

## FLM-420-O111 Output-input Interface Modules



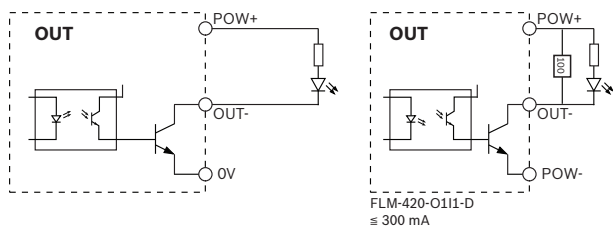
The FLM-420-O111 Output-input Interface Modules are fitted with one output to control external devices and with one monitored input. They are 2-wire LSN elements for connection to the fire panels FPA-5000 and FPA-1200 and offer the enhanced functionality of LSN improved technology.

### System overview

### Functions

#### Semi-conductor output

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



Functionality of the semi-conductor output

#### Output power supply

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

- Auxiliary power supply from the fire panel
- Or, for FLM-420-O111-D only: External power supply units

#### Input monitoring functions

The FLM-420-O111 Output-input-Interface Module provides two monitoring functions:



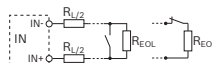
- ▶ Semi-conductor output electrically isolated from LSN loop and short-circuit proof
- ▶ Max. switchable current per output 700 mA
- ▶ Individually selectable input monitoring functions (EOL or contact)
- ▶ Maintains LSN loop functions in the event of wire interruption or short-circuit thanks to two integrated isolators

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



#### Position

#### Description

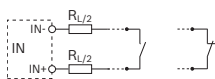
$R_{\Sigma}$  Overall line resistance with  $R_{\Sigma} = R_{L/2} + R_{L/2} + R_{EOL}$

$R_{L/2}$  Line resistance

The following line conditions will be reliably detected if the overall line resistance is within the specified range:

| Line condition | Overall line resistance $R_{\Sigma}$ |
|----------------|--------------------------------------|
| Standby        | 1500 Ω to 5500 Ω                     |
| Short circuit  | < 800 Ω                              |
| Interruption   | > 85000 Ω                            |

### 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.

| Address<br>rotary<br>switches | Address<br>DIP<br>switches | Mode                                                                                   |
|-------------------------------|----------------------------|----------------------------------------------------------------------------------------|
| 0 0 0                         | 0                          | Loop/stub in improved version LSN mode with automatic addressing (T-taps not possible) |
| 0 0 1<br>-<br>2 5 4           | 1 - 254                    | Loop/stub/T-taps in improved version LSN mode with manual addressing                   |
| CL 0 0                        | 255                        | Loop/stub in LSN mode classic                                                          |

### 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

### Regulatory information

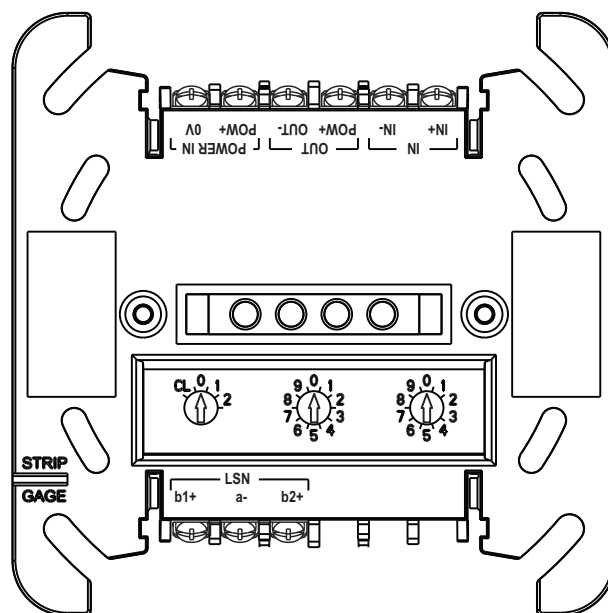
Complies with

- EN 54-17: 2005
- EN 54-18: 2005 + AC:2007

| Region  | Regulatory compliance/quality marks |                                                                                 |
|---------|-------------------------------------|---------------------------------------------------------------------------------|
| Germany | VdS                                 | G 209070 FLM-420-O111-E                                                         |
|         | VdS                                 | G 209069 FLM-420-O111-D                                                         |
| Europe  | CE                                  | FLM-420-O111-E                                                                  |
|         | CE                                  | FLM-420-O111-D                                                                  |
|         | CPD                                 | 0786-CPD-20714 FLM-420-O111-E                                                   |
|         | CPD                                 | 0786-CPD-20715 FLM-420-O111-D                                                   |
| Hungary | TMT                                 | TMT-36/2010 szamu FLM-420-O812-S, FLM-420-O111-E, FLM-420-O111-D, FLM-420-RLE-S |
| Ukraine | MOE                                 | UA1.016.0070232-11 FLM-420-O111-E                                               |
|         | MOE                                 | UA1.016.0070263-11 FLM-420-O111-D                                               |

### Installation/configuration notes

#### FLM-420-O111-D



#### Description

IN IN- | IN+

OUT POW+

OUT-

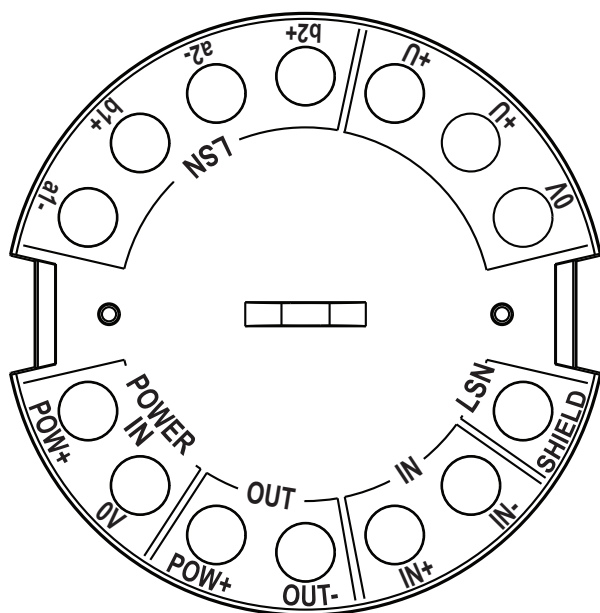
#### Connection

Input 1

Reference potential (+)

Output (switched negative potential)

|          |                |                           |
|----------|----------------|---------------------------|
| POWER IN | POW+   0V      | Power supply output       |
| LSN      | b1+   a-   b2+ | LSN (incoming / outgoing) |

**FLM-420-O1I1-E**

| Description | Connection            |                                                         |
|-------------|-----------------------|---------------------------------------------------------|
| POWER IN    | POW+   0V-            | Power supply (interface module and output)              |
| OUT         | POW+                  | Reference potential (+)                                 |
|             | OUT-                  | Output (switched negative potential)                    |
| IN          | -   +                 | Input                                                   |
| LSN         | SHIELD                | Cable shielding (if available)                          |
|             | 0V   +U   +U          | Auxiliary power supply (support points to loop through) |
| LSN         | b2+   a2-   b1+   a1- | LSN (incoming / outgoing)                               |

- Can be connected to fire panels of LSN improved bus technology.
- Programming is done with the programming software of the fire panel.
- The LSN connection is established by the two wires of the LSN line.
- The power supply for the output is either fed by the auxiliary power supply from the fire panel or by an external power supply unit. External power supplies, for FLM-420-O1I1-D only, must be free-of-ground.

- The outputs OUT/OUT- are switched against the negative potential of the interface module (POWER IN/0V). The positive potential (OUT/POW+) is either supplied by the auxiliary power (AUX) from the fire panel or by an external power supply unit.
- The maximum switchable voltage of the semi-conductor output is 30 V DC. The maximum switchable current is 700 mA (depending on the external power supply).
- The activation of the input IN has to be carried out electrically isolated from LSN (e.g. with relay contacts, pushbutton, etc.).
- The input must have a minimum activation time of 3.2 s.
- For FLM-420-O1I1-D applies: A maximum cable length of 3 m is permitted per input and output. FLM-420-O1I1-E must be mounted flush with the connected device.
- 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.

**Technical specifications****Electrical**

|                                                    |                                    |
|----------------------------------------------------|------------------------------------|
| LSN                                                |                                    |
| • LSN input voltage                                | 15 V DC to 33 V DC                 |
| • Max. current consumption from LSN                | 1.9 mA                             |
| Output                                             |                                    |
| • Max. switchable voltage of semi-conductor output | 30 V DC                            |
| • Max. switchable output current                   | 700 mA (depending on power supply) |
| • External power supply                            | 5 V DC to 30 V DC                  |
| Input                                              |                                    |
| Line monitoring with EOL                           |                                    |

|                                                                                        |                                                                                                                                                               |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| • EOL resistor                                                                         | Nominal 3.9 kΩ                                                                                                                                                |
| • Overall line resistance $R_{\Sigma}$ with $R_{\Sigma} = R_{L/1} + R_{L/2} + R_{EOL}$ | <ul style="list-style-type: none"> <li>• Standby: 1500 Ω to 5500 Ω</li> <li>• Short circuit: &lt; 800 Ω</li> <li>• Line interruption: &gt; 85000 Ω</li> </ul> |
| Contact monitoring                                                                     |                                                                                                                                                               |
| • Max. current strength (current pulse)                                                | 8 mA                                                                                                                                                          |
| Minimum activation time of the input                                                   | 3.2 s                                                                                                                                                         |

### Mechanical

|                                |                                            |
|--------------------------------|--------------------------------------------|
| Connections                    |                                            |
| • FLM-420-O111-E               | 14 screw terminals                         |
| • FLM-420-O111-D               | 12 screw terminals                         |
| Permissible wire diameter      |                                            |
| • FLM-420-O111-E               | 0.6 mm <sup>2</sup> to 2.0 mm <sup>2</sup> |
| • FLM-420-O111-D               | 0.6 mm <sup>2</sup> to 3.3 mm <sup>2</sup> |
| Address setting                |                                            |
| • FLM-420-O111-E               | 8 DIP switches                             |
| • FLM-420-O111-D               | 3 rotary switches                          |
| Housing material               |                                            |
| • FLM-420-O111-E               | ABS/PC blend                               |
| • FLM-420-O111-D incl. adapter | PPO (Noryl)                                |
| Housing color                  |                                            |
| • FLM-420-O111-E               | Signal white, RAL 9003                     |
| • FLM-420-O111-D incl. adapter | Gray white, similar to RAL 9002            |
| Dimensions                     |                                            |
| • FLM-420-O111-E               | Approx. 50 mm x 22 mm (Ø x H)              |

|                                |                                       |
|--------------------------------|---------------------------------------|
| • FLM-420-O111-D incl. adapter | Approx. 110 x 110 x 48 mm (W x H x D) |
| Weight                         | Without/with packing                  |
| • FLM-420-O111-E               | Approx. 35 g / 170 g                  |
| • FLM-420-O111-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  |               |
| • FLM-420-O111-D            | 3 m           |
| • FLM-420-O111-E            | Flush mounted |
| Maximum cable length output |               |
| • FLM-420-O111-D            | 3 m           |
| • FLM-420-O111-E            | Flush mounted |

### Ordering information

**FLM-420-O111-E Output-input interface module in-built** with 1 open collector output and 1 monitored input, in-built version

Order number **FLM-420-O111-E | F.01U.033.257**

**FLM-420-O111-D Output-input interface module rail-mount**

with 1 open collector output and 1 monitored input, DIN-rail version

Order number **FLM-420-O111-D | F.01U.033.256**

### Services

**EWE-FPDVC-IW 12 mths wrty ext Fire Peripheral Device**

12 months warranty extension

Order number **EWE-FPDVC-IW | F.01U.360.729**

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