$



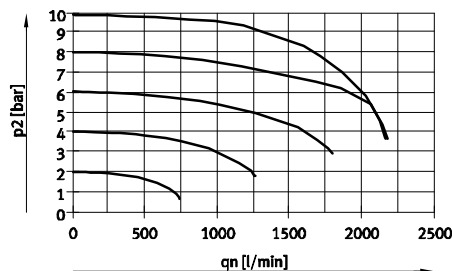
VPPE- ... -6- ... $q_n 1 \rightarrow 2$



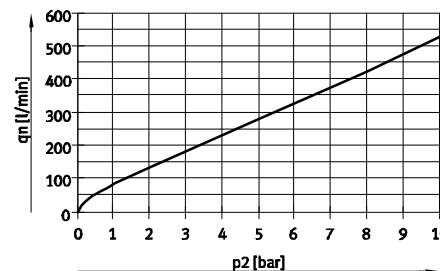
$q_n 2 \rightarrow 3$



VPPE- ... -10- ... $q_n 1 \rightarrow 2$



$q_n 2 \rightarrow 3$



Proportional pressure regulators VPPE with display

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Technical data

Electrical data			
Electrical connection		Plug, round design, 5-pin, M12x1	
Operating voltage range	[V DC]	21.6 ... 26.4	
Power supply indicator		LED	
Residual ripple	[%]	10	
Max. electrical power consumption		[W]	4.2
Analogue signal range	Voltage	[V DC]	0 ... 10
Output/input	Current	[mA]	4 ... 20
Protection against short circuit		For all electrical connections	
Switching output		PNP	
Protection against incorrect polarity		For all electrical connections	
Protection class		IP65	

Operating and environmental conditions			
Pressure regulation range	[bar]	0.02 ... 2	0.06 ... 6
Operating medium		Compressed air according to ISO 8573-1:2010 [7:4:4]	
		Inert gases	
Note on operating/pilot medium		Lubricated operation not possible	
Supply pressure 1 ¹⁾	[bar]	3 ... 4	6 ... 8
Max. pressure hysteresis	[mbar]	20	30
FS (full scale) linearity error	[%]	± 1	
FS (full scale) repetition accuracy	[%]	0.5	
Temperature coefficient	[%/K]	0.04	
Duty cycle	[%]	100	
Ambient temperature	[°C]	0 ... 60	
Temperature of medium	[°C]	10 ... 50	
Corrosion resistance class	[CRC]	2 ²⁾	
CE marking (see declaration of conformity)		To EU EMC Directive ³⁾	
Certification		RCM trademark	
		c UL us - Listed (OL)	

1) Supply pressure 1 should always be 1 bar greater than the maximum regulated output pressure.

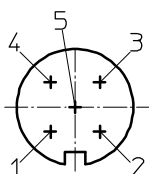
2) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

3) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp → User documentation.

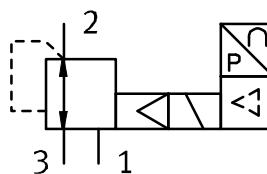
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Pin allocation for VPPE with display, M12x1



- 1 Supply
21.6 ... 26.4 V DC
- 2 Setpoint value (-)
- 3 GND (-)
- 4 Setpoint value (+) 0 ... 10 V DC /
4 ... 20 mA
- 5 Actual value output or switching
output (can be chosen via the
control panel)

Circuit symbol



Materials

Housing	Anodised wrought aluminium alloy
Note on materials	RoHS-compliant
	Free of copper and PTFE

- Note

Output pressure remains unregulated if the power supply cable is interrupted.

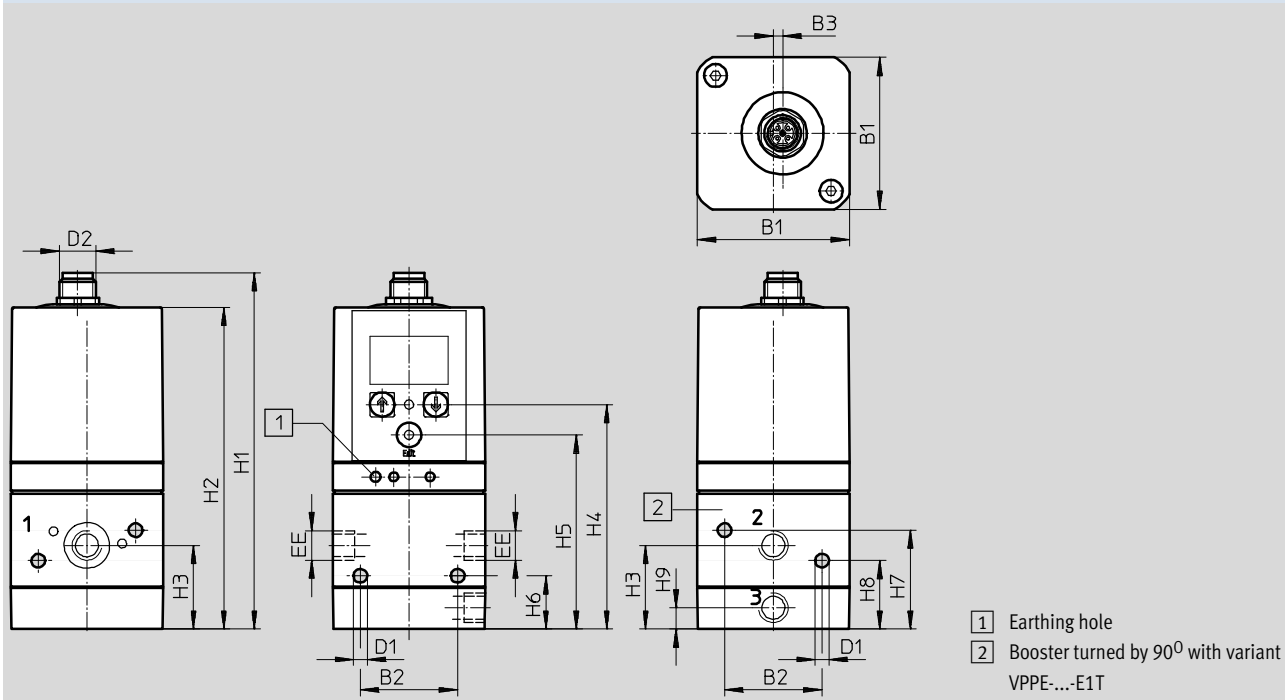
Proportional pressure regulators VPPE with display

Technical data

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Dimensions

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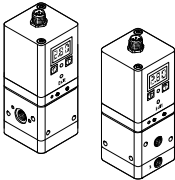
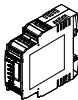


Type	B1	B2	B3	Ø D1	D2	EE	H1	H2	H3	H4	H5	H6	H7	H8	H9
VPPE-3-1/8- ... E1 ...	50	32	3.1	4.5	M12x1	G1/8	117.2	105.8	27.5	73.8	63.8	17.5	32.5	22.5	7

Proportional pressure regulators VPPE with display

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Ordering data

Ordering data				
	Description	Part No.	Type	
Proportional pressure regulator VPPE with display				
	Voltage type 0 ... 10 V			
	Pressure regulation range 0.02 ... 2 bar	557771	VPPE-3-1-1/8-2-010-E1	
		557777	VPPE-3-1-1/8-2-010-E1T	
	Pressure regulation range 0.06 ... 6 bar	557772	VPPE-3-1-1/8-6-010-E1	
		567539	VPPE-3-1-1/8-6-010-E1T	
	Pressure regulation range 0.1 ... 10 bar	557773	VPPE-3-1-1/8-10-010-E1	
		557778	VPPE-3-1-1/8-10-010-E1T	
	Current type 4 ... 20 mA			
	Pressure regulation range 0.02 ... 2 bar	557774	VPPE-3-1-1/8-2-420-E1	
		557779	VPPE-3-1-1/8-2-420-E1T	
	Pressure regulation range 0.06 ... 6 bar	557775	VPPE-3-1-1/8-6-420-E1	
		567540	VPPE-3-1-1/8-6-420-E1T	
	Pressure regulation range 0.1 ... 10 bar	557776	VPPE-3-1-1/8-10-420-E1	
		557780	VPPE-3-1-1/8-10-420-E1T	
Connecting cable				
	- Straight socket, M12x1, 5-pin - Open end, 5-wire	2.5 m	175715	SIM-M12-5GD-2,5-PU
		5 m	175716	SIM-M12-5GD-5-PU
Setpoint module				
	Setpoint module for generating 6 + 1 analogue voltage signals	546224	MPZ-1-24DC-SGH-6-SW	

Mounting rail for proportional pressure regulators VPPE

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Technical data

General

Design

Some selected types of the pressure regulator VPPE can be screwed to a mounting rail. This has the advantage that the mounting rail can be used to create a central compressed air supply.

The air can be fed into the mounting rail:

- at one end or
- at both ends through end plates,
- using an intermediate air supply module (in applications where an increased air rate is required).

The holes for the mounting rail must be drilled according to the assembly instructions. The pressure regulators VPPE are screwed to the mounting rail using the mounting plate. The end

plates are screwed to the left and right end faces of the mounting rail. See the assembly instructions for further information:

➔ Internet: vppe

Compressed air supply on the mounting rail

When using the mounting rail 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

E.g. with tubing Ø 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 ends – max. 10 valves
- With intermediate air supply module – max. 5 valves per module

-  - Note

- Intermediate air supply modules must always be centred on the mounting rail.
- Multiple intermediate air supply modules must be evenly distributed.

-  - Note

Only the following types of proportional pressure regulators VPPE can be mounted on mounting rails using a mounting plate:

- Valve VPPE with LED display, VPPE-3-1/8-6-010
- Valve VPPE with display and top part rotated by 90° VPPE- ... -E1T

Further information on mounting proportional pressure regulators VPPE as well as intermediate air supply

modules on mounting rails can be found in the assembly instructions: ➔ Internet: vppe

Mounting plate (set) materials

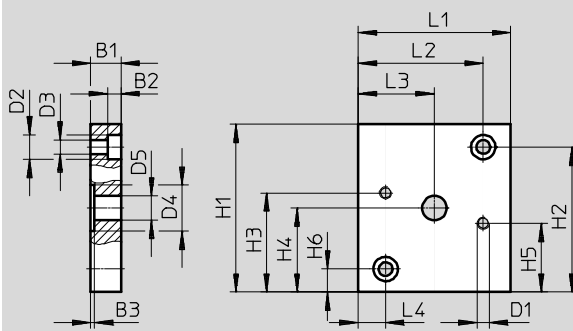
Plate	Wrought aluminium alloy
Seals	NBR
Screws	Steel
Note on materials	RoHS-compliant
Corrosion resistance class	[CRC] 2 ¹⁾

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

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Dimensions – Mounting plate

Download CAD data ➔ www.festo.com

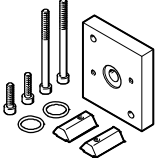
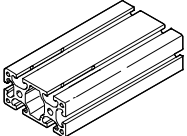
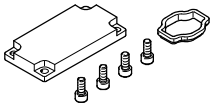
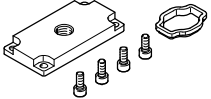
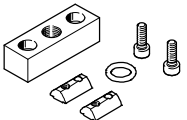


Type	B1	B2	B3	D1	Ø D2	Ø D3	Ø D4	Ø D5	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4
VAME-P5-MK	10	4.6	1.3	M4	8	4.5	15	8	55	47.5	32.5	27.5	22.5	7.5	50	41	25	9

Mounting rail for proportional pressure regulators VPPE

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Ordering data

Ordering data		Part No.	Type
Mounting plate set			
	Set, consisting of: • 1x mounting plate, weight: 110 g • 2x socket head screws M4X55 • 2x socket head screws M4X16 • 2x slot nuts • 2x O-rings	570966	VAME-P5-MK
Profile column (mounting rail)			
	Made from aluminium, as central air supply, length: individually adaptable	175964	HMBS-80/40- -
End plate set (closed)			
	For sealing the mounting rail, consisting of: • 1x plate • 1x seal • 4x socket head screws M5x12	8021858	VABE-P5-C
Compressed air supply plate set			
	With connecting thread G1/4, consisting of: • 1x plate with connecting thread G1/4 • 1x seal • 4x socket head screws M5x12	8021859	VABF-P5-P3A3-G14
	With connecting thread G3/8, consisting of: • 1x plate with connecting thread G3/8 • 1x seal • 4x socket head screws M5x12	8021860	VABF-P5-P3A3-G38
	With connecting thread G1/2, consisting of: • 1x plate with connecting thread G1/2 • 1x seal • 4x socket head screws M5x12	8021861	VABF-P5-P3A3-G12
Additional power supply module set			
	Connection G1/4, consisting of: • 1x plate with connecting thread G1/4 • 1x O-ring • 2x slot nuts • 2x socket head screws M6x20	8021862	VABF-P5-P1A3-G14
	Connection G3/8, consisting of: • 1x plate with connecting thread G3/8 • 1x O-ring • 2x slot nuts • 2x socket head screws M6x20	8021863	VABF-P5-P1A3-G38

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