

Simply a question of better measurement



Duplex-Laminar-Flow Sensor EM 20415 Twin*

Double validation of laminar flow

* protected by DE 20 2021 103 497.1

- Redundant validation of laminar flow applications
- Two independently working high-end flow sensors in one unit
- Easy installation at one measuring point
- No mutual influencing of the measurement
- Confined space becomes a minor matter
- ‚Plug and Play‘ and quick assembly
- Precise measurement of low flow velocities [w_N]
- Straight and angled design for wall or ceiling mounting

Industrial processes

Cleanroom and pharmaceuticals

First Duplex Flow Sensor: Laminar Flow Security in perfection!

Perfect for use if double validation of laminar flow is required and space is limited.

Two redundant flow signals from one measuring point – without any influence from the second probe.





Flow monitoring in cleanrooms and clean zones

A direction-defined airflow in clean rooms protects the products against contamination and unwanted particles will be safely evacuated. To do so, a uniform air flow from the ceiling to the floor ("oriented, low-turbulence displacement flow") is maintained in cleanrooms of high purity levels. The monitoring range is from $w_N = 0.36$ to 0.54 m/s flow velocity. In the cleanroom, the measurements are made behind terminal filters.

Since the recirculation of air is reduced during standstill periods, an extremely precise measurement of the air velocity is mandatory from 0.1 m/s onwards.

Air flow measurement and control by Duplex Flow Sensor EM 20415 Twin

Often two redundant flow sensors, such as the EM 20415 LED are installed in applications, for example to realize the regulation and monitoring of the laminar flow independently of one another. Many times, due to limited space, there are limitations in the best placement of the two sensors. Even if the assembly can finally be realized, the mutual influence of the two sensors is a big uncertainty.

With the **Duplex Flow Sensor EM 20415 Twin**, both of the problems mentioned above can be easily resolved. The combination of two completely self-sufficient flow sensors made it possible to realize a redundant flow measurement at the same measuring position and to eliminate the mutual influence of the two probes. Both flow signals are delivered separately from one another via two analogue outputs.

Thanks to the **cleanroom-compliant quick assembly kit**, the Duplex Flow Sensor can be exchanged for an existing sensor without any additional effort. The assembly effort is identical, the space requirement for assembly is slightly increased.

Order code Duplex Flow Sensor EM 20415 Twin

	Description	Article number							
Basic sensor	Duplex Flow Sensor EM 20.415 Twin	566 950	A	B	C	D	E	F	G
	Options								
Type	Standard		1						
Mechanical type	Sensor length 150 mm x 300 mm (angulated)			1					
	Sensor length 270 mm x 300 mm (angulated)			2					
	Sensor length 300 mm (straight)			3					
Mechanical fixation	Threaded bushing M25 with counter nut				1				
	Threaded bushing M25 with thread adaptor M25 x 1.5 to PG21				2				
	Threaded bushing M25 with shank nut				3				
	Welding bushing				4				
	Flange bushing				5				
	Without fixation material				6				
Measuring range	0 ... 1 m/s					1			
	0 ... 2.5 m/s					2			
Output signal	0 ... 10 V						1		
	4 ... 20 mA						2		
Adjustment accuracy and calibration	Standard adjustment							1	
	Standard adjustment with factory calibration certificate							2	
	High precision adjustment with factory calibration certificate							3	
Sensor programming	Factory setting								1

Technical data

Measuring parameters	Standard velocity w_N of air, based on standard conditions 20°C and 1013.25 hPa
Measuring range w_N	$0.05 \dots 1 / 2.5$ m/s
Measuring accuracy w_N	Standard ¹⁾ $\pm(3\%$ of measured value $+ 0.05$ m/s) High precision (option) ¹⁾ $\pm(1\%$ of measured value $+ 0.04$ m/s)
Response time (t_{90}) w_N	5 s
Signal outputs	2 analogue outputs: w_{N1} and w_{N2}
Analogue outputs security Analogue outputs signal type	Short-circuit protected (against both rails) U or I (selectable by order) - Voltage U: Signal: $0 \dots 10$ V Burden: $R_L \geq 10$ k Ω / $C_L \leq 10$ nF - Current I: Signal: $4 \dots 20$ mA (error: 2 mA) Burden: $R_L \leq 300$ Ω / $C_L \leq 100$ nF
Operating voltage U_B	24 VDC $\pm 10\%$
Pressure range	Atmospheric ($700 \dots 1,300$ hPa)
Humidity	Measuring mode: non-condensing ($< 95\%$ RH)
Operating temperature	$0 \dots +60^\circ\text{C}$
Connection	M9 connector, male, 7-pole
Probe length	300 mm straight 270 mm x 300 mm angulated 150 mm x 300 mm angulated
Probe diameter	Probe tube: approx. 9 mm Sensor head: 9 mm
Material	Stainless steel 1.4404 Gluing groove with H_2O_2 resistant epoxy resin
Type of protection	IP65
Protection class	III (SELV), PELV (EN 50178)

¹⁾ under reference conditions, related to the calibration reference