

Simply a question of
better measurement



LED measured value display EMD 10010/10015

The ideal solution for displaying
and calculating measured values
at the place of use

Compressed air technology

Industrial processes

Cleanroom and pharmaceuticals

Ventilation and air-conditioning



The ideal on-site measured value display for all types of sensors and measuring transducers

Sensors must be mounted into positions specified by metrology. In practice, a sensor display is often not very helpful, since it cannot be recognized or isn't even visible from far away. However, an on-site display near the sensor is often useful. It is important that calculated measured values such as m³/h or totalized volumes are also displayed and retransmitted as analog output signal.

The **LED displays EMD 10010 and 10015** meet these requirements perfectly. They have been designed as large-sized wall display and can be mounted in any readily accessible position. The analog output signals are scaled by one (EMD 10.010) or two sensors (EMD 10.015) and displayed. In addition, an analog value (4 ... 20 mA or 0 ... 10 V) is provided via a galvanically separated analog output. Furthermore, the values can be used to define switching points and output directly via two relays.

The power supply can be provided by the mains voltage or via 24 Volt (DC) – the connected sensors are supplied with power directly by the LED display.

Simple and quick control

The entire control and configuration of the LED display is effected very simply via 3 control buttons. A small status display supports navigation in the control menu. The measured values displayed include, apart from the calculated value, also the "raw value" of the sensor inputs in Milliampere or Volt, which extremely simplifies any troubleshooting or validation of the wiring. The maximum and minimum values of the calculated measurement value can be displayed by pressing a button (drag pointer function). To protect the LED display from unauthorized access to the setting, it can be locked.

Two versions to choose from

Depending on the applications, you have to choose of two product versions. For each version, you may also choose from a supply voltage of 85 – 250 VAC or 24 VDC.

	EMD 10010	EMD 10015
Number of sensor inputs	1	2
Difference/Sum functions	no	yes
Detection of flow direction ¹⁾	no	yes

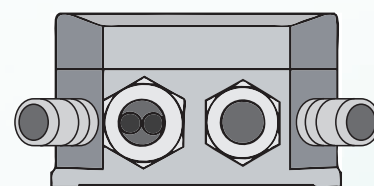
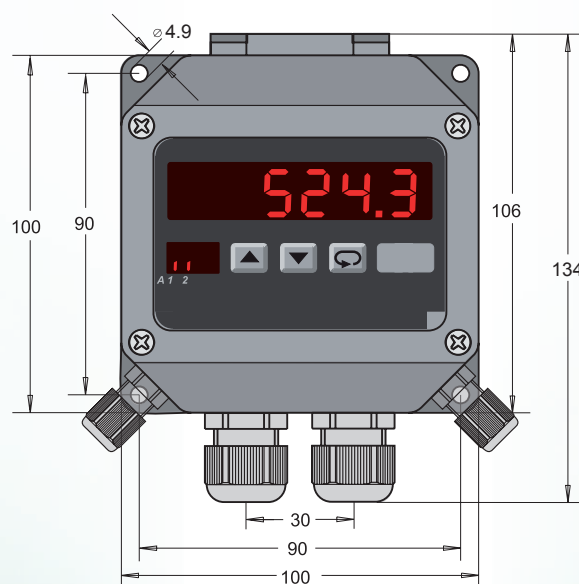
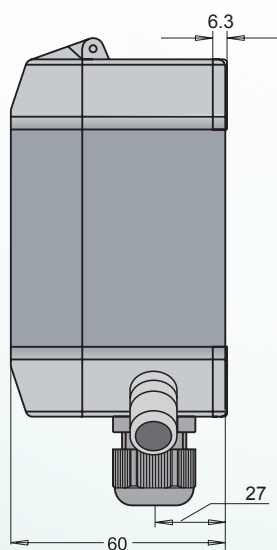
¹⁾ in connection with EM low sensors in chamber head technology

Their advantages at a glance:

- Sturdy plastic housing IP65 for wall assembly
- Settings are retained even after a power failure
- Simple and quick assembly directly on wall or duct
- Freely programmable for all sensors and measuring transducers (e. g. temperature, pressure or humidity sensors with 4 – 20 mA or 0 – 10 Volt on output signal)
- Adjustable averaging
- Output of calculated measured value (e.g. volumetric flow) as display and analog signal
- Configurable relay alarm outputs (e. g. falling/rising flank)
- Power supply of the connected sensor



Stickers for identifying the desired measuring unit are included



Typical application examples in connection with EM flow sensors

In compressed air technology:

- Detection of the consumed compressed air volume
- Detection of backflow in circular pipelines
- Display of the leakage volume on site
- Verification of the minimum compressed air volume in the system (site of consumption)

In industrial processes:

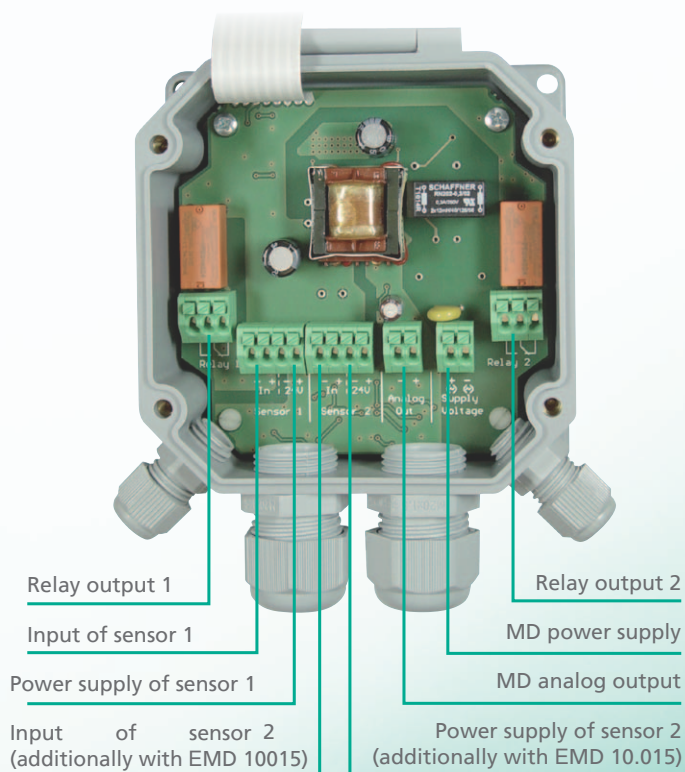
- Display of the air flow of extraction systems
- In-process detection of gas volumes

Cleanroom and pharmaceuticals:

- Display of the measured laminar flow
- Display and alarm function for room overflow applications

Ventilation and air-conditioning:

- Direct display of the actual volumetric flows on the duct
- Switching of fans or dampers when values exceed or fall below limit values on site
- Detection of backflows (e.g. in soiled filters)



Technical data

Display	Red LED, height 14.2 mm, 6 digits Additional display: 2 digits, 7 mm
Input signal	1 x 4 ... 20 mA ($R_i = 200 \Omega$) or 0 ... 10 V at $R_i \geq 12,5 \text{ k}\Omega$ (MD 10.010) 2 x 4 ... 20 mA or 0 ... 10 V (MD 10.015)
Output signal	1 x 4 ... 20 mA or 0 ... 10 V (Auto U/I) (galvanically separated, short-circuit-protected) Voltage output: $\geq 1 \text{ k}\Omega$ Current output: $\leq 400 \Omega$ 2 relay changeover contacts (potential-free), $< 250 \text{ V AC}$, max. 5 A
Accuracy of output signal	$\pm 0.2 \%$ of measured value
Supply voltage	85 ... 250 V AC, 50 ... 60 Hz or 23 ... 29 V DC
Current consumption	max. 8 VA
Sensor power supply	24 V DC, max. 160 mA (short-circuit-resistant)
Operating temperature	$-20 \dots +60 \text{ }^\circ\text{C}$
Storage/transport temperature	$-40 \dots +70 \text{ }^\circ\text{C}$
Environmental conditions	non-condensing (up to 95 % of relative humidity)
Connection	14 / 18 spring-actuated terminals, 1.5 mm ² , 4 through bolt joints
Operating position	any
Ingress protection / protection class	IP65 / II (contact protected)
Housing material	Polyamide, glass-fiber-reinforced (PA6-GF 15/15), color similar to RAL 7001
Weight	approx. 370 g



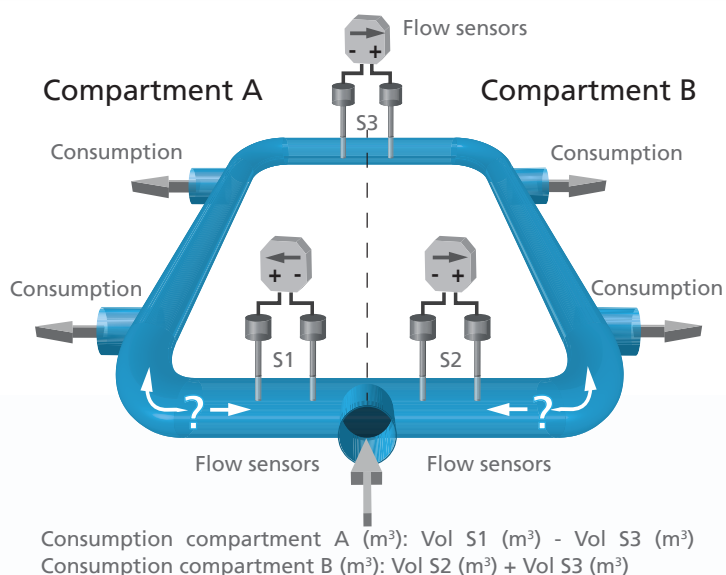
Assembly kit for pipe assembly suitable for EMD 10010 / 10015

Practical and safe

To connect the connecting lines, the housing is simply screwed open and folded up. The cables are inserted into spring-actuated terminals. Sealing and traction relief are effected via proven plastic screw-type joints.

Know where the wind is blowing from: Measuring the value and direction of flow with EM flow sensors and LED displays

In practice, for example in ring main compressed air pipes or circulation ducts, it very often happens that the flow does not always come from the same direction. This greatly affects the determination of the consumption rates: It leads to incorrect results, because the backflow through the flow meter is also added to the forward flow rather than subtracted. The mechanical (paddle) switches for flow detection used nowadays for solving the problem are not capable of detecting the direction of flow with small flow volumes, resulting in relatively inaccurate volume measurements.

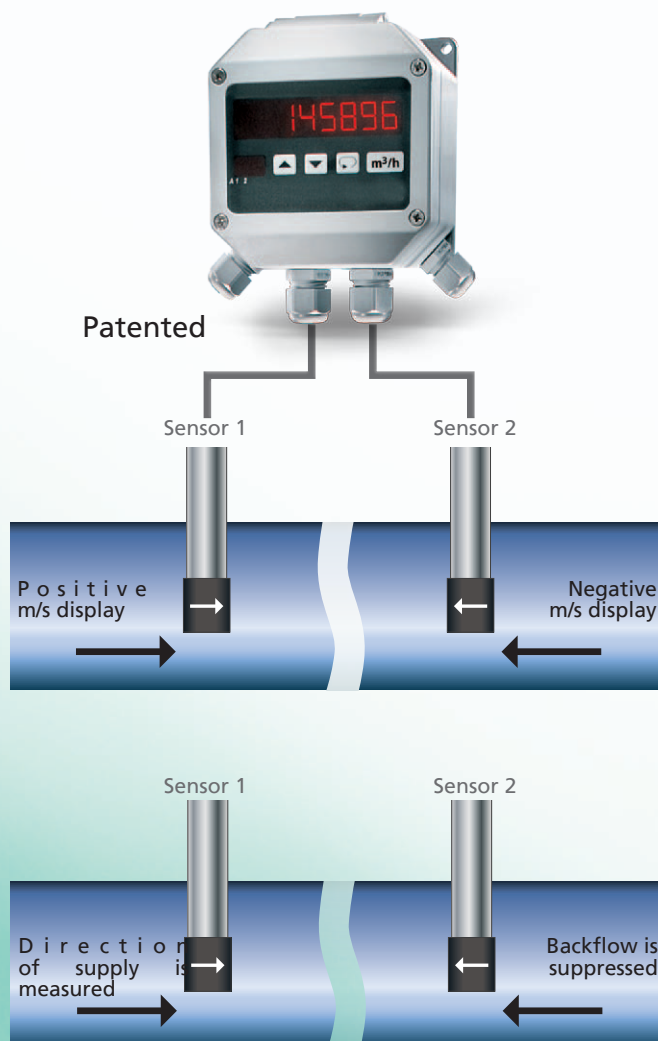


A patented and accurate solution

The LED display EMD 10015 and two flow sensors with chamber head technology allow accurate detection of the volumetric flows. 2 chamber head sensors are simply arranged rotated by 180 degrees and built in at a distance of 10 times the pipe diameter. The EMD 10015 provides the user with the following options:

Detection of the flow velocity and volume from both directions (bidirectional mode)

To detect the direction, the flow velocity is displayed with or without a minus sign. To pass on the information, the output signal is split: for example 4 ... 12 mA for negative, 12 ... 20 mA for positive display. For the determination of the volume, the "positive" direction is added up, and the "negative" direction is subtracted.



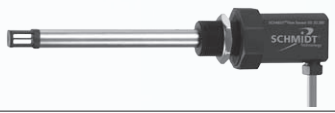
Detection of one direction of flow only

With this setting, the backflow values are not displayed or not added up – only the supply volumes from the direction of supply are detected. In this application, the second sensor serves as "direction detector".

Order information LED display EMD 10010/10015

Description	Article number
LED display EMD 10010; in a wall housing for displaying volumetric flow and flow velocity (or other measuring parameters), 85 ... 250 V AC and sensor power supply	527 320
LED display EMD 10010; same as 527 320, but with 24 V DC power supply	528 240
LED display EMD 10015; in a wall housing for displaying volumetric flow and flow velocity (or other measuring parameters), including an additional sum function and 2nd measurement input 85 ... 250 V AC and sensor power supply	527 330
LED display EMD 10015; same as 527 330, but with 24 V DC power supply	528 250
Assembly kit for pipe assembly suitable for EMD 10010 / 10015, including pipe clamps and collar for adjustment to the pipe diameter	531394

Suitable EM flow sensors with chamber head technology for detecting the direction of flow in connection with LED display EMD 10015:

Sensor		Flow measuring range	Maximum operating pressure	Temperature of the medium to be measured
EM 20260		0 ... 60 m/s	Atmospheric	-20 ... +120 °C
EM 20261		0 ... 90 m/s	10 bar	-20 ... +85 °C
EM 2060(0)		0 ... 220 m/s	16 (40) bar	-20 (-40) ... +120 °C
EM 20651		0 ... 20 / 60 m/s	Atmospheric / 16 bar	0 ... +200 / +350 °C