The FLM-420-O1I1 Output-input Interface Modules are fitted with one output to control external devices and with one monitored input. They are 2-wire LSN elements for connection to the fire panels FPA-5000 and FPA-1200 and offer the enhanced functionality of LSN improved technology.

**Functions**

**Semi-conductor output**
The semi-conductor output is electrically isolated from the LSN loop and protected against short circuits.

**Output power supply**
The power supply for loads connected to the output can be selected as:

- Auxiliary power supply from the fire panel
- External power supply units.

**Input monitoring functions**
The FLM-420-O1I1 Output-input Interface Module provides two monitoring functions:

1. Monitoring of a line by an EOL resistor
2. Monitoring of a potential-free contact

The input monitoring functions can be selected by setting the corresponding addresses.

**Line monitoring with EOL resistor**
The EOL resistor has a standard resistance of 3.9 kΩ. The interface module detects:
- Standby
- Triggering in the event of a short circuit
- Triggering in the event of line interruption.

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

The following line conditions will be reliably detected if the overall line resistance is within the specified range:
Line condition & Overall line resistance $R_L$:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standby</td>
<td>1500 Ω to 6000 Ω</td>
</tr>
<tr>
<td>Short circuit</td>
<td>&lt; 800 Ω</td>
</tr>
<tr>
<td>Interruption</td>
<td>&gt; 12,000 Ω</td>
</tr>
</tbody>
</table>

**Contact monitoring**

The interface module evaluates the operating conditions "open" or "closed". The normal operating condition can be programmed for each input. Contact monitoring has a pulse intensity of 8 mA.

**Address switches**

The address of the interface module is set using:

- DIP switches in case of the FLM-420-O111-E
- Rotary switches in case of the FLM-420-O111-D.

In improved version LSN mode, the operator can select automatic or manual addressing with or without auto-detection.

<table>
<thead>
<tr>
<th>Address rotary switches</th>
<th>Address DIP switches</th>
<th>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 - 254</td>
<td>1 - 254</td>
<td>Loop/stub/T-taps in improved version LSN mode with manual addressing</td>
</tr>
<tr>
<td>CL 0 0 255</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 Output-input Interface Modules are available in various designs:

- FLM-420-O111-E in-built version:
  - Suitable for standard device boxes according to EN 60670 and
  - For a space-saving installation in all devices.
- FLM-420-O111-D DIN-rail version:
  - Suitable for installation on a DIN-rail according to EN 60715 with included adapter and
  - For the FLM-IFB126-S surface-mounted housing.

**Certifications and Approvals**

Complies with

- EN 54-17: 2005

<table>
<thead>
<tr>
<th>Region</th>
<th>Certification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>VdS G 209070 FLM-420-O111-E G 209069 FLM-420-O111-D</td>
</tr>
</tbody>
</table>

**Installation/Configuration Notes**

**FLM-420-O111-D**

<table>
<thead>
<tr>
<th>Description</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN</td>
<td>IN-</td>
</tr>
<tr>
<td>OUT</td>
<td>POW+</td>
</tr>
<tr>
<td></td>
<td>OUT-</td>
</tr>
<tr>
<td>POWER IN</td>
<td>POW+</td>
</tr>
<tr>
<td>LSN</td>
<td>b1+</td>
</tr>
</tbody>
</table>
FLM-420-O1I1-E

### Description
- **POWER IN**: POW+ | 0V-
- **OUT**: POW+ | OUT-
- **IN**: - | +
- **LSN**: SHIELD | 0V | +U | +U

**LSN**
- b2+ | a2- | b1+ | a1-

**Connection**
- Power supply (interface module and output)
- Reference potential (+)
- Output (switched negative potential)
- Input
- Cable shielding (if available)
- Auxiliary power supply (support points to loop through)

**Parts Included**

<table>
<thead>
<tr>
<th>Type</th>
<th>Qty.</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLM-420-O1I1-E</td>
<td>1</td>
<td>Output-input Interface Module, in-built version</td>
</tr>
<tr>
<td>FLM-420-O1I1-D</td>
<td>1</td>
<td>Output-input Interface Module, DIN-rail version, with adapter and light pipe</td>
</tr>
</tbody>
</table>

### Technical Specifications

#### Electrical

<table>
<thead>
<tr>
<th>LSN</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. current consumption from LSN</td>
<td>1.9 mA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. switchable output voltage of semi-conductor output</td>
<td>30 V DC</td>
</tr>
<tr>
<td>Max. switchable output current</td>
<td>700 mA (depending on external power supply)</td>
</tr>
<tr>
<td>External power supply</td>
<td>5 V DC to 30 V DC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Input</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EOL resistor</td>
<td>Nominal 3.9 kΩ</td>
</tr>
<tr>
<td>Overall line resistance R_L with R_E = R_L/1 + R_L/2 + R_EOL</td>
<td>Standby: 1500 Ω to 6000 Ω</td>
</tr>
<tr>
<td>Short circuit: &lt; 800 Ω</td>
<td></td>
</tr>
<tr>
<td>Line interruption: &gt; 12.000 Ω</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contact monitoring</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. current strength (current pulse)</td>
<td>8 mA</td>
</tr>
<tr>
<td>Minimum activation time of the input</td>
<td>3.2 s</td>
</tr>
</tbody>
</table>

- The maximum cable length of all inputs connected to the loop or stub is 500 m in total. Additionally, all outputs which are not electrically isolated from LSN must be included in the total line length calculation (e.g. peripherals connected via C points). With UEZ 2000 LSN and UGM 2020, the limitation to 500 m applies to each Network Processing Converter (NVU).
- The interface module has terminals blocks to allow a second pair of wires to be looped through to supply the downstream connected elements with LSN power.
- For a fire system operation according to EN 54-2, the interface modules used for the activation of fire protection equipment and whose outputs are not monitored, must be installed directly next to or within the device which shall be activated.
Mechanical

Connections
- FLM-420-O1I1-E 14 screw terminals
- FLM-420-O1I1-D 12 screw terminals

Permissible wire diameter
- FLM-420-O1I1-E 0.6 mm² to 2.0 mm²
- FLM-420-O1I1-D 0.6 mm² to 3.3 mm²

Address setting
- FLM-420-O1I1-E 8 DIP switches
- FLM-420-O1I1-D 3 rotary switches

Housing material
- FLM-420-O1I1-E ABS/PC blend
- FLM-420-O1I1-D incl. adapter PPO (Noryl)

Housing color
- FLM-420-O1I1-E Signal white, RAL 9003
- FLM-420-O1I1-D incl. adapter Gray white, similar to RAL 9002

Dimensions
- FLM-420-O1I1-E Approx. 50 mm x 22 mm (Ø x H)
- FLM-420-O1I1-D incl. adapter Approx. 110 x 110 x 48 mm (W x H x D)

Weight
- Without/with packing
  - FLM-420-O1I1-E Approx. 35 g / 170 g
  - FLM-420-O1I1-D Approx. 95 g / 390 g

Environmental conditions

Permissible operating temperature
- -20 °C to +65 °C

Permissible storage temperature
- -25 °C to +80 °C

Permissible 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

Maximum cable length input
- 3 m

Maximum cable length output
- 3 m

Ordering Information

FLM-420-O1I1-E Output-input Interface Module
- with 1 open collector output and 1 monitored input, in-built version

FLM-420-O1I1-D Output-input Interface Module
- with 1 open collector output and 1 monitored input, DIN-rail version

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)