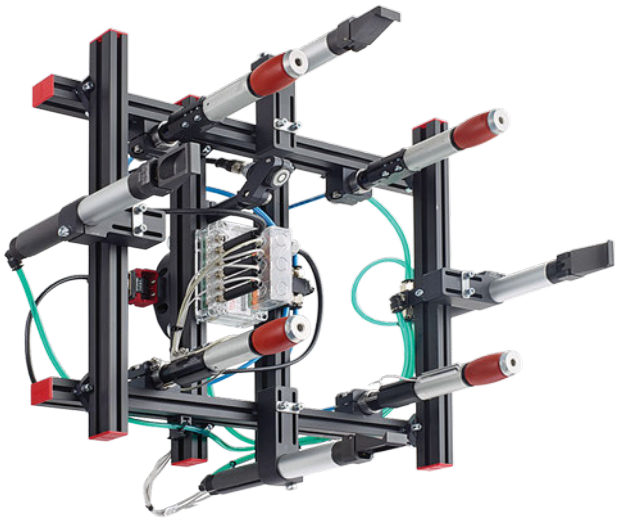
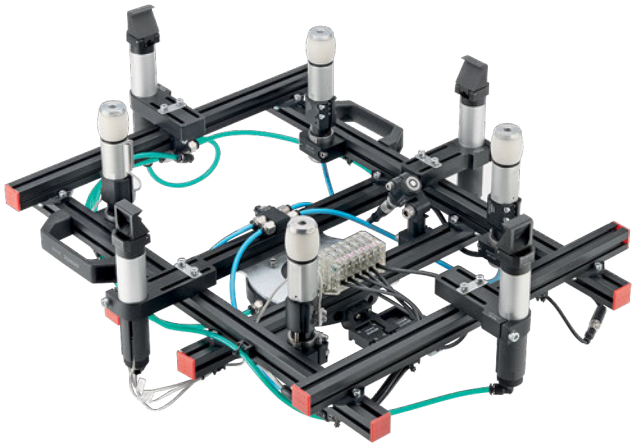
## Connection boxes for SB series sensors

The sensor connection box is an interface made to condition sensor signals to condense information and make it suitable for control electronics, such as a programmable logic controller (PLC).

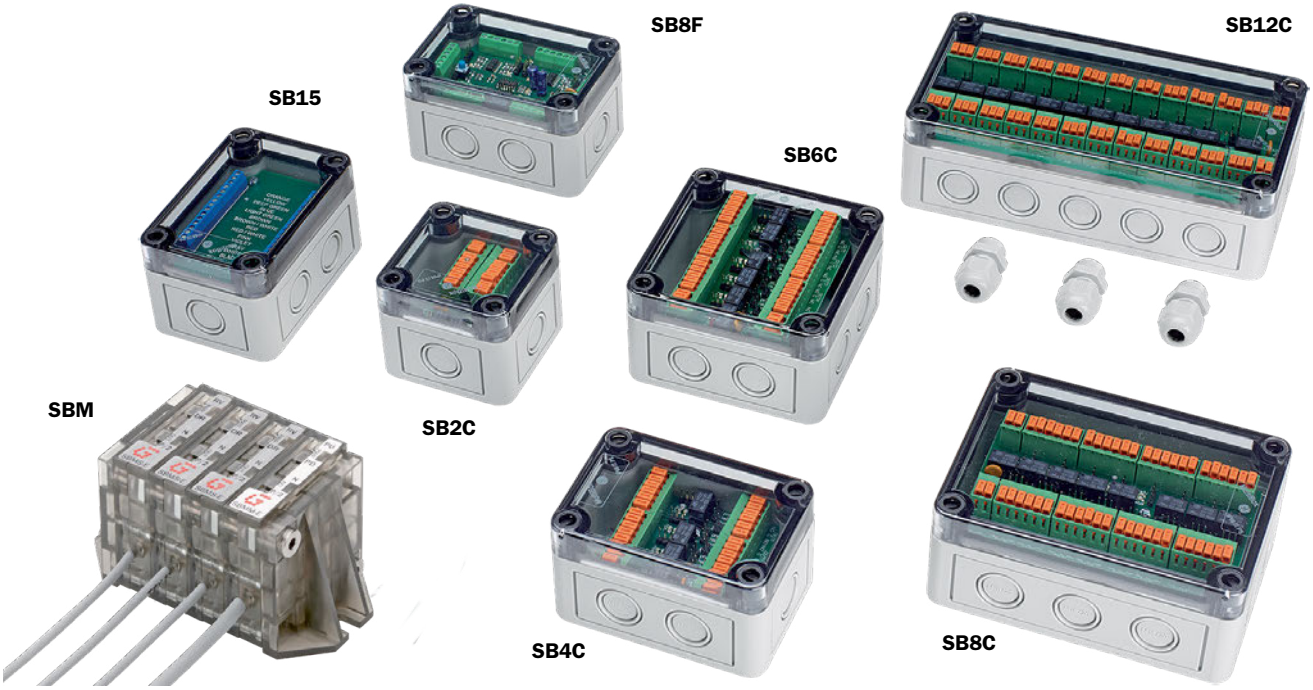
A connection box (or sensor box) has various functions, such as the possibility of connecting different types of sensors in series, converting their signals, troubleshooting, maintaining control circuits, regenerating signals in the case of extensive cabling and maintaining the contacts. Each control box has several areas - a power supply area, an input area for physical sensor connection, an input configuration area (used to set the type of sensor connected), an output configuration area (used to set the type of output and processing logic required), and an output area for collecting the signals generated. Each physical input can be configured on the basis of the type of sensor connected (PNP, NPN, 2-wire NO/NC) using jump wires or selectors. Signals coming from the sensors are conditioned using relay switches or microprocessors (on the basis of the type of control box), to provide one or more outputs depending on operational requirements. Even an individual output can be configured using a jump wire or selector to define the type (PNP or NPN), and normally open (NO) or normally closed (NC) mode of operation.
Sensor boxes consist of  a frame, clamps and terminal boards to make installation and wiring the sensors and outputs straightforward and easy. Furthermore, the presence of a resettable fuse protects and safeguards the integrity of the electronic equipment from short circuits. All connection boxes have LED warning lights that are visible through transparent plastic containers, which is convenient for troubleshooting and viewing input/output status. The connection boxes have PG9 cable glands depending on the model, which guarantee an IP65 protection grade for integrated electronic boards (SBxC, SB6B, SBF) rather than a modular structure (SBM). This makes it possible to limit size as much as possible, and secure the box directly to the aluminium profiles that usually form gripper frames.





## Connection boxes for series SB sensors

- Used for sensor wiring on EOATs.
- PNP and NPN signals can be converted.
- Is/Os can be current sourcing (PNP), sinking (NPN) or dry contact.
- Several boxes can be connected in series to control more sensors.
- Input signal repetition LED for easy troubleshooting (not for SB15).
- Provided with strain reliefs and kit for fastening to profiles.




| | SB2C.. ..SB12C | SB8F | SBMM | SBMS | SBMM-E | SBMS-E |
|---|---|---|---|---|---|---|
| Power supply unit (Vdc) | 24 (± 10%) | | 12 ÷ 24 (± 10%) | | | |
| Maximum output current (A) | 1 | 0.2 | 0.35 | | | |
| Programming method | jump wire | microprocessor and pushbutton panel | selectors | | | |
| Structure | rigid (fixed number of inputs/outputs) | | modular | | | |
| Number of inputs | 2÷12 | 8 | - | 1 | - | 1 |
| Number of outputs | 2÷12 | 1 | 2 (1NO, 1NC) | - | 1 (NO) | - |
| Protection rating | IP65 | | IP40 | | | |
| Overall dimensions (mm) | 65÷180x94x57 | 94x65x57 | 10x36x34 (single module) | | | |

## Connection boxes with NO/NC relay logic and clamp connection

- IP66 polystyrene sensor junction boxes.
- Cable inputs/outputs which can be customised using standard cable glands.
- Multiple models available with 2 to 12 input sensors, warning LEDs and connection clamps.
- Simple configuration of the type of sensor connected, type of output required, and the signal processing logic (individual or grouped) using jump wires.
- Protection from short circuits with red LED warning light and resettable fuse.
- Multiple boxes can be connected in series to increase the number of sensors that can be connected.
- Up to 1A as maximum switching current for individual outputs.
- Provided with screws for securing directly to aluminium profiles.

SB2C

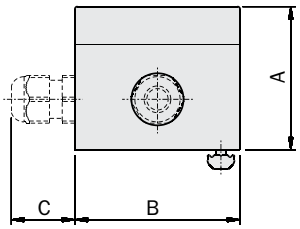
SB4C

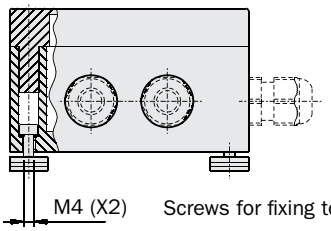
SB6C

SB8C

SB12C

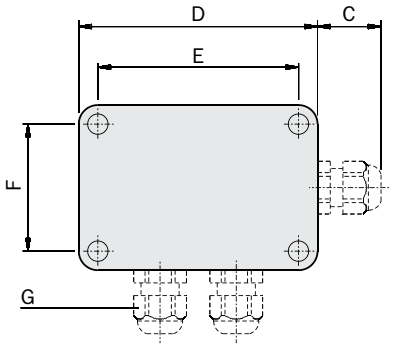
## Dimensions (mm)



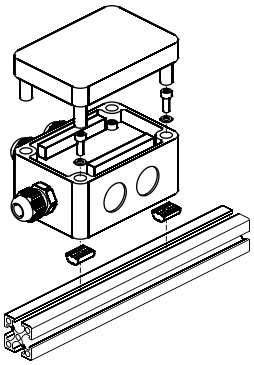




Screws for fixing to the extruded profile

Strain reliefs (G) and fixing screws included in the supply

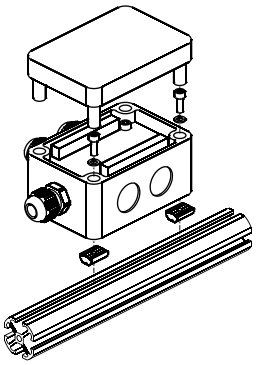



Strain reliefs

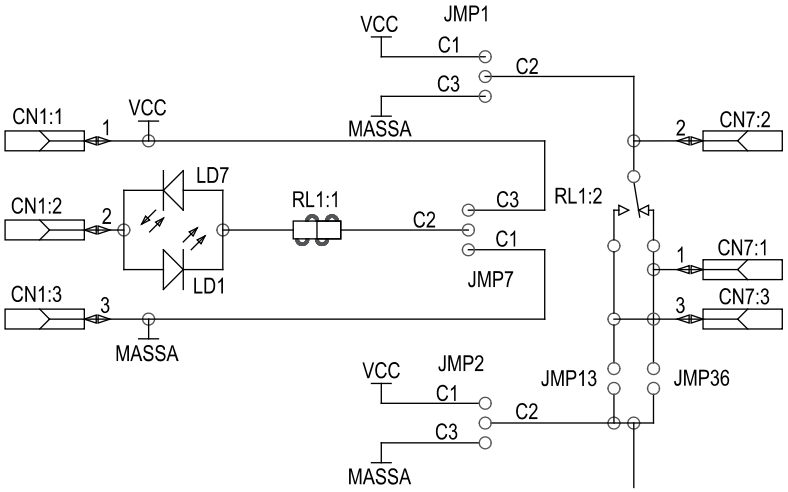


FIRST ANGLE PROJECTION

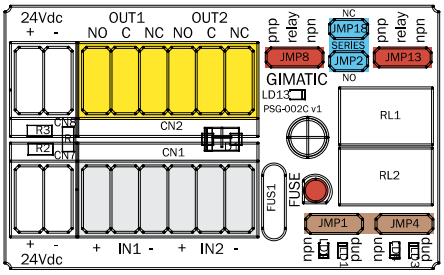
| | SB2C | SB4C | SB6C | SB8C | SB12C |
|---|---|---|---|---|---|
| A | 57 | 57 | 57 | 57 | 57 |
| B | 65 | 65 | 94 | 94 | 94 |
| C | 25 | 25 | 25 | 25 | 25 |
| D | 65 | 94 | 94 | 130 | 180 |
| E | 50 | 79 | 79 | 115 | 165 |
| F | 50 | 50 | 79 | 79 | 79 |
| G | n°2 | n°3 | n°4 | n°6 | n°8 |
| Mass | 120 g | 160 g | 190 g | 235 g | 325 g |



## Input/output single-circuit diagram

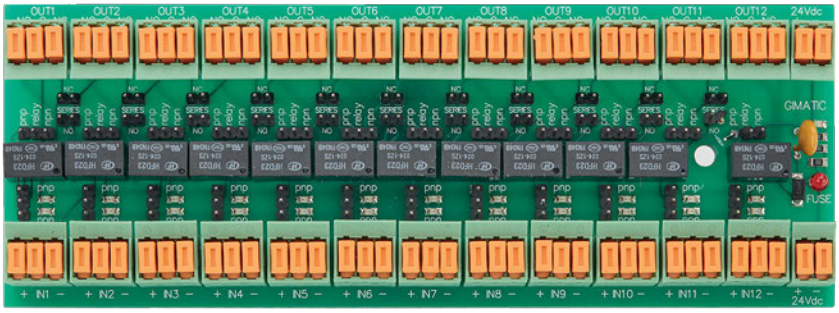


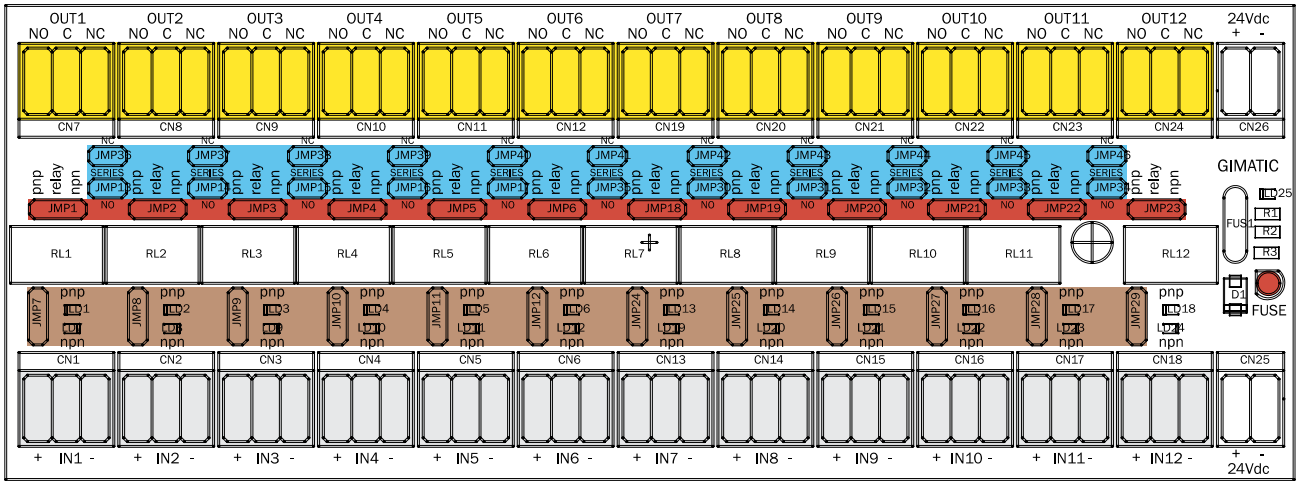

### SB2C




- *Power terminals*
- *Input sensor connection clamps*
- *Input type configuration selector (PNP, NPN)*
- *Output type configuration selector (PNP, NPN)*
- *Processing logic configuration selector (NO series, NC series)*
- *Output connection clamps*

### SB12C

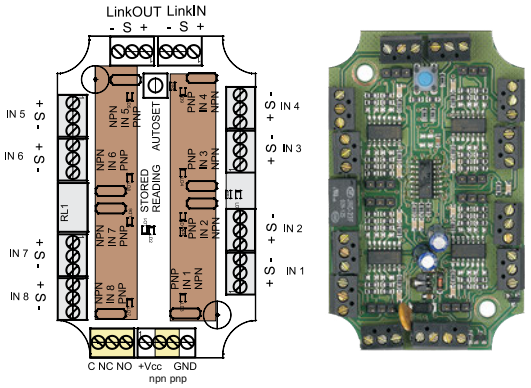


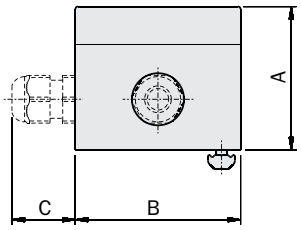
## Connection boxes with microprocessor logic and clamp connection

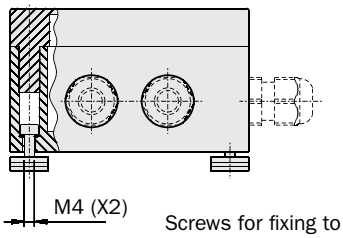
- IP66 polystyrene sensor junction boxes.
- Cable inputs/outputs which can be customised using standard cable glands.
- Up to 8 sensors with warning LEDs can be connected using clamps, configuration can be set using jump wires.
- Simple configuration by pressing a programming button.
- On pressing the button the microprocessor stores the status of all connected inputs. The output is activated every time the same input status is returned.
- Short circuit protection with resettable fuse.
- Multiple boxes can be connected in series to increase the number of sensors that can be connected (pressing just one button stores the status of all sensors).
- Up to 1A as maximum switching current for individual relay outputs and 30 mA for individual transistor outputs.
- Provided with screws for securing directly to aluminium profiles.

Circuit diagram



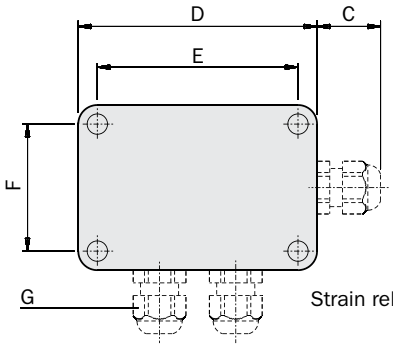

## Dimensions (mm)



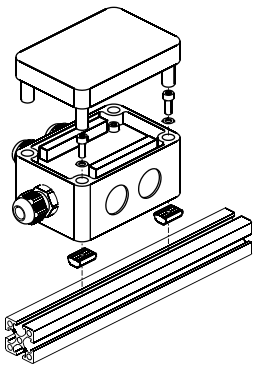

Screws for fixing to the extruded profile

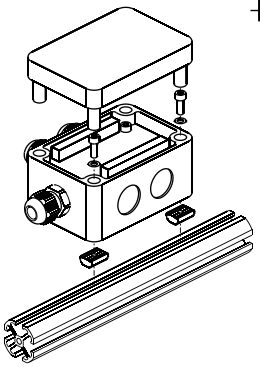
Strain reliefs (G) and fixing screws included in the supply




Strain reliefs

| | SB8F |
|---|---|
| A | 57 |
| B | 65 |
| C | 25 |
| D | 94 |
| E | 79 |
| F | 50 |
| G | n°3 |
| Weight | 165 g |



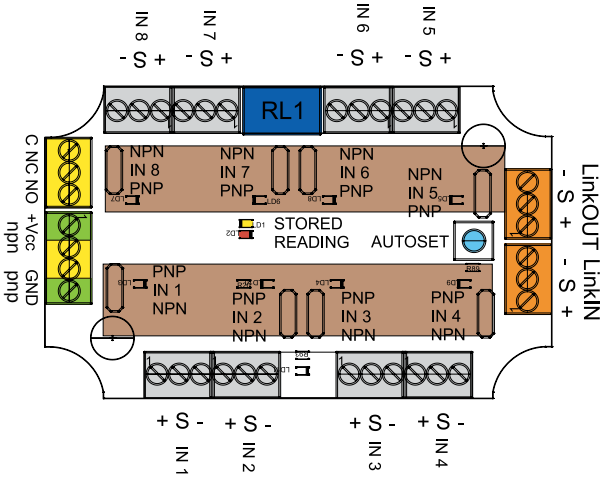


FIRST ANGLE PROJECTION

09/2022

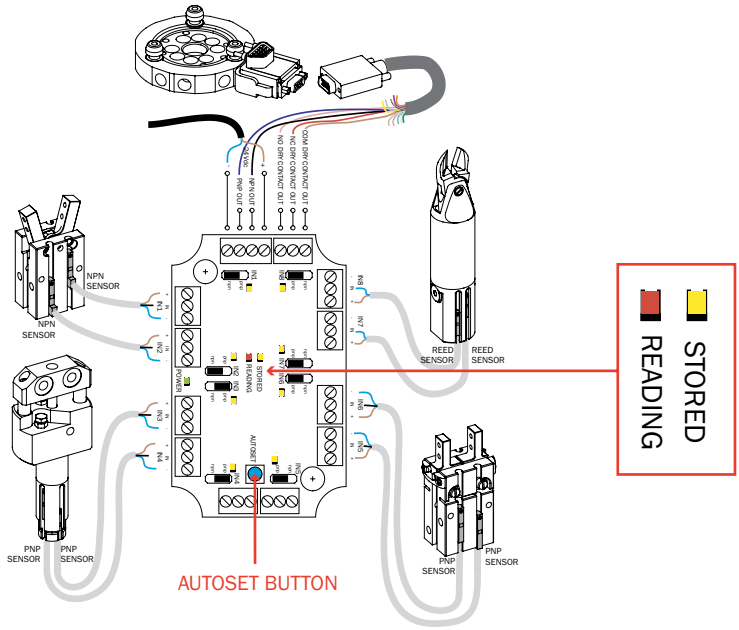
## Operation

Supply the sensor box with 24Vdc (+10%) (GREEN AREA).
When the AUTOSET button is pressed, the microprocessor stores the state of inputs (GREY AREA) that are properly set using jump wires (BROWN AREA).
The output (YELLOW AREA) is enabled whenever the same input configuration occurs. Each output can be controlled in 4 modes: PNP, NPN, CLEAN NC-CONTACT, CLEAN NO-CONTACT.
Using the LinkIN and LinkOUT (ORANGE AREA) channels, you can connect several blocks in series. The maximum number of connected blocks depends on the maximum current supplied.



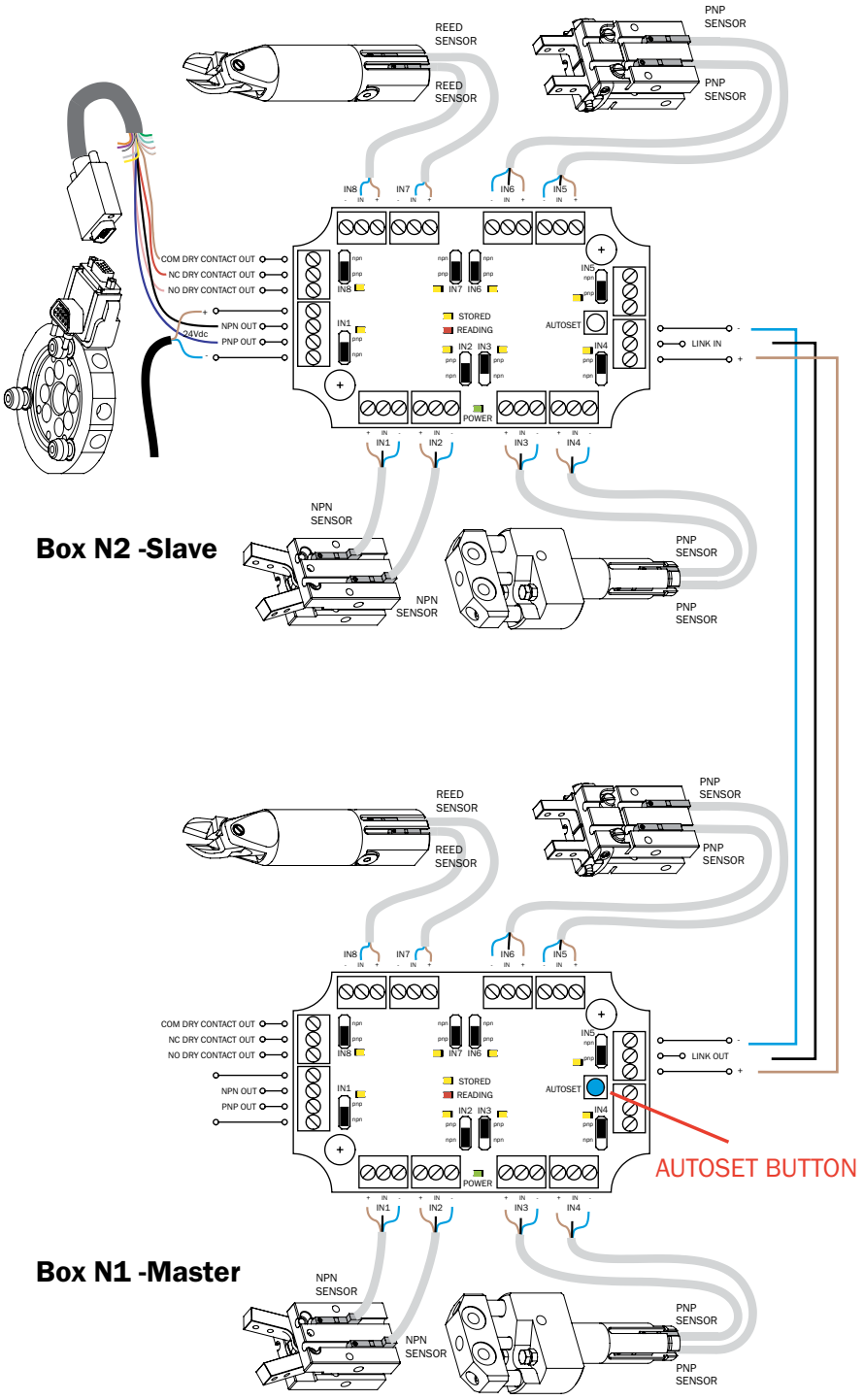

## Programming a single SB8F

Before programming the sensor box, make sure that the wired inputs are in the configuration (ON/OFF) desired to enable the output.
Press the AUTOSET button and hold it down for 3 seconds until the READING red light starts flashing, then release it.
The red light (READING) flashing indicates that the microprocessor is reading and storing the state of all the inputs. Then the red light goes off and the output is enabled.
Output enabling is indicated by the yellow light (STORED).



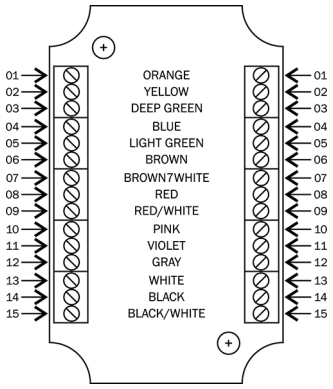
## Programming 2 SB8F connected in series

To connect two or more SB8Fs in series, you only need to connect the LINK channels as indicated in the diagram. The box with wired LINK-OUT (Box N1) is the MASTER box, while the box with wired LINK-IN (Box N2) is the SLAVE box. For a correct storage of all the system wired inputs you only need to press the AUTOSET button on the MASTER box. During input reading and storing, all the red lights (READING) of the connected SB8Fs will start flashing. At the end of programming, all the SB8F yellow lights (STORED) (and the individual outputs) will be enabled, and also the red lights (READING) will be enabled (indicating that the output of the SB8F connected at the entrance of each SB8F on channel LINK-IN is enabled).



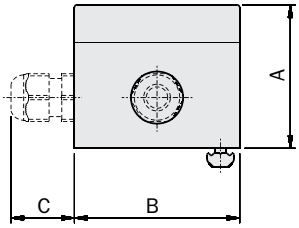
## Sensor box with terminal board

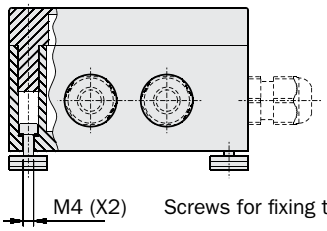
- IP66 polystyrene sensor box.
- Customizable cable input and output with standard cable gland.
- 2 screw terminals with direct connection of 15 inputs/ outputs.
- Supplied complete with direct fixing screws for aluminum extruded profiles.
- Maximum switching current up to 1A for each connection line.




Circuit diagram

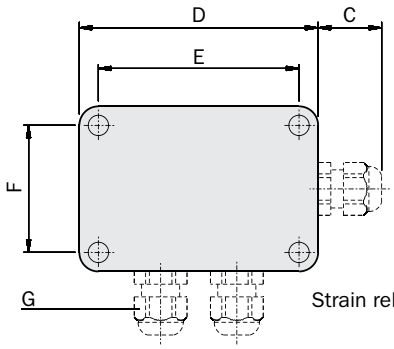

## Dimensions (mm)




Screws for fixing to the extruded profile

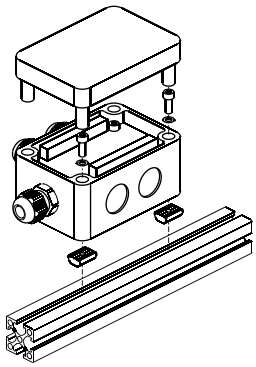
Strain reliefs (G) and fixing screws included in the package

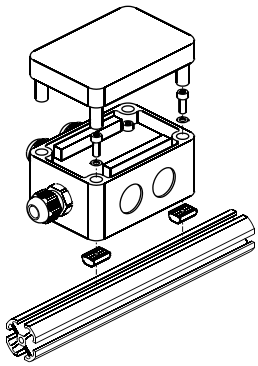



Strain reliefs

FIRST ANGLE PROJECTION

| | SB15 |
|---|---|
| A | 57 |
| B | 65 |
| C | 25 |
| D | 94 |
| E | 79 |
| F | 50 |
| G | n°3 |
| Weight | 150 g |





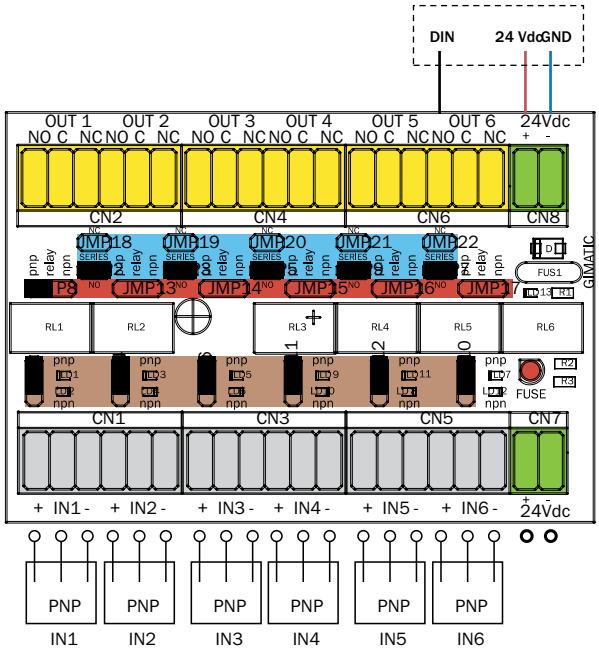
## Application example

**SB6B model**

**Inputs**
6 PNP INPUTS

**Number of outputs**
1

**Output type**
NO PNP (6-INPUT SERIES)



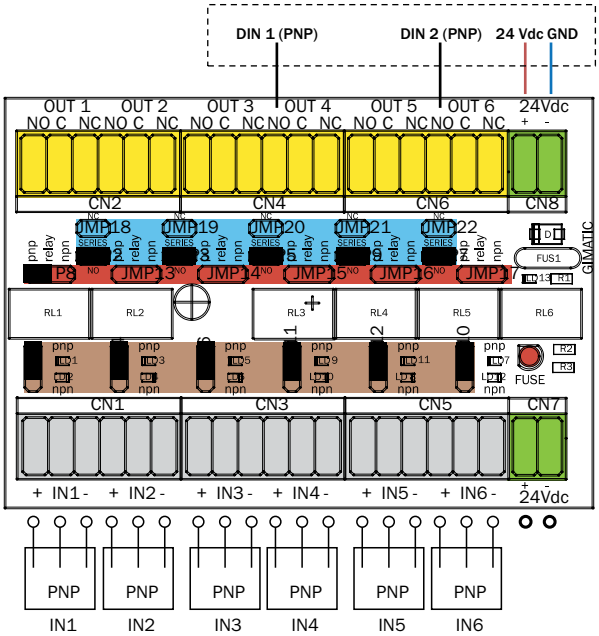

## Application example

**SB6B model**

**Inputs**
6 PNP INPUTS

**Number of outputs**
2

**Output type**
1 NO PNP (4-INPUT SERIES)
1 NO PNP (LAST 2 INPUTS)



## Application example

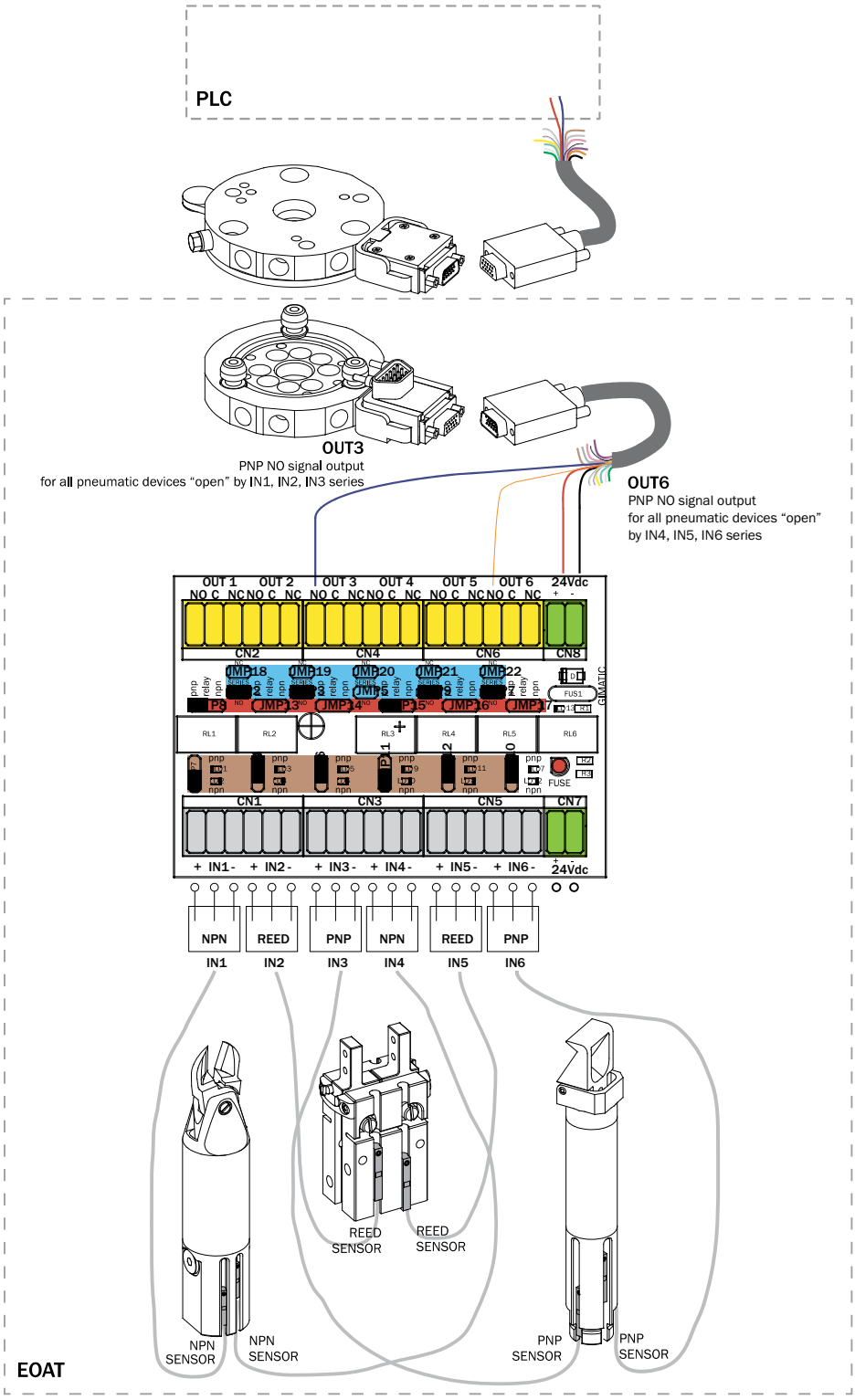
**SB6B model**

**Power supply**
24 Vdc (±10%)

**Inputs**
2 PNP INPUTS (IN3/IN6)
2 NPN INPUTS (IN1/IN4)
2 DRY CONTACT (IN2/IN5)

**Number of outputs**
2

**Output type**
1 PNP NO (4-INPUT SERIES)
1 PNP NO (LAST 2 INPUTS)



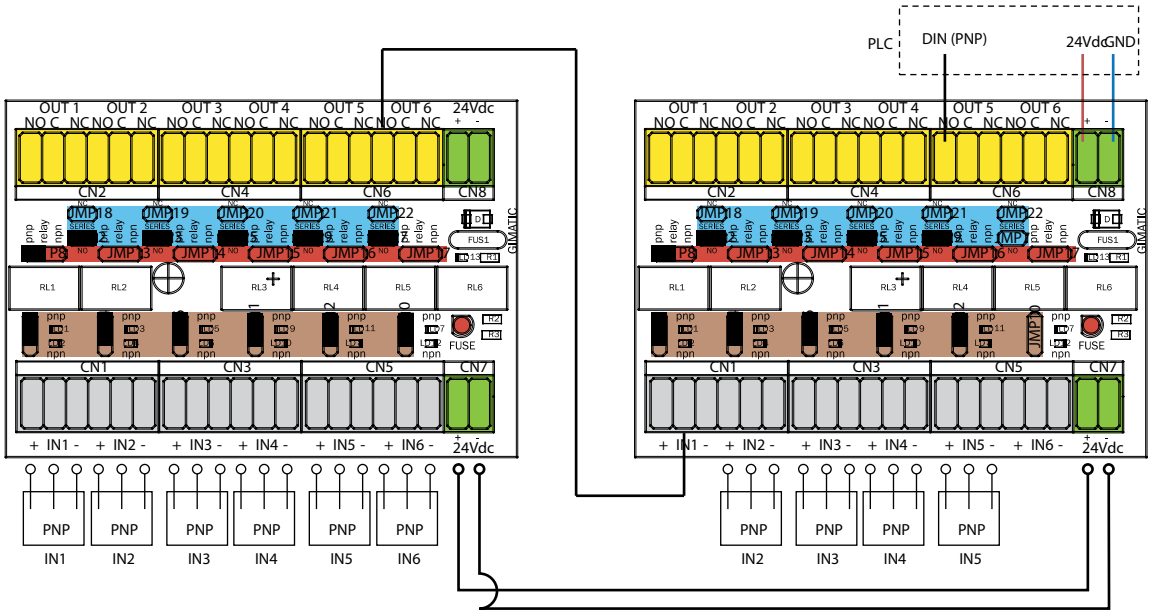
## Application example

**2 SB6B IN-SERIES model**

**Inputs**
10 PNP INPUTS

**Number of outputs**
1

**Output type**
1 PNP NO (10-INPUT SERIES)



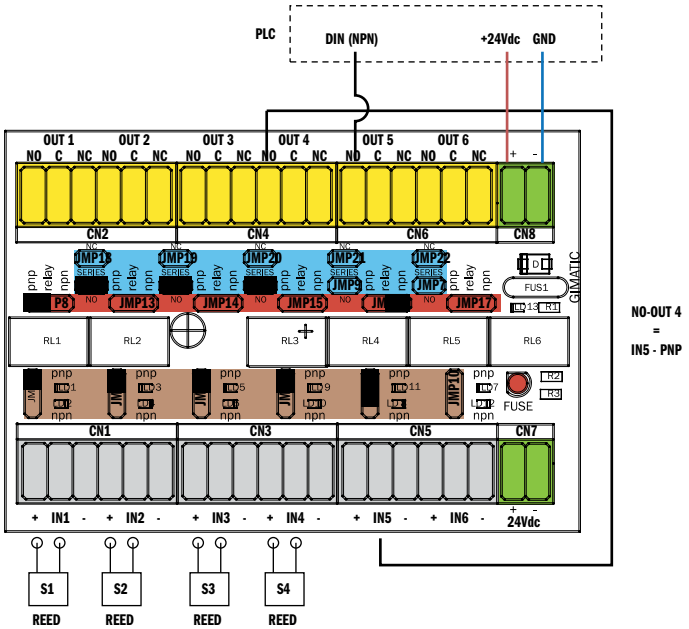

## Application example

**SB6B model**

**Inputs**
4 REED INPUTS

**Number of outputs**
1

**Output type**
1 PNP NO (4-INPUT SERIES)



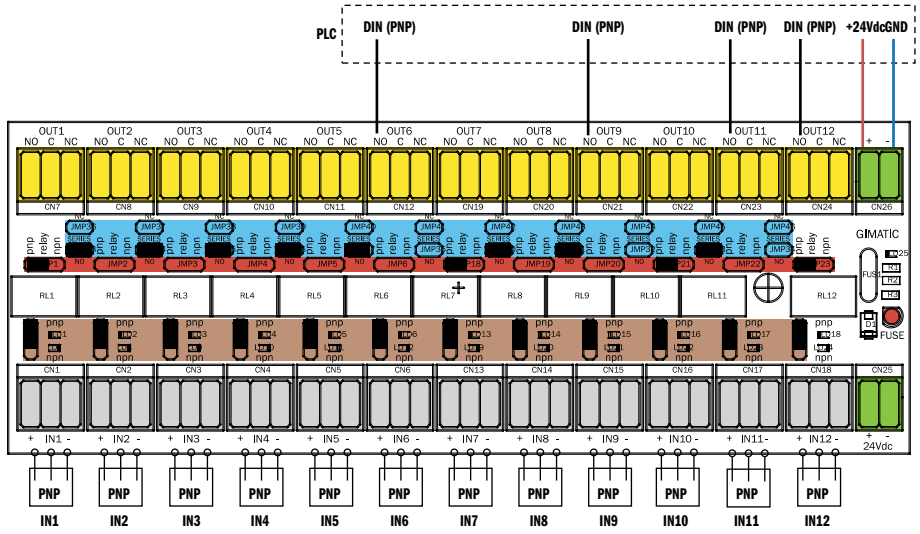
## Application example

**SB12C model**

**Inputs**
12 PNP INPUTS

**Number of outputs**
1

**Output type**
1 PNP (FIRST 6-INPUT SERIES)
1 PNP (3-INPUT SERIES)
1 PNP (LAST 2-INPUT SERIES)
1 PNP (1:1 WITH LAST INPUT)



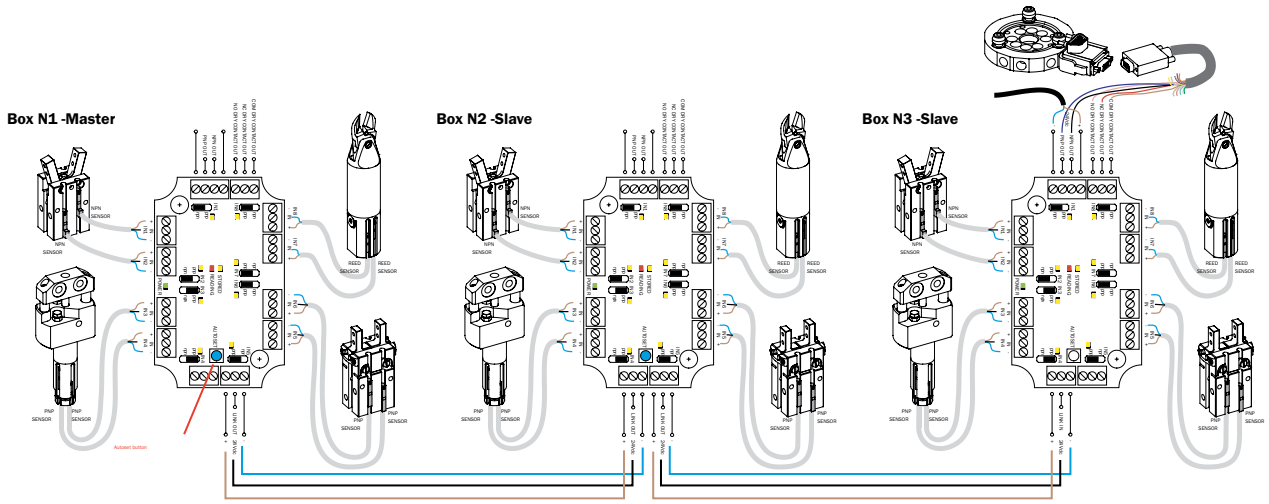

## Application example

**3 SB8F model**

**Inputs**
6 NPN INPUTS
12 PNP INPUTS
6 DRY CONTACTS

**Number of outputs**
1

**Output type**
1 PNP OTPUT
1 NPN OUTPUT
1 DRY CONTACT NC
1 DRY CONTACT NO



## Application example

**SB15 + 2 SB6B model**

**Inputs**
4 PNP
4 NPN
4 DRY CONTACT

**Number of outputs**
1

**Output type**
4 PNP NO

**Operation**
The SB15 is used to connect CAQC/CBQC modules to SB blocks with wired sensors.