Technical Data Sheet
Fume Cupboard Monitor FM100

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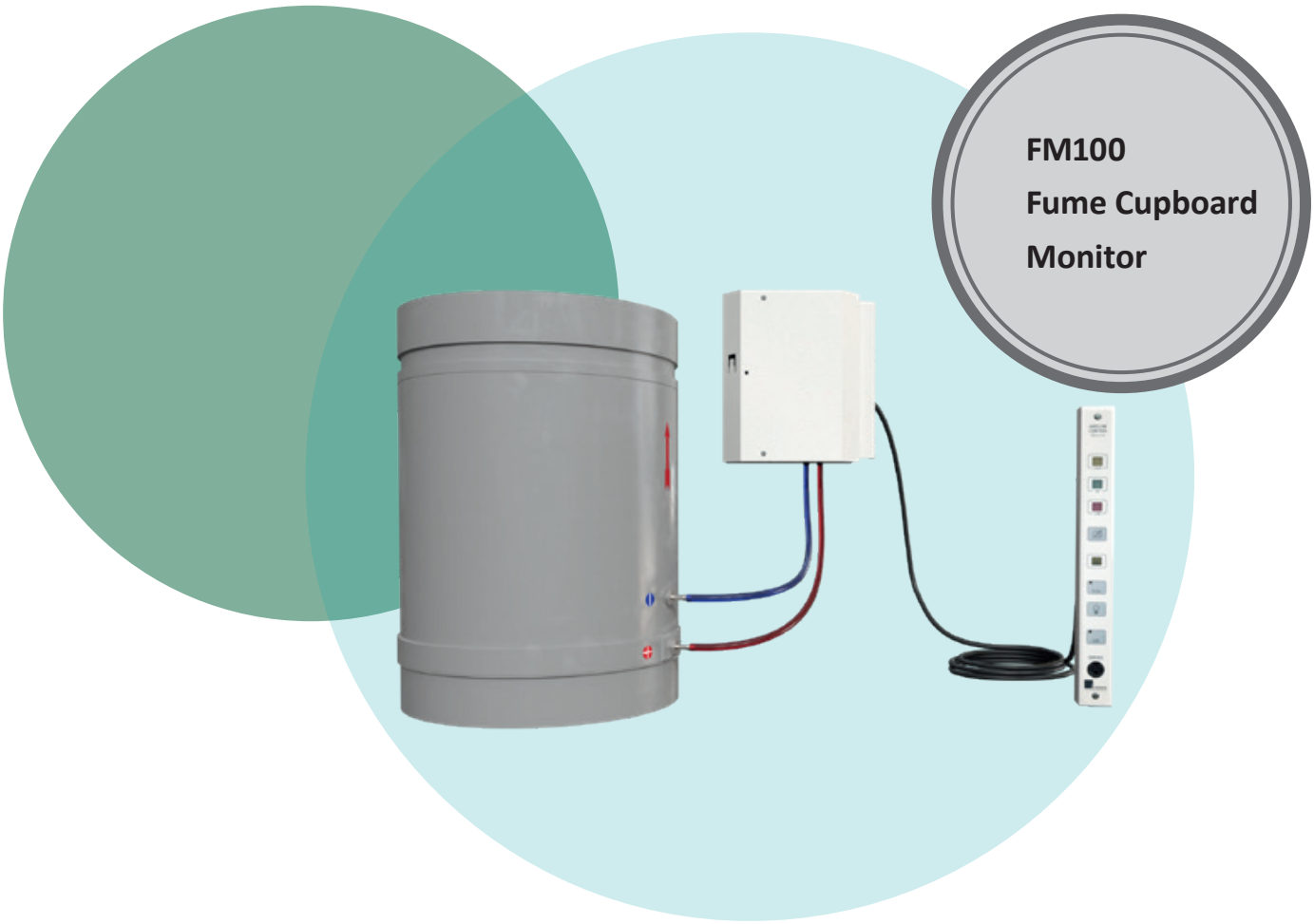
WHERE TO FIND WHAT

GENERAL PERFORMANCE DATA 3
SPECIAL FEATURES 3
PRODUCT DESCRIPTION 4
FUNCTIONAL DESCRIPTION 4
PERFORMANCE FEATURES 4
FUNCTION DISPLAY 5
BASIC EQUIPMENT 5
OPTIONAL EQUIPMENT 5
OPERATING MODES 6
STANDARD VERSION 6
CUSTOMER-SPECIFIC VERSIONS FM100-AA - ZZ 6
AREAS OF APPLICATION 6
PRODUCT CODE FUME CUPBOARD MONITOR 7
PRODUCT CODE FUNCTIONAL DISPLAY 8
TERMINAL ASSIGNMENT OF FM100 9
TECHNICAL DATA FM100 10
ACCESSORIES 11
CONTACT 12



GENERAL PERFORMANCE DATA

Rated voltage	230 V AC / 50/60 Hz / ± 10 %
Rated current max.	200 mA
Power consumption max.	10 VA
Recovery time	600 ms
Operating temperature	+15 °C bis +40 °C
Humidity	RH, 80 max., non-condensing
Dimensions of the housing (L x W x H)	185 x 167 x 92 mm
Material	Steel sheet
Weight	1,4 kg approx.
Protection	IP 20
Colour	RAL 9002
Number of digital outputs	3
Number of digital inputs	3

SPECIAL FEATURES

- Fume cupboard monitoring system with microcontroller
- All system data is saved power-failure-proof
- Parameterization and retrieval of all system values via the PC2500 Software
- Monitoring of supply and exhaust air systems
- Monitoring of fume cupboard operation as per DIN EN 14175 with acoustic and optical alarms
- Suitable for all fume cupboard designs

NOTICE!

The nameplate is fitted on the right side of the housing, opposite to the differential pressure sensor connections.

PRODUCT DESCRIPTION

The FM100 Fume Cupboard Monitor is used as a monitoring and alarm system for exhaust air volume flows in various applications, such as fume cupboards, safety cabinets and other extracting units. It complies with the DIN 12924 and DIN EN 14175-2 standards. This means safety for the laboratory technician. The fume cupboard monitor is suitable for all types of fume cupboard designs, making new installations and retrofits to existing fume cupboards easy to implement.

FUNCTIONAL DESCRIPTION

The microcontroller controlled safety system is used to monitor the escape-proof operating state of fume cupboards. An acoustic and optical alarm is triggered as soon as the exhaust air volume flow falls below or exceeds the parameterizable limit values.

For precise and reliable monitoring, a suitable measuring system is indispensable. To ensure safe operation with the internal differential pressure sensor, as well as reproducible and accurate measurement results, we recommend the venturi measuring device or measuring rod from SCHNEIDER.

PERFORMANCE FEATURES

- Fume cupboard monitoring system with microcontroller
- Low-cost system
- Integrated power supply 230 V AC
- All system data is saved power-failure-proof
- Parameterization and retrieval of all system values via the PC2500 Software
- Monitoring of supply and exhaust air systems
- Differential pressure sensor with long-term stability
- Measuring range: 6 Pa to 240 Pa or 20 Pa to 640 Pa
- Monitoring of fume cupboard operation as per DIN EN 14175 with acoustic and optical alarms
- Optional monitoring for exceeding a parameterizable volume flow $\dot{V}_{max}$ with visual warning
- Optical and, optionally, also acoustic warning of the operating state “sash > 50 cm open”
- Parameterization of a second monitoring value $\dot{V}_{min}$ (reduced volume flow during nighttime operation)
- Emergency power accumulator (on option) for outage-safe operation
- Suitable for all fume cupboard designs

FUNCTION DISPLAY

The function display is available in a surface-mounted housing or as a built-in version in various models.

Basic equipment:

- Acoustic and optical alarm (red LED) for too low exhaust air or too high supply air volumes
- Visual indication (green LED) for sufficient exhaust air/ supply air volumes
- OUIT push-button to acknowledge the acoustic alarm
- Parameterization via the PC2500 Software

Optional equipment:

- Visual indication (yellow LED) when the maximum exhaust air volume is exceeded
- Yellow flashing LED as visual warning of the operating state ”sash > 50 cm open”
- Status indication $\dot{V}_{min}$ for DAY/ NIGHT
- Push-button to switch the fume cupboard light On/Off
- ON/OFF push-button to switch FM100 On/Off

Further information concerning customer-specific versions as well as a comprehensive selection of function displays is given in the document “Technical Data Sheet Function Displays”.

OPERATING MODES

Standard version

The operating mode FM100-A (standard version) is used as a monitoring and alarm system for exhaust air volume flows in various applications such as fume cupboards, safety cabinets and other extracting units. The integrated differential pressure sensor 300 Pa or 800 Pa provides high long-term stability for the measurement of the actual exhaust value (volume flow [m³/h]). The volume flow determination is based on the measurement of the differential pressure at the measuring device, which is installed in the form of a Venturi measuring nozzle or a measuring rod.
The integrated function monitoring as per DIN EN 14175-2 offers safety for the laboratory staff.
If the exhaust air volume to be adjusted falls below the setpoint, an acoustic and optical alarm is triggered.
In addition, three dry contacts are available for „Alarm“, „Fume cupboard light ON/OFF“ and „Operating mode ON/OFF“. The standard version is suitable for all fume hood designs and extracting units.

Customer-specific versions FM100-AA - ZZ

For customer-specific designs, please contact our sales staff directly.
For further information on our Venturi measuring nozzles and measuring rods, please refer to the document “Technical Data Sheet Control Components, Measuring Devices and Control Dampers”.

Areas of application

- Standard laboratory
- Clean room (with airlock)
- Training lab
- Nuclide lab
- Animal lab
- Pharmacy
- GMP applications

PRODUCT CODE FUME CUPBOARD MONITOR

01	02	03	04
Type	Operating mode	Emergency power accumulator	Sensor type

01 – Type

FM100: Fume Cupboard Monitor

02 – Operating mode

A: Standard

AA – ZZ: Customer-specific versions

03 – Emergency power accumulator

0: Without emergency power accumulator

N: With emergency power accumulator (6 V / 1.2 Ah)

04 – Sensor type

D3: Differential pressure sensor 300 Pa

D8: Differential pressure sensor 800 Pa

Ordering example: FM100 Fume Cupboard Monitor

Fume cupboard monitor with three zero-potential contacts for “Alarm”, “Fume cupboard light ON/OFF” and “Operation ON/OFF”. Standard version with emergency power accumulator (6 V / 1.2 Ah). With differential pressure sensor 300 Pa.

Type: FM100-A-N-D3

01	02	03	04
FM100	-A	-N	-D3

PRODUCT CODE FUNCTION DISPLAY

01	02	03
Type	Function display code	Cable length

01 – Type

FA: Function display

02 – Function display code

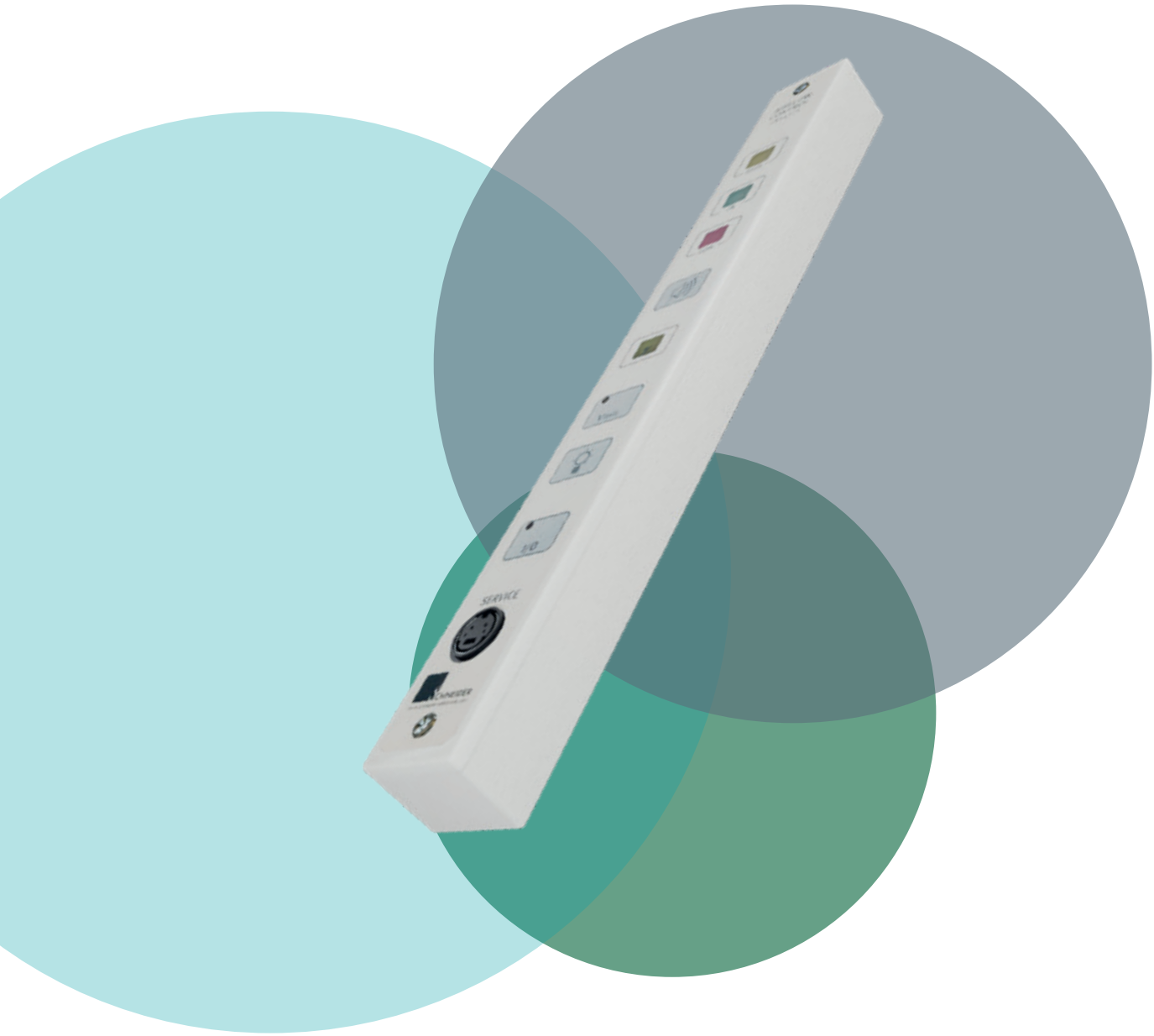
0010 – 0999: Various SCHNEIDER standard versions

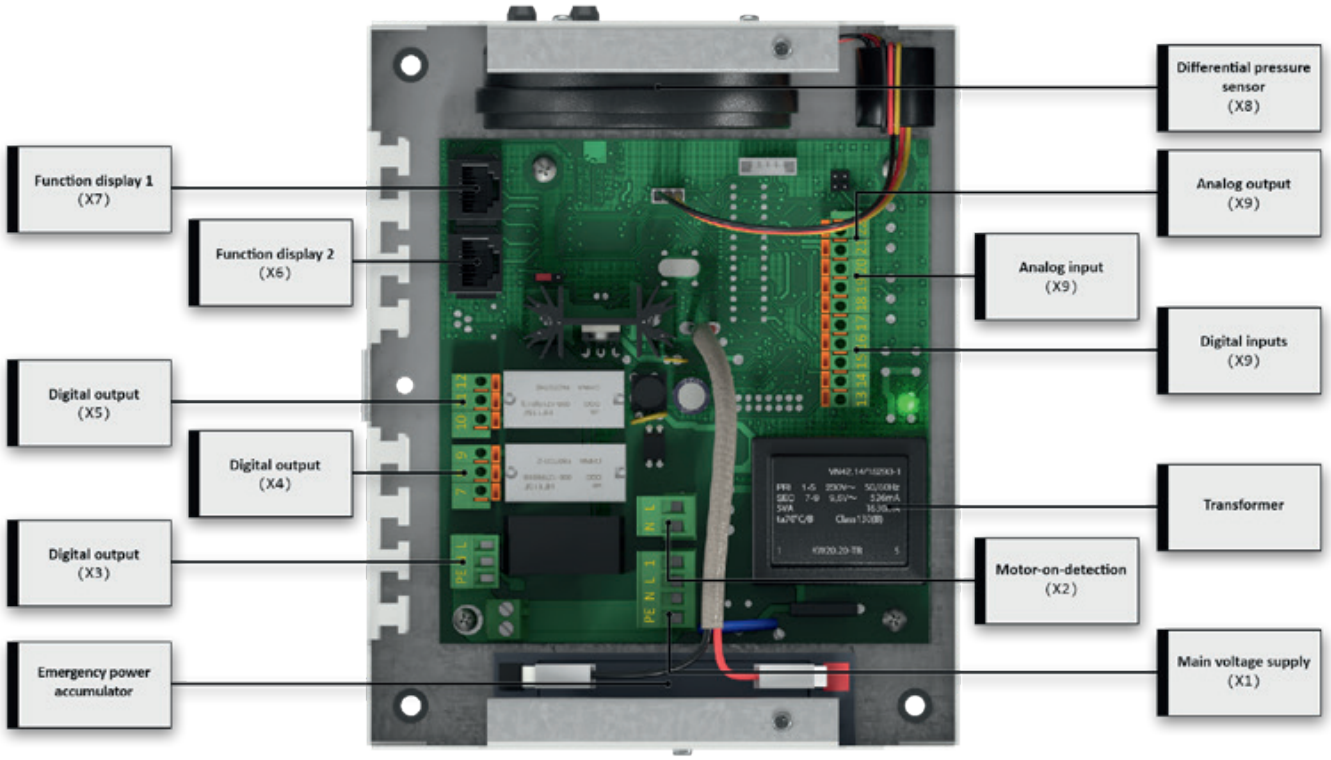
1000 – 9999: Customer-specific versions

03 – Cable length

3: 3 m cable length (standard)

5: 5 m cable length





TERMINAL ASSIGNMENT OF FM100

Function display 1 (X7)

- Connection for primary function display

Function display 2 (X6)

- Connection for secondary function display, for pass-through fume cupboards

Digital output (X5)

- Potential-free contact for ALARM

Digital output (X4)

- Potential-free contact for ON/OFF

Digital output (X3)

- Potential-free contact for fume cupboard light

Emergency power accumulator

- 6 V / 1.2 Ah

Differential pressure sensor (X8)

- 6 Pa to 240 Pa, 20 Pa to 640 Pa on option

Analog output (X9)

- Exhaust air actual value

Analog input (X9)

- Only for special functions

Digital inputs (X9)

- Digital input for ON/OFF
- Digital input for DAYTIME/NIGHTTIME
- Digital input for sash position > 50 cm

Motor-on-detection (X2)

- Exhaust fan feedback 230 V AC, optional 24 V AC / DC

Main voltage supply (X1)

- 230 V AC

TECHNICAL DATA FM100

General	
Rated voltage	230 V AC / 50/60 Hz / +- 15 %
Rated current max.	200 mA
Power consumption max.	10 VA
Recovery time	600 ms
Operating temperature	+15° bis +40 ° C
Humidity	RH, 80 % max., non-condensing
Housing	
Protection	IP 20
Material	Steel sheet
Colour	RAL 9002
Dimensions (L x W x H)	185 x 167 x 92 mm
Weight	1,4 kg approx.
Terminal blocks	Screw terminal 1.5 mm² Cage clamp terminal 1.5 mm²
Digital outputs	
Number	1 relay (K3) / suitable for the fume cupboard light
Contact type	Normally open contact
Max. switching voltage	230 V AC
Max. continuous current	6 A
Number	2 relays (K1, K2)
Contact type	Switchover / changeover contact
Max. switching voltage	230 V AC / 30 V DC
Max. continuous current	3 A
Digitale inputs	
Number	3 inputs (5 V DC / 2 mA) / not galvanically isolated
Activation	Potential-free contact, 5 m cable length maximum
Analog output	
Exhaust air actual value	2 - 10 V DC, 10 mA
Analog input	
Only for special functions	0 - 10 V DC, 1 mA
Differential pressure sensor	
Measuring principle	Differential pressure
Pressure range	6 - 240 Pa on option: 20 - 640 Pa
Response time	< 10 ms
Sensor burst pressure	500 mbar

Accessories

FA-0026 Function display

VM-250-PPS-MM
venturi nozzle

AFS100

Measuring rod

Associated data sheets:

- Technical Data Sheet Air Flow Sensor AFS100
- Technical Data Sheet Function Displays
- Technical Data Sheet Control Components, Measuring Devices and Control Dampers

The information and data contained in this data sheet have been compiled to the best of our knowledge and in accordance with the current state of the art (subject to technical changes). The currently valid version applies. The proven properties of SCHNEIDER products are based on the use of the products recommended in this documentation. Diverging situations and individual cases are not taken into account, so that we cannot assume any warranty and liability.

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Do you have any questions? We look forward to your message:
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