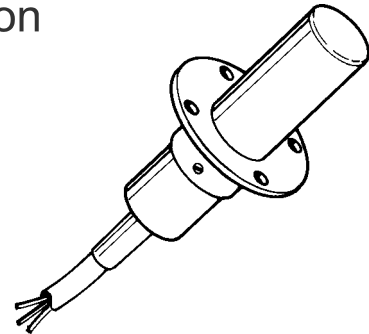


One-part sensor for monitoring air flows with integrated evaluation electronics. The calorimetrically working devices makes possible maintenance-free operation due to its teach-in function.

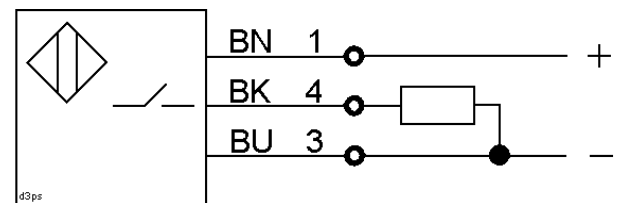
Teach - In
function



Technical Data

Type	FKM 231.13 G
Art.-No.	8043A
Output	PNP n. o.
Adjusting range	1 - 16 m/s
Set limit value	3 m/s
Response time	2 – 10 s
Readiness delay	30 s
Supply voltage	24 V DC
Load current max.	0 - 200 mA
Short circuit protection	yes
No load current	< 40 mA
Voltage drop	< 2 V
Switching hysteresis	max 15 %
Ambient temperature	-10 to +60 °C
Protection class	IP 67
Connection	2 m cable
Function display	Duo-LED red/green
Housing material	Plastic PBT
Further available designs:	Type:
without PNP normally close output	FKM 231.12 G

Diagram of Connections

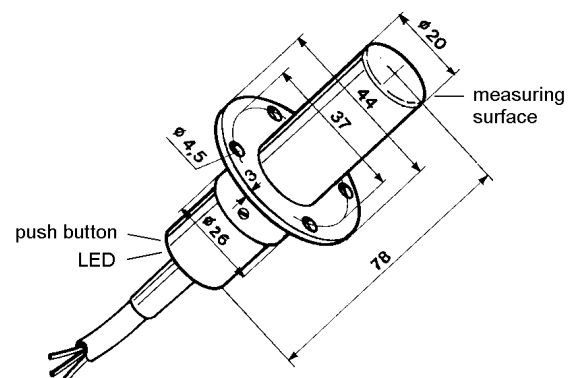


The flow limit set to 3 m/s by the factory is preferred in the ranges of building technology and mechanical engineering, however it can be adapted to the application requirements by it's TEACH-IN push-button.

TEACH-IN: Expose the air flow controller to the flow in question for at least 5 minutes. Keep push-button pressed for 3 seconds, until the LED gives green blinking light. Now the sensor stores the new flow limit value permanently and independent from the mains supply. In order to avoid that normal changes in the flow during operation result in wrong switchings half the value of the flow in question is stored as limit value. Example: flow value 10 m/s, stored limited value approx. 5 m/s.

Operation: After applying the service voltage (LED flashes green light) the output simulates existing flow for 30 seconds. After this delay the switching output indicates the real flow condition. The normally-open version switches through (LED gives green light) when the flow limit value is exceeded and opens when the value falls below the limit value (LED gives red light) (inverted behaviour of the switching output in case of the normally-close version).

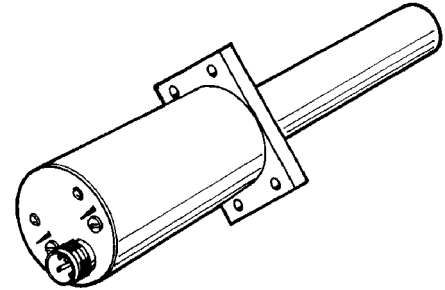
Installation: The air flow controller is installed in such way that the flow can reach the plane measuring surface (Ø20mm) from any direction. For proper temperature compensation 30 mm of the cylindrical part up to the measuring surface must be exposed to the same ambient temperatures. Quick changes of temperature can result in short-time wrong switchings. A mounting flange is included in the scope of the delivery. Alternatively you can use customary clips or cable unions M32 (PG 21).



This air flow controller controls two independently adjustable limit values upto a flow velocity of 30 m/s. Short-circuit-proof normally open and normally close outputs as well as two-colour LEDs indicate when the values exceed or fall below the desired range. So troubles such as flow failure, hose rupture and required exchange of filter can be monitored in installations of inflow technique.

Normally open (LED and potentiometer at the left, 20 pitches): output connected through and given green light at min. flow existing; red LED flow failure.

Normally close (LED and potentiometer at the right, 20 pitches): output connected through and LED giving green light at value fallen below the max. flow; red LED = flow too high.

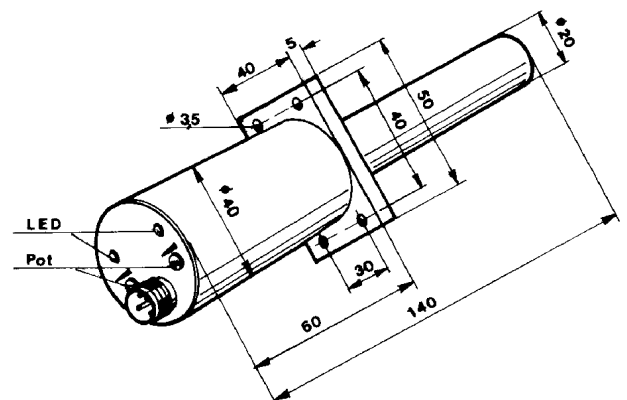
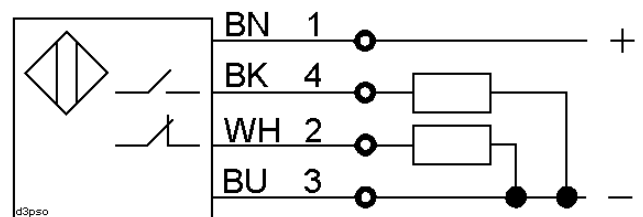


Technical Data

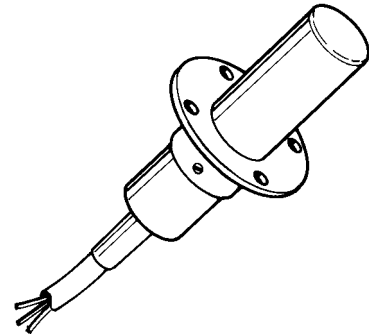
Type	FKM 230.18 GS4
Art.-Nr.	8041A
Output	PNP n. o. + n. c.
Adjusting range normally open	1 - 30 m/s
Adjusting range normally close	8 - 30 m/s
Measuring principle	calorimetric
Response time	< 10 s
Readiness delay	30 s
after applying the supply voltage both outputs are connected	during this time both LEDs give green intermittent light.
Supply voltage	24 V DC +10 / -15%
Ripple voltage	max. 15%
Load current max.	0 - 400 mA
Short-time load current	4 A / 100 ms
Short circuit protection	yes, pulsing
No-load current	50 mA
Voltage drop	1,5 V
Switching hysteresis	0,5 - 2 m/s
Ambient temperature	-10 ... +60 °C
Protection class	IP 65
Connection	plug Lumberg M12
Function display	2 LEDs 2-colour
Housing material	sensor part plastic electronic part with flange aluminium
Weight	200 g

The air flow controller is mounted in such a way that the air can flow onto the plane measuring surface (diameter 20 mm) from random direction. For effective temperature compensation the cylindrical part must be exposed to the same ambient temperatures 30 mm upto the measuring surface. Quick changes of temperature can result in misswitchings for a short time.

Diagram of Connections



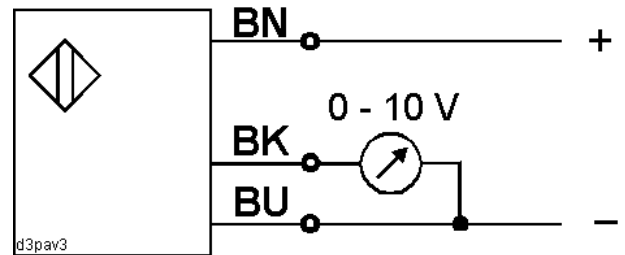
The air flow controller is mounted into the flow to be controlled as a stationary sensing unit with the flange or a PG 29 union. The air flow produces an output signal which is proportionate to the velocity. The heated flow sensors are arranged below the face of the hermetically closed casing of insulating material. Thanks to the calorimetrical measuring principle with electronic evaluation maintenance-free operation is possible.



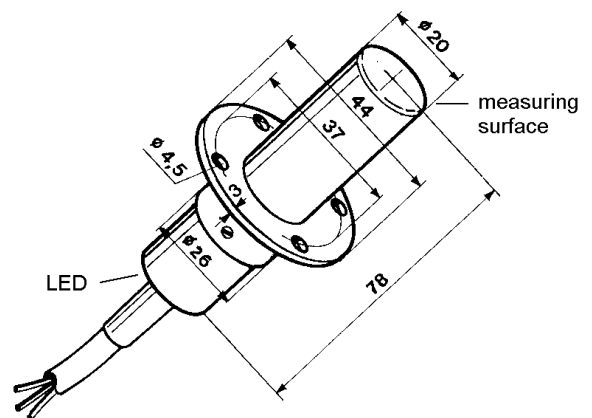
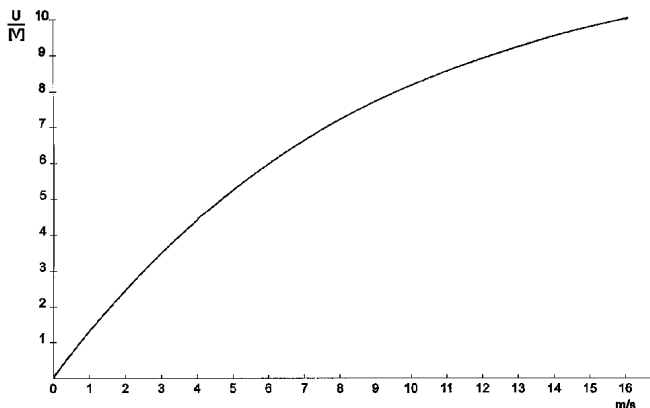
Technical Data

Type	FKM 230.19
Art.-No.	8027A
Output	0 - 10 V ($R_L \geq 10\text{ K}$)
Measuring range	0 - 16 m/s
Resolution	0,01 m/s
Exactitude	+/- 5 %
Temperature error	0,5 %/K
Response time	15 s (t 90)
Starting time	5 min
Supply voltage	24 V DC +10 % / -15 %
Power absorption	60 mA
Ambient temperature	0 to +50 °C
Protection class	IP 67
Connection	2 m cable
Function display	LED
Housing material	plastic

Diagram of Connections



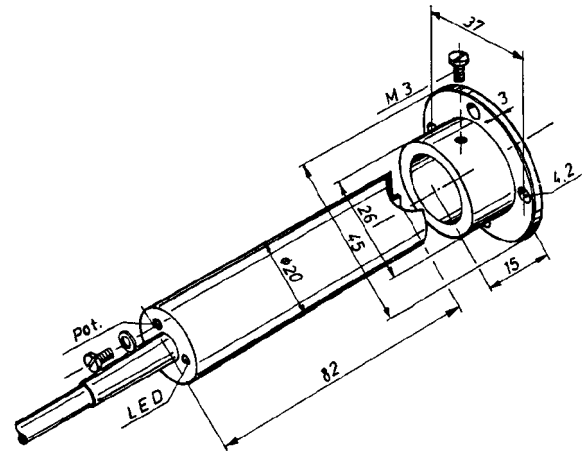
Output voltage/flow rate standard



One-part sensor for controlling air and gaseous flows with integrated evaluation electronic. The air flow controller is mounted into the flow to be controlled as a stationary sensing unit with the flange or a PG 21 union.

The calorimetrically working unit with integrated evaluation electronic offers maintenance-free operation.

The sensor is available as switching unit with different output variations for controlling a limit flow value as well as with analogous output.



Switching Output with S. C. P.

Type	Art.-No.	Connection technology
FKM 130.10 G	8005A	NPN n. c., 3 wire
FKM 130.11 G	8006A	NPN n. o., 3 wire
FKM 130.12 G	8007A	PNP n. c., 3 wire
FKM 130.13 G	8008A	PNP n. o., 3 wire

Switching Output without S. C. P.

Type	Art.-No.	Connection technology
FKM 130.10	8001A	NPN n. c., 3 wire
FKM 130.11	8002A	NPN n. o., 3 wire
FKM 130.12	8003A	PNP n. c., 3 wire
FKM 130.13	8004A	PNP n. o., 3 wire

Analogous Output

Type	Art.-No.	Output
FKM 130.19	8009A	0 - 10 V

The value of 3 m/s adjusted in the factory is preferred in the branches of building technology and constructional engineering, however it can be set subsequently to values between 1 and 10 m/s.

After applying the supply voltage the FKM 130 needs a start-up time delay of 3 minutes. After this delay the switching output (red LED) indicates the real condition of flow. The normally open version switches through and the red LED gives light when the limit value for flow is exceeded and opens if the flow falls below the set value (inverse behaviour of normally close versions).

A mounting flange is included in the scope of supply. Alternatively suitable clips or a PG 29 cable union can be used for pressure-tight assembly. The sensor must protrude approx. 25 mm (1 inch) into the air duct. The ceramic vane should be parallel to the air flow. Small deviations in vane orientation do not affect operation. Quick changes of temperature can result in misswitchings for a short time.

Technical Data (Switching Output)

Adjusting range	1 - 10 m/s
Set limit value	3 m/s
Response time	max. 15 s
Starting time	3 min
Supply voltage	24 V DC
Load current max.	0 - 200 mA
Short circuit protection	yes
No load current	50 mA
Voltage drop	2 V
Switching hysteresis	max 30 %
Ambient temperature	-10 ... +60 °C
Protection class	IP 65
Connection	2 m cable
Function display	LED
Housing material	plastic

Technical Data (Analogous Output)

Output	0 - 10 V ($R_L \geq 10 \text{ K}\Omega$)
Measuring range	0 - 16 m/s
Response time	15 s (t_{90})
Starting time	5 min
Supply voltage	24 V DC
Power absorption	40 mA
Ambient temperature	0 ... +50 °C
Protection class	IP 65
Connection	2 m cable
Function display	LED
Housing material	plastic

All types also available with hermetically closed casing:
M2compact FKM 230

One-part sensor for controlling air and gaseous flows with integrated evaluation electronic. The air flow controller is mounted into the flow to be controlled as a stationary sensing unit with the flange or a M32 (PG 21) union. The calorimetrically working unit with integrated evaluation electronic offers maintenance-free operation.

Technical Data

Type	Art.-No.	Connection technology
FKM 130.52	8019A	115 V AC n. c.
FKM 130.53	8020A	115 V AC n. o.
FKM 130.82	8022A	230 V AC n. c.
FKM 130.83	8023A	230 V AC n. o.
Adjusting range	1 - 10 m/s	
Set limit value	3 m/s	
Response time	max. 15 s	
Starting time	3 min	
Supply voltage	115 V AC	
Load current max.	0,5 - 300 mA	
Short circuit protection	no	
No load current	20 mA	
Voltage drop	6 V	
Switching hysteresis	max 30 %	
Ambient temperature	-10 to +60 °C	
Protection class	IP 65	
Connection	2 m cable	
Function display	LED	
Housing material	plastic	

The value of 3 m/s adjusted in the factory is preferred in the branches of building technology and constructional engineering, however it can be set subsequently to values between 1 and 10 m/s.

After applying the supply voltage the FKM 130 needs a start-up time delay of 3 minutes. After this delay the switching output indicates the real condition of flow. The normally open version switches through and the LED gives light when the limit value for flow is exceeded and opens if the flow falls below the set value (inverse behaviour of normally close versions).

A mounting flange is included in the scope of supply. Alternatively suitable clips or a M32 (PG 21) cable union can be used for pressure-tight assembly. The sensor must protrude approx. 25 mm (1 inch) into the air duct. The ceramic vane should be parallel to the air flow. Small deviations in vane orientation do not affect operation. Quick changes of temperature can result in misswitchings for a short time.

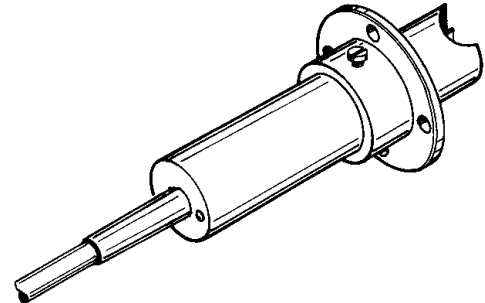


Diagram of Connections

