TROX® TECHNIK
The art of handling air

TFM-1

FOR THE MONITORING OF VOLUME FLOWS

Monitoring system with integral static differential pressure transducer and measuring probe for fume cupboards, fume hoods and similar components of the supply air or extract air system

- Two values can be monitored, switching between the two is possible; alarms can be configured; monitoring can be switched off
- Optical and acoustic alarms are emitted on the control panel
- Control panel with lighting button that also displays power failures
- Monitoring parameters and additional functions can be adjusted using MConnect configuration software
- For new installations and for refurbishment

Alternative recording of the volume flow being monitored

- Using volume flow rate measuring unit Type VMR, VME or VMLK

Application

Application

- Monitoring system TFM-1 for volume flow monitoring on fume cupboards, fume hoods and similar components
- Simple solution for fume cupboards with a constant extract air flow
- Optical and acoustic alarms as well as alarm signalling to higher-level systems (central BMS)
- Measured value recording by means of a measuring probe and an integral static differential pressure transducer
- For use in laboratories, clean rooms in the pharmaceutical and semiconductor industries, operation theatres, intensive care units, and offices
- For new installations, retrofit, and refurbishment projects

The correct aerodynamic function of a fume cupboard must be monitored and displayed (EN 14175-2, for refurbishment projects DIN 12924 may apply). Any fault must be indicated by an optical alarm and an alarm sound. The monitoring system TFM-1 meets these requirements.

Special characteristics

- Two values can be monitored, switching between the two is possible; alarms can be configured; monitoring can be switched off
- Signalling of normal operation, volume flow rate higher or lower than setpoint, power failure
- Control of the fume cupboard lighting from the control panel
- Service access from the control panel
- On-site configuration with free-of-charge configuration software MConnect

Description

Variants

- TFM-1: Monitoring system
- TFM-1 230 V: Monitoring system with mains supply connection 230 V AC

Parts and characteristics

- Microprocessor system with programme and system data stored in nonvolatile memory
- Static differential pressure transducer, suitable for aggressive media
- Plastic measuring probe, easy to install in the duct
- Digital inputs for special functions, can be configured as make/break contacts
- Digital outputs for alarm signalling and special functions
- Power failure indication

Control panel

- Display: Volume flow rate or differential pressure alarm, red; power failure, flashing red
- Display: Normal operation, green
- Display: Volume flow rate exceeds setpoint or differential pressure deviates from setpoint, yellow
- Alarm acknowledgement
- Alarm sounder
- Socket to connect a notebook for service and commissioning

Useful additions

- MConnect: Configuration software for on-site configuration and service

Construction features

- Casing can be opened and closed without tools
- Control panel with plug-in connecting cable

Materials and surfaces

- Casing made of galvanised sheet steel, powder-coated, white
- Control panel made of plastic, light grey

INFORMACIÓN TÉCNICA

Functional description

The volume flow rate is determined by measuring the effective pressure. For this purpose the measuring probe is installed in the duct. Instead of a measuring probe a measuring unit can be used, e.g. Type VMLK, VMRK or VMR.

The integral differental pressure transducer transforms the effective pressure into a voltage signal. During commissioning with the MConnect configuration software a constant that depends on the duct size is saved. This constant is used to calculate the volume flow rate actual value.

The monitoring system considers a minimum volume flow rate and a maximum volume flow rate (switching, e.g. from daytime to night-time operation). Separate alarms can be configured in case the actual flow rate exceeds the setpoint or falls short of the setpoint.

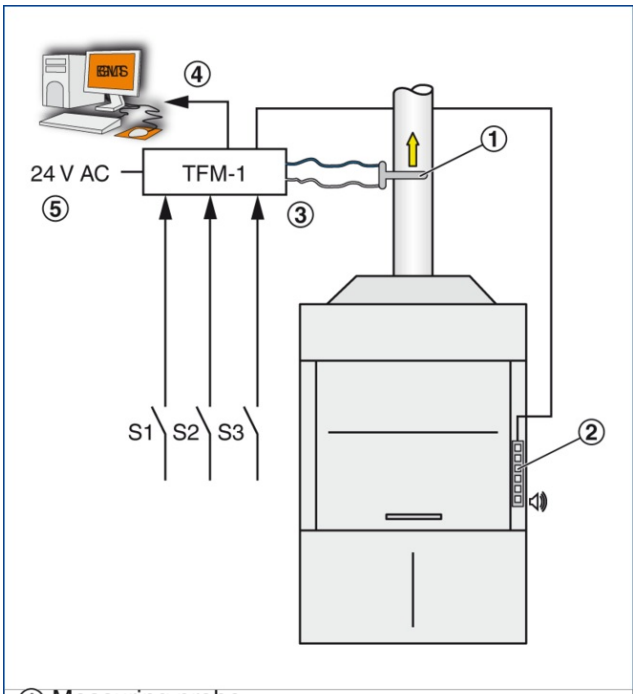
- Alarm delay
- Duration of the alarm sounding; sound can also be suppressed

Alarms can be signalled to the central BMS if the alarm relay is wired to the central BMS

Operating states are displayed on the control panel; optical and acoustic alarms are also emitted on the control panel. The operating state is displayed on the control panel; optical and acoustic alarms are also emitted on the control panel.

Room occupants can acknowledge alarms on the control panel. Depending on the setup the fume cupboard lighting can be switched on/off from the control panel.

The monitoring system can be switched off.



① Measuring probe
② Control panel
③ Monitoring device TFM-1
④ Alarm signalling to central BMS
⑤ Supply voltage

TFM-1 and TFM-1-230-V

Supply voltage	24 V AC ± 15 %, 50/60 Hz
Supply voltage (TFM-1-230-V)	230 V AC ±10 %, 50/60 Hz
Power rating	3.5 VA
Measuring range, static differential pressure transducer	5 – 280 Pa
Switching signal input	3 volt-free switch contacts
Alarm output	1 volt-free change-over contact
Switching function output	3 volt-free make contacts
Operating temperature	10 – 40 °C
Switch rating of relay outputs	250 V AC, 5 A
IEC protection class	III (protective extra-low voltage)
Protection level	IP 20
EC conformity	EMC to 2004/108/EG, low voltage to 2006/95/EG
Weight	1.7 kg

Monitoring systems for volume flow monitoring on fume cupboards, fume hoods and similar components. Suitable for all kinds of laboratory extraction arms to EN 14175. Ready-to-use unit consists of the electronic system including a static differential pressure transducer in the same casing, a measuring probe to be installed in the ducting, a control panel, and measuring tubes. Volume flow rate monitoring of two limit values, minimum and maximum, with corresponding alarm functions that can be configured (alarm delay, duration of the alarm sounding, alarm suppression), output on a digital output. Control panel to display the operating state, to acknowledge alarms, to set special functions such as the lighting. Switching inputs for switching between the monitoring values or to switch off the monitoring function.

Special characteristics

- Two values can be monitored, switching between the two is possible; alarms can be configured; monitoring can be switched off
- Signalling of normal operation, volume flow rate higher or lower than setpoint, power failure
- Control of the fume cupboard lighting from the control panel
- Service access from the control panel
- On-site configuration with free-of-charge configuration software MConnect

Materials and surfaces

- Casing made of galvanised sheet steel, powder-coated, white
- Control panel made of plastic, light grey

Technical data

- Supply voltage: 24 V AC, 50/60 Hz
- Power rating: 3.5 VA
- Measuring range, static differential pressure transducer: 5 – 280 Pa
- Switching signal: 3 volt-free switch contacts
- Alarm output: 1 volt-free changeover contact
- Switching function output: 3 volt-free make contacts

TFM – 1

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1 Type

TFM-1 Monitoring system, supply voltage 24 V AC

TFM-1-230-V Monitoring system, supply voltage 230 V AC