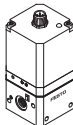
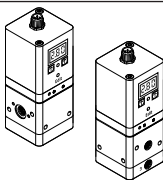


Proportional-pressure regulators VPPE

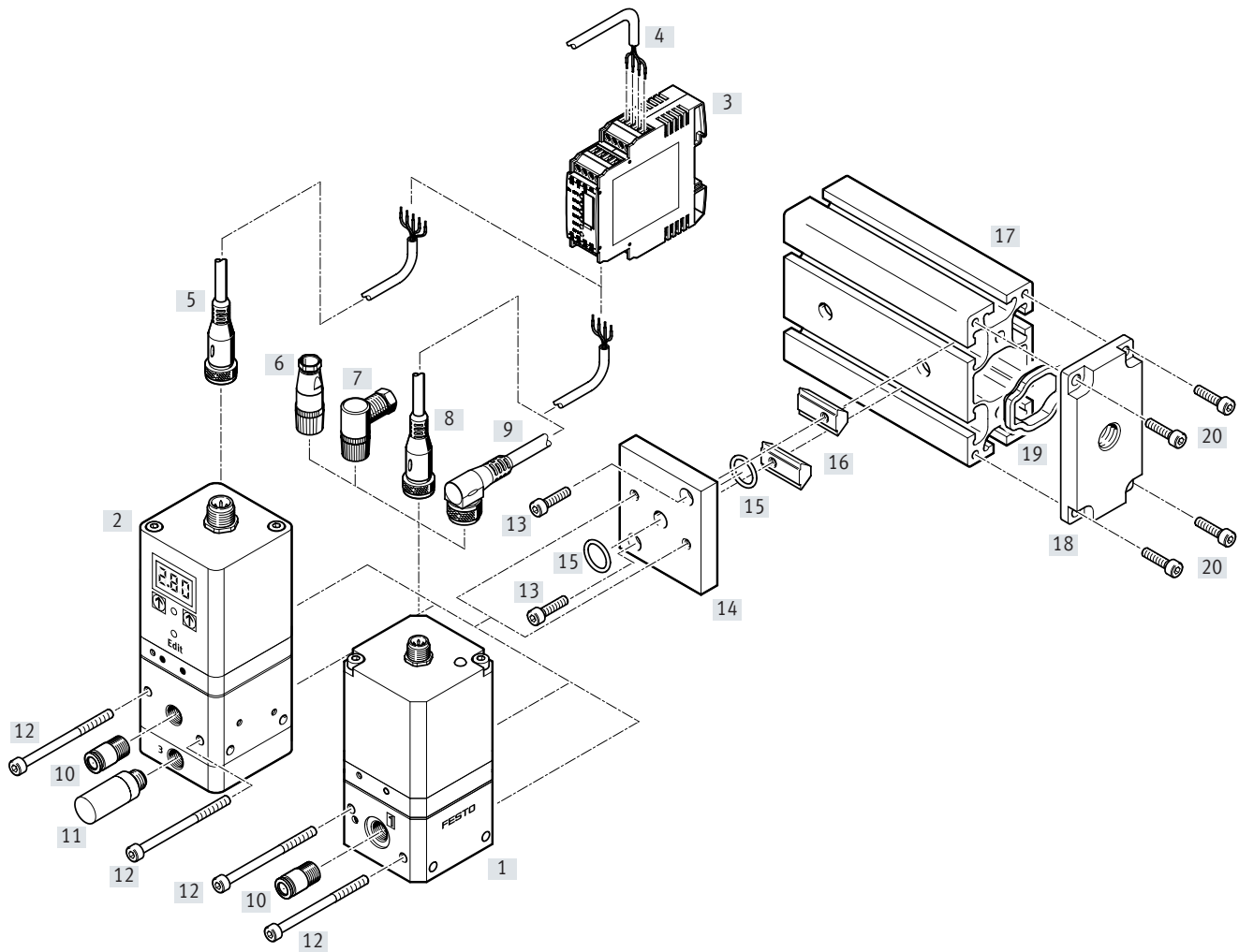
FESTO



Product range overview

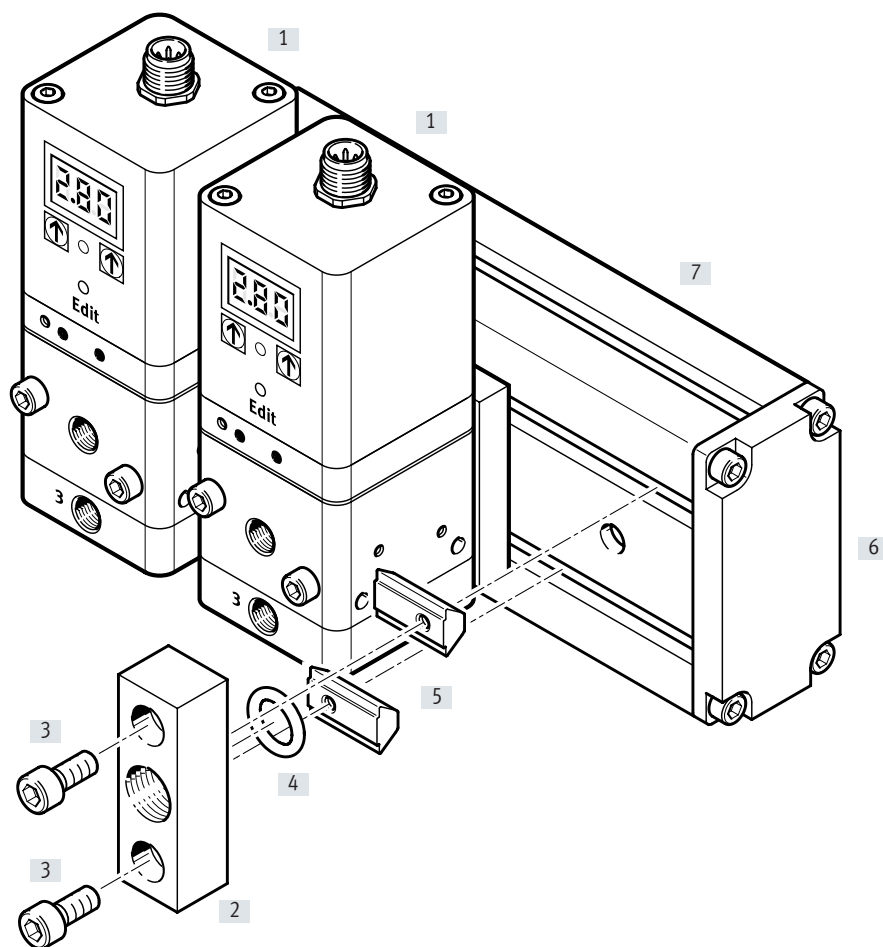
Function	Design	Pneumatic connection	Nominal width pressurisation/exhaust [mm]	Pressure regulation range		Setpoint input		→ Page/ Internet
				[MPa]	[bar]	Voltage type 0 ... 10 V	Current type 4 ... 20 mA	
Proportional- pressure regulator	Without display							
		G1/8	5/2.5	0.015 ... 0.6	0.15 ... 6	■	–	6
	With display							
		G1/8	5/2.5	0.002 ... 0.2 0.006 ... 0.6 0.01 ... 1	0.02 ... 2 0.06 ... 6 0.1 ... 10	■	■	11

Peripherals overview



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

Peripherals overview – Additional supply




Accessories		Type	Description	→ Page/Internet
[1]	Prop.-pressure regulator with display	VPPE ... E1	–	15
[2]	Additional supply (set)	VABF-P5-P1A3...	For supplying compressed air (consists of compressed air supply plate, screws and seal)	17
[3]	Socket head screw M6x20	–	For screwing the compressed air supply plate to the slot nut	17
[4]	O-ring	–	For sealing	17
[5]	Slot nuts	–	For clamp fastening on the profile strip	17
[6]	End plate (set)	VABE-P5-C	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


Type codes


001	Series	
VPPE	Proportional pressure regulator	
002	Valve function	
3	3-way proportional-pressure regulator, closed	
003	Pneumatic connection	
1/8	Female thread G1/8	

004	Pressure regulation range	
6	0.15 ... 6 bar	
005	Setpoint input for individual valves	
010	0 ... 10 V	

Data sheet

- 

Flow rate
850 l/min
- 

Voltage
21.6 ... 26.4 V DC
- 

Pressure regulation range
0.015 ... 0.6 MPa

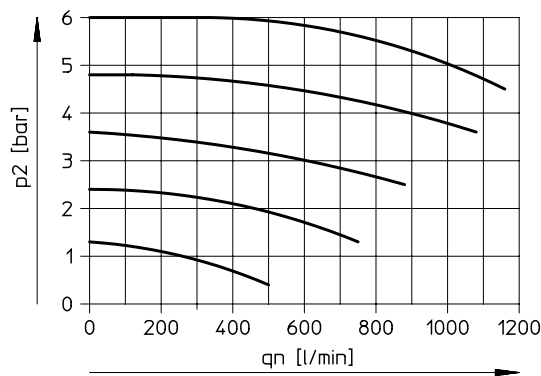
Variants


- 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 prop.-pressure regulator, closed	
Safety remark		Safety position VPPE	
Sealing principle		Soft	
Actuation type		Electrical	
Type of control		Piloted via 2/2-way valves	
Type of mounting		Via through-hole	
Mounting position		Any, preferably vertical	
Nominal width	Pressurisation	[mm]	5
	Exhaust	[mm]	2.5
Standard nominal flow rate		[l/min]	→ graph
Product weight		[g]	445

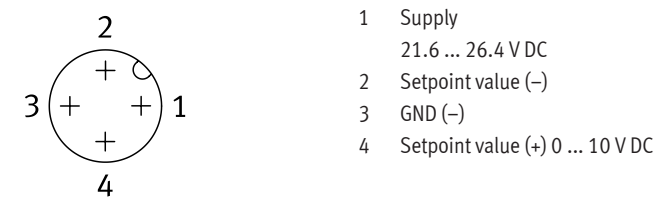
Flow rate qn as a function of output pressure p2



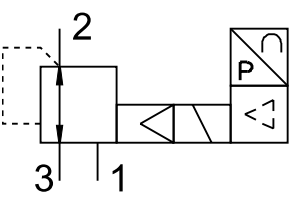
 **Note**
Output pressure remains unregulated if the power supply cable is interrupted.

Electrical data		
Electrical connection	Plug, round design, 4-pin, M12x1	
Operating voltage range	[V DC]	21.6 ... 26.4
Operating voltage 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]	55 0/1300
Short circuit current rating/reverse polarity protection	For all electrical connections	
Degree of protection	IP65	

M12x1 – Pin allocation for VPPE



Circuit symbol



Data sheet

Operating and environmental conditions		
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
		Inert gases
Note on the operating/pilot medium		Lubricated operation not possible
Operating pressure	[MPa]	0.8
	[bar]	≤ 8
Input pressure 1	[MPa]	0.6 ... 0.8
	[bar]	6 ... 8
Pressure regulation range	[MPa]	0.015 ... 0.6
	[bar]	0.15 ... 6
Max. pressure hysteresis	[MPa]	0.015
	[bar]	0.15
Hysteresis FS (full scale)	[%]	2.5
Linearity error FS (full scale)	[%]	1
Repetition accuracy FS (full scale)	[%]	0.5
Overall accuracy FS (full scale)	[%]	2.25
Temperature coefficient	[%/K]	0.04
Ambient temperature	[°C]	10 ... 50
Temperature of medium	[°C]	10 ... 50
Corrosion resistance class CRC ¹⁾		2
CE marking (see declaration of conformity)		To EU EMC Directive ²⁾
UKCA marking (see declaration of conformity)		To UK instructions for EMC
Certification		RCM
		c UL us listed (OL)

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

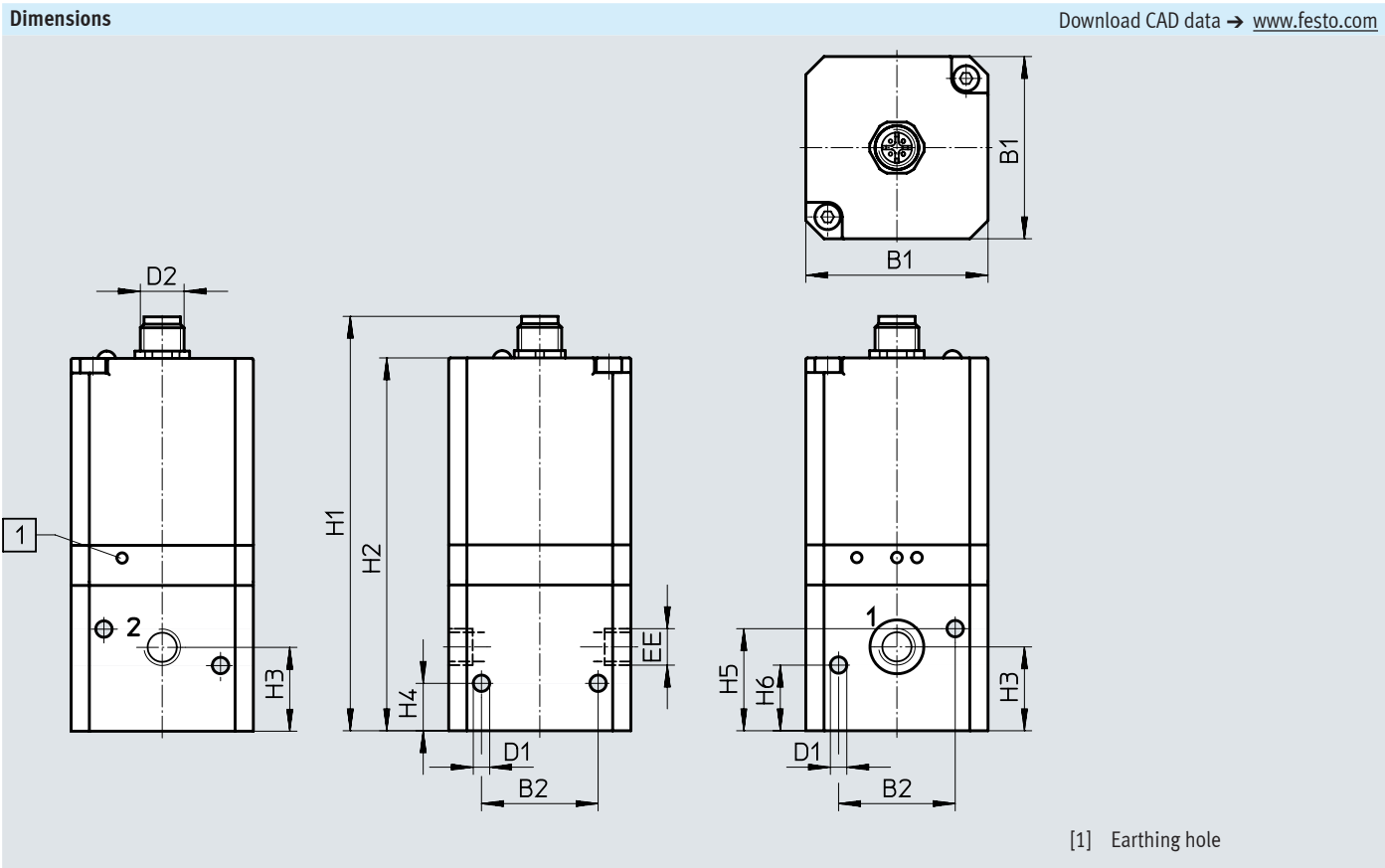
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

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.

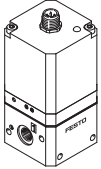
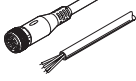
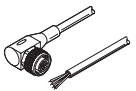
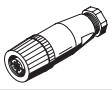

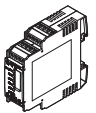
Materials	
Housing	Wrought aluminium alloy
Diaphragm	NBR
Note on materials	RoHS-compliant
PWIS conformity	VDMA24364-B2-L

Data sheet



Type	B1	B2	D1 Ø	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

Ordering data




Ordering data	Description	Part no.	Type
Proportional-pressure regulator VPPE without display			
	<ul style="list-style-type: none"> Pressure regulation range: 0.015 ... 0.6 MPa Pneumatic connection: G1/8 	539639	VPPE-3-1/8-6-010
Connecting cable			
	<ul style="list-style-type: none"> Straight socket, M12x1, 5-pin Open end, 4-wire, cable length 5 m 	164259	SIM-M12-4GD-5-PU
	<ul style="list-style-type: none"> Angled socket, M12x1, 5-pin Open end, 4-wire, cable length 5 m 	164258	SIM-M12-4WD-5-PU
Connection socket			
	Straight socket, M12x1, 4-pin	18494	SIE-GD
	Angled socket, M12x1, 4-pin	12956	SIE-WD-TR
Setpoint module			
	Setpoint module for generating 6 + 1 analogue voltage signals	546224	MPZ-1-24DC-SGH-6-SW

Type codes

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	
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	
007	Operator unit/interface	
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 facilities for the manufacture of lithium-ion batteries	

Data sheet

-  Flow rate
310 ... 1250 l/min
-  Voltage
21.6 ... 26.4 V DC
-  Pressure regulation ranges
0.002 ... 0.2 MPa
0.006 ... 0.6 MPa
0.01 ... 1 MPa

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 profile strip
- 3-digit LED display

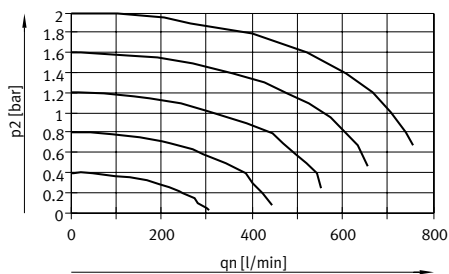
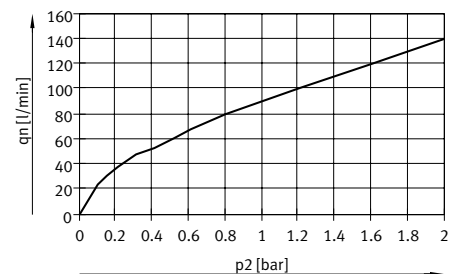


General technical data

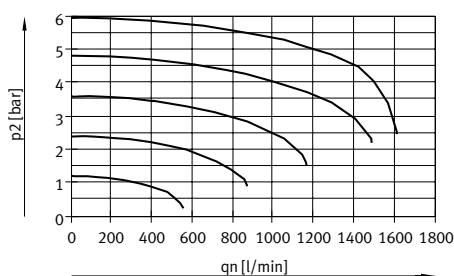
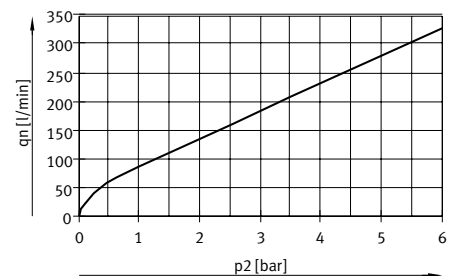
Pneumatic connection 1, 2, 3	G1/8		
Design, valve function	Piloted diaphragm regulator, 3-way prop.-pressure regulator		
Safety remark	Safety position VPPE		
Sealing principle	Soft		
Actuation type	Electrical		
Reset method	Mechanical spring		
Type of control	Piloted via 2/2-way valves		
Type of mounting	Via through-hole		
Mounting position	Any, preferably upright		
Nominal width	Pressurisation	[mm]	5
	Exhaust	[mm]	2.5
Standard nominal flow rate		[l/min]	→ graphs
Product weight		[g]	390

Flow rate q_n as a function of output pressure p_2

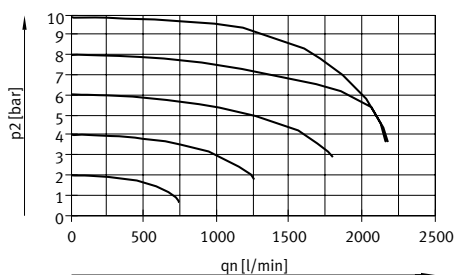
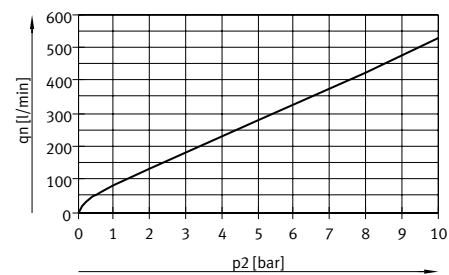
VPPE- ... -2- ...

 $q_n 1 \rightarrow 2$  $q_n 2 \rightarrow 3$ 

VPPE- ... -6- ...

 $q_n 1 \rightarrow 2$  $q_n 2 \rightarrow 3$ 

VPPE- ... -10- ...

 $q_n 1 \rightarrow 2$  $q_n 2 \rightarrow 3$ 

Data sheet

Electrical data				
Electrical connection		Plug, round design, 5-pin, M12x1		
Operating voltage range		[V DC]	21.6 ... 26.4	
Operating voltage indicator			LED	
Residual ripple		[%]	10	
Max. electrical power consumption		[W]	4.2	
Max. current consumption		[mA]	160	
Signal range for analogue output/input		Voltage	[V DC]	0 ... 10
		Current	[mA]	4 ... 20
Short circuit current rating			For all electrical connections	
Switching output			PNP	
Reverse-polarity protection			For all electrical connections	
Degree of protection			IP65	
Operating and environmental conditions				
Pressure regulation range		[MPa]	0.002 ... 0.2	0.006 ... 0.6
		[bar]	0.02 ... 2	0.06 ... 6
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]		
		Inert gases		
Note on the operating/pilot medium		Lubricated operation not possible		
Input pressure 1 ¹⁾		[MPa]	0.3 ... 0.4	0.6 ... 0.8
		[bar]	3 ... 4	6 ... 8
Max. pressure hysteresis		[MPa]	0.002	0.003
		[bar]	0.02	0.03
Hysteresis FS (full scale)		[%]	1	0.5
Linearity error FS (full scale)		[%]	1	
Repetition accuracy FS (full scale)		[%]	0.5	
Overall accuracy FS (full scale)		[%]	1.5	1.25
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⁾		
UKCA marking (see declaration of conformity)		To UK instructions for EMC		
Certification		RCM		
		c UL us listed (OL)		

1) Input 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

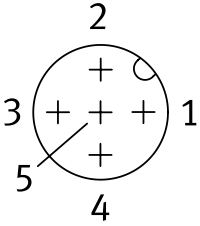
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

3) 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.

Data sheet

Pin allocation for VPPE with display, M12x1



1

Supply
21.6 ... 26.4 V DC

2

Setpoint value (-)

3

GND (-)

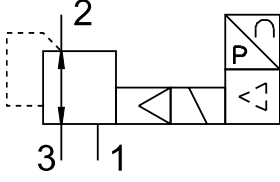
4

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


5

Actual value output or switching
output (can be selected on the
operator panel)

Circuit symbol



Materials	
Housing	Anodised wrought aluminium alloy
Note on materials	RoHS-compliant
	Free of copper and PTFE
PWIS conformity	VDMA24364-B2-L

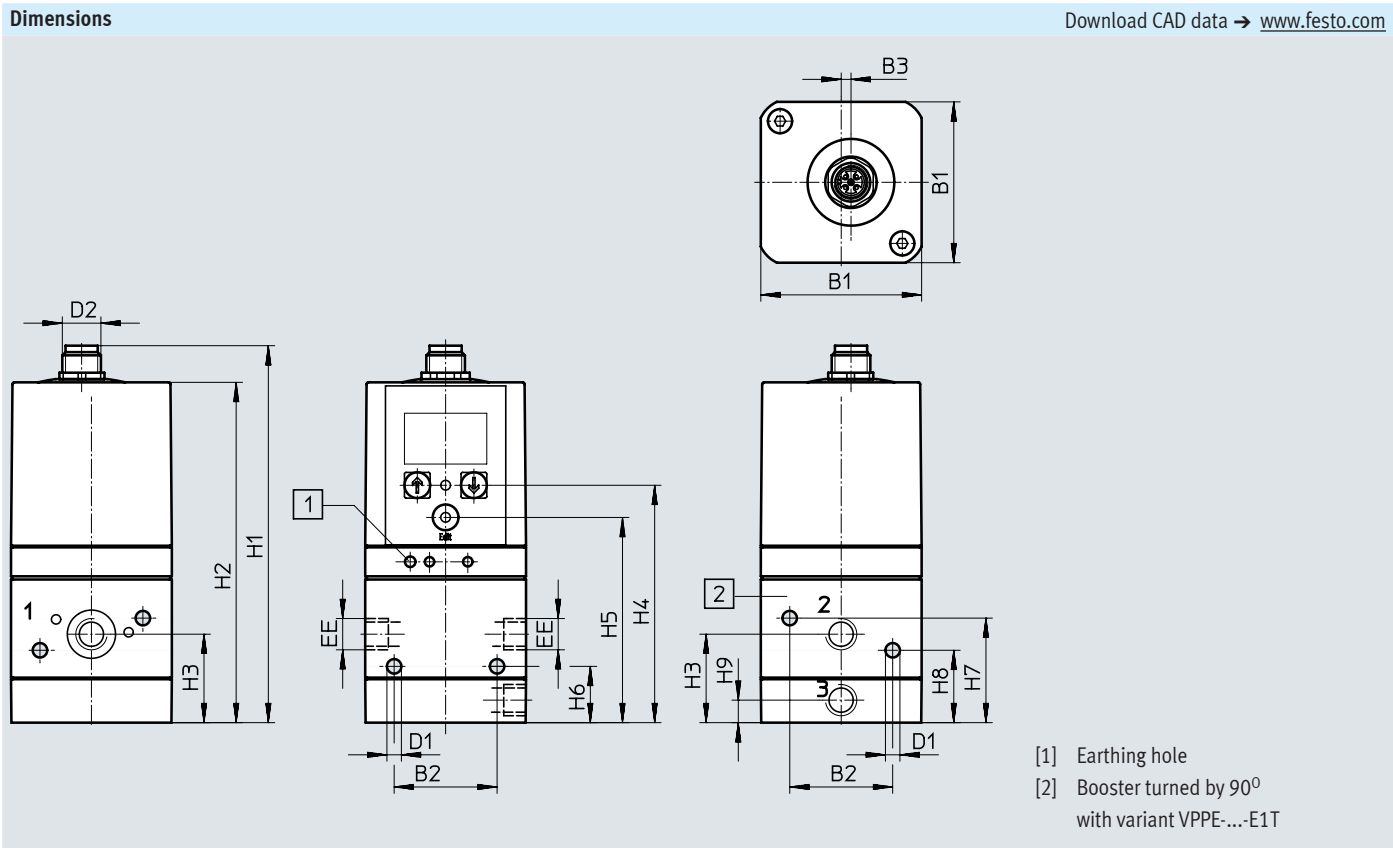
 **Note**
Output pressure remains unregulated if the supply cable is interrupted.

2022/01 – Subject to change

→ Internet: www.festo.com/catalogue/...

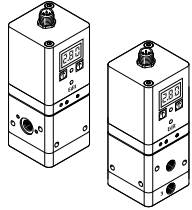
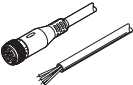
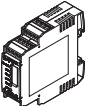
13

Data sheet



Type	B1	B2	B3	@ 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

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	In-line valve	557771	VPPE-3-1-1/8-2-010-E1
		P manifold rail	557777	VPPE-3-1-1/8-2-010-E1T
	Pressure regulation range 0.06 ... 6 bar	In-line valve	557772	VPPE-3-1-1/8-6-010-E1
		P manifold rail	567539	VPPE-3-1-1/8-6-010-E1T
	Pressure regulation range 0.1 ... 10 bar	In-line valve	557773	VPPE-3-1-1/8-10-010-E1
		P manifold rail	557778	VPPE-3-1-1/8-10-010-E1T
	Current type 4 ... 20 mA			
	Pressure regulation range 0.02 ... 2 bar	In-line valve	557774	VPPE-3-1-1/8-2-420-E1
		P manifold rail	557779	VPPE-3-1-1/8-2-420-E1T
	Pressure regulation range 0.06 ... 6 bar	In-line valve	557775	VPPE-3-1-1/8-6-420-E1
		P manifold rail	567540	VPPE-3-1-1/8-6-420-E1T
	Pressure regulation range 0.1 ... 10 bar	In-line valve	557776	VPPE-3-1-1/8-10-420-E1
		P manifold rail	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

Data sheet

General information

Design

Some selected types of the pressure regulator VPPE can be screwed to 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 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 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 left and right end faces of the profile strip. 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 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 each

Note

- Intermediate air supply modules must always be centred on the profile strip.
- Multiple intermediate air 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 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 profile strips can be found in the assembly instructions:

→ Internet: vppe

Mounting plate (set) materials

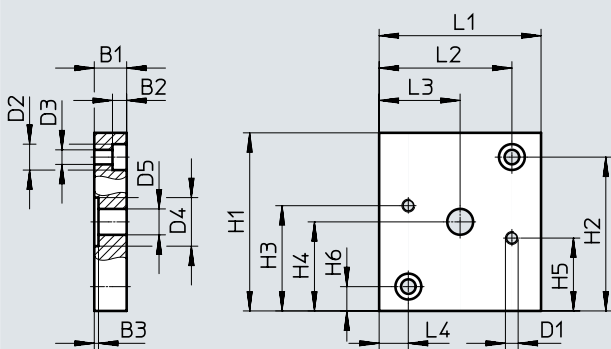
Plate	Wrought aluminium alloy
Seals	NBR
Screws	Steel
Note on materials	RoHS-compliant
Corrosion resistance class	[CRC] 2 ¹⁾

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

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

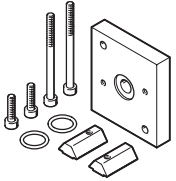
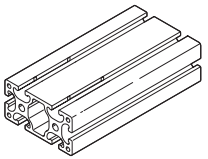
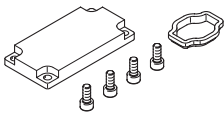
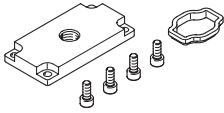
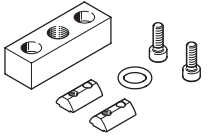
Mounting plate dimensions

Download CAD data → www.festo.com



Type	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

Ordering data	Description	Part no.	Type
Mounting plate set			
	Set comprising: <ul style="list-style-type: none"> • 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 (profile strip)			
	Made from aluminium, as central air supply, length: individually adaptable	175964	HMBS-8 0/40- -
End plate set (closed)			
	For sealing the profile strip, consisting of: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 1x plate with connecting thread G1/2 • 1x seal • 4x socket head screws M5x12 	8021861	VABF-P5-P3A3-G12
Additional supply set			
	Connection G1/4, consisting of: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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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