

Mass flow controller VEFC

FESTO



Characteristics

At a glance

Description:

- Based on piezo technology, the low-noise mass flow controller with minimal power consumption and compact dimensions is suitable for a wide range of applications.

Benefits:

- Very low power consumption
- High dynamic response
- Very low self-heating
- Completely silent
- Excellent price/performance ratio
- Sturdy and durable
- Linear control behaviour
- Small installation space and low weight

Operating mode:

- VEFC is a mass flow controller. The flow rate is controlled in a closed control loop.
- The setpoint value for the mass flow can be specified in analogue form or via Modbus® RTU, and the actual value is also fed back in analogue and digital form via Modbus® RTU.
- Mass flow measurement is carried out using the pressure difference method.

Range of applications:

- The mass flow controller VEFC is used for controlling a mass flow rate proportional to a given setpoint value.
- A filter may need to be installed downstream, or an initial rinsing cycle may need to be carried out for applications with special requirements, for example with regard to technical cleanliness and being free from particles.

Type code

001	Series	
VEFC	Mass flow controller	
002	Directional control valve type	
L	In-line valve	
003	Valve function	
6	2/2-way valve, normally closed	
004	Flow rate range	
50	50 l/min	
100	100 l/min	
100B	100 l/min increased back pressure	
200	200 l/min	
200B	200 l/min increased back pressure	
005	Pressure range	
D31	0 ... 7 bar	

006	Pneumatic connection 1	
G14	G1/4	
MFS14	Front metal seal 1/4"	
Q8	Push-in connector 8 mm	
Q10	Push-in connector 10 mm	
R14	R1/4	
007	Pneumatic connection 2	
G14	G1/4	
MFS14	Front metal seal 1/4"	
Q8	Push-in connector 8 mm	
Q10	Push-in connector 10 mm	
R14	R1/4	
008	Bus protocol/activation	
MR	Modbus® RTU	
009	Electrical connection	
M1	Multi-pin with SUB-D plug	

Datasheet

General technical data

General technical data										
Pneumatic connection, port 1	G1/4			R1/4			QS-10		Front metal seal 1/4“	
Pneumatic connection, port 2	G1/4			R1/4			QS-10		Front metal seal 1/4“	
Flow rate control range	5 ... 100 l/min	10 ... 200 l/min	2 ... 50 l/min	5 ... 100 l/min	10 ... 200 l/min	2 ... 50 l/min	5 ... 100 l/min	10 ... 200 l/min	5 ... 100 l/min	10 ... 200 l/min
Dimensions (W x L x H)	24 mm x 130 mm x 97 mm						24 mm x 114.6 mm x 97 mm		24 mm x 152.8 mm x 97 mm	
Valve function	2-way proportional flow control valve									
Type of actuation	Electrical									
Flow direction	Non-reversible									
Display type	LED									
Reverse polarity protection	For operating voltage									
Protection against direct and indirect contact	PELV									
Product weight	250 g									
Suitability for the production of Li-ion batteries	Suitable for battery production with reduced Cu/Zn/Ni values (F1a)									
Instructions on use	The product is suitable for industrial purposes only. Measures to eliminate radio interference may be required in residential areas., For indoor use only									

Electrical data

Nominal operating voltage DC	24 V
Operational voltage range DC	24 V
Max. current consumption	65 mA
Max. electrical power consumption	1.6 W
Information on power consumption	Typical <1 W
Overvoltage category	II
Residual ripple	± 10%
Setpoint value input	0 - 5 V 0 - 10 V 1 - 5 V 4 - 20 mA Modbus® RTU
Electrical connection 1, function	Analogue output, Analogue input, Communication, Power supply
Electrical connection 1, connection type	Plug
Electrical connection 1, connector system	Sub-D
Electrical connection 1, number of connections/cores	9

Datasheet

Operating and environmental conditions			
Flow rate control range ¹⁾	5 ... 100 l/min	10 ... 200 l/min	2 ... 50 l/min
Note on the flow rate control range	N2 equivalent, the specified dynamic and accuracy values apply to setpoint values >10%FS		
Vibration resistance	Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6		
Note on vibration resistance	In the event of vibrations, install perpendicular to the flow direction using the mounting kit.		
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4] Inert gas		
Operating pressure	0.6 MPa		
Operating pressure	6 bar		
Overload pressure	0.8 MPa		
Overload pressure	8 bar		
Burst pressure	2.1 MPa		
Burst pressure	21 bar		
Inlet pressure 1	0.1 ... 0.7 MPa		
Inlet pressure 1	1 ... 7 bar		
Degree of protection	IP20		
Relative air humidity	5 - 85% Non-condensing		
Climatic category	3K22 in accordance with EN 60721		
Nominal altitude of use	<= 2000 m NHN		
Media temperature	5 ... 50°C		
Ambient temperature	5 ... 50°C		
Storage temperature	-20 ... 60°C		
Total accuracy	1.5%FS		
Reproducibility	0.2 %FS		
Linearity	1.5 %FS		
Hysteresis	0.15 %FS		
Overshoot	2 %FS		
Pollution degree	2		
Approval	RCM c UL us - Listed (Oil)		
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		
KC mark	KC-EMV		
KC Approval No. EMC/Radio	FTO-KC-2024-1003		
Certificate issuing authority	UL E322346		
LABS (PWIS) conformity	VDMA24364 zone III		
Cleanroom suitability, measured according to ISO 14644-14	Class 3 according to ISO 14644-1 (with CDA filter) Class 4 according to ISO 14644-1		
Total leakage	0.6 l/h		
Note on total leakage	Standardised according to SEMI E16 tested with CDA		
Note on the measured variable	Dynamic characteristic values according to SEMI E17 with preset "fast". The dead time, the step response and the settling time may increase when the setpoint is changed from a closed valve state or when the back pressure is above atmospheric pressure.		
Settling time	500 ms		
Step response time	500 ms		

1) See order details for a differentiation between the flow control ranges.

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 reducing the emitted interference may be necessary.

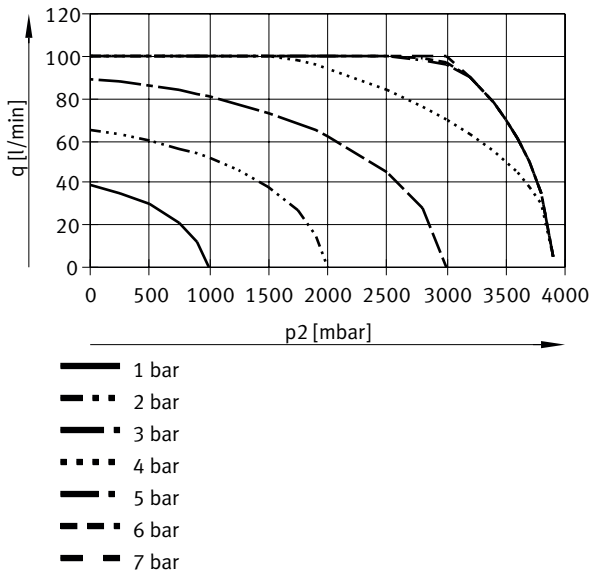
3) For information about the area of use, see the declaration of conformity at: www.festo.com/catalogue/... -> Support/Downloads.

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

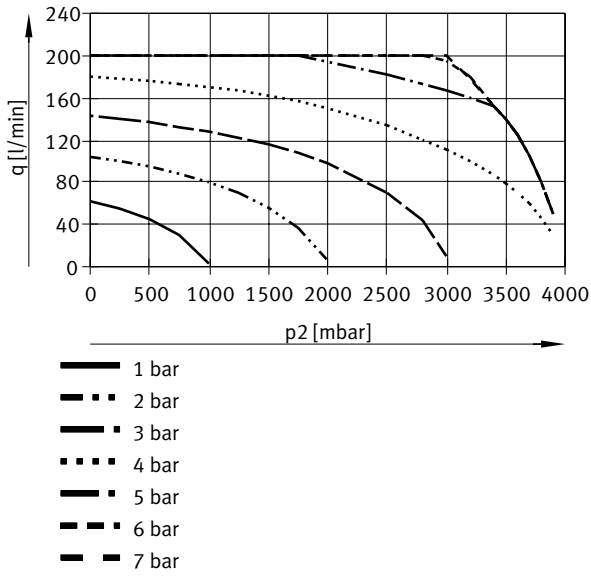
Materials	
Note on materials	RoHS compliant
Fire test material	UL94 HB

Datasheet

VEFC-L-6-100-...



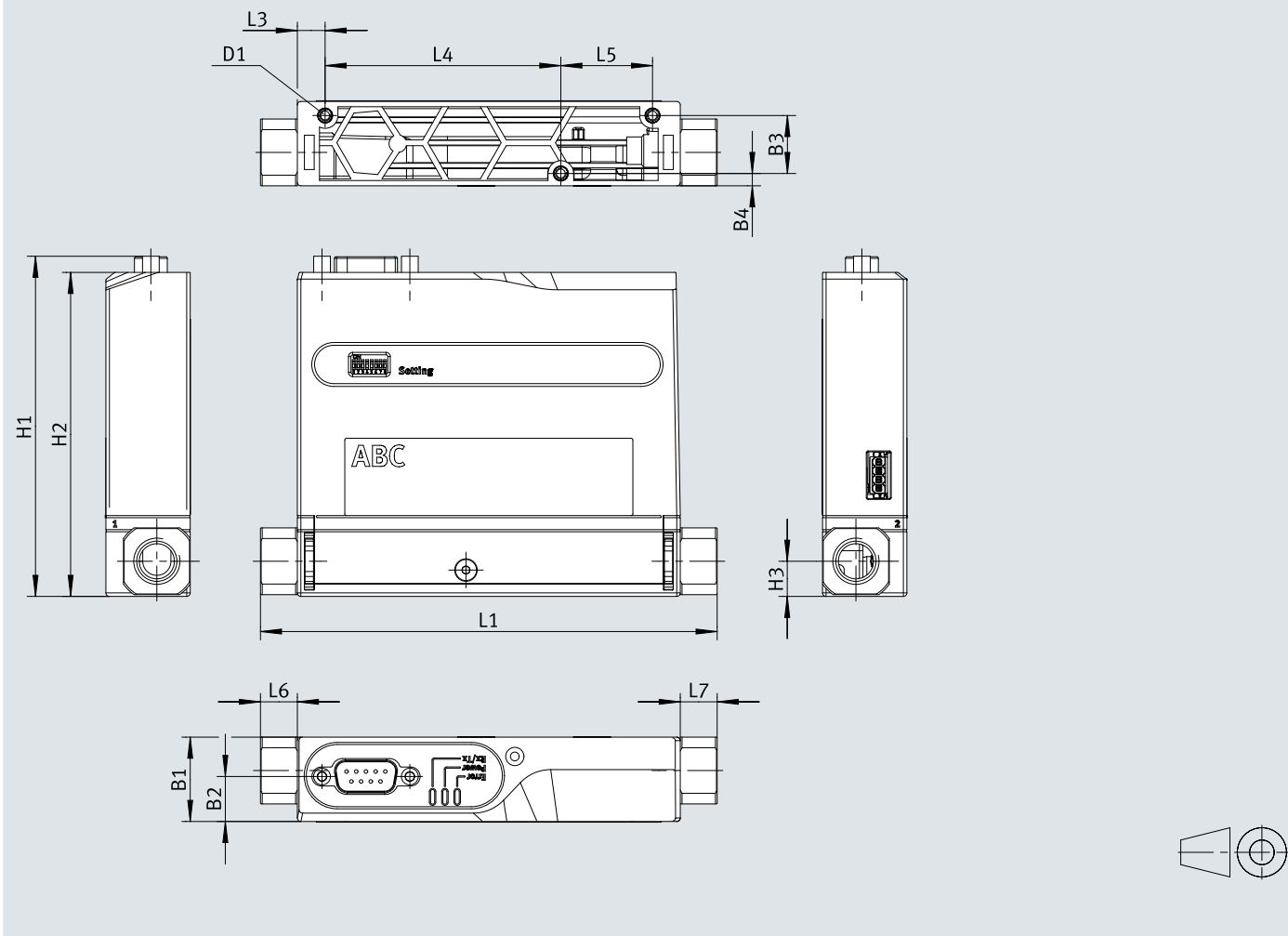
VEFC-L-6-200-...



Dimensions

Dimensions – Mass flow controller VEFC, G14

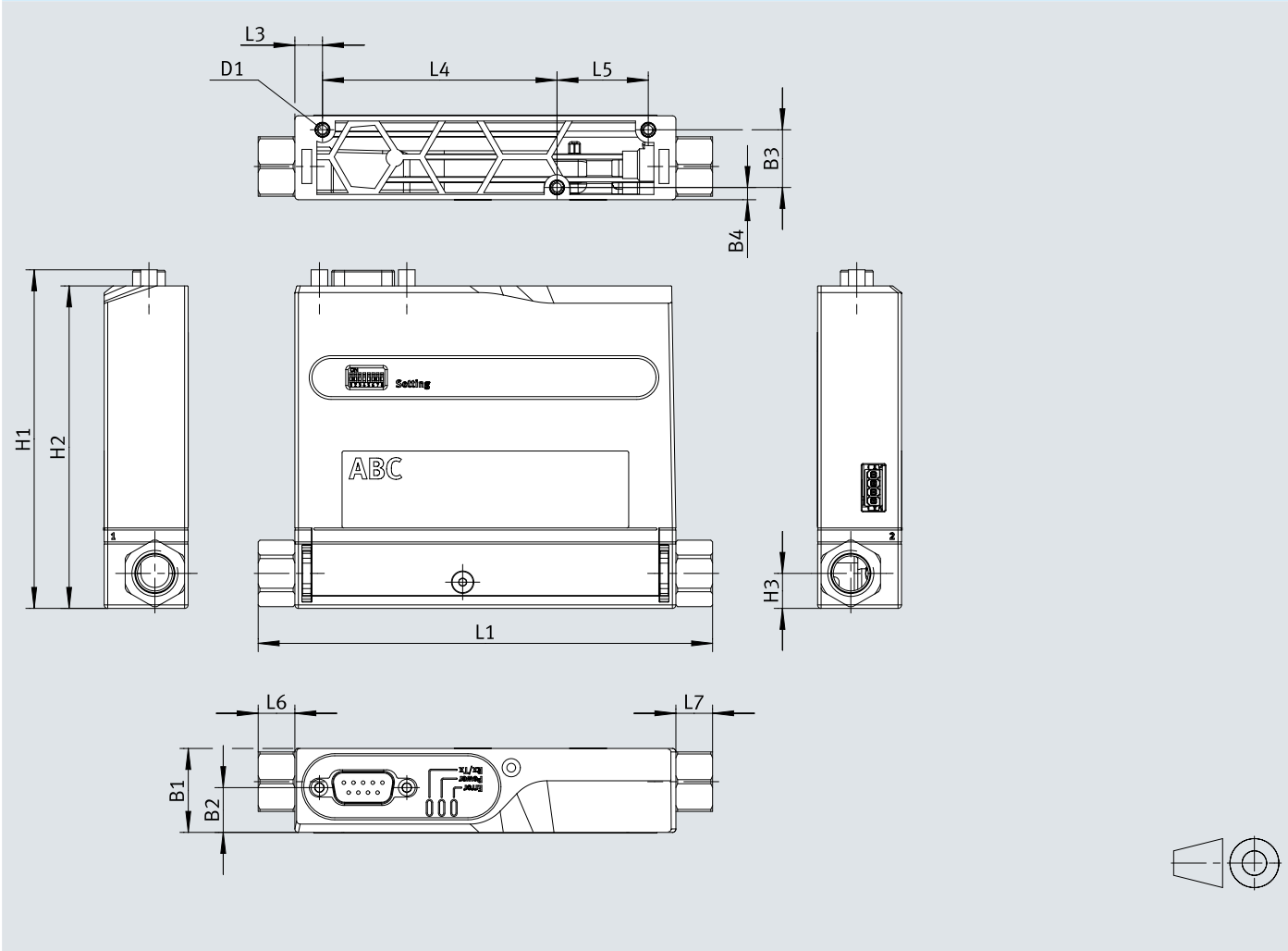
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	B1	B2	B3	B4	D1	H1	H2	H3	L1	L3	L4	L5	L6	L7
VEFC-L-6-200-D31-G14-G14-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	130	7,9	67,1	26,1	10,5	10,5
VEFC-L-6-100-D31-G14-G14-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	130	7,9	67,1	26,1	10,5	10,5
VEFC-L-6-50-D31-G14-G14-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	130	7,9	67,1	26,1	10,5	10,5
VEFC-L-6-100B-D31-G14-G14-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	130	7,9	67,1	26,1	10,5	10,5
VEFC-L-6-200B-D31-G14-G14-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	130	7,9	67,1	26,1	10,5	10,5

Dimensions

Dimensions – Mass flow controller VEFC, R14 Download CAD data www.festo.com

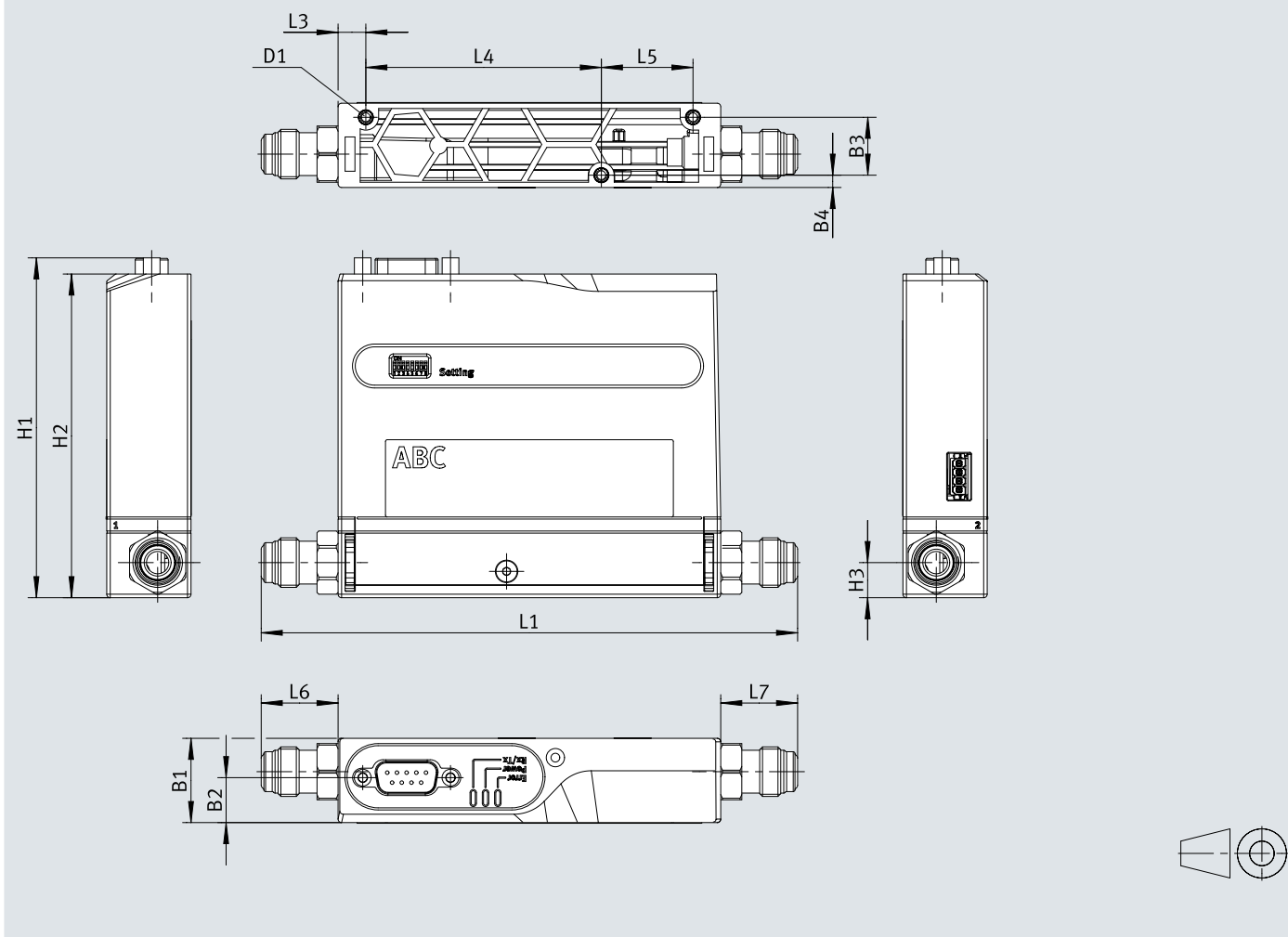


	B1	B2	B3	B4	D1	H1	H2	H3	L1	L3	L4	L5	L6	L7
VEFC-L-6-200-D31-R14-R14-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	130	7,9	67,1	26,1	10,5	10,5
VEFC-L-6-100-D31-R14-R14-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	130	7,9	67,1	26,1	10,5	10,5
VEFC-L-6-50-D31-R14-R14-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	130	7,9	67,1	26,1	10,5	10,5
VEFC-L-6-100B-D31-R14-R14-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	130	7,9	67,1	26,1	10,5	10,5
VEFC-L-6-200B-D31-R14-R14-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	130	7,9	67,1	26,1	10,5	10,5

Dimensions

Dimensions – Mass flow controller VEFC, MFS14

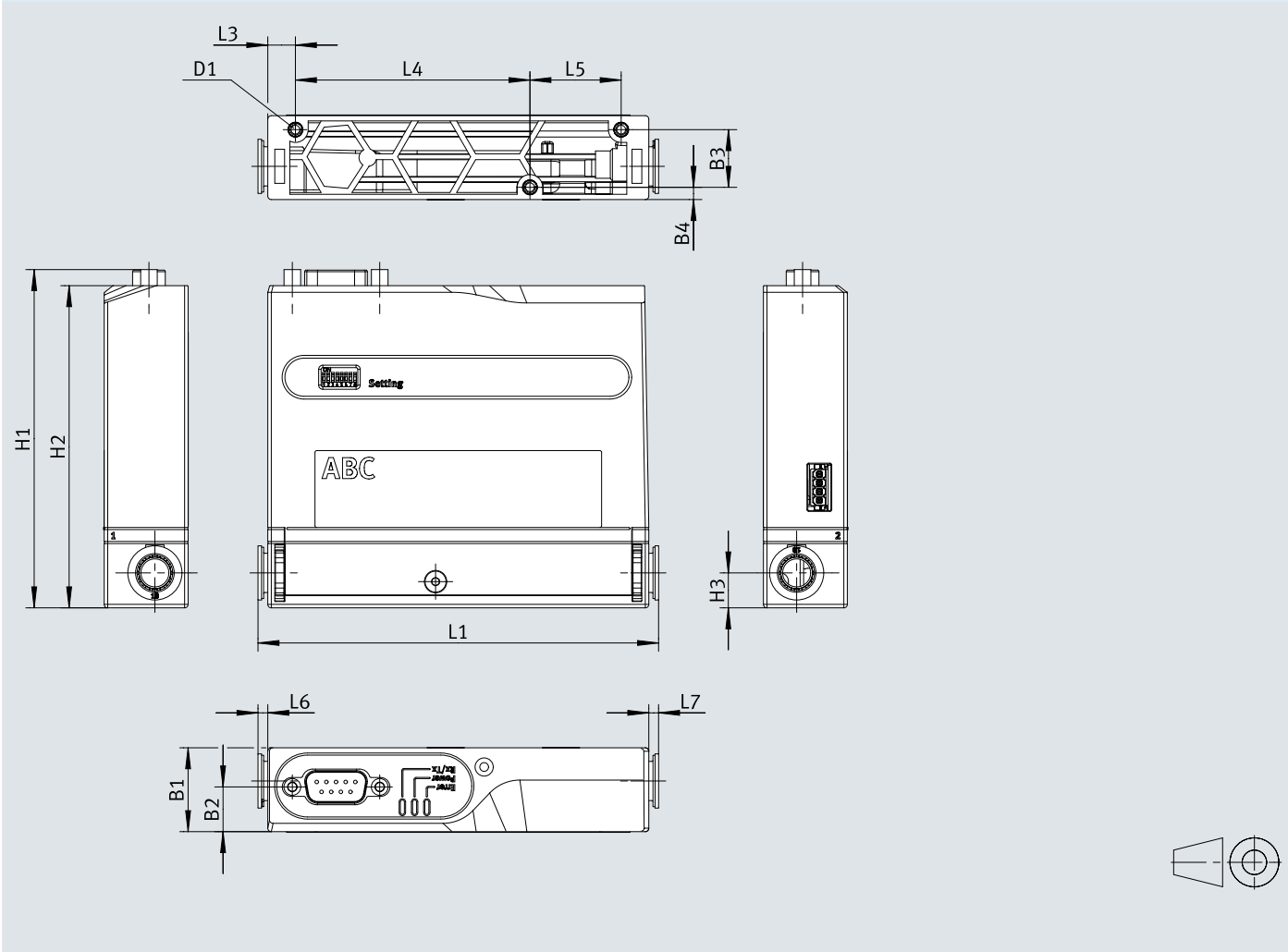
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	B1	B2	B3	B4	D1	H1	H2	H3	L1	L3	L4	L5	L6	L7
VEFC-L-6-200-D31-MFS14-MFS14-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	152,8	7,9	67,1	26,1	21,9	21,9
VEFC-L-6-100-D31-MFS14-MFS14-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	152,8	7,9	67,1	26,1	21,9	21,9
VEFC-L-6-50-D31-MFS14-MFS14-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	152,8	7,9	67,1	26,1	21,9	21,9

Dimensions

Dimensions – Mass flow controller VEFC, Q10 Download CAD data www.festo.com

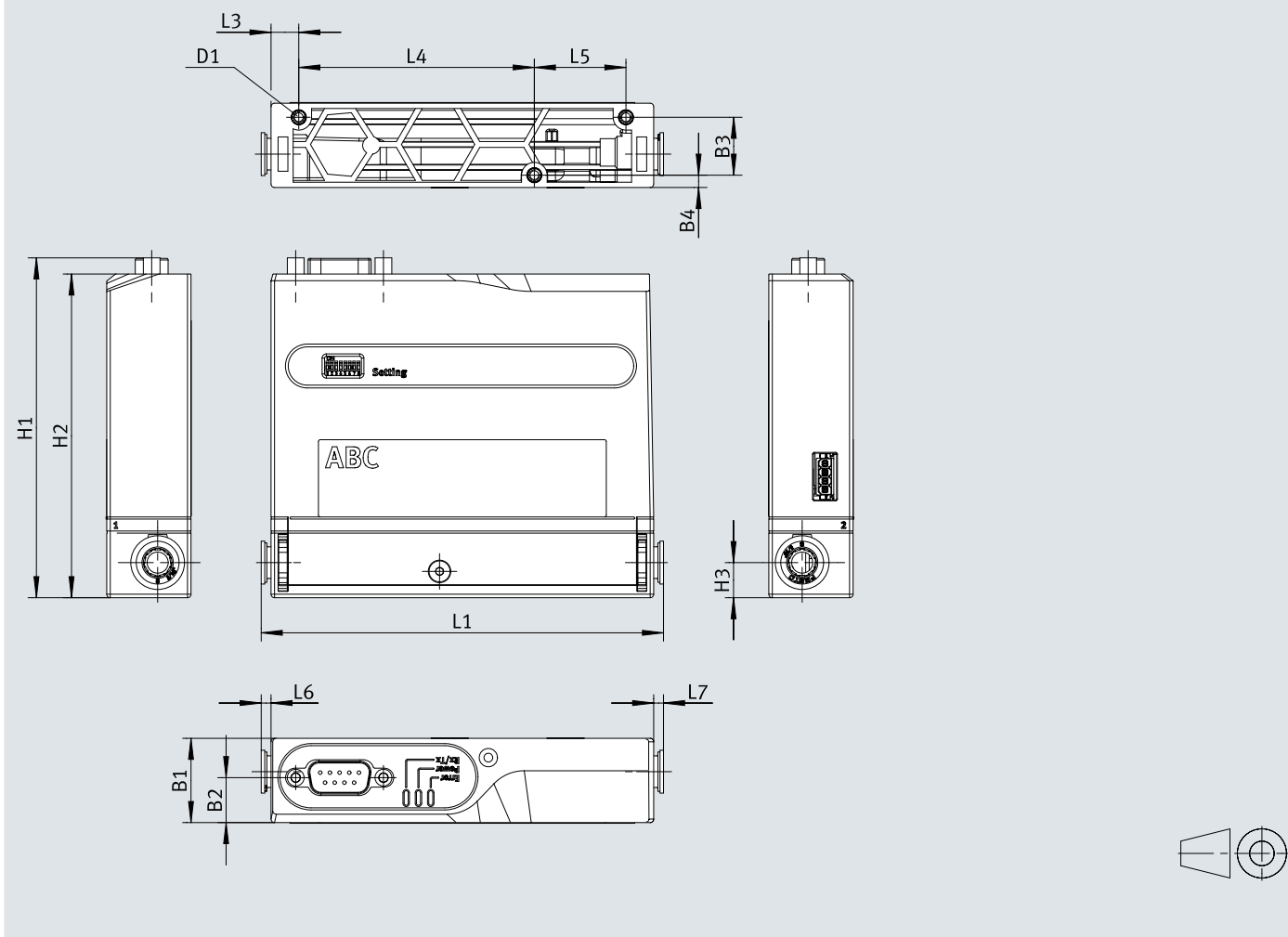


	B1	B2	B3	B4	D1	H1	H2	H3	L1	L3	L4	L5	L6	L7
VEFC-L-6-200-D31-Q10-Q10-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	114,6	7,9	67,1	26,1	2,8	2,8
VEFC-L-6-100-D31-Q10-Q10-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	114,6	7,9	67,1	26,1	2,8	2,8

Dimensions

Dimensions – Mass flow controller VEFC, Q8

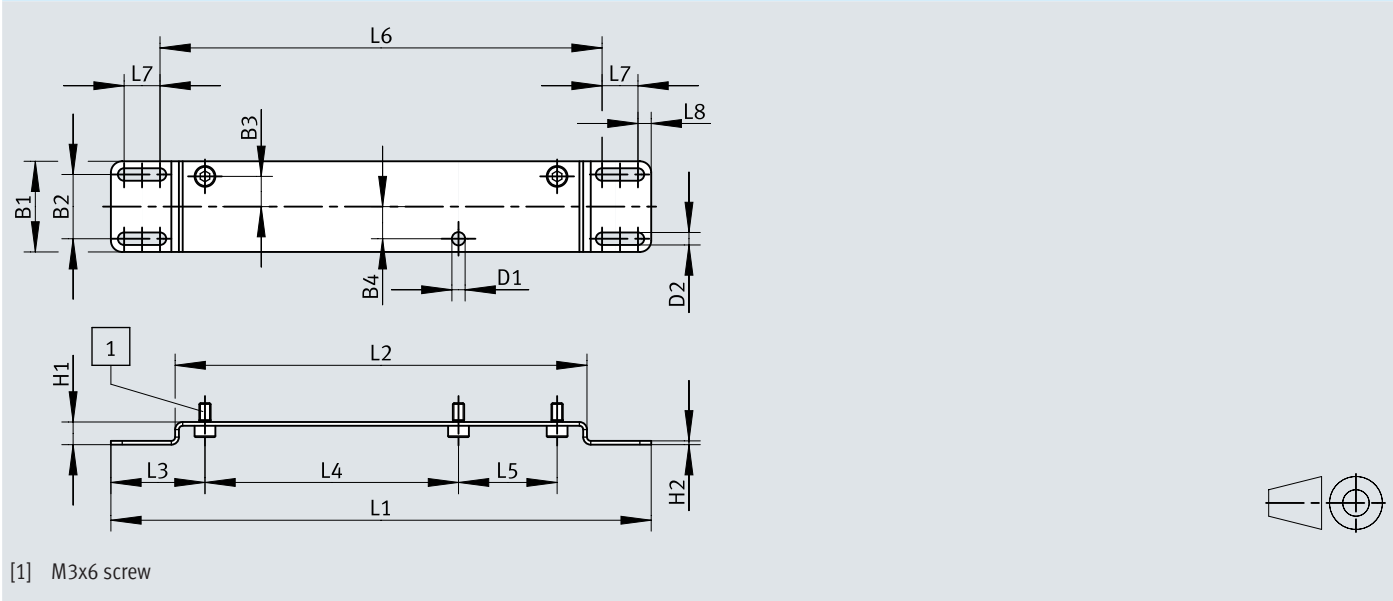
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	B1	B2	B3	B4	D1	H1	H2	H3	L1	L3	L4	L5	L6	L7
VEFC-L-6-200-D31-Q8-Q8-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	114,6	7,9	67,1	26,1	2,8	2,8
VEFC-L-6-100-D31-Q8-Q8-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	114,6	7,9	67,1	26,1	2,8	2,8

Dimensions

Dimensions – Mounting kit VAME Download CAD data www.festo.com



	B1	B2	B3	B4	D1	D2	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8
	±0,1				∅			±0,1	±0,3							
VAME-P20-24-K	24	17	8	8,5	3,5	3,3	6	1	143	109	24,9	67,1	26,1	117	9,5	3,5

Ordering data

Mass flow controller VEFC, flow rate up to 50 l/min					Link vefc
	Pneumatic connection, port 1	Pneumatic connection, port 2	Flow rate control range	Part no.	Type
	G1/4	G1/4	2 ... 50 l/min	8204596	VEFC-L-6-50-D31-G14-G14-MRM1
	R1/4	R1/4		8204595	VEFC-L-6-50-D31-R14-R14-MRM1

Mass flow controller VEFC, flow rate up to 100 l/min					Link vefc
	Pneumatic connection, port 1	Pneumatic connection, port 2	Flow rate control range	Part no.	Type
	G1/4	G1/4	5 ... 100 l/min	8204592	VEFC-L-6-100-D31-G14-G14-MRM1
	R1/4	R1/4		8204593	VEFC-L-6-100-D31-R14-R14-MRM1
	QS-10	QS-10		8204591	VEFC-L-6-100-D31-Q10-Q10-MRM1
	Front metal seal 1/4"	Front metal seal 1/4"		8204590	VEFC-L-6-100-D31-MFS14-MFS14-MRM1

Mass flow controller VEFC, flow rate up to 100 l/min, increased back pressure					Link vefc
	Pneumatic connection, port 1	Pneumatic connection, port 2	Flow rate control range	Part no.	Type
	G1/4	G1/4	5 ... 100 l/min	8204594	VEFC-L-6-100B-D31-G14-G14-MRM1
	R1/4	R1/4		8204589	VEFC-L-6-100B-D31-R14-R14-MRM1

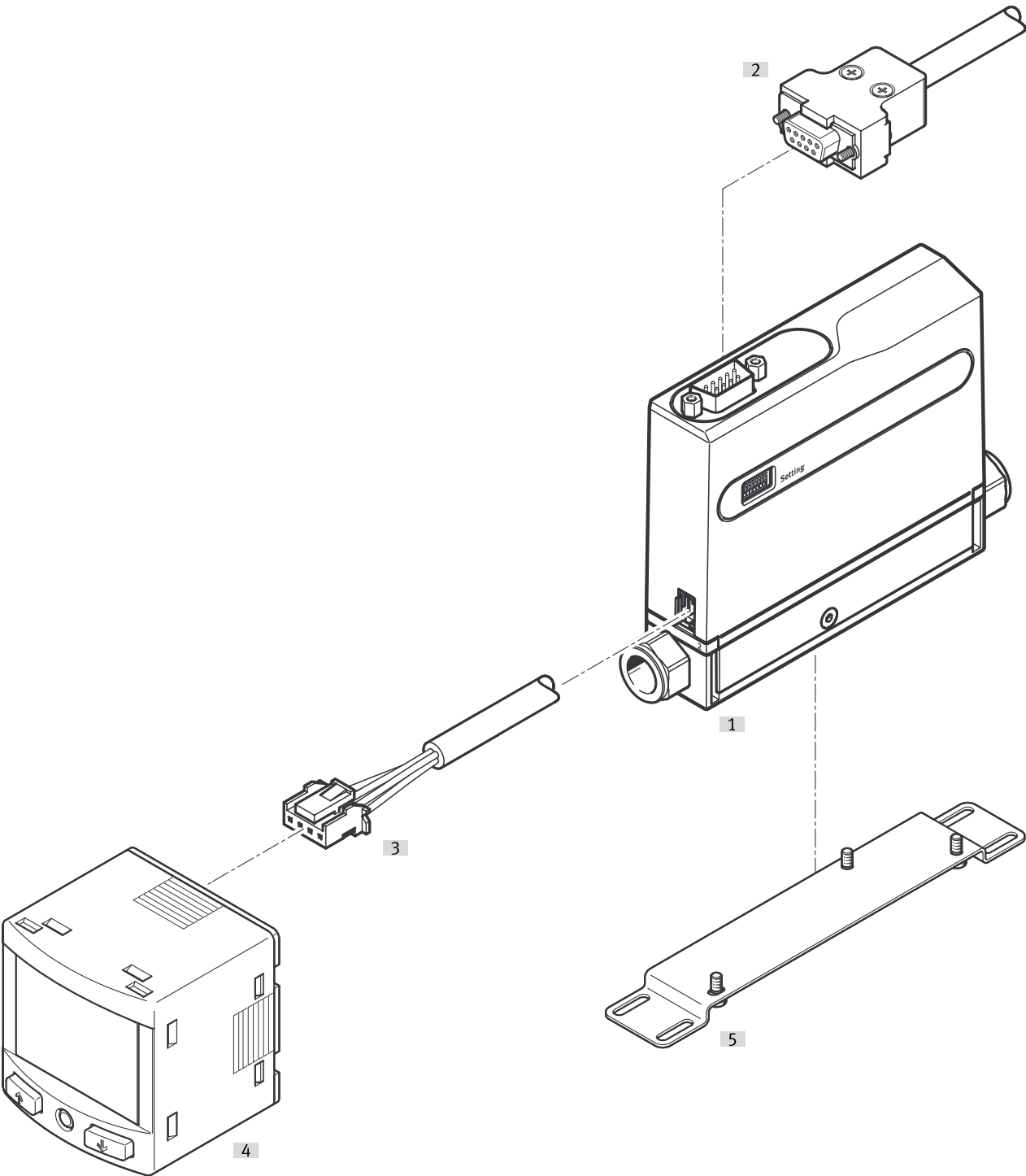
Mass flow controller VEFC, flow rate up to 200 l/min					Link vefc
	Pneumatic connection, port 1	Pneumatic connection, port 2	Flow rate control range	Part no.	Type
	G1/4	G1/4	10 ... 200 l/min	8204587	VEFC-L-6-200-D31-G14-G14-MRM1
	R1/4	R1/4		8204588	VEFC-L-6-200-D31-R14-R14-MRM1
	QS-10	QS-10		8204586	VEFC-L-6-200-D31-Q10-Q10-MRM1
	Front metal seal 1/4"	Front metal seal 1/4"		8204585	VEFC-L-6-200-D31-MFS14-MFS14-MRM1

Ordering data

Mass flow controller VEFC, flow rate up to 200 l/min, increased back pressure					Link 
	Pneumatic connection, port 1	Pneumatic connection, port 2	Flow rate control range	Part no.	Type
	G1/4	G1/4	10 ... 200 l/min	8204598	VEFC-L-6-200B-D31-G14-G14-MRM1
	R1/4	R1/4		8204597	VEFC-L-6-200B-D31-R14-R14-MRM1

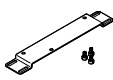
Peripherals

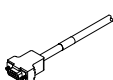
Peripherals overview

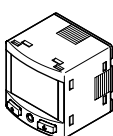


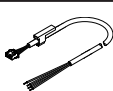
Accessories			→ Link
Type/order code	Description		
[1] Mass flow controller	VEFC		vefc
[2] Connecting cable	KMP6-09P-8-...		16
[3] Connecting cable	NEBS-L1G4-K-...-LE4		16
[4] Operator unit	CDSV-P20-A		16
[5] Mounting kit	VAME-P20-24-K		16

Accessories

Mounting kit				
	Dimensions (W x L x H)	Product weight	Part no.	Type
	24 mm x 143 mm x 6 mm	12 g	8210178	VAME-P20-24-K

Connecting cable				
	Product weight	Cable length	Part no.	Type
	248 g	2.5 m	531184	KMP6-09P-8-2,5
	454 g	5 m	531185	KMP6-09P-8-5
	864 g	10 m	531186	KMP6-09P-8-10

Operator unit				
	Material housing	Note on materials	Part no.	Type
	Reinforced PA	RoHS compliant	8217573	CDSV-P20-A

Connection cable for operator unit						
	Material cable sheath	Material housing	Note on materials	Cable length	Part no.	Type
	PVC	PA	RoHS compliant	2.5 m	572576	NEBS-L1G4-K-2.5-LE4
				5 m	572577	NEBS-L1G4-K-5-LE4