The FLM-420-I2 Input Interface Modules monitor up to two inputs. They are 2-wire LSN elements for connection to the Local SecurityNetwork LSN improved version with the enhanced functionality.

### System Overview

**FLM-420-I2-D**

- Line monitoring when operating with EOL resistor
- Contact monitoring
- Voltage monitoring
- Individual monitoring of the two inputs
- Maintains LSN loop functions in the event of wire interruption or short-circuit thanks to two integrated isolators

### Description

<table>
<thead>
<tr>
<th>Description</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN1+</td>
<td>IN1-</td>
</tr>
<tr>
<td>IN2+</td>
<td>IN2-</td>
</tr>
<tr>
<td>LSN b1+</td>
<td>a-</td>
</tr>
</tbody>
</table>
### Description

<table>
<thead>
<tr>
<th>Connection</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN1-</td>
<td>Input 1</td>
</tr>
<tr>
<td>IN1+</td>
<td>Input 1</td>
</tr>
<tr>
<td>IN2-</td>
<td>Input 2</td>
</tr>
<tr>
<td>IN2+</td>
<td>Input 2</td>
</tr>
<tr>
<td>LSN-SHIELD</td>
<td>Shielding cable (if available)</td>
</tr>
<tr>
<td>LSN POWER</td>
<td>LSN power supply (supports for looping through)</td>
</tr>
<tr>
<td>0 V</td>
<td>0 V</td>
</tr>
<tr>
<td>+24 V</td>
<td>+24 V</td>
</tr>
<tr>
<td>LSN a1-</td>
<td>LSN (in/out)</td>
</tr>
<tr>
<td>b1+</td>
<td></td>
</tr>
<tr>
<td>a2-</td>
<td></td>
</tr>
<tr>
<td>b2+</td>
<td></td>
</tr>
</tbody>
</table>

### Functions

#### Monitoring functions

The FLM-420-I2 Input Interface Modules offer three monitoring functions:

1. Monitoring of a line with EOL resistor
2. Monitoring of a potential-free contact
3. Voltage monitoring

The monitoring functions can be selected for the two inputs individually by address setting via the programming software.

#### Line monitoring with EOL resistor

Operation with EOL resistor can be programmed for each input individually. The standard EOL resistor is 3.9 kΩ.

The interface module detects
- Standby
- Triggering in the event of line interruption
- Triggering in the event of a short circuit.

<table>
<thead>
<tr>
<th>Position</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RΣ</td>
<td>Overall line resistance with $R_{Σ} = R_{L/2} + R_{L/2} + R_{EOL}$</td>
</tr>
<tr>
<td>RL/2</td>
<td>Line resistance</td>
</tr>
</tbody>
</table>

The following line conditions will be definitely detected if the overall line resistance is within the specified ranges:

<table>
<thead>
<tr>
<th>Line condition</th>
<th>Overall line resistance $R_{Σ}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standby</td>
<td>1500 Ω to 6000 Ω</td>
</tr>
<tr>
<td>Interruption</td>
<td>&gt; 12.000 Ω</td>
</tr>
<tr>
<td>Short circuit</td>
<td>&lt; 800 Ω</td>
</tr>
</tbody>
</table>

#### Contact monitoring

<table>
<thead>
<tr>
<th>Position</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RL/2</td>
<td>Line resistance with $R_{L/2} + R_{L/2} \leq 50$ Ω</td>
</tr>
</tbody>
</table>

The interface module evaluates the operating conditions "open" or "closed". The normal operating condition can be programmed for each input. Contact monitoring is carried out with a pulse intensity of 8 mA. The module detects signals from a duration of 300 ms.

#### Voltage monitoring

<table>
<thead>
<tr>
<th>Position</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RL/2</td>
<td>Line resistance with $R_{L/2} + R_{L/2} \leq 50$ Ω</td>
</tr>
</tbody>
</table>

Voltage monitoring is carried out between 0 V DC and 30 V DC. The programming software can be used to select two threshold values.

#### Address switches

The addresses of the interface modules are set using:
- DIP switches for FLM-420-I2-E and FLM-420-I2-W
- Rotary switches for FLM-420-I2-D.

In improved version LSN mode, the operator can select automatic or manual addressing with or without autodetection.
FLM-420-I2 Input Interface Modules

<table>
<thead>
<tr>
<th>Address rotary switches</th>
<th>Address DIP switches</th>
<th>Operating mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 0 0</td>
<td>0</td>
<td>Loop/stub in improved version LSN mode with automatic addressing (T-taps not possible)</td>
</tr>
<tr>
<td>0 0 1</td>
<td>1 – 254</td>
<td>Loop/stub/T-taps in improved version LSN mode with manual addressing</td>
</tr>
<tr>
<td>CL 0 0</td>
<td>255</td>
<td>Loop/stub in LSN mode classic</td>
</tr>
</tbody>
</table>

**LSN features**

Integrated isolators ensure that function is maintained in the event of a short circuit or line interruption in the LSN loop. A fault indication is sent to the fire panel.

**Features of LSN improved version**

The interface modules in the 420 series 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

**Interface variants**

The Input Interface Modules are available in various designs:

- **FLM-420-I2-E** type in-built:
  - Can be built in to standard device boxes in accordance with EN 60670 (e.g. below standard switch programs)
  - For space-saving installation in devices
- **FLM-420-I2-W** type wall-mount (with cover):
  - Can be built in to standard device boxes in accordance with EN 60670
  - For surface mounting in conjunction with the FMX-IFB55-S interface box.
- **FLM-420-I2-D** type DIN rail:
  - For installation on a DIN rail in accordance with EN 60715 with included adapter
  - Can be built in to a FLM-IFB126-S surface-mounted housing.

**Certifications and Approvals**

<table>
<thead>
<tr>
<th>Region</th>
<th>Certification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>VdS G 207076 FLM-420-I2-D; FLM-420-I2-E; FLM-420-I2-W</td>
</tr>
<tr>
<td>Europe</td>
<td>CE FLM-420-I2-W/E</td>
</tr>
<tr>
<td>CPD</td>
<td>0786-CPD-20288 FLM-420-I2-D</td>
</tr>
<tr>
<td>MOE</td>
<td>UA1.016-0070269-11 FLM-420-I2-W, -E</td>
</tr>
</tbody>
</table>

**Installation/Configuration Notes**

- Can be connected to the fire panels FPA-5000 and FPA-1200.
- Programming is done with the programming software of the fire panel.
- The LSN connection is established via the two wires on the LSN line.
- A maximum cable length of 3 m is permitted per input.
- When mounting the in-built type interface module below a switch, a minimum depth of the device box of 60 mm is recommended.
- The in-built (-E) and wall-mount (-W) versions are fitted with terminals to allow a second wire pair to be looped through to the LSN power supply of subsequent elements.

**Parts Included**

<table>
<thead>
<tr>
<th>Type</th>
<th>Qty.</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLM-420-I2-E</td>
<td>1</td>
<td>Input Interface Module, type in-built</td>
</tr>
<tr>
<td>FLM-420-I2-W</td>
<td>1</td>
<td>Input Interface Module, type wall-mount, with cover and accessories</td>
</tr>
<tr>
<td>FLM-420-I2-D</td>
<td>1</td>
<td>Input Interface Module, type DIN rail, with adapter and light pipe</td>
</tr>
</tbody>
</table>

**Technical Specifications**

**Electrical**

<table>
<thead>
<tr>
<th>LSN</th>
<th>LSN input voltage</th>
<th>15 V DC to 33 V DC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Max. current consumption from LSN</td>
<td>10.4 mA</td>
</tr>
<tr>
<td>Inputs</td>
<td>2, independent of each other</td>
<td></td>
</tr>
<tr>
<td>Line monitoring with EOL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EOL resistor</td>
<td>Nominal 3.9 kΩ</td>
<td></td>
</tr>
<tr>
<td>Overall line resistance</td>
<td>During standby: 1500 to 6000 Ω</td>
<td></td>
</tr>
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<td>Interruption: &gt; 12.000 Ω</td>
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<td>Short circuit: &lt; 800 Ω</td>
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[www.boschsecurity.com](http://www.boschsecurity.com)
Contact monitoring

- Max. current (current peak)  8 mA

Voltage monitoring

- Voltage range  0 to 30 V DC
- Input resistance  ≥ 50 kΩ
- Selectable threshold values
  - 0.8 V DC (± 0.3 V DC)
  - 3.3 V DC (± 0.3 V DC)
  - 10.2 V DC (± 0.5 V DC)
  - 21.2 V DC (± 0.5 V DC)

Mechanical

Connections

- FLM-420-I2-E / W  14 screw terminals
- FLM-420-I2-D  7 screw terminals

Permitted wire cross-section

- FLM-420-I2-E / W  0.6 to 2.0 mm²
- FLM-420-I2-D  0.6 to 3.3 mm²

Address setting

- FLM-420-I2-E / W  8 DIP switches
- FLM-420-I2-D  3 rotary switches

Housing material

- FLM-420-I2-E / W  ABS/PC blend
- FLM-420-I2-D with adapter  PPO (Noryl)

Color

- FLM-420-I2-E / W  Signal white, RAL 9003
- FLM-420-I2-D with adapter  Off-white, similar to RAL 9002

Dimensions

- FLM-420-I2-E  Approx. 50 mm x 22 mm (Ø x H)
- FLM-420-I2-W  Approx. 76 mm x 30 mm (Ø x H)
- FLM-420-I2-D with adapter  Approx. 110 x 110 x 48 mm (W x H x D)

Weight

- FLM-420-I2-E  Approx. 35 g / 130 g
- FLM-420-I2-W  Approx. 55 g / 155 g
- FLM-420-I2-D  Approx. 150 g / 235 g

Environmental conditions

Permitted operating temperature  -20 °C to +65 °C
Permitted storage temperature  -25 °C to +80 °C
Permitted rel. humidity  < 96% (non-condensing)
Classes of equipment as per IEC 60950  Class III equipment
Protection class as per IEC 60529  IP 30

System limiting values

Max. cable length per input  3 m

Ordering Information

FLM-420-I2-E Input Interface Module
with 2 monitored inputs, flush-mount type
FLM-420-I2-E

FLM-420-I2-W Input Interface Module
with 2 monitored inputs, wall-mount type,
with cover
FLM-420-I2-W

FLM-420-I2-D Input Interface Module
with 2 monitored inputs, DIN rail type
FLM-420-I2-D

Accessories

FLM-IFB126-S Surface-mounted Housing
as retainer for the interface modules series 420 type DIN rail (-D) or spare housing for type surface-mount (-S)
FLM-IFB126-S

FMX-IFB55-S Interface Box Surface-mount
for interface modules of wall mount type in the 420 series, surface-mount
FMX-IFB55-S

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