



EN Operating instructions.pages 1 to 8
Translation of the original operating instructions

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1. About this document

1.1 Function

These operating instructions provide all the information required for mounting, commissioning, safe operation and also disassembly of the device. The operating instructions must be available in a legible condition and a complete version in the vicinity of the device.

1.2 Target group: authorised qualified personnel

All operations described in this operating instructions manual must be carried out by trained specialist personnel, authorised by the plant operator only.

Please make sure that you have read and understood these operating instructions and that you know all applicable legislations regarding occupational safety and accident prevention prior to installation and putting the component into operation.

The machine builder must carefully select the harmonised standards to be complied with as well as other technical specifications for the selection, mounting and integration of the components.

1.3 Explanation of the symbols used



Information, hint, note:

This symbol is used for identifying useful additional information.



Caution: Failure to comply with this warning notice could lead to failures or malfunctions.

Warning: Failure to comply with this warning notice could lead to physical injury and/or damage to the machine.

1.4 Appropriate use

The products described in these operating instructions are developed to execute safety-related functions as part of an entire plant or machine. It is the responsibility of the manufacturer of a machine or plant to ensure the correct functionality of the entire machine or plant.

The passive distribution module may only be used in accordance with the following versions or for the applications authorised by the manufacturer. Detailed information regarding the range of applications can be found in the chapter "Product description".

1.5 General safety instructions

The user must observe the safety instructions in this operating instructions manual, the country-specific installation standards as well as all prevailing safety regulations and accident prevention rules.



Further technical information can be found in the Schmersal catalogues or in the online catalogue on the Internet: www.schmersal.net.

The information contained in this operating instructions manual is provided without liability and is subject to technical modifications.

There are no residual risks, provided that the safety instructions as well as the instructions regarding mounting, commissioning, operation and maintenance are observed.

1.6 Warning about misuse



In the event of improper or unintended use or tampering, use of the passive distribution module could expose persons to danger or cause damage to the machine or system components.

1.7 Exclusion of liability

We shall accept no liability for damages and malfunctions resulting from defective mounting or failure to comply with this operating instructions manual. The manufacturer shall accept no liability for damages resulting from the use of unauthorised spare parts or accessories.

For safety reasons, invasive work on the device as well as arbitrary repairs, conversions and modifications to the device are strictly forbidden; the manufacturer shall accept no liability for damages resulting from such invasive work, arbitrary repairs, conversions and/or modifications to the device.

2. Product description

2.1 Ordering code

This operating instructions manual applies to the following types:

PDM-SD-4CC-SD

| Option | Description |
|--------|---------------------------------------|
| PDM | Passive distribution module |
| SD | Evaluation side: SD interface |
| 4CC | 4 device connections with cage clamps |
| SD | Device connection: SD interface |

2.2 Destination and use

The PDM-SD-4CC-SD passive distribution module is designed for the connection of 4 electronic safety switchgear units with SD interface manufactured by SCHMERSAL. It serves to connect up to 4 safety switchgear units in series.

To increase the safety functionality, more passive distribution modules can also be connected in series.

With the PDM-SD-4CC-SD passive distribution module, the secure OSSD outputs of the connected safety switchgear units are connected in series and wired to a relevant safety-monitoring module.

The non-secure SD interface signals of the devices are connected in series and wired to an SD Gateway.



The user must evaluate and design the safety chain in accordance with the relevant standards and the required safety level.

2.3 Technical data

| | |
|---------------------------|---|
| Standards: | IEC 60947-1 |
| Material of the housings: | Plastic, Polyamide 66 |
| Mounting: | 35 mm standard rail in accordance with EN 60715 |

Mechanical data

| | |
|---------------------|---|
| Type of connection: | Clips, cage clamps |
| Cable section: | min. 0.25 mm ² , max. 1.5 mm ² (including conductor ferrules) |

| | |
|-----------------------|--------------|
| De-insulation length: | 5 ... 6 mm |
| Actuator tool blade: | 3.5 x 0.5 mm |

Ambient conditions

| | |
|------------------------------------|------------------------------|
| Ambient temperature: | -25 °C ... +65 °C |
| Storage and transport temperature: | -40 °C ... +85 °C |
| Relative humidity: | 5 % ... 95 %, non condensing |

| | |
|--------------------------|------------------------------|
| Resistance to shock: | 30 g / 11 ms |
| Resistance to vibration: | 10 ... 55 Hz, amplitude 1 mm |

| | |
|-------------------|-------------------|
| Protection class: | IP00 to IEC 60529 |
|-------------------|-------------------|

| | |
|-------------------|-----|
| Protection class: | III |
|-------------------|-----|

Insulation values to IEC 60664-1:

| | |
|---|--------|
| - Rated insulation voltage U_i : | 32 VDC |
| - Rated impulse withstand voltage U_{imp} : | 0.8 kV |
| - Over-voltage category: | III |
| - Degree of pollution: | 2 |

Electrical data

| | |
|------------------------|--|
| Supply voltage U_B : | 24 VDC -15% / +10% stabilised PELV units |
|------------------------|--|

| | |
|---------------------------------|--------|
| Rated operating voltage U_e : | 24 VDC |
|---------------------------------|--------|

Operating current I_e :

| | |
|---|-------|
| - Distribution module (external fuse needed): | 10 A |
| - Device connection (internal fuse fitted): | 1.5 A |

| | |
|------------------------------|--|
| Device connection line fuse: | Automatically resetting fuse element 1.5 A |
|------------------------------|--|

LED indications

| | |
|--------------------|------------------------------------|
| Green "Power" LED: | Distribution module supply voltage |
| Green "F4" LED: | Device connection 4 fuse element |
| Green "F3" LED: | Device connection 3 fuse element |
| Green "F2" LED: | Device connection 2 fuse element |
| Green "F1" LED: | Device connection 1 fuse element |

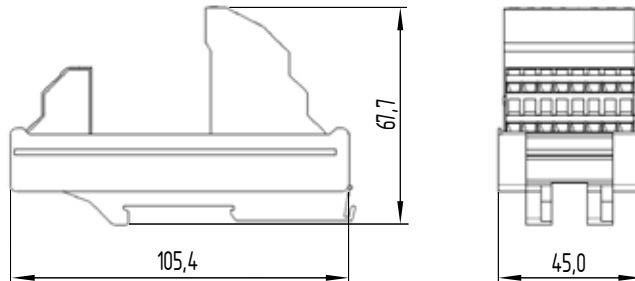
3. Mounting

3.1 General mounting instructions

The distribution module is designed to be mounted in a switch cabinet. The module can be attached to a standard 35 mm rail in accordance with EN 60715. Any mounting position.

3.2 Dimensions

All measurements in mm.



3.3 Accessories

Pre-wired cable M12, 8 pole

| | |
|-------|-----------|
| 2.5 m | 103011415 |
| 5.0 m | 103007358 |
| 10 m | 103007359 |

Pre-wired cable M8, 8 pole

| | |
|-------|-----------|
| 2.0 m | 103003638 |
| 5.0 m | 103003639 |
| 10 m | 103003640 |

4. Electrical connection

4.1 General information for electrical connection



The electrical connection may only be carried out by authorised personnel in a de-energised condition.

It is possible to connect wires with and without conductor ferrules with a wire cross section of 0.25 mm² to 1.5 mm² to the terminals of the passive distribution module.

The supply voltage of the module is to be protected with a fuse with a 10 A rating.

4.2 LED indicators and fuse elements

The distribution module features 5 green LED indicators.

| | |
|-------------|---|
| LED „POWER“ | Distribution module supply voltage status |
| LED „F4“ | Device connection 4 fuse element status |
| LED „F3“ | Device connection 3 fuse element status |
| LED „F2“ | Device connection 2 fuse element status |
| LED „F1“ | Device connection 1 fuse element status |

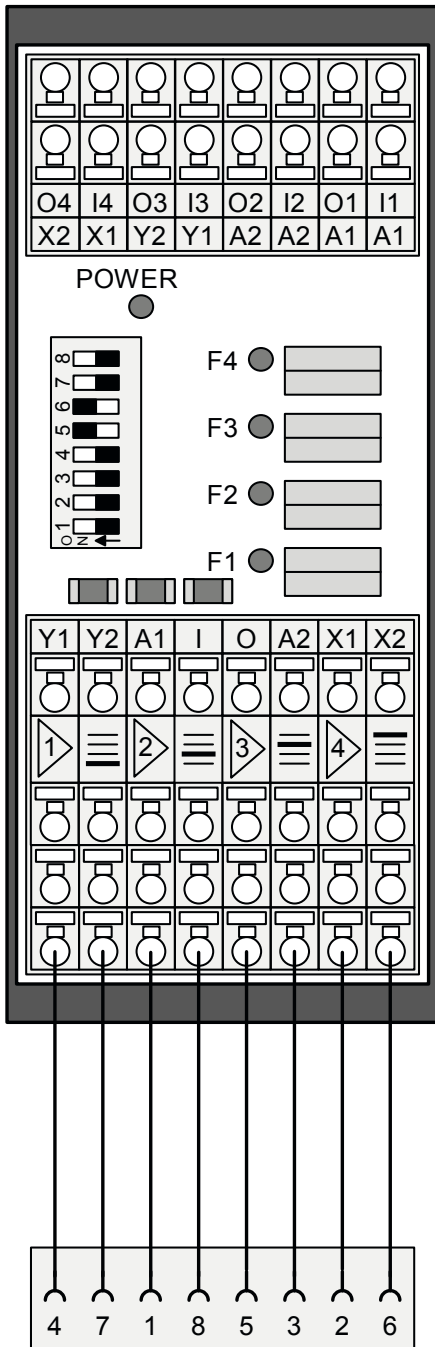
The 4 device connections are each equipped with an automatically resetting 1.5 A fuse for wiring protection.

If the fuse element triggers, the corresponding green LED goes out.



F1, F2, F3 and F4 fuse elements on the circuit board could become hot in the event of excess current.

4.3 Pin assignment of module connection



2 level terminal

Input and output signals of safety switchgear

Safety signals and supply voltage

4 level terminal

Safety switchgear connection 4

Safety switchgear connection 3

Safety switchgear connection 2

Safety switchgear connection 1

M23 / M12 / M8 8-pin device connection

Pin assignment of safety switchgear connection

| Function safety switchgear | | Pin assignment of connector plug or conductor numbers | Colour code of the Schmersal connector to DIN 47100 | Colour code of the Schmersal connector | Possible colour code of other commercially available connectors, also refer to IEC 60947-5-2 |
|-------------------------------------|---------------------------------|---|---|--|--|
| with conventional diagnostic output | with serial diagnostic function | | | | |
| | | | from part no. 103007xxx | to part no. 103007xxx | |
| A1 | U _e | | 1 | WH | BN |
| X1 | Safety input 1 | | 2 | BN | WH |
| A2 | GND | | 3 | GN | BU |
| Y1 | Safety output 1 | | 4 | YE | BK |
| OUT | Diagnostic output | SD output | 5 | GY | GY |
| X2 | Safety input 2 | | 6 | PK | VT |
| Y2 | Safety output 2 | | 7 | BU | RD |
| IN | Solenoid control | SD input | 8 | RD | PK |
| | without function | | 9 | | or |

4.4 Pin assignment of 2 level terminal

Input and output signals of safety switchgear

| | |
|----|--|
| O4 | SD output if 4 devices are connected |
| I4 | Do not use! |
| O3 | SD output if 3 devices are connected |
| I3 | Do not use! |
| O2 | SD output if 2 devices are connected |
| I2 | Do not use! |
| O1 | SD output if 1 device is connected |
| I1 | Distribution module input SD interface |

Safety signals and supply voltage

| | |
|----|-------------------------|
| X2 | Input safety channel 2 |
| X1 | Input safety channel 1 |
| Y2 | Output safety channel 2 |
| Y1 | Output safety channel 1 |
| A2 | 0 VDC module supply |
| A2 | 0 VDC module supply |
| A1 | +24 VDC module supply |
| A1 | +24 VDC module supply |

4.5 Pin assignment of 4 level terminal

Pin assignment of safety switchgear 4

| | |
|----|-------------------------|
| Y1 | Safety output 1 |
| Y2 | Safety output 2 |
| A1 | +24 VDC device supplied |
| I | Device SD input |
| O | Device SD output |
| A2 | 0 VDC device supplied |
| X1 | Safety input 1 |
| X2 | Safety input 2 |

Pin assignment of safety switchgear 3

| | |
|----|-------------------------|
| Y1 | Safety output 1 |
| Y2 | Safety output 2 |
| A1 | +24 VDC device supplied |
| I | Device SD input |
| O | Device SD output |
| A2 | 0 VDC device supplied |
| X1 | Safety input 1 |
| X2 | Safety input 2 |

Pin assignment of safety switchgear 2

| | |
|----|-------------------------|
| Y1 | Safety output 1 |
| Y2 | Safety output 2 |
| A1 | +24 VDC device supplied |
| I | Device SD input |
| O | Device SD output |
| A2 | 0 VDC device supplied |
| X1 | Safety input 1 |
| X2 | Safety input 2 |

Pin assignment of safety switchgear 1

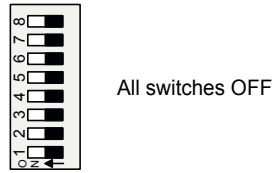
| | |
|----|-------------------------|
| Y1 | Safety output 1 |
| Y2 | Safety output 2 |
| A1 | +24 VDC device supplied |
| I | Device SD input |
| O | Device SD output |
| A2 | 0 VDC device supplied |
| X1 | Safety input 1 |
| X2 | Safety input 2 |

4.6 DIP switch configuration

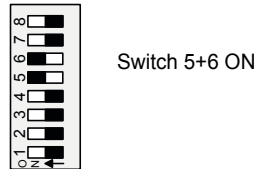
The position of the DIP switch is shown in black.

Module in centre of series wiring

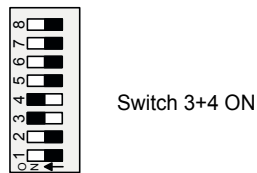
4 devices connected



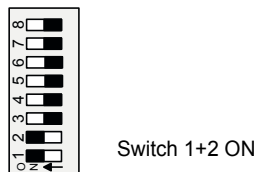
3 devices connected



2 devices connected

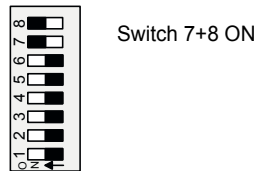


1 device connected

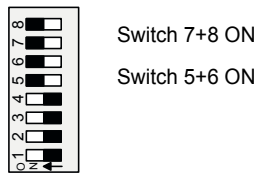


Last module in series-wiring

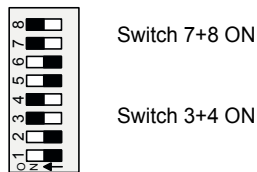
4 devices connected



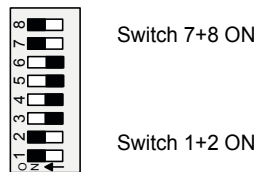
3 devices connected



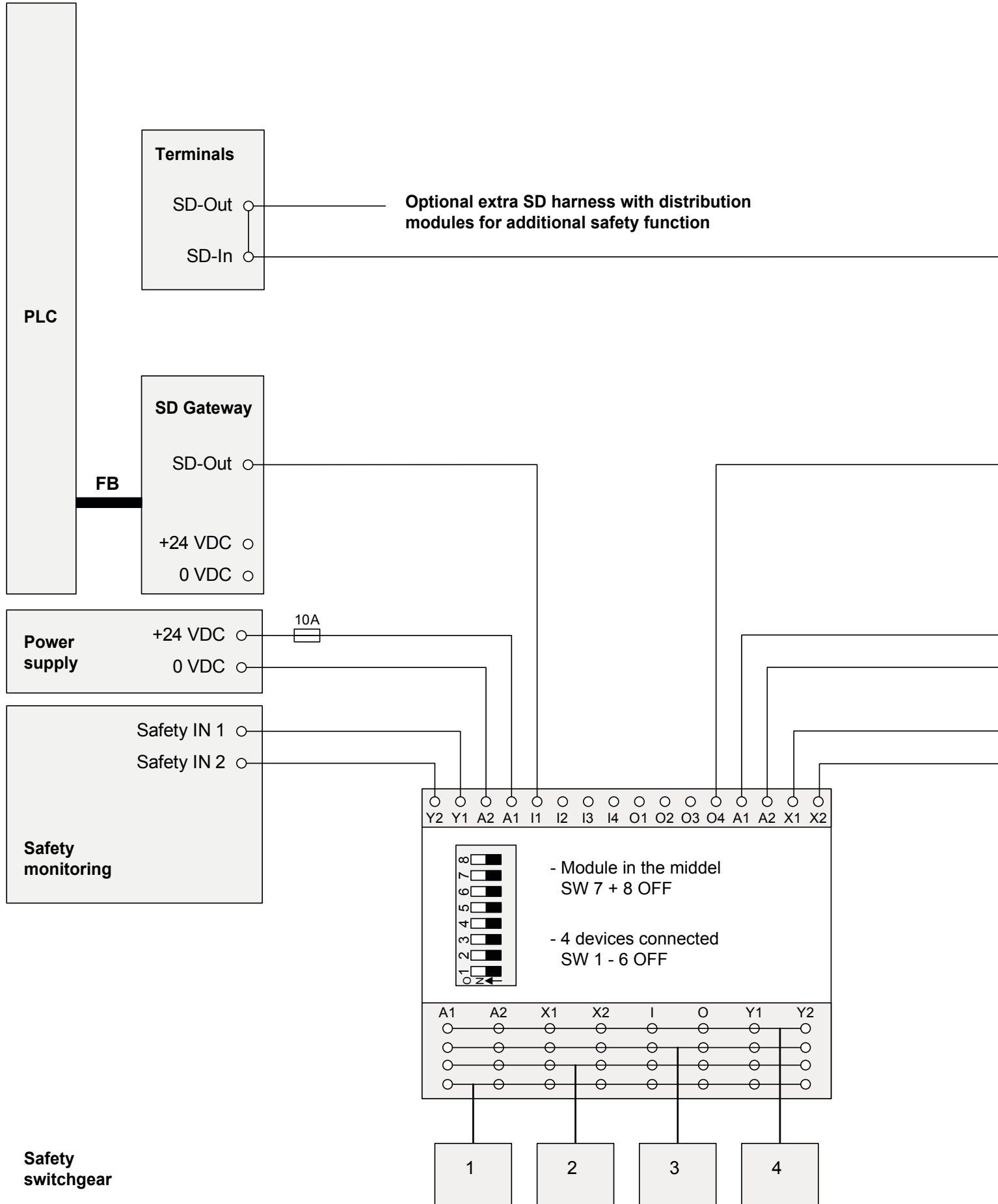
2 devices connected

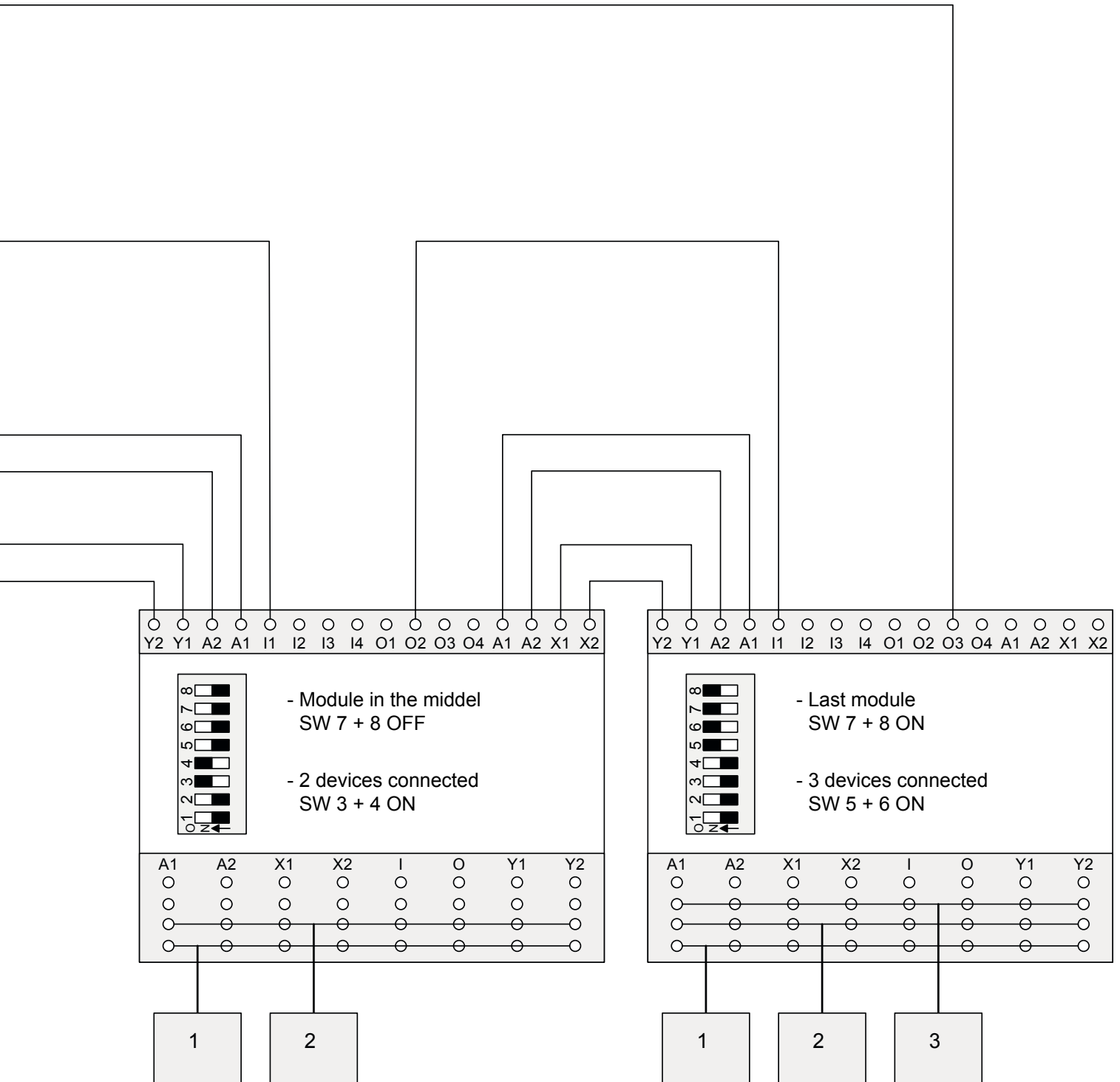


1 device connected



4.7 Wiring example





5. Set-up and maintenance

5.1 Functional testing

A check must be carried out to ensure that the projected safety function is effective.



The safety function, the DIP switch configuration and correct installation must be checked by the responsible safety specialist / safety representative.

5.2 Maintenance

If installed correctly and used as intended, the passive distribution module requires no maintenance.

6. Disassembly and disposal

6.1 Disassembly

The passive distribution module may only be removed when de-energised.

6.2 Disposal

The passive distribution module is to be disposed of in the correct manner as per the national regulations and legislation.

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