

Safety field box for PROFINET/PROFIsafe systems

SFB-PN-IRT-8M12-IOP



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The interface solution for PROFINET/PROFIsafe

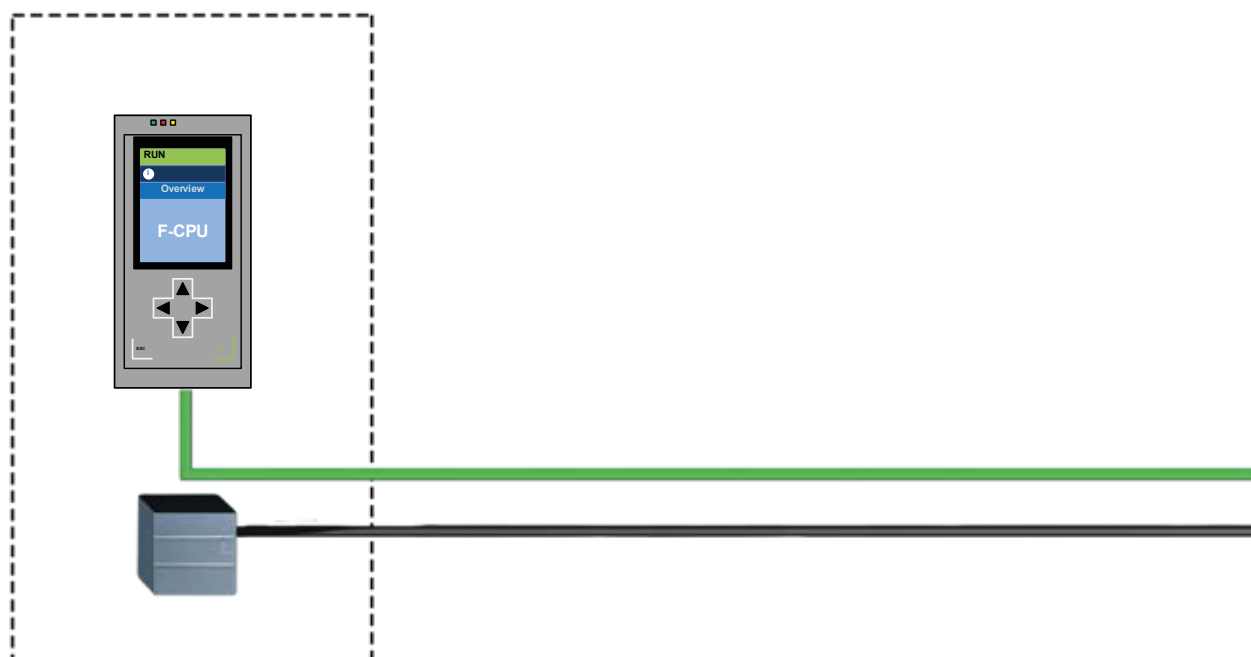
- Safety field box for installation of up to 8 safety switchgear devices
- PROFINET/PROFIsafe field bus interface
- Integrated dual-port switch, IRT-capable
- M12 power connector with 10 A current capacity for installation of wide range safety systems
- Universal 8-pole M12 device sockets suitable for 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

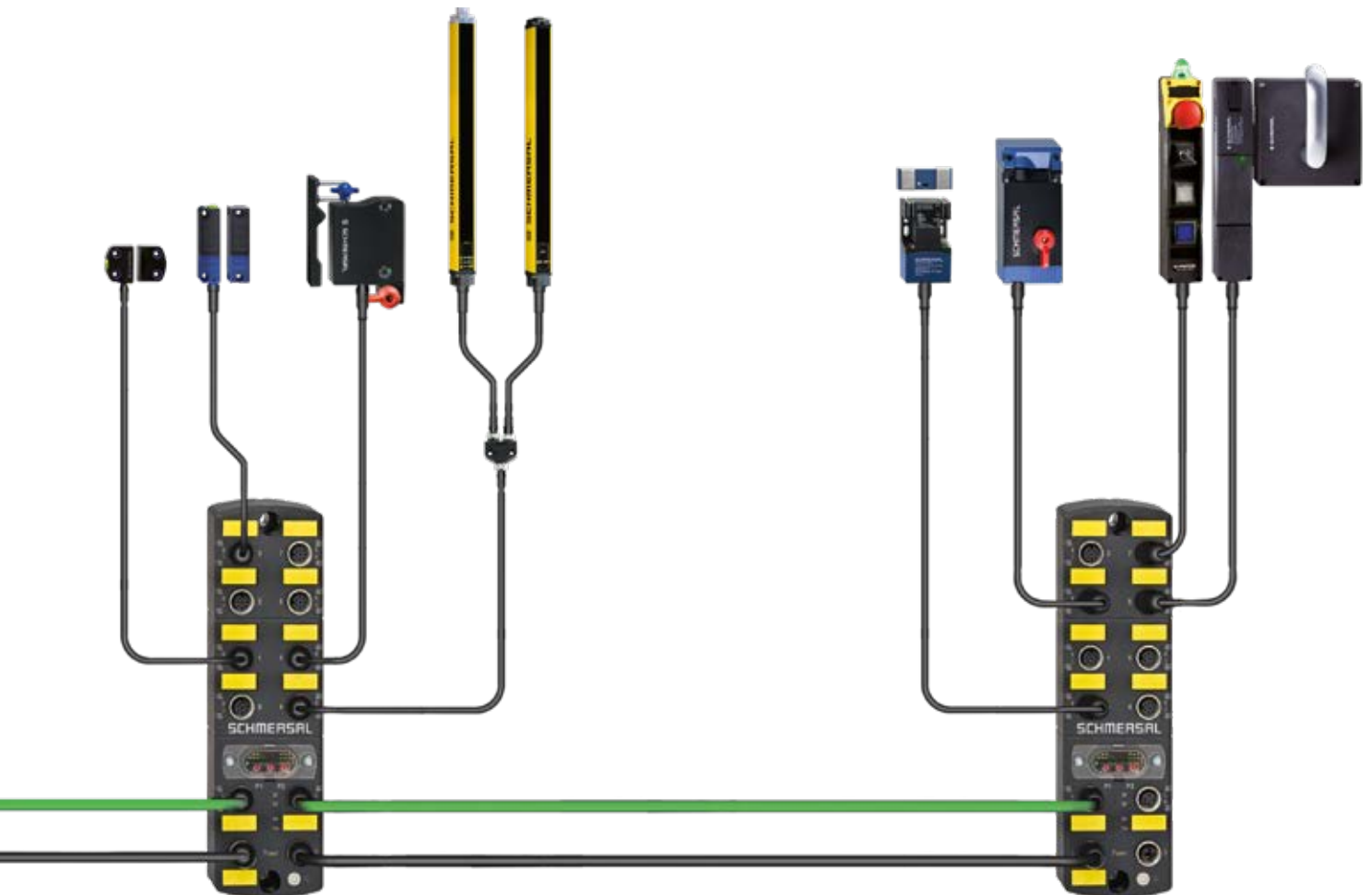
- Unique wide range of different connectable safety switchgear:
 - Up to 8 different solenoid interlocks, such as electromechanical devices or electronic solenoid interlocks with 1- or 2-channel control of the interlock function. Only one device socket is required for each solenoid interlock.
 - Up to 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	max. 5 m to 10 m *	max. 3.5 m to 7.5 m *
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 3, SIL 2
Safety outputs 2 cables	PL e, Category 4, SIL 3

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. 3 / 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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x.000 / L+W / 08.2018 / Teile-Nr. 103026489 / EN / Ausgabe 01

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