

## Functional description

For use as a monitoring and alarm system for exhaust flows in various applications, such as fume hoods, safety cabinets and other extraction units.

A microprocessor controlled security system for monitoring the containment-safe operating status of fume hoods. An acoustic and optical alarm is activated as soon as the exhaust flow falls below or exceeds the programmed threshold values.

FM100 fulfills the standard EN 14175. That means security for the laboratory worker. FM100 is suitable for all fume hood constructions, making it easy to carry out new installations and re-fittings on existing fume hoods. In addition to client-specific designs a wide range of different function displays are available (see the data sheet Standard function displays).

A suitable measurement system is vital for precise and safe monitoring. For safe operation with the static differential pressure transmitter and reproducible and exact measurement results we recommend the SCHNEIDER venturi measuring tube or measuring tube.

## Function and control panel

The function and control panel is available with its own case or as a built-in version in different variations. Client-specific designs are implemented quickly and cost-effectively.

### Functions:

- Acoustic and optical alarm (red LED) for insufficient exhaust/supply air
- Optical display (green LED) for sufficient exhaust/supply air
- RESET button to acknowledge the acoustic alarm
- Plug for programming via the service module SVM100 or laptop

### Options:

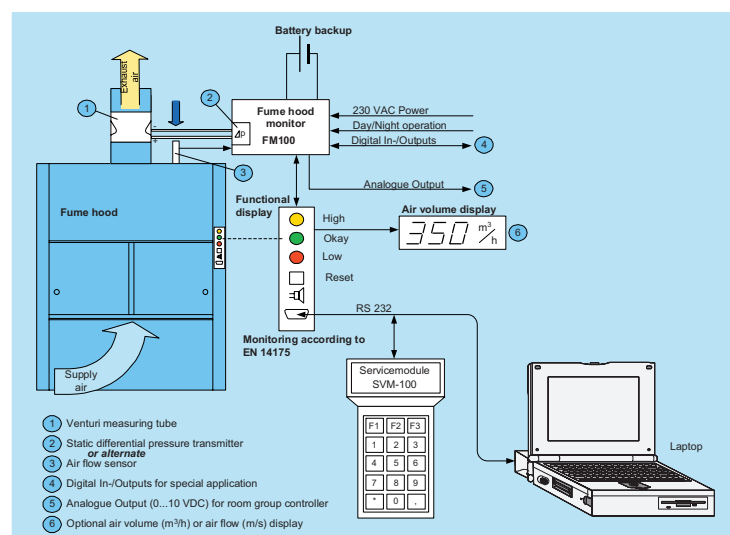
- Button light ON/OFF (fume hood interior)
- Optical display (yellow LED) when the maximum exhaust air is exceeded
- Yellow blinking LED as an optical alarm for the operating status "Sash > 50cm"



## Performance features

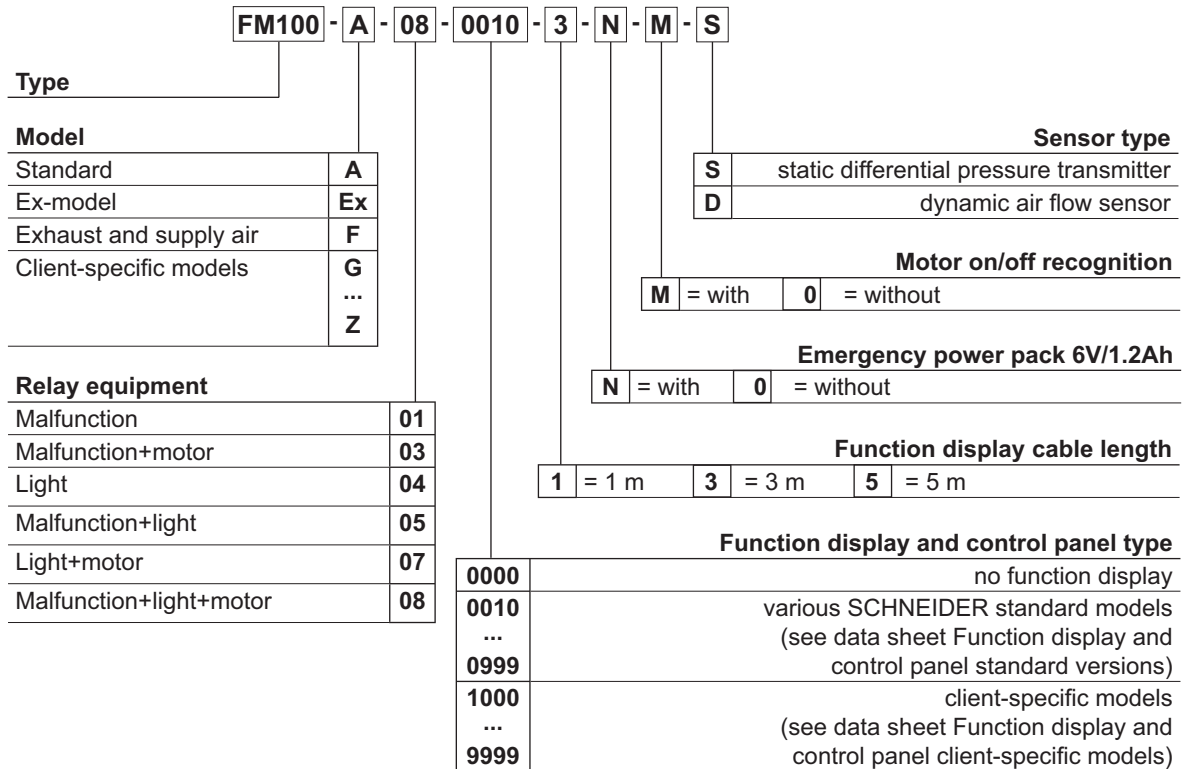
- microprocessor controlled monitoring system
- low cost system
- integrated power supply 230V AC
- all system data are saved mains voltage failure-safe in the EEPROM
- programming of all system values via service module SVM100 or laptop computer software PC2000
- Monitoring of supply and exhaust air systems
- Static differential pressure transmitter with long-term stability. Measuring range: 6...240 pascal or 20...640 pascal. Optionally with air flow sensor (face velocity)
- Monitoring of fume hood operation to EN 14175 with acoustic and optical alarms
- Optional monitoring of exceedance of a programmable volume flow with optical alarm
- Optical and optional acoustic alarm for the operating status "Sash > 50cm"
- Programming of a second monitoring value (reduced volume flow during night-time operation)
- Emergency power pack (optional) for mains voltage failure-safe operation
- Suitable for all fume hood constructions

## Schematic diagram: Fume hood monitoring system FM100



Order code: fume hood monitoring system

**Order code:** Fume hood monitoring system



**Ordering example: Fume hood monitoring system FM100**

Case construction=standard, 3 relays, function display and control panel type = 0010 with 3m cable, with emergency power pack, with motor on/off recognition, static differential pressure transmitter.

**Make: SCHNEIDER      Type: FM100-A-08-0010-3-N-M-S**

**Ex-protected model:**

With ex-differential pressure transmitter and ex-barrier, suitable for zone 2 and zone 1. Mount the FM100 basic model outside the ex-zone. Venturi measuring tube or measuring tube is absolutely essential and to be ordered separately.

**Order code: Venturi measuring tube**

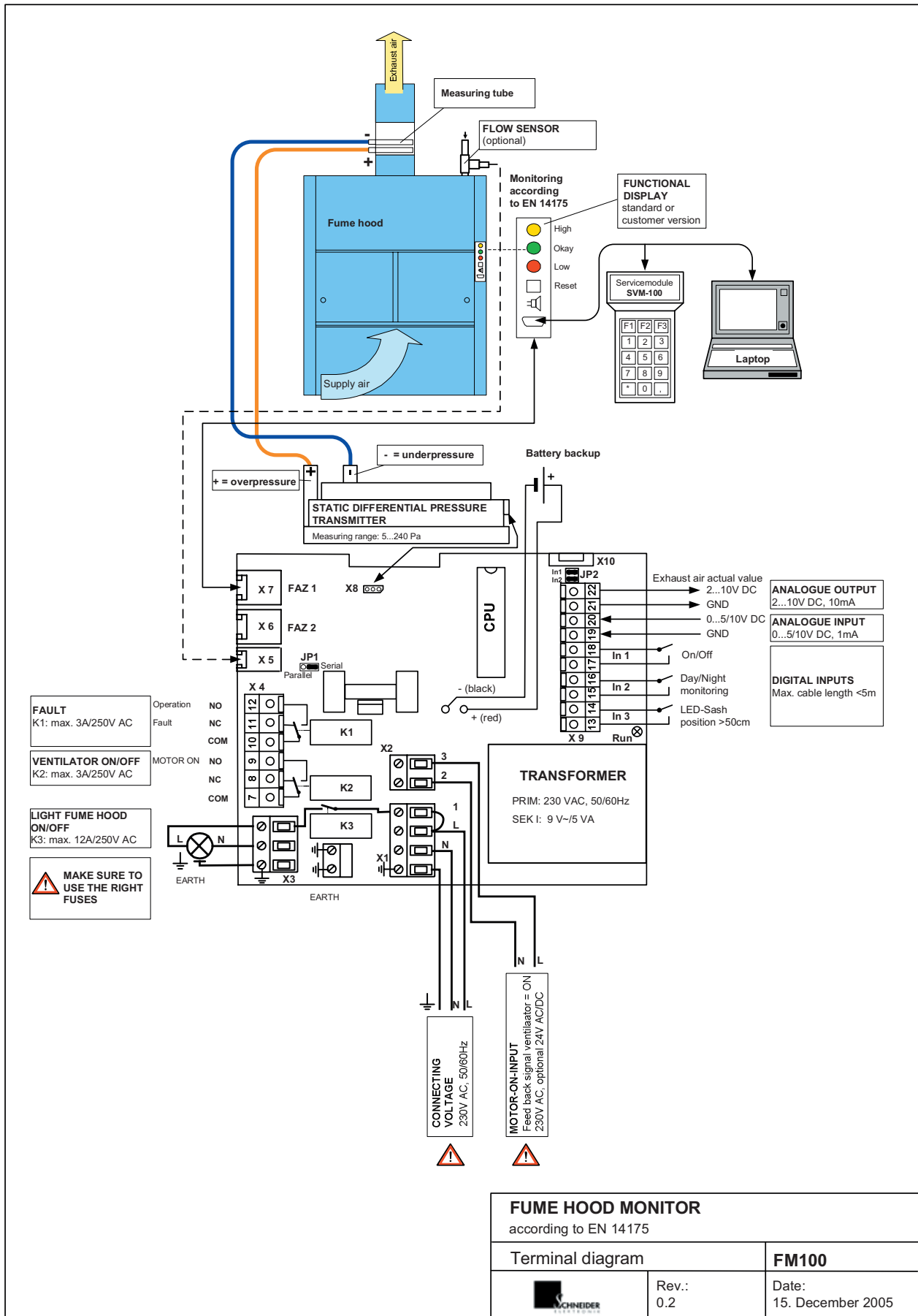
		<b>VM - 250 - P - MM</b>			
<b>Type</b>				<b>Pipe connections</b>	
<b>Nominal diameter [mm]</b>				<b>Air inflow</b>	<b>Air outflow</b>
DN 160	<b>160</b>			<b>MM</b> Socket	Socket
DN 200	<b>200</b>			<b>FF</b> Flange	Flange
DN 250	<b>250</b>			<b>MF</b> Socket	Flange
DN 315	<b>315</b>			<b>FM</b> Flange	Socket
<b>Material</b>					
Polypropylene (PPs)		<b>P</b>		<b>Ordering example: Venturi measuring tube</b>	
PPs electroconductive (Ex-model)		<b>PeI</b>		DN250, PPs, Socket/Socket	
FM 4910		<b>F</b>		<b>Make: SCHNEIDER    Type: VM-250-P-MM</b>	
Galvanised steel		<b>S</b>			
Stainless steel V4A		<b>V</b>			

**Order code: Measuring tube SCHNEIDER**

		<b>MT - 250</b>			
<b>Type</b>				<b>Ordering example: Measuring tube</b>	
		<b>Lengths [mm]</b>		Length 250 mm, PP, suitable for DN250 or angled air ducts (width=250 mm)	
	<b>160</b>	160, 200, 250		<b>Make: SCHNEIDER    Type: MT-250</b>	
	<b>...</b>	315, 400, 500			
	<b>800</b>	600, 700, 800			

Terminal diagram

Terminal diagram: Fume hood monitoring system FM100



■ General	
Nominal voltage	230V AC/50/60Hz/+/-15%
Max. charging rate	200 mA
Max. power input	10 VA
Reactivation time	600ms
Operating temperature	0 °C bis +55 °C
Humidity	max. 80 % relative, non-condensing

■ Case	
Protection type	IP 20
Material	sheet steel
Colour	white, RAL 9002
Dimensions (LxWxH)	(185 x 167 x 92) mm
Weight	ca. 1.4 kg
Terminals	Screw terminal 1.5 mm <sup>2</sup> caged spring terminal 1.5 mm <sup>2</sup>

■ Relay outputs	
Number	1 relay (K3)
Contact type	normally open contact
Max. switching voltage	250V AC
Max. continuous current	12A
Number	2 relays (K1, K2)
Contact type	changeover contact
Max. switching voltage	250V AC
Max. continuous current	3A

■ Digital inputs	
Number	3 inputs, 5V DC/2mA
Activation	potential-free contact, maximum cable length < 5m

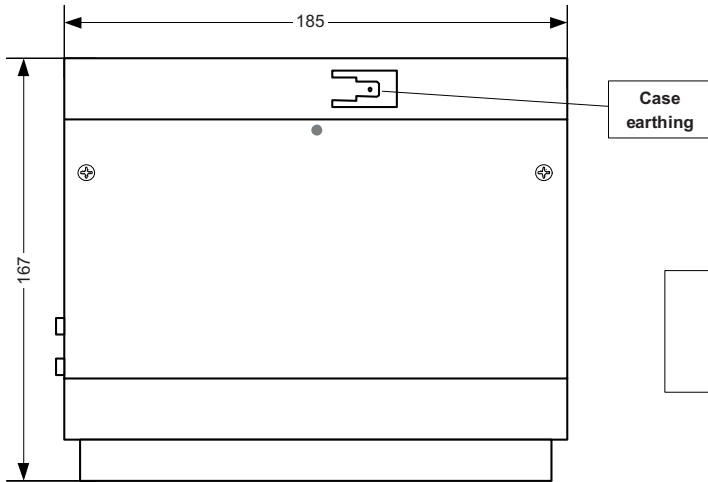
■ Analogue output	
Exhaust air actual value	2...10VDC, 10mA

■ Analogue input	
Setpoint value	0(2)...5/10VDC, 1mA

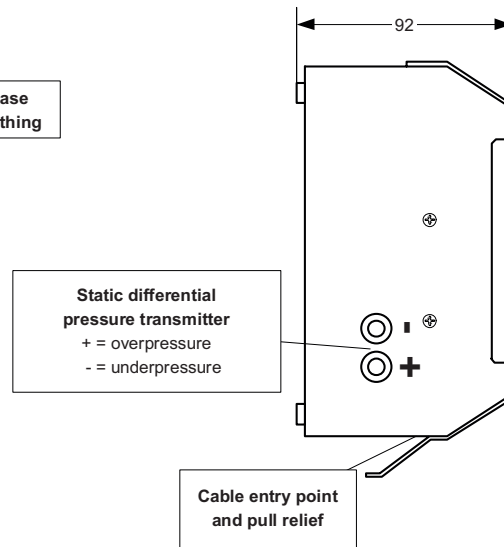
■ Differential pressure transmitter	
Measuring principle	static
Pressure range	6...240 pascal 20...640 pascal optional
Response time	<10 ms
Overpressure max.	500 mbar

■ Optional measurement system	
Material	Polypropylene (PPs)
Measurement system	venturi measuring tube or measuring tube

Case FM100: Top view

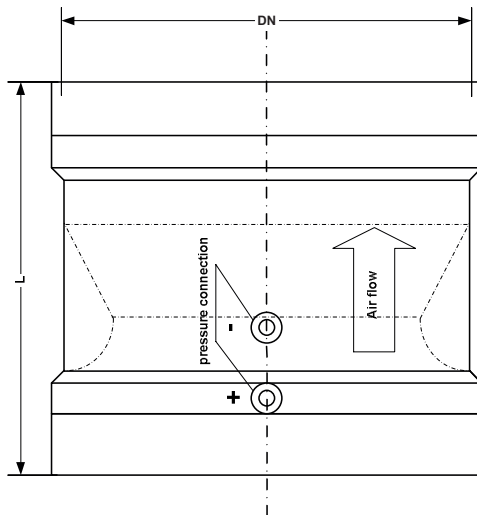


Case FM100: Side view



Venturi measuring tube

Construction: PPs, socket/socket



SCHNEIDER Standard function display  
Function display type: 0010



Measuring tube MT

Suitable for fitting in pipes or angled air ducts  
Construction: PP, lengths from 160 to 800 mm



The shield factor B for the measuring tube MT has to be calculated and is depending on the mounting position.

Nominal diameter [mm]	Length [mm]	Shield factor B	V <sub>MIN</sub> [m <sup>3</sup> /h]	V <sub>MAX</sub> [m <sup>3</sup> /h]
DN 160	190	40	80	509
DN 200	210	61	120	798
DN 250	230	92	180	1263
DN 315	600	148	280	2025

Shield factor B related to air density 1,2 kg/m<sup>3</sup>

Tender specification FM100

Fume hood monitoring system with integrated microprocessor, two independent watchdog circuits and static differential pressure transmitter. Monitoring of fume hood operation to EN 14175 with acoustic and optical alarm. Optical and optionally acoustic alarm for the operating status "Sash > 50cm open". Integrated charging connection for emergency power pack. Optional monitoring of exceedance of a pro-

grammable air flow with optical alarm and programming of a second monitoring value (reduced air flow during night-time operation). System data storage in mains voltage failure-safe EEPROM. Suitable for all fume hood constructions.

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