

FLM-430-I2M1 Interface module 2 inputs 1 output

AVENAR IO module 4000

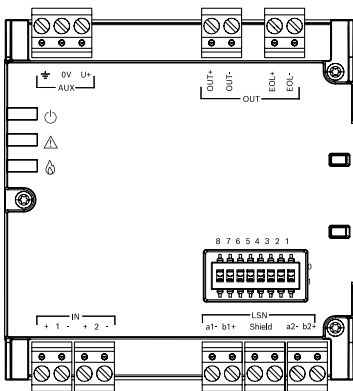


- ▶ Monitored control of signaling devices by pole reversal
- ▶ Control of fire protection equipment with configurable fail-safe logic and feedback lines
- ▶ LED display for status indication
- ▶ Diagnostic data for easier maintenance
- ▶ Surface or DIN rail mounting

The FLM-430-I2M1 has two inputs and one monitored output. The output can be used to control signaling devices or to control fire protection equipment e.g., fire dampers, door holders. The input can be used to monitor potential free contacts such as from power supply.

The FLM-430-I2M1 can be used for different applications per module depending on the regional and local standard.

System overview



Description	Connector
IN1+ / IN1-	Input 1
IN2+ / IN2-	Input 2
OUT+ / OUT-	Output
EOL+ / EOL-	Output line termination

Description	Connector
a1- / b1+	LSN in
a2- / b2+	LSN out
+U/0V	Ext. power supply
Shield	Shield LSN
	Functional ground*

(* = Connection to functional ground is only required if the ground fault monitoring of FLM-430-I2M1 is configured by the programming software.)

Functions

Output line monitoring

The FLM-430-I2M1 has one monitored output. The output line can be configured by the programming software. Depending on your application the output can be configured as:

- Monitoring the output line in quiescent condition (standby mode) in case of interruption and short circuit. Output line is terminated with 3.9 kΩ resistor.
- Extended monitoring of the output line in quiescent condition (standby mode) in case of line interruption, short circuit including creeping according to VdS 2543. Output line is terminated at EOL connector of FLM-430-I2M1.
- Active monitoring of the output line in quiescent mode (standby mode) and in alarm condition in case of interruption and short circuit. Output line is terminated at EOL connector of FLM-430-I2M1.

Examples:

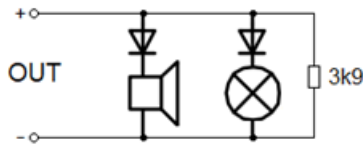


Fig. 1: EN 54 signaling device line monitoring with an EOL 3.9kΩ resistor

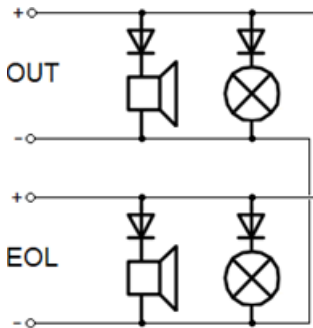


Fig. 2: VdS 2543 signaling device, extended line monitoring

Feedback of output

Each input of the FLM-430-I2M1 can be configured in the programming software as independent or feedback of output. For the feedback configuration a feedback time in a range of 3 s to 255 s is selectable to address different fire protection equipment.

Output fail-safe state

The fail-safe state of the output can be configured in the programming software:

- Remain: output signal is kept in case of a fieldbus connection loss (e.g. for signaling devices)
- Interrupt: output signal is interrupted in case of a fieldbus connection loss (e.g. for fire damper or fire doors)

In addition, the output signal is also interrupted in case of an AUX power-loss or an internal watchdog fault.

Power supply

An additional power supply is required to operate FLM-430-I2M1.

Additional power supply:

- Fire panel
- External power supply: e.g. FPP-3000 or FPP-5000

The interface module monitors the supply line for undervoltage and in case provides a fault message to the fire panel.

Ground fault monitoring

The interface module can be configured via the programming software to monitor the power supply line, the output line and the input lines for ground faults.

Connection to functional ground is only required if the FLM-430-I2M1 ground fault monitoring is configured by the programming software.

Input line and contact monitoring

The 2 inputs of the FLM-430-I2M1 can be configured in the programming software as independent, or feedback of output.

The input line can be used to monitor potential-free contacts.

In the programming software the line monitoring is configured individually for each input:

- Contact monitoring (NC/NO)
- Contact monitoring with End of line resistor 3.3 KΩ in case of line interruption or short circuit
- Double resistor line monitoring with 680 Ω and 3.3 KΩ resistors in case of line interruption and short circuit
- Double resistor line monitoring with 680 Ω and 3.3 kΩ in case of line interruption and short circuit including creeping according to VdS 2543
- In case of configuring the input as feedback of output e.g., for type C fire protection equipment like fire dampers: Triple resistor line monitoring for two potential-free contacts with 680 Ω, 2.7 kΩ and 3.3 kΩ in case of line interruption and short circuit for damper closed position, open position, and in between position.

For reliable detection, the potential-free contact must be in a stable position for at least 500 ms.

Examples:

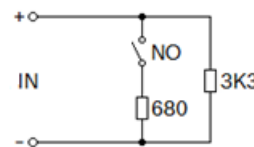


Fig. 3: EN 54 alarm contact monitoring via double resistors

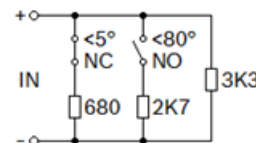


Fig. 4: Fire damper position monitoring via triple resistors

Status display

The status of FLM-430-I2M1 is shown by the flashing of up to three LEDs:

- Green: the interface module is operational (configurable in programming software)
- Yellow: at least one fault was detected on the output or input lines
- Red: the output line is activated

Diagnostic data

The following diagnostic data are provided by FLM-430-I2M1 and can be retrieved via the fire panel diagnostic screens:

- Status: Status of the interface module, the output and each input
- ID number

- Software version
- Hardware version
- Output end of line resistor value
- Output line resistance value (only for Extended (loop) configuration)
- Input resistance value
- Min./ max. history of output analog end of line resistance values
- Min./ max. history of output analog line resistance values (only for Extended (loop) configuration)
- Min./ max. history of input analog resistance values
- Min./ max. history of input EMC values

Features of LSN improved version

The interface module FLM-430-I2M1 offer all the features of improved LSN technology:

- Flexible network structures including T-tapping without additional elements
- Up to 254 LSN improved elements per loop or stub line
- Unshielded cable can be used

Installation/configuration notes

- Can be connected to the fire panels AVENAR 2000 and AVENAR 8000.
- National standards and guidelines must be considered during the planning stage.
- An external power supply is required for the interface module FLM-430-I2M1 .
- Manual call points must not be connected to the inputs of FLM-430-I2M1.
- If the interface module is supplied from the fire panel or from an FPP-5000 with TI-13 module, the ground address must be set to 0 to prevent interferences with other ground fault monitoring.
- For operating the fire alarm system according to VdS 2543 the output monitoring must be configured to extended (loop) and the input monitoring to double resistors extended.
- Can be installed near or in some distance from the application.
- For EN 54-13 transmission paths each input or output line must have a dedicated cable.
- Must be surface-mounted with FLM-430-SMB or mounted in an electrical cabinet onto a DIN rail with FLM-430-CLIP.

Dip switches

The dip switch integrated in the interface module can be used to select between automatic or manual addressing with or without auto detection.

Termination resistors

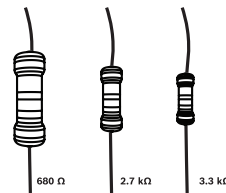


Fig. 5: Input



Fig. 6: Output

Parts included

Quantity	Component
1	FLM-430-I2M1 Interface Module
2	3.3 kOhm ±1% 0.4 W
2	2.7 kOhm ±1% 0.6 W
2	680 Ohm ±1% 1 W
1	3.9 kOhm ±1% 1 W

Technical specifications

Electrical

LSN

Operating voltage (VDC)	15 VDC – 33 VDC
Current consumption (mA)	max. 0.72 mA

External power supply

Operating voltage (VDC)	17 VDC - 30 VDC
Average quiescent current (NAC)	typ. 4 mA / max. 8.5 mA
Average alarm current (NAC)	typ. 12 mA / max. 18 mA
Average quiescent current (Control)	typ. 4 mA/ max. 9.5 mA
Average alarm current (Control)	typ. 3 mA / max. 6.5 mA
Line resistance	max. 50 Ω
Line length	max. 1000 m

Ground

Ground fault monitoring configuration for AUX, OUT, IN1 and IN2	On, Off
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Monitored Output

Output voltage	0 VDC - 30 VDC
Output current	2 A continuous 11 A for 50 ms 20 A for 6 ms
Internal voltage drop (AUX to OUT)	max. 1 V at 2 A
Output signals	Steady Temporal Code 3 Synchronization protocol (Wheelock)
Fail-safe state	Interrupt, Remain
Feedback time	3 s - 255 s
Terminating resistor	3.9 k Ω
Line resistance	max. 50 Ω
Line length	max. 1000 m
Capacitive load	max. 1.5 mF
Inductive load	max. 1 mH

Input

Monitoring voltage	max. 13 VDC
Monitoring current	max. 8 mA
Terminating resistors	3.3 k Ω , 2.7 k Ω , 680 Ω
Line resistance	max. 50 Ω
Line length	max. 1000 m
Galvanic isolation to LSN	Yes

Mechanical

LED color	Red; Yellow; Green (Fire alarm; Fault; Operation)
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LSN/Address setting	8 DIP switches
Connections	8 pluggable screw type connectors
Conductor cross section	0.34 mm ² - 2.5 mm ²
Color (RAL)	similar RAL 9003 Signal white
Dimensions (H x W x D) (mm)	96 mm x 87.5 mm x 35 mm
Weight (g)	135 g

Environmental

Operating temperature (°C)	-20 °C – 50 °C
Storage temperature (°C)	-25 °C – 70 °C
IP rating FLM-430-I2M1	IP30
IP rating FLM-430-SMB	IP 54
Class of equipment (IEC 62368-1)	III
Operating relative humidity, non-condensing (%)	< 96%

Ordering information

FLM-430-I2M1 Interface module 2 inputs 1 output
Interface module with 2 inputs and 1 output
Order number **FLM-430-I2M1**

Accessories

FLM-430-CABLE Cable kit for interface module
Set of 5 cables for LSN loop-through for DIN-rail installations
Order number **FLM-430-CABLE**

FLM-430-CLIP DIN clip for interface module
Set of 5 CLIP adapters for horizontal and vertical installation of interface modules on DIN-rail
Order number **FLM-430-CLIP**

FLM-430-SMB Surface mount box
Surface mount box for interface modules
Order number **FLM-430-SMB**



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