

# 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	
100	100 l/min	
200	200 l/min	
005	Pressure range	
D31	0 ... 7 bar	

006	Pneumatic connection 1	
G14	G1/4	
MFS14	Front metal seal 1/4"	
Q10	Push-in connector 10 mm	
R14	R1/4	
007	Pneumatic connection 2	
G14	G1/4	
MFS14	Front metal seal 1/4"	
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

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	5 ... 100 l/min	10 ... 200 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	Electric							
Flow direction	Non-reversible							
Display type	LED							
Reverse polarity protection	For operating voltage							
Protection against direct and indirect contact	PELV							
Product weight	0.25 kg							
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	Plugs
Electrical connection 1, connector system	Sub-D
Electrical connection 1, number of connections/cores	9

## Datasheet

### Operating and environmental conditions

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
Flow rate control range <sup>1)</sup>	5 ... 200 l/min
Note on the flow rate control range	N2 equivalent, the specified dynamic and accuracy values apply to setpoint values >10%FS
Degree of protection	IP20
Relative air humidity	5 - 85% Non-condensing
Climatic category	3K22 to 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 trademark
CE mark (see declaration of conformity) <sup>2)</sup>	To EU EMC Directive In accordance with EU RoHS Directive
UKCA marking (see declaration of conformity) <sup>3)</sup>	To UK instructions for EMC To UK RoHS instructions
KC mark	KC-EMV
KC Approval No. EMC/Radio	FTO-KC-2024-1003
LABS (PWIS) conformity	VDMA24364 zone III
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.
Vibration resistance	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6
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/...](http://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/...](http://www.festo.com/catalogue/...) -> Support/Downloads.

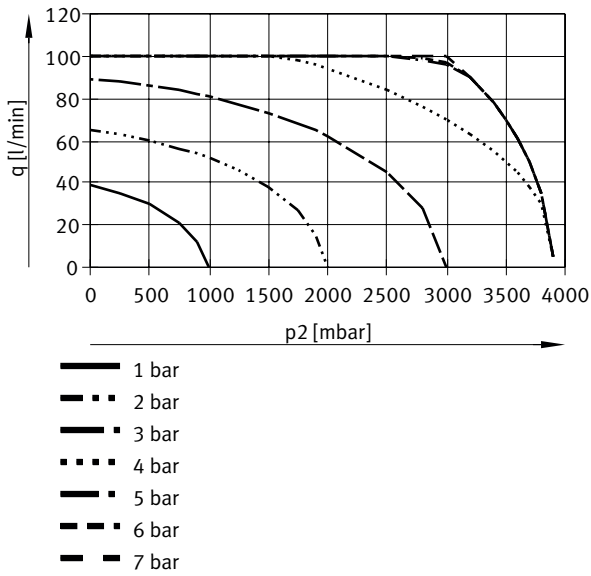
If the devices are subject to usage restrictions in residential, commercial or light industrial environments, further measures for reducing the emitted interference may be necessary.

### Materials

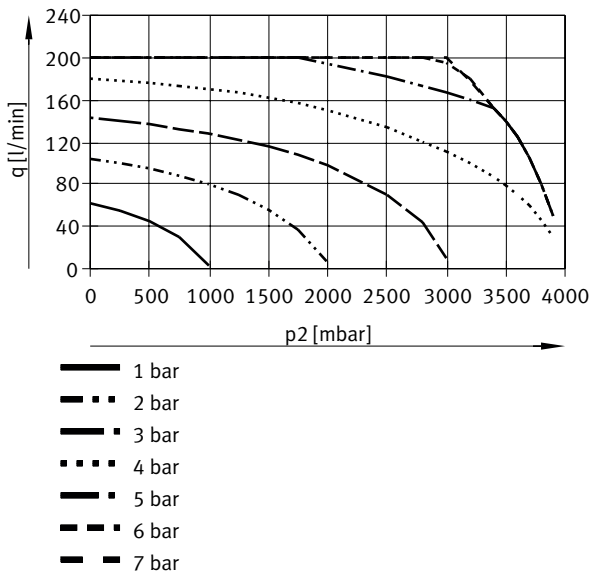
Note on materials	RoHS-compliant
Fire test material	UL94 HB

Datasheet

VEFC-L-6-100-...



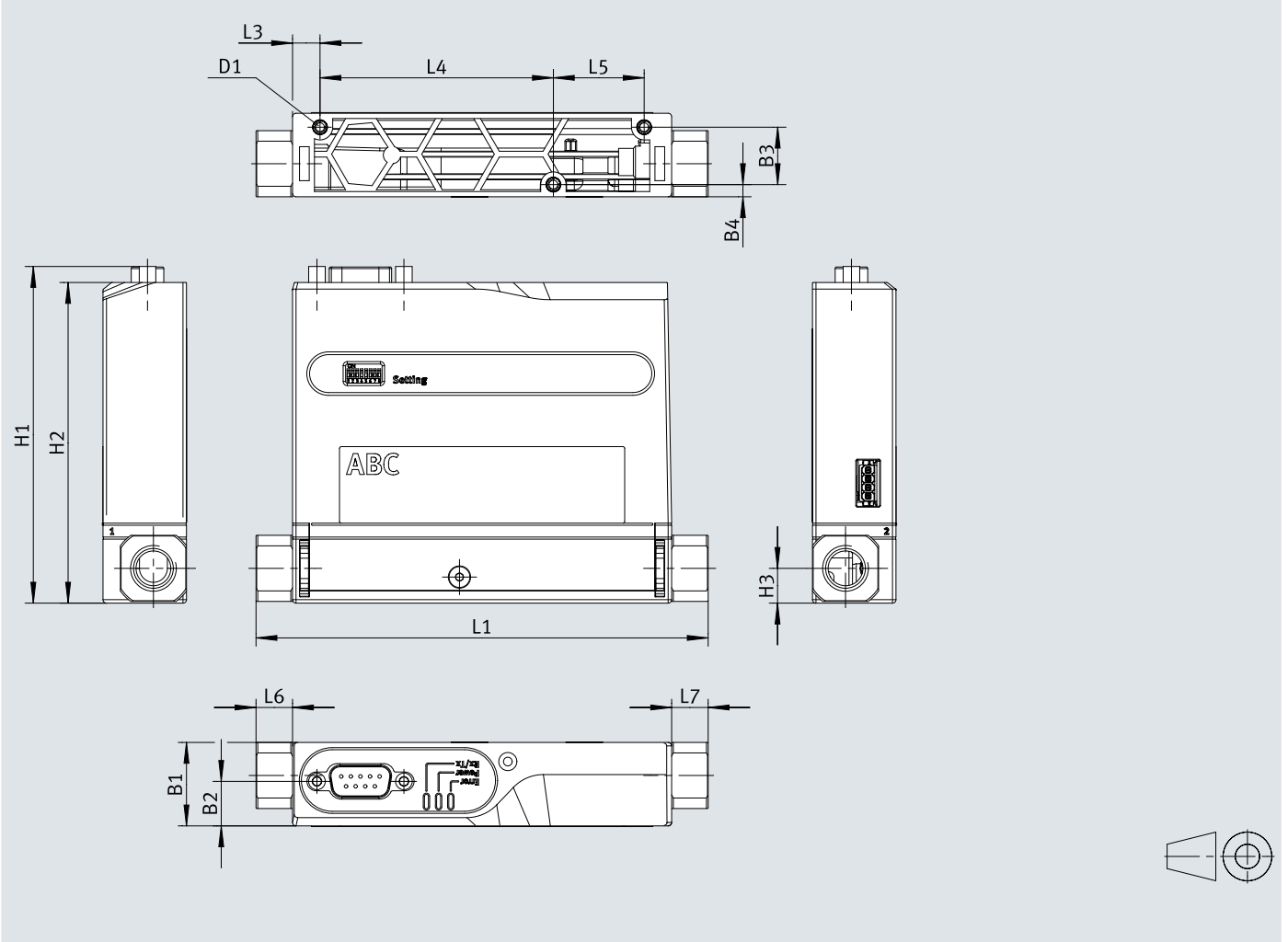
VEFC-L-6-200-...



# Dimensions

Dimensions – Mass flow controller VEFC, G14

Download CAD data [www.festo.com](http://www.festo.com)

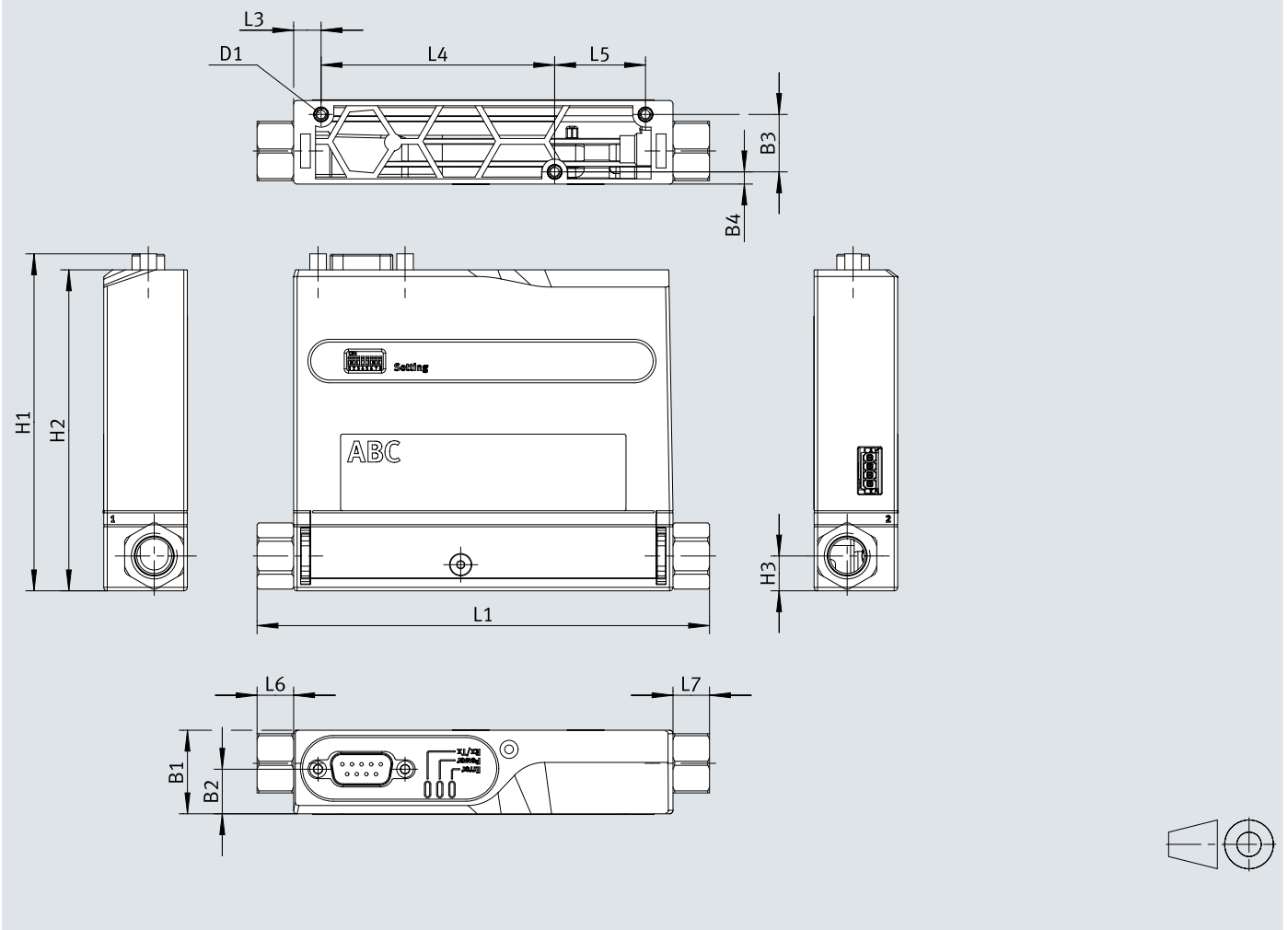


	B1	B2	B3	B4	D1	H1	H2	H3	L1	L3	L4	L5	L6	L7
VEFC-L-6-200-D31-G14-G14-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	130	7,9	67,1	26,1	10,5	10,5
VEFC-L-6-100-D31-G14-G14-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	130	7,9	67,1	26,1	10,5	10,5

## Dimensions

Dimensions – Mass flow controller VEFC, R14

Download CAD data [www.festo.com](http://www.festo.com)

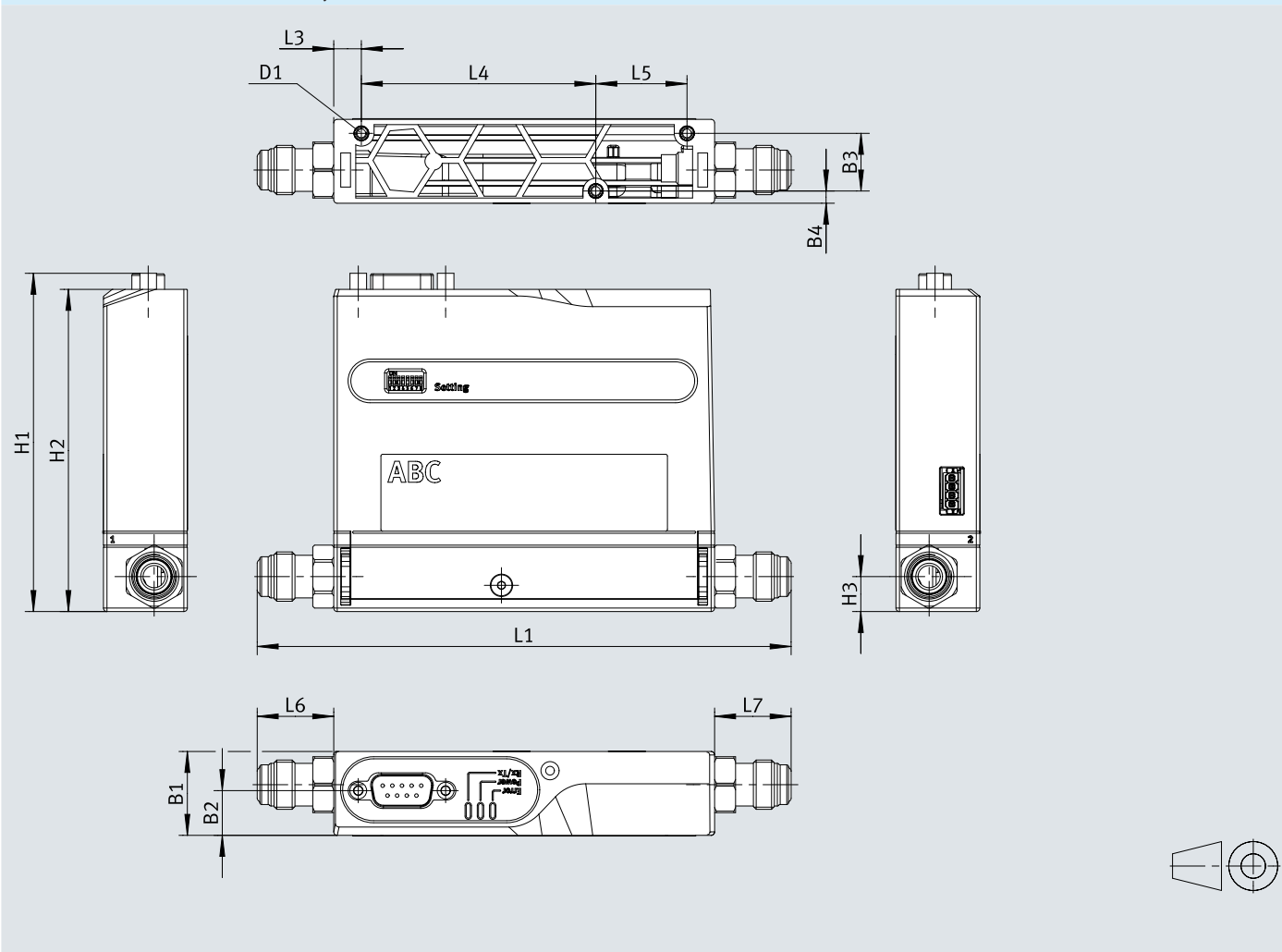


	B1	B2	B3	B4	D1	H1	H2	H3	L1	L3	L4	L5	L6	L7
VEFC-L-6-200-D31-R14-R14-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	130	7,9	67,1	26,1	10,5	10,5
VEFC-L-6-100-D31-R14-R14-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	130	7,9	67,1	26,1	10,5	10,5
VEFC-L-6-50-D31-R14-R14-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	130	7,9	67,1	26,1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

# Dimensions

Dimensions – Mass flow controller VEFC, MFS14

Download CAD data [www.festo.com](http://www.festo.com)

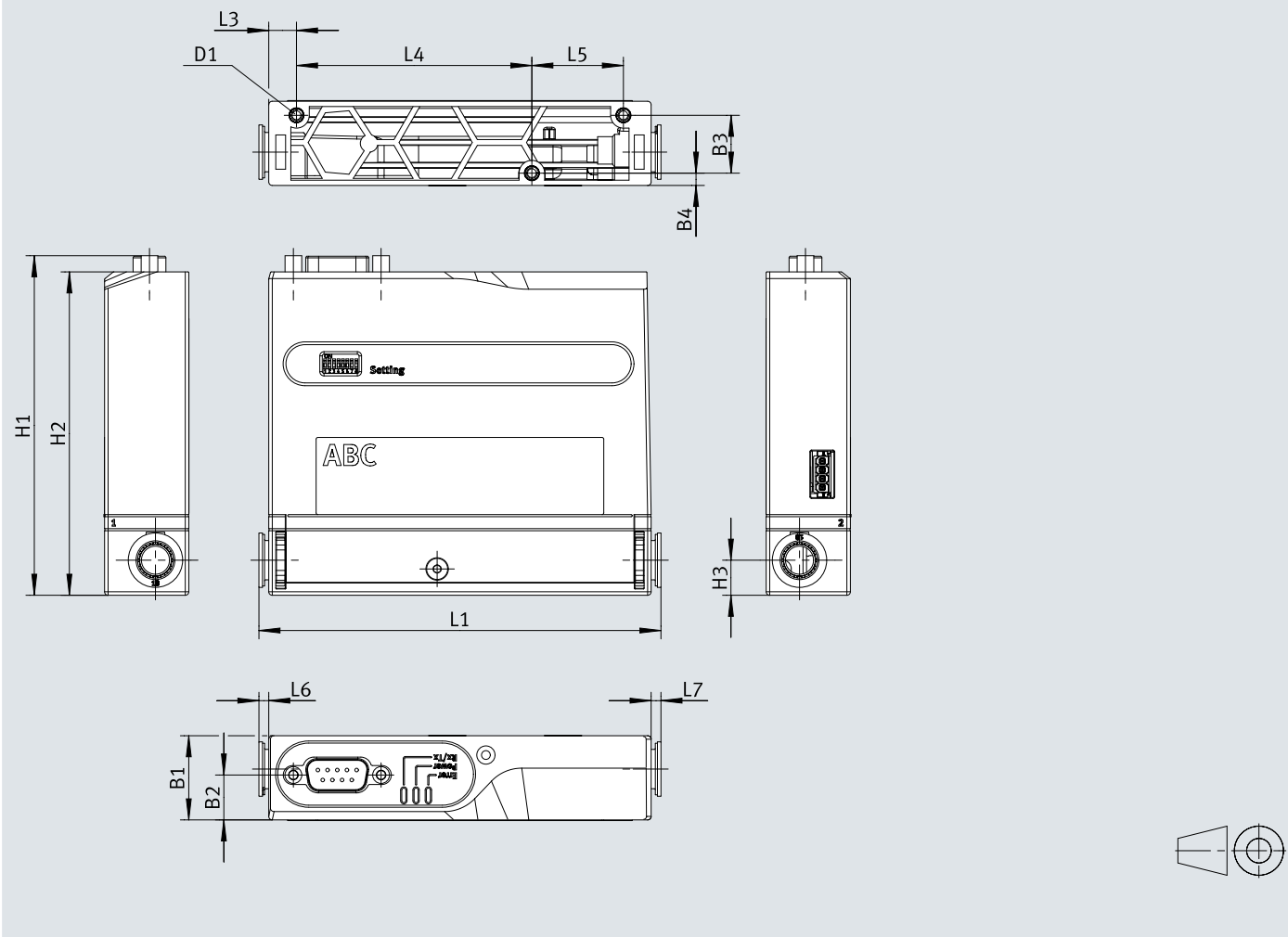


	B1	B2	B3	B4	D1	H1	H2	H3	L1	L3	L4	L5	L6	L7
VEFC-L-6-200-D31-MFS14-MFS14-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	152,8	7,9	67,1	26,1	21,9	21,9
VEFC-L-6-100-D31-MFS14-MFS14-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	152,8	7,9	67,1	26,1	21,9	21,9
VEFC-L-6-50-D31-MFS14-MFS14-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10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

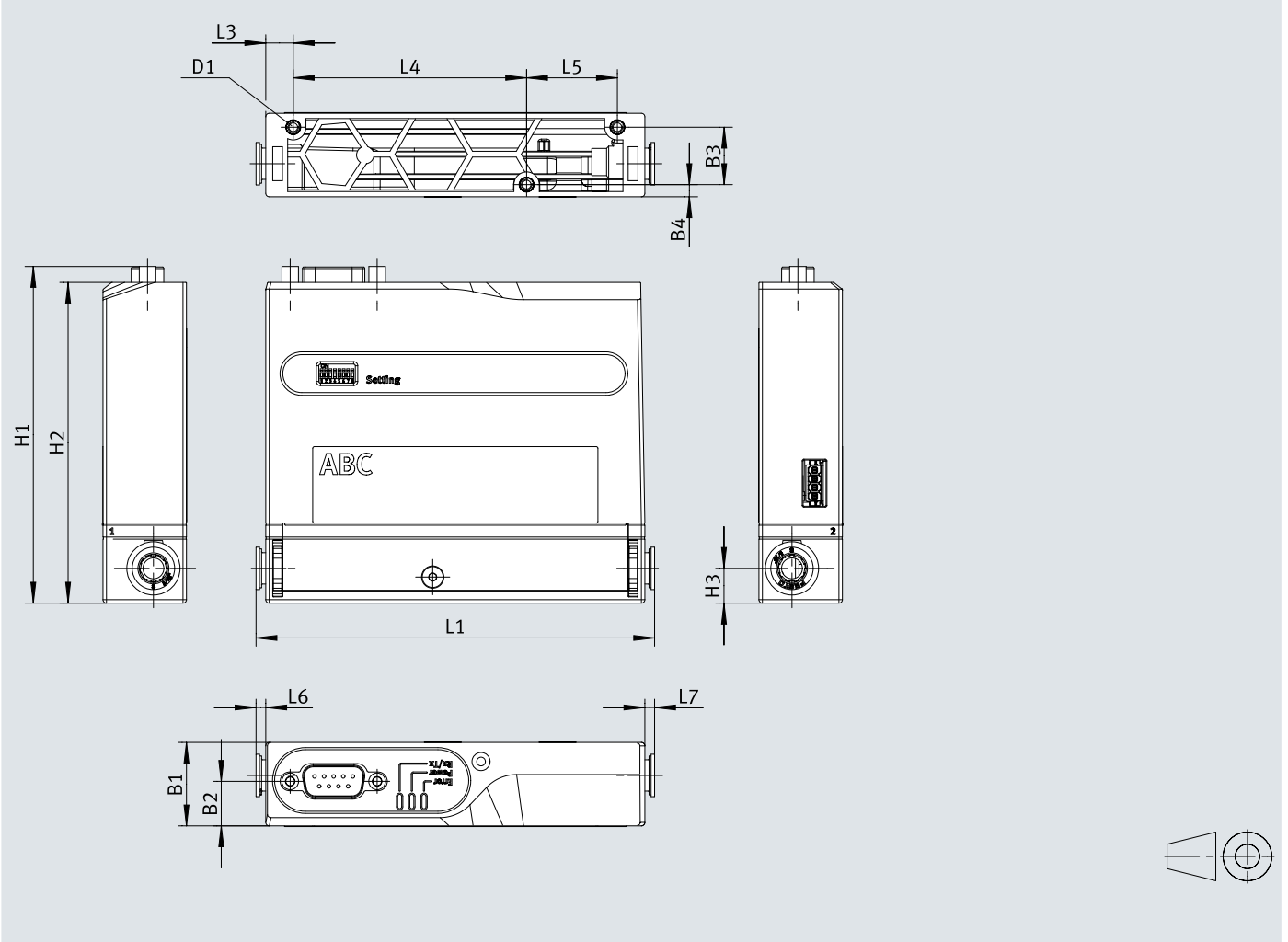


	B1	B2	B3	B4	D1	H1	H2	H3	L1	L3	L4	L5	L6	L7
VEFC-L-6-200-D31-Q10-Q10-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	114,6	7,9	67,1	26,1	2,8	2,8
VEFC-L-6-100-D31-Q10-Q10-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	114,6	7,9	67,1	26,1	2,8	2,8

## Dimensions

### Dimensions – Mass flow controller VEFC, Q8

Download CAD data [www.festo.com](http://www.festo.com)

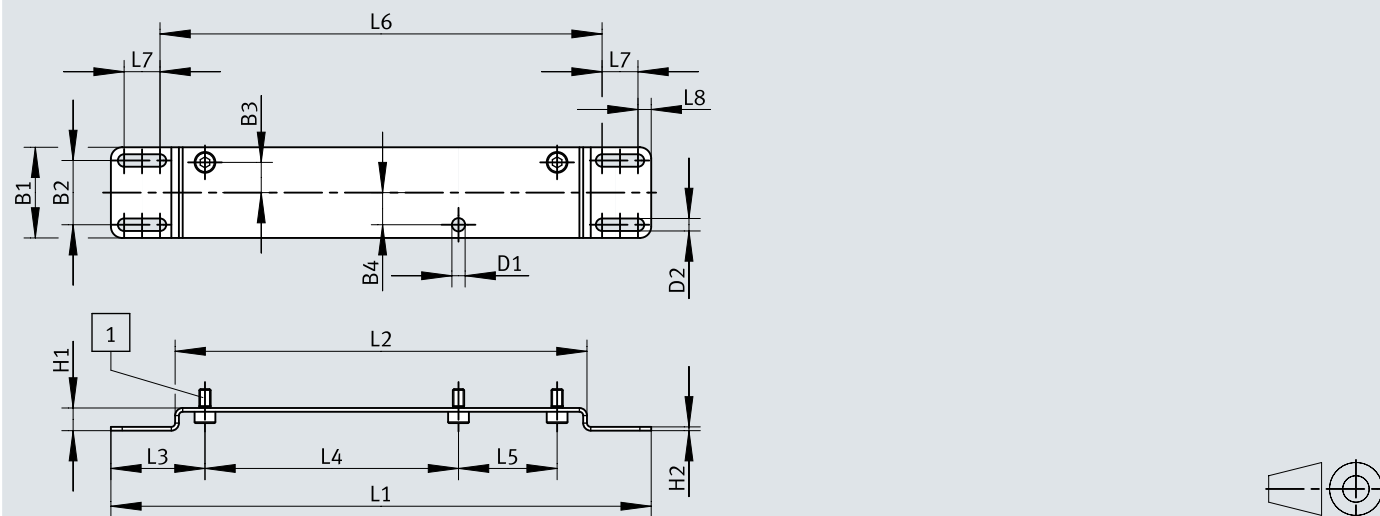


	B1	B2	B3	B4	D1	H1	H2	H3	L1	L3	L4	L5	L6	L7
VEFC-L-6-200-D31-Q8-Q8-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	114,6	7,9	67,1	26,1	2,8	2,8
VEFC-L-6-100-D31-Q8-Q8-MRM1	24	12,8	16,5	3,5	M3	96,8	92,2	10	114,6	7,9	67,1	26,1	2,8	2,8

## Dimensions

### Dimensions – Mounting kit VAME


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[1] M3x6 screw

	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

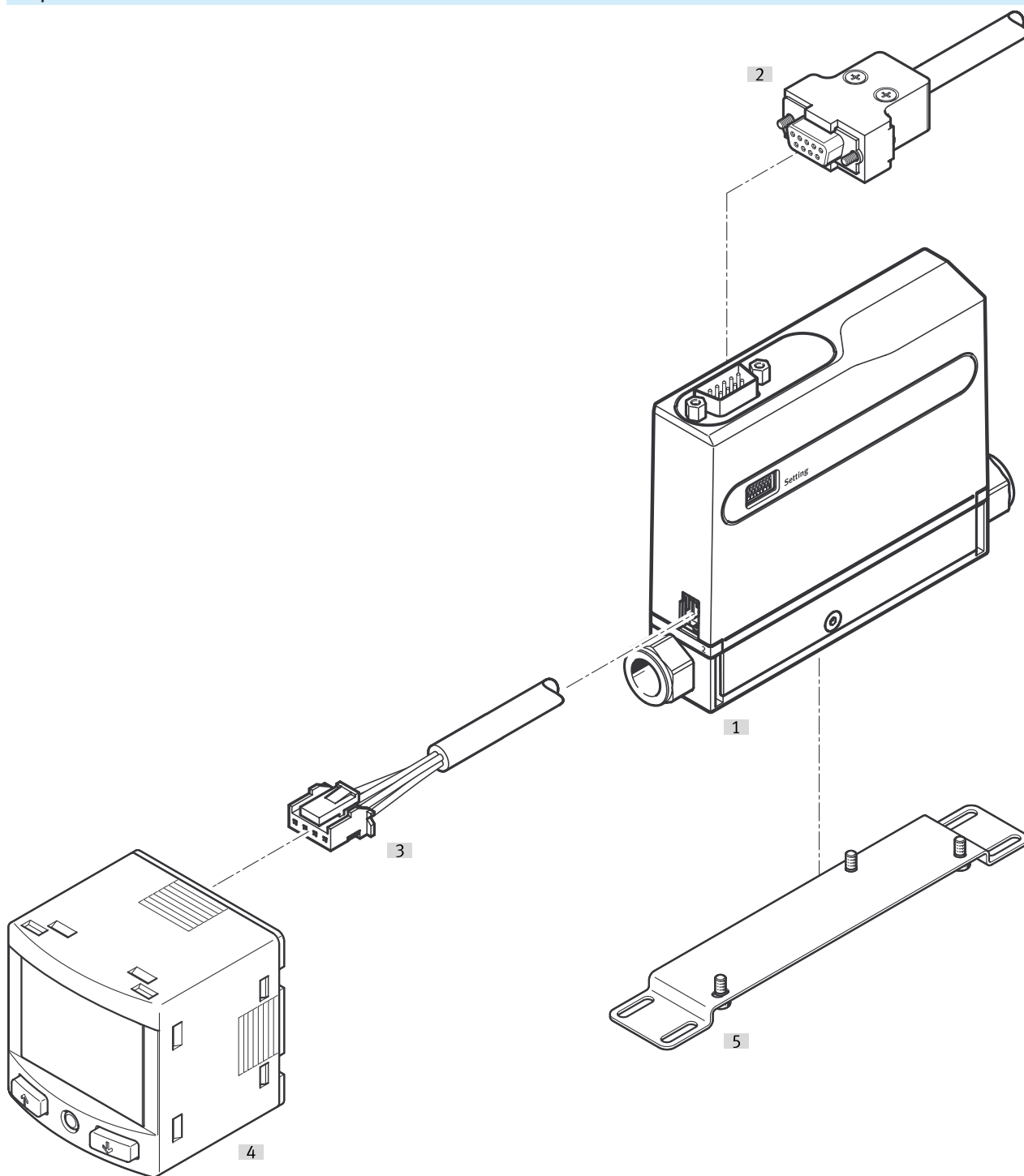
## Ordering data

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

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

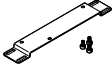
## Peripherals

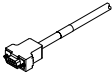
### Peripherals overview

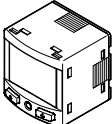


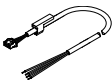
Accessories			→ Link
Type/order code	Description		
[1] Mass flow controller	VEFC		<a href="#">vefc</a>
[2] Connecting cable	KMP6-09P-8-...		<a href="#">15</a>
[3] Connecting cable	NEBS-L1G4-K...-LE4		<a href="#">15</a>
[4] Operator unit	CDSV-P20-A		<a href="#">15</a>
[5] Mounting kit	VAME-P20-24-K		<a href="#">15</a>

## Accessories

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

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

Operator unit				
	Material housing	Note on materials	Part no.	Type
	PA-reinforced	RoHS-compliant	<b>8217573</b>	<b>CDSV-P20-A</b>

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	<b>572576</b>	<b>NEBS-L1G4-K-2.5-LE4</b>
				5 m	<b>572577</b>	<b>NEBS-L1G4-K-5-LE4</b>