

Simply a question of
better measurement



Flow Switch EM 20200

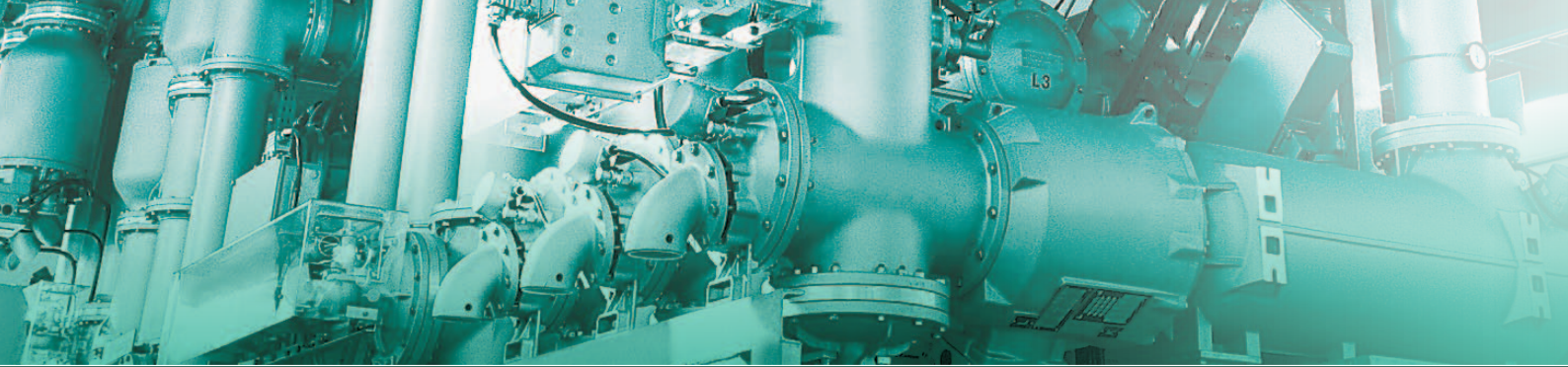
Reliable and safe,
independent of temperature

Industrial processes

Cleanroom/pharmaceuticals

Ventilation/air-conditioning





Flow Switch EM 20200

Reliable signalization of flow limit values

For many applications the detection of exceeding and shortfall of air/volume flows is a process and quality relevant factor. In order to document exact threshold values, common flow switches, working as "yes/no-indicators", are insufficient. For demanding applications the EM 20200 is the ideal solution.

Technical Base: A flow sensor

The Flow Switch EM 20200 is based on the thermal measuring principle. The sensor is of the same high technology like a flow sensor and can be used for over pressures up to 10 bars. The output signal is different however: Instead of an analog signal a switching signal is put out by the Flow Switch. The medium temperature is detected and integrated. Thus the EM 20200 is temperature compensated. In practise that means flow detection independent of temperature variations.

The dumbbell head technology

With the dumbbell head technology used and the high flow angle (radial: 360°, axial: $\pm 45^\circ$), the Flow Switch can be positioned in the gas flow safely and quickly. It can be easily installed by means of a flange or a press fitting. The switching point can be fixed either on site by means of a setting potentiometer or as customized pre-programmed value. When reaching the threshold the switch can be used optionally as closing or opening contact.

Protected from dust and aggressive gases

Due to the patented dumbbell head the Flow Switch can also be used in dusty gases. In case the sensor tip gets dirty it can be cleaned by the user without any problems. On request the flow switch can be delivered with a special protective coating that makes it resistant to aggressive mediums like salt acid, acetone, sulfuric acid and a lot more.

Typical applications of the Flow Switch EM 20200 dumbbell head technology include:

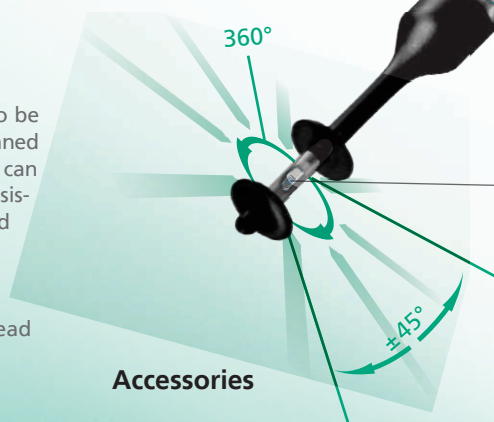
- Monitoring the minimum air flow (ventilator control)
- Ensuring the minimum volume flow in exhaustions
- Avoiding the shortfall of volume flows in compressed air equipments
- Control of supply air in cooling air channels (protection of equipment)
- Compliance with minimum speed in drying processes
- Control of filters



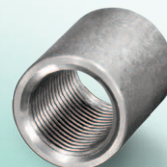
Everything in view

Dual LED's clearly indicate the sensor is energized and that the operation is "OK". The setting potentiometer is located behind the protective cover.

With protective coating

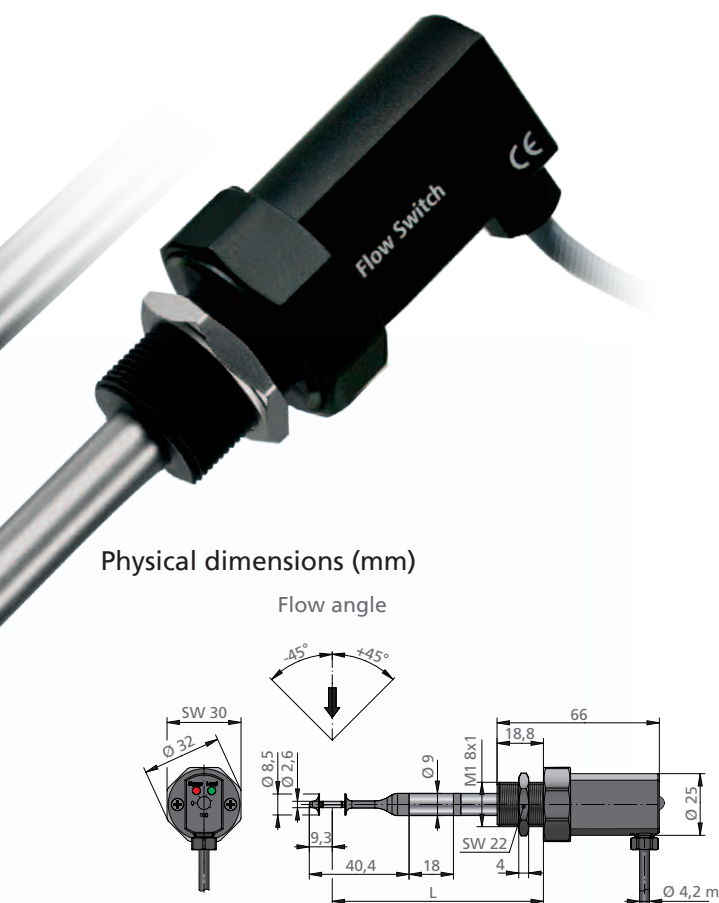


Accessories



Compression fitting for atmospheric pressure
stainless steel Art. No. 532 160 brass Art. No. 517 206

Welding sleeve
steel Art. No. 524 916
stainless steel Art. No. 524 882



Physical dimensions (mm)

Flow angle

Everything in flow

The integrated temperature measurement is located behind a metal sleeve in the sensor tube which is inserted into the medium to be measured. This allows fast response to changes in flow and temperature of the medium.

Everything in its place

The sensor element for the flow measurement is located between the two "dumbbell disks", which ensure an aerodynamic flow line. A resistant protective coating is available as an option.



Compression fitting, max 10 bar
brass Art. No. 524 891
stainless steel Art. No. 524 919



Mounting flange
Art. No. 301 048

Technical Data

Measuring data	
Measurement values w_N	Standard flow velocity w_N normalized to $T_N = 20^\circ\text{C}$ and $p_N = 1013.25\text{ hPa}$
Measuring fluid	Air, nitrogen, other gases on request
Measuring range $w_{N\text{ max}}$	0 ... 1 / 2,5 / 10 / 20 m/s
Threshold w_N	0,1 m/s up to the end of measuring range
Accuracy	
Switching hysteresis	$\pm 5\%$ of threshold; min. 0,1 m/s
Setting threshold	Potentiometer (270°), optionally pre-programmed
Accuracy threshold ¹⁾ (pre-programmed)	$\pm (3\% \text{ of measured value} + 0.1\text{ m/s})$
Response time $t_{90\text{ } w_N}$	3 s (jump from 0 to 5 m/s air)
Switch-on delay	20 s
Temperature gradient w_N	$< 2\text{ K/min}$ at 5 m/s
Operating temperature	
Sensor	$-20^\circ\text{C} \dots +85^\circ\text{C}$
Electronics	$-20^\circ\text{C} \dots +70^\circ\text{C}$
Storage temperature	$-20^\circ\text{C} \dots +85^\circ\text{C}$
Material	
Housing	PBT fibre-glass reinforced
Sensor tube	Stainless steel 1.4571
Sensor head	PBT fibre-glass reinforced Stainless steel 1.4571
Protective coating (option)	Polyurethane derivative
Connecting cable	PVC
General Data	
Humidity	Measuring mode: non-condensing ($< 95\% \text{ RH}$)
Maximum pressure	0 ... 10 bar
Display	LED green: operating status LED red: switching status
Supply voltage	24 V DC $\pm 20\%$
Current consumption	Type $< 70\text{ mA}$
Switching output	Semiconductor relays; max. 30 V / 100 mA / 300 mW; $R_{ON\text{ max}} = 25\ \Omega$
Electrical connection	Permanently connected cable, 4-pin, length 2 m
Admissible cable length	100 m max.
Mounting position	Any
Minimum immersion	58 mm ($< 58\text{ mm}$ on request)
Protection class	Housing: IP65/III, sensor head: IP67
MTTF value (per 01.01.2011)	$> 50\text{ years}$
Sensor length	100 / 200 / 350 / 500 mm
Weight	Approx. 100 g ($L = 350\text{ mm}$)

¹⁾ under reference conditions, related to the calibration reference

Order information Flow Switch EM 20200

	Description	Article number				
Basic sensor	Flow Switch EM 20200; with switching output, cable length 2 m, without protective coating	504 475 -	X	Y	S	N xx
	Flow Switch EM 20200; with switching output, cable length 2 m, with protective coating	505 504 -	X	Y	S	N xx
	Options					
Mechanical type	Sensor length 100 mm		1			
	Sensor length 200 mm		2			
	Sensor length 350 mm		3			
	Sensor length 500 mm		4			
Measuring ranges and calibration	Measuring range 0... 1 m/s			1		
	Measuring range 0... 2,5 m/s			2		
	Measuring range 0... 10 m/s			3		
	Measuring range 0... 20 m/s			4		
Signalization Relais/LED	Flow velocity $w_N > \text{threshold}$: relais closes/LED on				1	
	Flow velocity $w_N > \text{threshold}$: relais opens ¹⁾ /LED on				2	
	Flow velocity $w_N < \text{threshold}$: relais closes ¹⁾ /LED on				3	
	Flow velocity $w_N < \text{threshold}$: relais opens ¹⁾ /LED on				4	
Setting threshold	With setting potentiometer, without pre-setting					P 00
	With setting potentiometer, selectable pre-setting of 5 up to 95 % of measuring value					P 05 ... 95
	Selectable pre-programming (not changeable) from 5 up to 95 % of measuring range					F 05 ... 95
	Description	Article number				
Accessories	Mounting flange made of galvanized steel	301 048				
	Wall mounting flange stainless steel, PTFE-clamping ring	520 181				
	Compression fitting stainless steel G ½, atmospheric pressure	532 160				
	Compression fitting brass G ½, atmospheric pressure	517 206				
	Compression fitting stainless steel G ½, max. 10 bar, with protection against pressure losses	524 919				
	Compression fitting brass G ½, max. 10 bar, with protection against pressure losses	524 891				
	Welding sleeve steel G ½, according to EN 10241, 5 pieces	524 916				
	Welding sleeve stainless steel G ½, according to EN 10241, 2 pieces	524 882				
	Clip-on bars for dumbbell against mechanical influences, stainless steel	531 026				
	Attachable protective 2-wires-clip for protection against mechanical influences, stainless steel, H ₂ O ₂ -resistant	559 124				
	Power supply unit 24 V DC / 1 A output, supply voltage 115/230 V AC	535 282				

¹⁾ In case of an alarm the configuration "relay opens" is called "fail safe" because a voltage breakdown as well as a cable break can also be signalized as alarm.