

Safety field box for PROFINET/PROFIsafe systems

SFB-PN-IRT-8M12-IOP

V2.2 Scandinavia



Universal M12 device sockets, 8-pole

Wide range of connectable safety switchgear



Safety field box SFB-PN-IRT-8M12-IOP

The interface solution for PROFINET/PROFIsafe

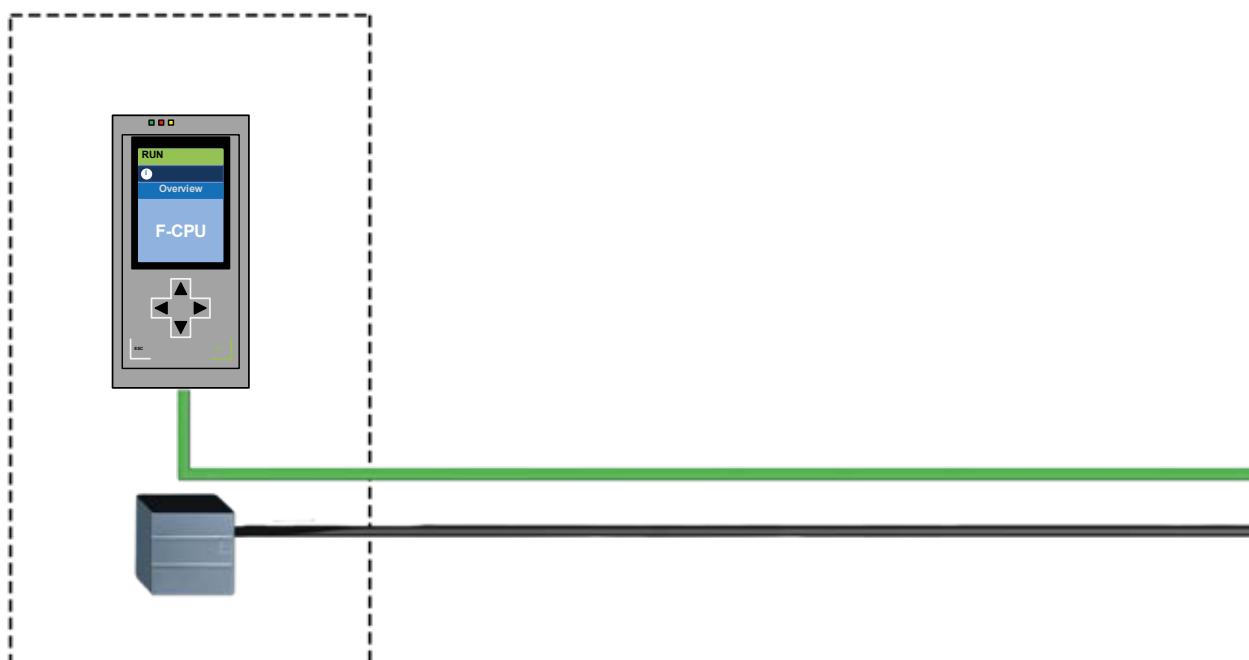
- Safety field box for installation of up to 8 safety switchgear devices
- PROFINET/PROFIsafe field bus interface
- Integrated dual-port switch, IRT-capable
- M12 power connector with 10 A current capacity for installation of wide range safety systems
- Universal 8-pole M12 device sockets suitable for electromechanical and electronic safety switches, sensors and solenoid interlocks as well as light curtains and control panels.
 - Electronic safety sensors with p-type semiconductor outputs (OSSD)
 - Electronic solenoid interlocks with p-type semiconductor outputs (OSSD) and 1- or 2-channel actuation of interlock function
 - Active opto-electronic protective devices (AOPD), such as safety light curtains and light grids
 - Control panels with electronic EMERGENCY-STOP function and non-safe command and signalling devices
 - Safety switches and reed sensors with 2 NC contacts
 - Solenoid interlocks with 2 NC contacts and 1-channel solenoid control up to 0.8 A
- Optimum process transparency through transfer of all diagnostic signals from connected devices to the control system. A digital input is available on each device socket.
- Line protection with integrated automatic resettable fuse for all device connections.
- Robust, industrial design:
 - Fibre-glass reinforced thermoplastic enclosure
 - Protection class IP67
 - Operating temperature range -20 °C to $+55\text{ °C}$
 - cULus-Approval
- Wide range of accessories available

System solution for the installation of safety switchgear

For simple and cost-effective installation

Product advantages SFB-PN

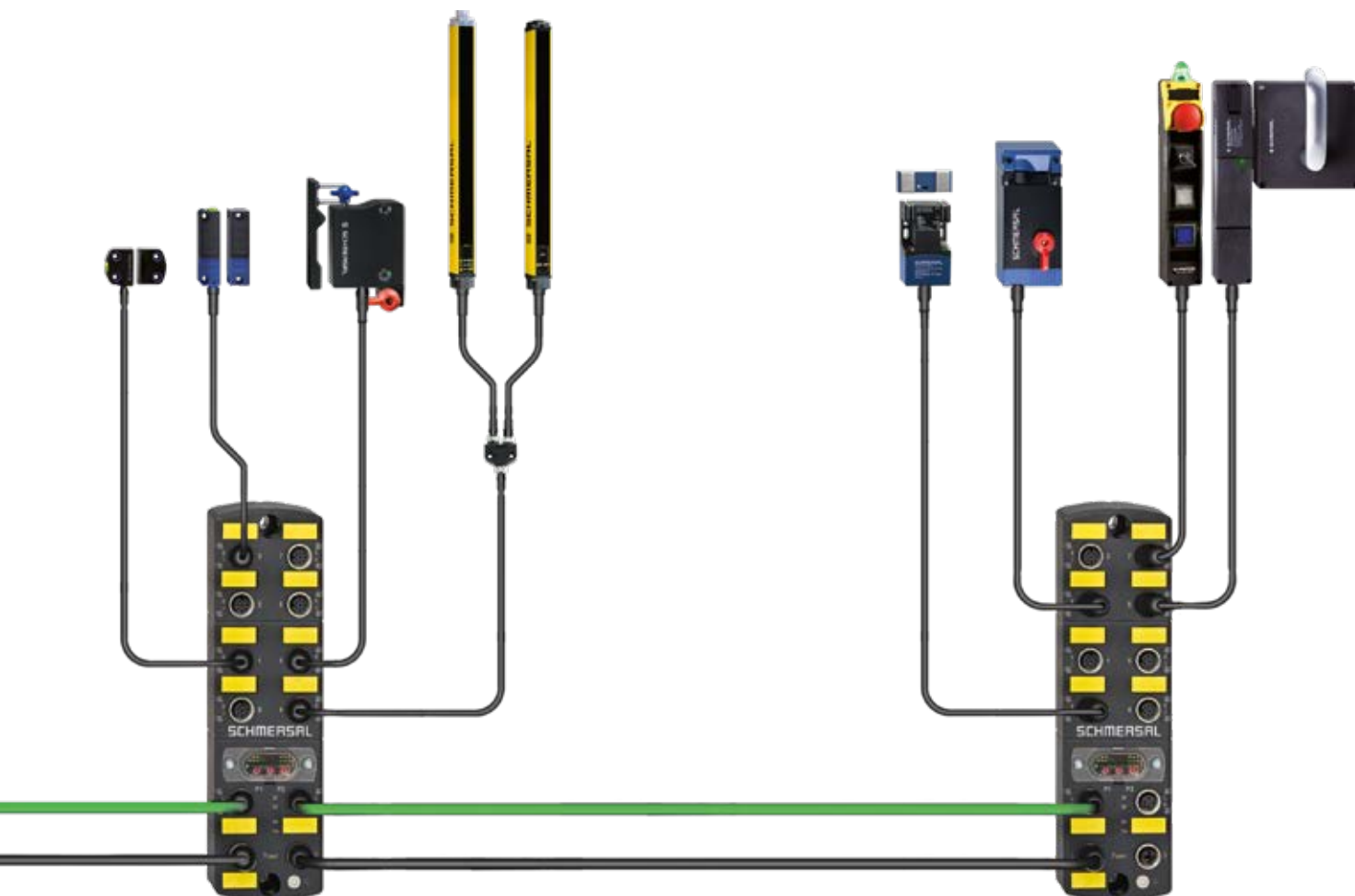
- Unique wide range of different connectable safety switchgear:
 - Up to 8 different solenoid interlocks, such as electromechanical devices or electronic solenoid interlocks with 1- or 2-channel control of the interlock function. Only one device socket is required for each solenoid interlock.
 - Up to 8 active opto-electronic protective devices (AOPD), such as safety light curtains and light grids, via Y-adapter.
 - Up to 4 BDF200-FB control panels with electronic EMERGENCY-STOP function and 3 operational command and signalling devices at device sockets X4 to X7.
- An additional integrated digital input on each 8-pole device socket allows for evaluation of the diagnostic signals of all connected safety switchgear.
- All device connections are internally protected with automatic resettable fuse for line protection.
- Power supply to field box via M12 power connector with current capacity of 10 A. The 3 mm² conductors allow for simple installation of the field boxes in series with a single central supply.
- The universal 8-pole device connection allows safety switchgear from other manufacturers to be connected with ease using, e. g. adapters.



Example layout of SFB-PN with Schmersal safety switchgear

| Type | Max. number of devices | Max. number of field boxes | Box to box wire | Wire to device |
|---------------------------|------------------------|----------------------------|----------------------------|----------------------------|
| RSS sensors BDF 200-FB | 80 | 10 | Need to be calculated * | Need to be calculated * |
| AZM 300 | 48 | 6 | | |
| MZM 100 | 32 | 4 | | |
| AZM 201 | 28 | 4 | | |
| AZM 400 | 16 | 2 | | |
| AZM 161 | 32 | 4 | | |

* Depends on number of devices



Technical data

The most important technical data at a glance

■ SFB-PN-IRT-8M12-IOP

Technical features

| | |
|--|---|
| General technical data | |
| Standards | EN 61131-1, EN 61131-2, ISO 13849-1, IEC 61508, IEC 62061 |
| Mechanical data | |
| Electrical connection version: | Connector socket/connector |
| - Device connection X0 – X7 | M12 / 8-pole, A-coded |
| - Power I/O | M12-POWER / 4-pole, T-coded |
| - PROFINET P1/P2 | M12 / 4-pole, D-coded |
| Materials: | |
| - Enclosure | Polyamide / PA 6 GF |
| - Inspection window | Polyamide / PACM12 |
| - Encapsulation | Polyurethane / 2K PU |
| - Labelling plates | Polycarbonate / PC |
| Ambient conditions | |
| Ambient temperature | -20 °C ... +55 °C |
| Protection class | IP67 to IEC 60529 |
| Resistance to shock | 30 g / 11 ms |
| Resistance to vibration | 5 ... 10 Hz, amplitude 3.5 mm 10 ... 150 Hz, amplitude 0.35 mm / 5 g |
| Electrical data | |
| Supply voltage U_b | 24 VDC -15% / +10% |
| Operating current I_o | 10 A |
| Current capacity, device supply socket X0 – X7 | 0.8 A |
| Current capacity, digital output socket X0 – X7 | 0.8 A |
| Field bus interface | |
| Field bus protocol: | PROFINET/PROFIsafe |
| - PROFINET | V2.3, Conformance Class C, MRP |
| - PROFIsafe | V2.4 |
| Transmission rate | 100 Mbit/s Full Duplex |
| Integrated switch | Dual Port, 100 Mbit/s, IRT capable |
| Service interface | WEB-Interface HTTP |
| Safety values | |
| 2-channel safety inputs | PL e, Category 4, SIL 3 |
| 1-channel safety inputs | PL c, Category 1, SIL 1 |
| Safety outputs 1 cable | PL d, Category 2, SIL 2 |
| Safety outputs 2 cables | PL d, Category 2, SIL 2 |

Wiring example and accessories

For the safe field box SFB-PN-IRT-8M12-IOP

| Parameter | Value | Wiring example – Solenoid interlock |
|-------------------------------|----------------|-------------------------------------|
| Safety inputs | 2-channel | |
| Cross-wire monitoring | OFF | |
| Safety outputs | 1 cable (PL d) | |
| Monitoring time | 2 s | |
| Stable time | 0.1 s | |
| Safety values | | |
| Inputs X1 & X2: | | |
| – up to Cat. 4 / PL e / SIL 3 | | |
| Output DO: | | |
| – up to Cat. 2 / PL d / SIL 2 | | |

| Pre-wired and connecting cables | Description | Length [m] | Type designation | Part number |
|--|---|--|---|-------------|
| M12 power cables, 4-pole, straight, T-coded | Pre-wired cable, female connector | 5.0 | A-K4P-M12P-S-G-5M-BK-2-X-T-4 | 103013430 |
| | | 10.0 | A-K4P-M12P-S-G-10M-BK-2-X-T-4 | 103013431 |
| | Connecting cable, male / female connectors | 0.5 | V-SK4P-M12P-S-G-0.5M-BK-2-X-T-4 | 103025138 |
| | | 1.5 | V-SK4P-M12P-S-G-1.5M-BK-2-X-T-4 | 103025136 |
| | | 3.0 | V-SK4P-M12P-S-G-3M-BK-2-X-T-4 | 103013432 |
| | | 5.0 | V-SK4P-M12P-S-G-5M-BK-2-X-T-4 | 103013433 |
| | | 7.5 | V-SK4P-M12P-S-G-7,5M-BK-2-X-T-4 | 103013434 |
| M12 Ethernet cables, 4-pole, straight, D-coded, shielded | Connecting cable, RJ45 to M12 | 5.0 | AIE-S4P-M12/RJ45-S-G-5M-GN-2-X-D-1 | 103013435 |
| | | 7.5 | AIE-S4P-M12/RJ45-S-G-7,5M-GN-2-X-D-1 | 103013436 |
| | | 10.0 | AIE-S4P-M12/RJ45-S-G-10M-GN-2-X-D-1 | 103013437 |
| | Connecting cable, male / male connectors | 3.0 | VIE-SS4P-M12-S-G-3M-GN-2-X-D-1 | 103013438 |
| | | 5.0 | VIE-SS4P-M12-S-G-5M-GN-2-X-D-1 | 103013439 |
| | | 7.5 | VIE-SS4P-M12-S-G-7,5M-GN-2-X-D-1 | 103013440 |
| | | M12 device connection cables, 8-pole, straight, A-coded | Connecting cable, male / female connectors | 0.5 |
| 1.0 | V-SK8P-M12-S-G-1M-BK-2-X-A-4-69 | | | 101217787 |
| 1.5 | V-SK8P-M12-S-G-1,5M-BK-2-X-A-4-69 | | | 101217788 |
| 2.5 | V-SK8P-M12-S-G-2,5M-BK-2-X-A-4-69 | | | 101217789 |
| 3.5 | V-SK8P-M12-S-G-3,5M-BK-2-X-A-4-69 | | | 103013428 |
| 5.0 | V-SK8P-M12-S-G-5M-BK-2-X-A-4-69 | | | 101217790 |
| 7.5 | V-SK8P-M12-S-G-7,5M-BK-2-X-A-4-69 | | | 103013429 |



The Schmersal Group

In the demanding field of machine safety, the owner-managed Schmersal Group is one of the international market leaders. The company, which was founded in 1945, has a workforce of about 2000 people and seven manufacturing sites on three continents along with its own companies and sales partners in more than 60 countries.

Customers of the Schmersal Group include global players from the area of mechanical engineering and plant manufacturing as well as operators of machinery. They profit from the company's extensive expertise as a provider of systems and solutions for machine safety. Furthermore, Schmersal specialises in various areas including food & beverage, packaging, machine tools, lift switchgear, heavy industry and automotive.

A major contribution to the systems and solutions offered by the Schmersal Group is made by tec.nicum with its comprehensive range of services: certified Functional Safety Engineers advise machinery manufacturers and machinery operators in all aspects relating to machinery and occupational safety – and do so with product and manufacturer neutrality. Furthermore, they design and realise complex solutions for safety around the world in close collaboration with the clients.

Safety Products



- Safety switches and sensors, solenoid interlocks
- Safety controllers and safety relay modules, safety bus systems
- Optoelectronic and tactile safety devices
- Automation technology: position switches, proximity switches

Safety Systems



- Complete solutions for safeguarding hazard areas
- Individual parametrisation and programming of safety controllers
- Tailor-made safety technology – be it for individual machines or a complex production line
- Industry-specific safety solutions

Safety Services



- tec.nicum academy – Seminars and training
- tec.nicum consulting – Consultancy services
- tec.nicum engineering – Design and technical planning
- tec.nicum integration – Execution and installation

The details and data referred to have been carefully checked.
Subject to technical amendments and errors.

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