

Mass flow controller VEMD

FESTO



Characteristics

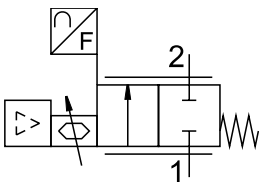
At a glance Link [vemd](#)

- Operating mode:
- The VEMD is a mass flow controller with integrated proportional valve. The flow rate is controlled using a closed loop control with integrated thermal sensor.
 - The setpoint value for the flow rate can be specified using an analogue or digital interface, and the actual value is reported back in the same way.

- Range of applications:
- The proportional flow control valve VEMD is intended to control a flow of air and inert gases proportionally to a specified setpoint value.
 - The flow control valve is suitable for use in medical technology within the specified technical characteristics.
 - Additional measures, for example with regard to hygiene and sterility, may be required for applications with special requirements.

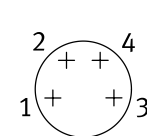
Valve function

[6] 2/2-way valve, normally closed



Nominal width

[14] 1.4 mm



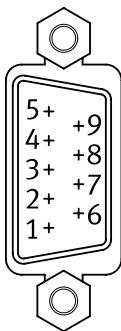
Pin assignment for VEMD-L-6-14-20-D21-M5-1-R1-V4:

- Pin 1: +24 V DC supply voltage
- Pin 2: + setpoint value 0.2 ... 10 V
- Pin 3: GND
- Pin 4: + actual value 0.2 ... 10 V

Pin assignment for VEMD-L-6-14-20-D21-M5-5-R1-V4:

- Pin 1: +12 V DC supply voltage
- Pin 2, 3 and 4 identical to the pin assignment of VEMD-L-6-14-20-D21-M5-1-R1-V4

[60] 6 mm



- Pin 1: GND
- Pin 2: +24 V DC supply voltage
- Pin 3: RS232 RX external
- Pin 4: RS232 TX external
- Pin 5: RS485-P external
- Pin 6: Analogue input (IN)
- Pin 7: Analogue output (OUT)
- Pin 8: GND analogue
- Pin 9: RS485-N external

Characteristics

Display

The mass flow controller VEMD with a nominal diameter of 6 mm is available with or without a display.

[]	None	[D]	Display
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Diagrams

Link [vemd](#)



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

Type code

001	Series	
VEMD	Mass flow controller	
002	Variant	
	Plug and play	
003	Directional control valve type	
L	In-line valve	
004	Valve function	
6	2/2-way valve, normally closed	
005	Nominal width	
14	1.4 mm	
60	6 mm	
006	Flow rate range	
20	20 l/min	
50	50 l/min	
100	100 l/min	
200	200 l/min	
007	Pressure range [bar]	
D9	0 ... 6	
D21	0 ... 2.5	

008	Pneumatic connection	
G14	G1/4	
M5	M5	
009	Nominal operating voltage	
1	24 V DC	
5	12 V DC	
5Y	12 V DC to 26 V DC	
010	Bus protocol/activation	
	None	
MP	Multiprotocol	
011	Electrical connection	
M1	Multi-pin with SUB-D plug	
R1	Individual connector M8, 4-pin	
012	Display	
	None	
D	Display	
013	Setpoint input for individual valves	
VA	0 ... 10 V and 4 ... 20 mA	
V4	0.2 ... 10 V	

Datasheet

General technical data, nominal width 1.4 mm



Flow rate control range ¹⁾	0 ... 20 l/min
Valve function	2-way proportional flow control valve
Dimensions (W x L x H)	37 x 70 x 31 mm
Nominal size	1.4 mm
Pneumatic connection, port 1	Female thread M5
Pneumatic connection, port 2	Female thread M5
Type of mounting	Direct mounting via thread
Mounting position	optional
Flow direction	Non-reversible
Product weight	92 g
Size	10

¹⁾ The flow rate is calibrated at the factory to the physical standard conditions in accordance with DIN 1343 (1013 mbar, 0 °C)

Electrical data, nominal width 1.4 mm

Flow rate control range	0 ... 20 l/min	
Nominal operating voltage DC	12 V	24 V
Electrical connection	4-pin M8x1 A-encoded to EN 61076-2-104 Plugs	
Operational voltage range DC	11.1 ... 13.2 V	22 ... 26.4 V
Signal range analogue input	0.2 - 10 V	
Signal range analogue output	0.2 - 10 V	
Setpoint value	0.2 - 10 V	
Max. electrical power consumption	1 W	
Max. current consumption	65 mA	40 mA
Duty cycle	100%	
Reverse polarity protection	For operating voltage connections	
Degree of protection	IP40	
Note on degree of protection	IP51 with horizontal installation	

Datasheet

Operating and environmental conditions, nominal width 1.4 mm

Flow rate control range	0 ... 20 l/min
Operating pressure ¹⁾	0 ... 0.25 MPa
Operating pressure ²⁾	0 ... 2.5 bar
Overload pressure	0.6 MPa
Overload pressure	6 bar
Burst pressure	1 MPa
Burst pressure	10 bar
Medium	Argon Compressed air to ISO 8573-1:2010 [5:4:1] Carbon dioxide Oxygen (oxygen applications to IEC 60601-1 only on request) Nitrogen
Note on the medium	Lubricated operation not possible
Environmental conditions	Not suitable for use in an environment enriched with oxygen to IEC 60601-1
Special characteristics	Oxygen-compatible to DIN EN 1797
Accuracy of flow rate	± (4% o.m.v. + 1.25% FS)
Repetition accuracy in ± %FS	1 %FS
Hysteresis in ± %FS	2.5 %FS
Linearity error in ± %FS	2%
Temperature coefficient	0.1 %/K
Ambient temperature	0 ... 50°C
Media temperature	5 ... 40°C
Storage temperature	-20 ... 70°C
Approval	RCM trademark
Conforms to standard	EN 61000-6-2 (EMC) EN 61000-6-3 (EMC)
CE mark (see declaration of conformity) ³⁾	To EU EMC Directive In accordance with EU RoHS Directive
UKCA marking (see declaration of conformity) ⁴⁾	To UK instructions for EMC To UK RoHS instructions
KC mark	KC-EMV

1) For input pressures above 0,4 MPa and low flow rates:

Do not use components that reflect pressure waves in the pneumatic laminar flow inlet.

The reflection of pressure waves can cause vibrations in the system and deviations in the accuracy of the product.

2) For input pressures above 4 bar and low flow rates:

Do not use components that reflect pressure waves in the pneumatic laminar flow inlet.

The reflection of pressure waves can cause vibrations in the system and deviations in the accuracy of the product.

3) For information about the area of use, see the declaration of conformity at: [www.festo.com/catalogue/... d Support/Downloads](http://www.festo.com/catalogue/...d/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.

4) For information about the area of use, see the declaration of conformity at: [www.festo.com/catalogue/... d Support/Downloads](http://www.festo.com/catalogue/...d/Support/Downloads).

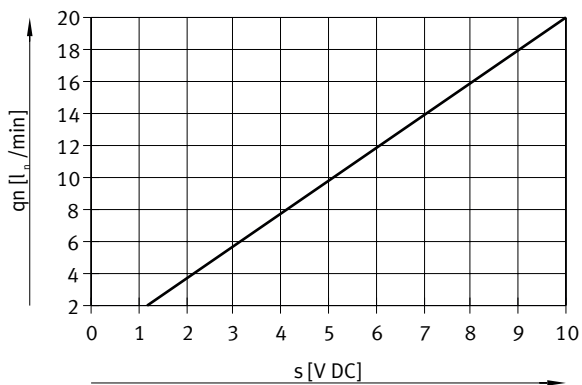
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Materials, nominal width 1.4 mm

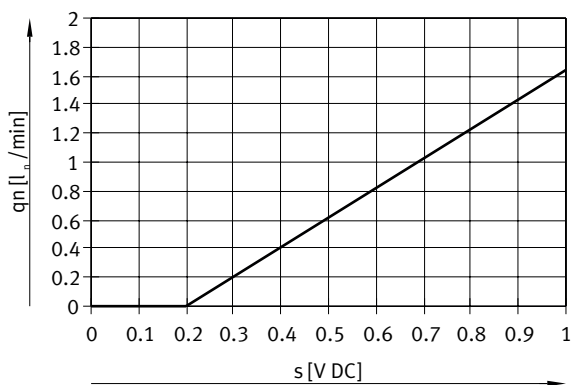
Flow rate control range	0 ... 20 l/min
Material seals	EPDM NBR
Material cover	PA-reinforced
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364 zone III

Datasheet

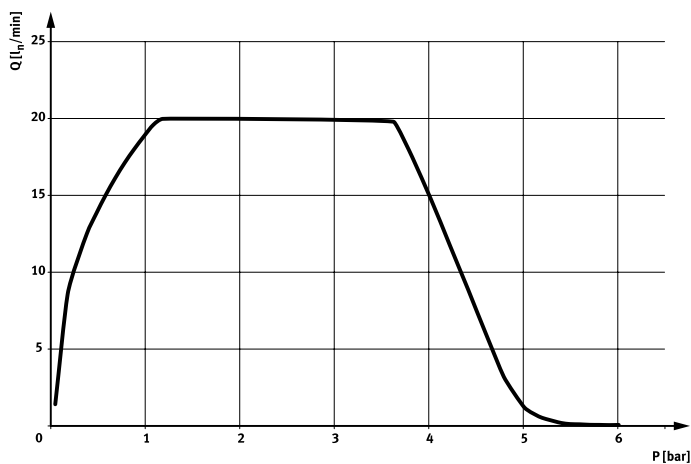
Flow rate q_n as a function of setpoint value s , total value range, nominal width 1.4 mm



Flow rate q_n as a function of setpoint value s , detail range, nominal width 1.4 mm



Maximum flow rate above operating pressure, at room temperature, nominal width 1.4 mm



Datasheet

General technical data, nominal width 6 mm



Flow rate control range ¹⁾	4 ... 200 l/min	1 ... 50 l/min	2 ... 100 l/min
Valve function	2-way proportional flow control valve		
Dimensions (W x L x H)	116 mm x 38 mm x 124 mm		
Nominal size	6 mm		
Pneumatic connection, port 1	Female thread G1/4		
Pneumatic connection, port 2	Female thread G1/4		
Type of mounting	Direct mounting via through-hole Mounting plate, attached with screws On H-rail via accessories Screw-clamped Via through-hole for M4 screw		
Mounting position	optional		
Flow direction	Non-reversible		
Product weight	630 g		
Size	100		

¹⁾ The flow is calibrated at the factory to the physical standard conditions in accordance with DIN 1343 (1013 mbar, 0°C)

Electrical data, nominal width 6 mm

Flow rate control range	4 ... 200 l/min	1 ... 50 l/min	2 ... 100 l/min
Nominal operating voltage DC	24 V		
Operational voltage range DC	12 ... 24 V		
Signal range analogue input	0 - 10 V 4 - 20 mA 1 - 5 V		
Signal range analogue output	0 - 10 V 1 - 5 V 4 - 20 mA		
Setpoint value	4 - 20 mA 0 - 10 V 1 - 5 V Modbus®		
Max. electrical power consumption	8.5 W		
Duty cycle	100%		
Reverse polarity protection	For operating voltage connections		
Degree of protection	IP40		

Datasheet

Operating and environmental conditions, nominal width 6 mm

Flow rate control range	4 ... 200 l/min	1 ... 50 l/min	2 ... 100 l/min
Nominal operating pressure	0.3 MPa		
Nominal operating pressure	3 bar		
Nominal operating pressure	43.5 psi		
Operating pressure	0.1 ... 0.6 MPa		
Operating pressure	1 ... 6 bar		
Note on operating pressure	For input pressures above 0.4 MPa (4 bar, 58 psi) and low flow rates: avoid components in the laminar flow inlet that reflect pressure waves. The reflection of pressure waves can lead to vibrations in the system and to accuracy deviations in the product.		
Overload pressure	0.8 MPa		
Overload pressure	8 bar		
Burst pressure	1.8 MPa		
Burst pressure	18 bar		
Environmental conditions	Not suitable for use in an environment enriched with oxygen to IEC 60601-1 Cleanest possible ambient air Dry		
Accuracy of flow rate	± (1.3% read + 0.7% FS)		
Repetition accuracy of flow rate	± (0.25% o.m.v. + 0.25% FS)		
Ambient temperature	5 ... 40°C		
Media temperature	5 ... 40°C		
Storage temperature	-20 ... 70°C		
Approval	C-Tick RCM trademark c UL us listed (OL)		
Conforms to standard	IEC 61010-1 ISO 15001		
CE mark (see declaration of conformity) ¹⁾	To EU EMC Directive In accordance with EU RoHS Directive		
UKCA marking (see declaration of conformity) ²⁾	To UK instructions for EMC To UK RoHS instructions		
KC mark	KC-EMV		

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

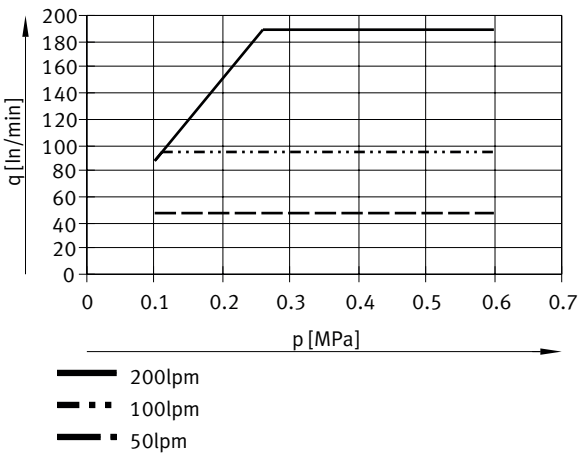
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Materials, nominal width 6 mm

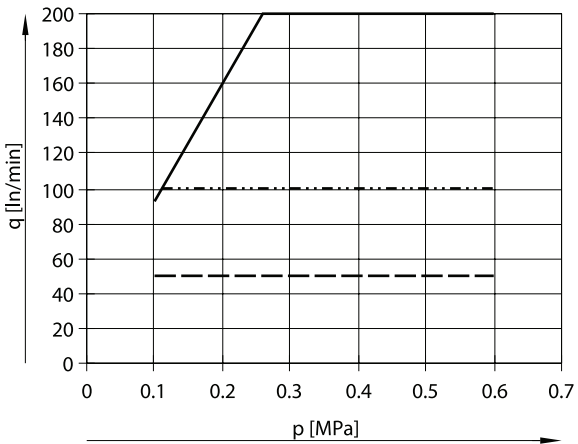
Flow rate control range	4 ... 200 l/min	1 ... 50 l/min	2 ... 100 l/min
Material seals	EPDM FPM		
Note on materials	RoHS-compliant		
LABS (PWIS) conformity	VDMA24364 zone III		

Datasheet

Maximum flow rate in relation to input pressure, at room temperature, nominal width 6 mm, air



Maximum flow rate in relation to input pressure, at room temperature, nominal width 6 mm, N2



Datasheet

Gas conversion, nominal width 6 mm

Maximum flow rates for the different gases:

VEMD-...-50:

- N₂: 50 l/min
- Q: 124.98 bar
- Air: 96.7 bar
- AR: 70.1 bar
- CO₂: 63.7 l/min
- O₂: 87.5 l/min

VEMD-...-100:

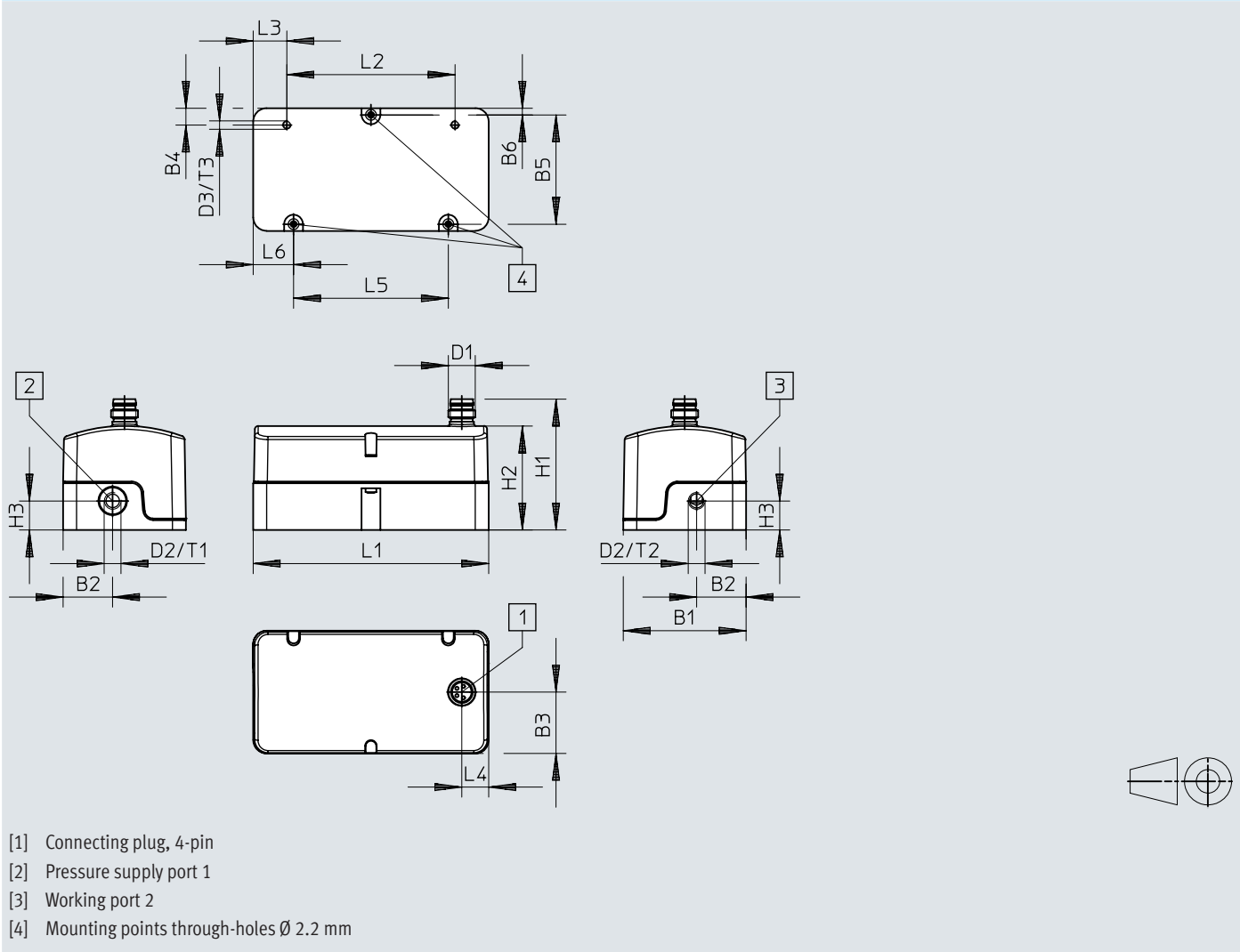
- N₂: 100 l/min
- Q: 124.98 bar
- Air: 96.7 bar
- AR: 70.1 bar
- CO₂: 63.7 l/min
- O₂: 87.5 l/min

VEMD-...-200:

- N₂: 200 l/min
- Q: 124.98 bar
- Air: 96.7 bar
- AR: 70.1 bar
- CO₂: 63.7 l/min
- O₂: 87.5 l/min

Dimensions

Dimensions – Mass flow controller VEMD, nominal width 1.4 mm Download CAD data www.festo.com



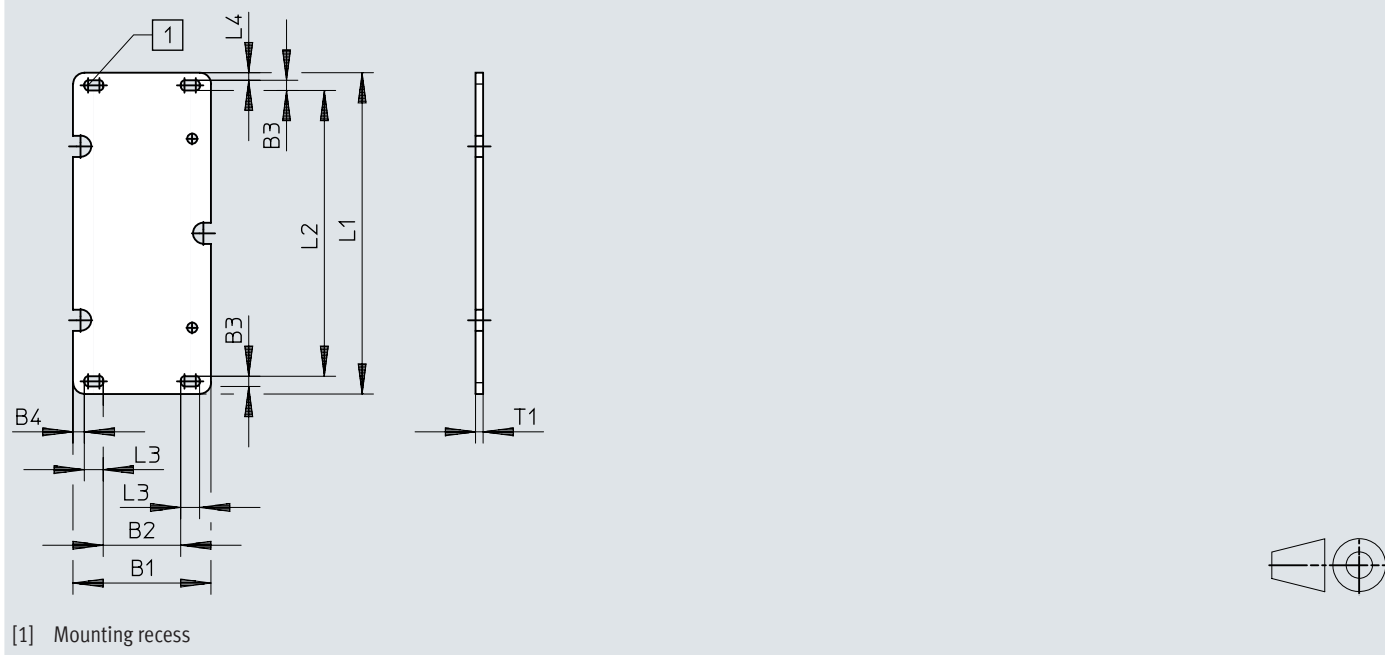
	B1	B2	B3	B4	B5	B6	D1	D2	D3
VEMD	36,5	14,7	18,3	5	32,5	2	M8x1	M5	M2,5

	H1	H2	H3	L1	L2	L3	L4	L5	L6	T1	T2	T3
VEMD	38,9	30,9	8,6	70	50	10	8	46	12	8	5	5

Dimensions

Dimensions – Wall mounting VAME-P14-W

Download CAD data www.festo.com

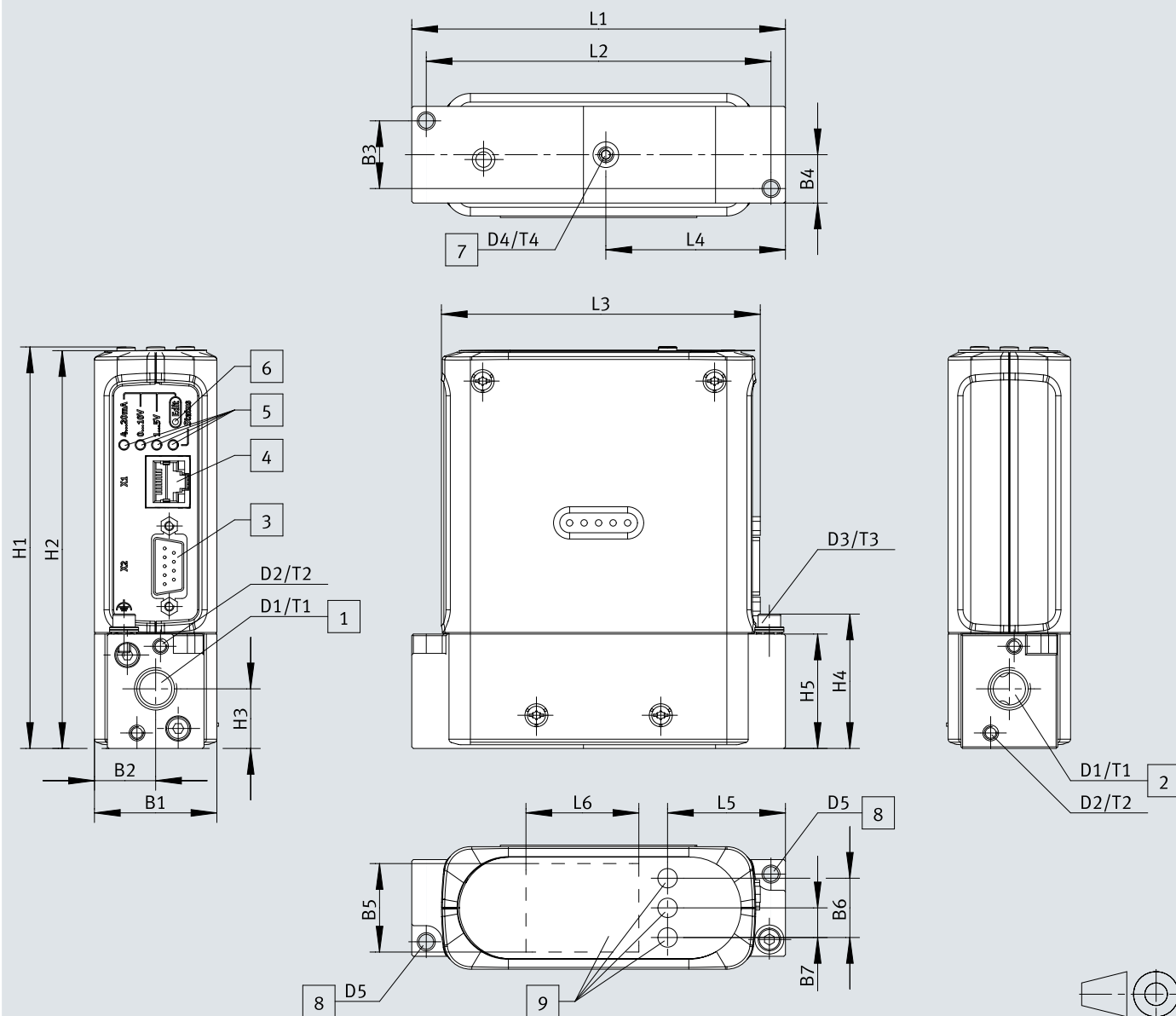


	B1	B2	B3	B4	L1	L2	L3	L4	T1
VAME-P14-W	36,5	20,5	2,7	3	85	75,6	5	2	2

Dimensions

Dimensions – Proportional flow control valve VEMD, nominal width 6 mm

Download CAD data www.festo.com



- [1] Exhaust air/pneumatic output
- [2] Working air/pneumatic input
- [3] Sub-D connection
- [4] RJ45 connection (Ethernet)
- [5] LED indicator
- [6] Analogue input setting button
- [7] H-rail connection
- [8] Connection for wall mounting
- [9] Display with operating buttons (not applicable for part nos. 8163824 and 8184633)

Dimensions

	B1	B2	B3	B4	B5	B6	B7	D1 Ø	D2 Ø	D3 Ø	D4 Ø	D5 Ø	H1	H2
VEMD-L-6-60-50-D9-G14-5YMPM1-VA	38	19	21	15	-	-	-	G1/4	M4	M4	M4	4,6	124,6	123,5
VEMD-L-6-60-100-D9-G14-5YMPM1-VA														
VEMD-L-6-60-200-D9-G14-5YMPM1-VA														
VEMD-L-6-60-50-D9-G14-5YMPM1D-VA														
VEMD-L-6-60-100-D9-G14-5YMPM1D-VA														
VEMD-L-6-60-200-D9-G14-5YMPM1D-VA														

	H3	H4	H5	L1	L2	L3	L4	L5	L6	T1	T2	T3	T4
VEMD-L-6-60-50-D9-G14-5YMPM1-VA	18,5	42	35,5	116	107	100	55,8	-	-	13	8	8	10
VEMD-L-6-60-100-D9-G14-5YMPM1-VA													
VEMD-L-6-60-200-D9-G14-5YMPM1-VA													
VEMD-L-6-60-50-D9-G14-5YMPM1D-VA													
VEMD-L-6-60-100-D9-G14-5YMPM1D-VA													
VEMD-L-6-60-200-D9-G14-5YMPM1D-VA													

Ordering data

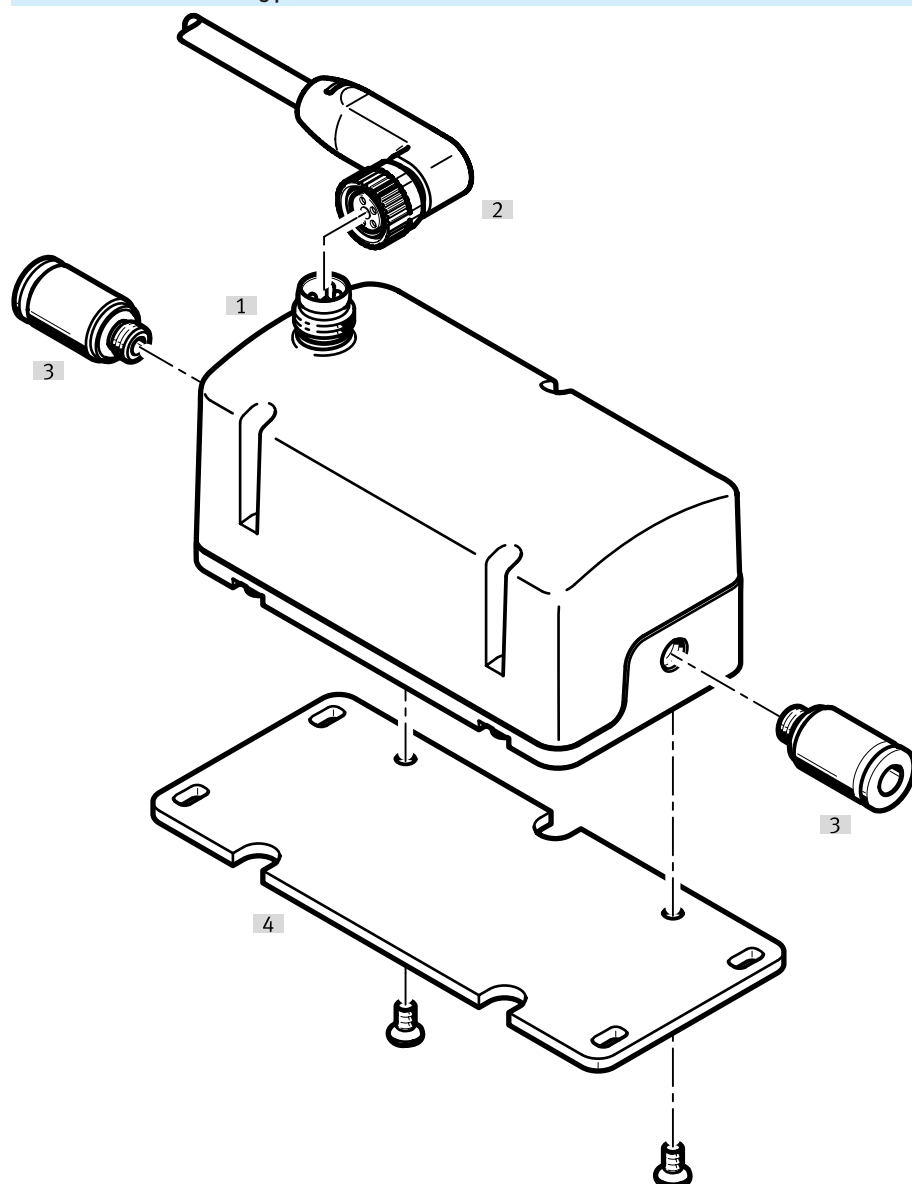
Mass flow controller VEMD, nominal width 1.4 mm, without display						
	Operating pressure	Operating pressure	Nominal operating voltage DC	Flow rate control range	Part no.	Type
	0 ... 0.25 MPa	0 ... 2.5 bar	12 V	0 ... 20 l/min	8086473	VEMD-L-6-14-20-D21-M5-5-R1-V4
			24 V		8086472	VEMD-L-6-14-20-D21-M5-1-R1-V4

Mass flow controller VEMD, nominal diameter 6 mm, with display						
	Operating pressure	Operating pressure	Operational voltage range DC	Flow rate control range	Part no.	Type
	0.1 ... 0.6 MPa	1 ... 6 bar	12 ... 24 V	1 ... 50 l/min	8163828	VEMD-L-6-60-50-D9-G14-5YMPM1D-VA
				2 ... 100 l/min	8163829	VEMD-L-6-60-100-D9-G14-5YMPM1D-VA
				4 ... 200 l/min	8163830	VEMD-L-6-60-200-D9-G14-5YMPM1D-VA

Mass flow controller VEMD, nominal diameter 6 mm, without display						
	Operating pressure	Operating pressure	Operational voltage range DC	Flow rate control range	Part no.	Type
	0.1 ... 0.6 MPa	1 ... 6 bar	12 ... 24 V	1 ... 50 l/min	8163823	VEMD-L-6-60-50-D9-G14-5YMPM1-VA
				2 ... 100 l/min	8163824	VEMD-L-6-60-100-D9-G14-5YMPM1-VA
				4 ... 200 l/min	8163825	VEMD-L-6-60-200-D9-G14-5YMPM1-VA

Peripherals

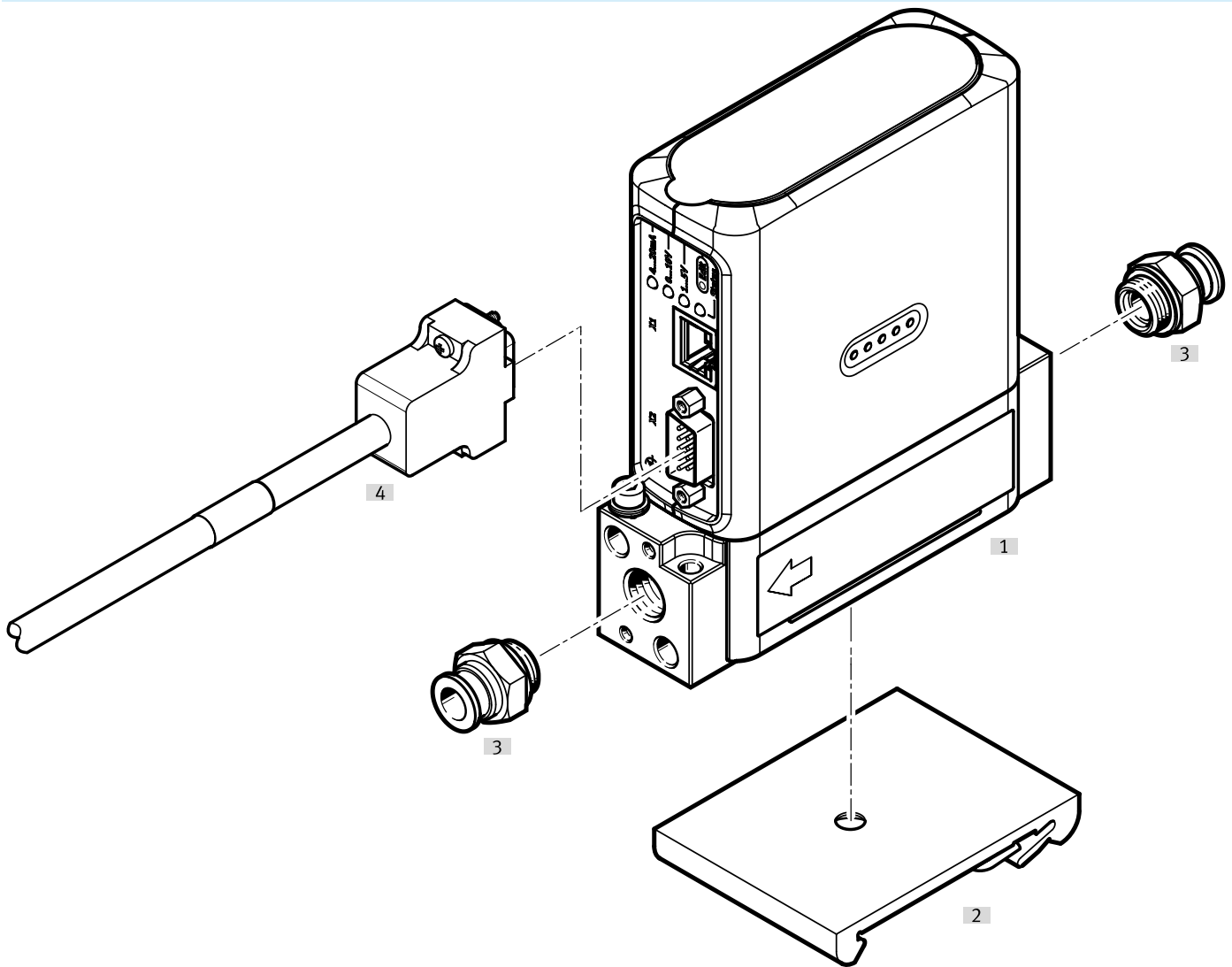
VEMD-L-6-14-... on mounting plate



Accessories		→ Link
Type/order code	Description	
[1] Mass flow controller VEMD	–	vemd
[2] Connecting cable NEBA	–	19
[3] Push-in fitting QSM/NPQM	For connecting tubing with standard O.D.	19
[4] Mounting plate VAME-P14	For mounting the valve	19

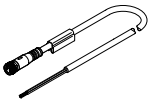
Peripherals

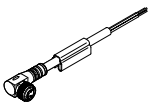
VEMD-L-6-60-... on H-rail mounting

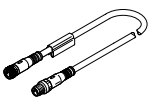


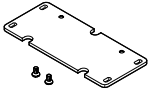
Accessories		→ Link
Type/order code	Description	
[1] Mass flow controller VEMD	–	vemd
[2] H-rail mounting CAFM	For mounting the valve	20
[3] Push-in fitting QS	For connecting tubing with standard O.D.	20
[4] Connecting cable KMP6	–	20

Accessories

Connecting cable, straight socket, open end, for nominal width 1.4 mm						
	Electrical connection 1, connection type	Electrical connection 1, connector system	Electrical connection 1, number of connections/cores	Cable length	Part no.	Type
	Socket	M8x1, A-coded, to EN 61076-2-104	4	2.5 m	8078227	NEBA-M8G4-U-2.5-N-LE4
				5 m	8078228	NEBA-M8G4-U-5-N-LE4

Connecting cable, angled socket, open end, for nominal width 1.4 mm						
	Electrical connection 1, connection type	Electrical connection 1, connector system	Electrical connection 1, number of connections/cores	Cable length	Part no.	Type
	Socket	M8x1, A-coded, to EN 61076-2-104	4	2.5 m	8078233	NEBA-M8W4-U-2.5-N-LE4

Connecting cable, straight socket, straight plug, for nominal width 1.4 mm						
	Electrical connection 1, connection type	Electrical connection 1, connector system	Electrical connection 1, number of connections/cores	Cable length	Part no.	Type
	Socket	M8x1, A-coded, to EN 61076-2-104	4	2.5 m	8078295	NEBA-M8G4-U-2.5-N-M8G4
				5 m	8078234	NEBA-M8W4-U-5-N-LE4

Wall mounting, for valve mounting, for nominal width 1.4 mm				Part no.	Type
	Mounting position				
	optional			5225721	VAME-P14-W

Push-in fitting, with hex socket, metal version, for nominal width 1.4 mm				
	Pneumatic connection, port 1	Pneumatic connection, port 2	Part no.	Type
	Male thread M5	For tubing outside diameter of 4 mm	558657	NPQM-DK-M5-Q4-P10
		For tubing outside diameter of 6 mm	558658	NPQM-DK-M5-Q6-P10

Push-in fitting, with hex socket, polymer version, for nominal width 1.4 mm				
	Pneumatic connection, port 1	Pneumatic connection, port 2	Part no.	Type
	Male thread M5	For tubing outer diameter of 3 mm	153313	QSM-M5-3-I
		For tubing outside diameter of 4 mm	153315	QSM-M5-4-I
		For tubing outside diameter of 6 mm	153317	QSM-M5-6-I

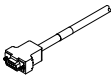
Push-in fitting, with external hex, metal version, for nominal width 1.4 mm				
	Pneumatic connection, port 1	Pneumatic connection, port 2	Part no.	Type
	Male thread M5	For tubing outer diameter of 3 mm	153302	QSM-M5-3

Accessories

Push-in fitting, with external hex, metal version, for nominal width 1.4 mm					
	Pneumatic connection, port 1	Pneumatic connection, port 2	Part no.	Type	
	Male thread M5	For tubing outside diameter of 4 mm	153304	QSM-M5-4	
		For tubing outside diameter of 6 mm	153306	QSM-M5-6	

Push-in fitting, with external hex, for nominal width 6 mm					
	Pneumatic connection, port 1	Pneumatic connection, port 2	Size of pack	Part no.	Type
	Male thread G1/4	For tubing outside diameter of 8 mm	10	186099	QS-G1/4-8
			50	132040	QS-G1/4-8-50

Push-in fitting, with external hex, for nominal width 6 mm					
	Pneumatic connection, port 1	Pneumatic connection, port 2	Size of pack	Part no.	Type
	Male thread G1/4	For tubing outside diameter of 6 mm	10	8203297	NPQO-D-G14-Q6-P10
		For tubing outside diameter of 8 mm		8203298	NPQO-D-G14-Q8-P10
		For tubing outside diameter of 10 mm	5	8203299	NPQO-D-G14-Q10-P5

Connecting cable, for nominal width 6 mm						
	Electrical connection 1, connection type	Electrical connection 1, connector system	Electrical connection 1, number of connections/cores	Cable length	Part no.	Type
	Socket	Sub-D	9	2.5 m	531184	KMP6-09P-8-2,5
				5 m	531185	KMP6-09P-8-5
				10 m	531186	KMP6-09P-8-10

H-rail mounting, for nominal width 6 mm				Part no.	Type
	Product weight				
	22 g			570043	CAFM-F1-H