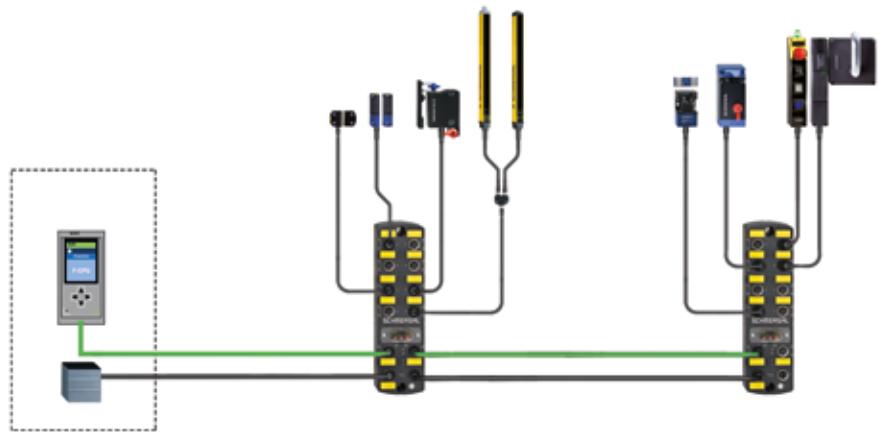


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Safely connected Safety Fieldbox for universal use

The Schmersal Group will be presenting a newly developed fieldbox at SPS IPC Drives for the first time. This allows up to eight safety switchgear devices of different designs to be simply connected to various safety controllers using “Plug&Play”. The machine manufacturer benefits from the reduced installation times, while the operator can enjoy increased flexibility and transparency.

Flexibility and simple, fail-safe installation: These are the central requirements of the manufacturers and users of machine and automation systems when it comes to the integration of switchgear into the controller infrastructure. This is why bus systems and fieldboxes have been so universally successful. They enable the installation (or replacement) of individual switchgear devices in seconds and, in combination with the fieldbus system, allow “tidy” cabling within the system. At the same time, this kind of communication between switchgear devices, sensors and controllers also improves transparency, because a wide range of operational data can be collected, transferred and evaluated. This information can be used, for example, to uncover irregularities and allow early intervention in a service scenario.



From the safety switch via the fieldbox to the controller:
The Safety Fieldbox simplifies installation and increases process transparency.

A tool for self-optimisation

In safety-related switching circuits, this development has taken place with a time delay. The first safety fieldboxes for the universally used Ethernet-based fieldbuses with their respective safety protocols, such as Profinet/Profisafe, were presented a good three years ago. They offer the same advantages as the fieldboxes for operational signals and more, as they provide, for example, data on the frequency of opening of safety doors or the actuation of emergency stop signals, which can be used for (self-) optimisation of machines and controls, either by training the operators or eliminating the causes of frequent machine faults.

Purpose of the development: Universal application

The fact that, despite these benefits, the safety fieldboxes have failed to find the same level of acceptance as the non-safety-related fieldboxes, could also lie in the fact that the solutions available were not suitable for all

designs of safety switchgear. The aim of the new Schmersal development, which will be presented for the first time at SPS IPC Drives, was therefore to provide a universal fieldbox for as broad as possible a range of safety switchgear types and technologies. The box, called SFB-PN, is integrated into Profinet/Profisafe systems and is suitable for simple “Plug&Play” installation of up to eight safety switchgear devices.

“One for all”

The developers opted for a universal device interface with eight-pin M2 connectors, as this means all conventional designs of safety switchgear devices can be connected: electromechanical safety switchgear, electromechanical and electronic solenoid interlocks with one or two-channel controllers, safety sensors, opto-electronic safety equipment: (BWS: via Y adapter) and also control panels. This applies not only to Schmersal Group products: Safety devices from other manufacturers can also be easily connected, using an adapter, for example.

An additional integrated digital input on each connector slot enables the evaluation of diagnostic signals from all safety switchgear devices connected. In practice, this means: The SFB-PN Safety Fieldbox allows all safety switchgear devices, e.g. in a plant section, a workplace or a hazardous area, to be connected. Typical configurations, such as two or three switchgear devices or interlocks (for position monitoring of a single or double-wing safety doors and a maintenance flap), a safety light curtain (for securing the area around an insertion point) and a control panel with emergency stop switch can be connected via the fieldbox in “Plug&Play” mode to the higher-level safety controller and then simply configured via this controller. This means the fieldbox is an absolutely ideal system component for safety systems built on a “Safety Integrated” basis, irrespective of which controller products are used. At the same time, it is an important module for systems for condition monitoring and predictive maintenance, even for more complex machines. It also simplifies installation as the use of M12 power connectors to supply the

fieldbox – depending on the switchgear type and power consumption - means that up to 10 Safety Fieldbox with 80 devices can simply be connected in series.

Safe communication and high availability

Profisafe-based communication is protected against alteration, transmission errors, changes in the telegram sequence and similar. Parallel transmission of safety signals allows safety switchgear devices to be freely linked in the safety controller unit. At the same time, all device connections also feature a self-resetting fuse element for the circuit breaker. After eliminating an overload in a connection, the fuse element resets itself after a brief cool-down period.

Conclusion: The designer has the choice

The Safety Fieldbox thus gives machine and plant engineers a particularly versatile solution for the simple installation of safety switchgear and integration into the safety circuit. It is not the only solution and is an addition to the existing range rather than a replacement. The designer has the choice. The Safety Fieldbox for Profinet/Profisafe will be launched in a first phase by the middle of 2019. The Safety Fieldbox for Ethernet IPCIPsafety will follow around a year later.



As a simple Plug&Play solution, the Safety Fieldbox ensures rapid fitting and cost-efficient, fail-safe installation with little wiring.

Solution configurator for the installation of safety switchgear

When you factor in the newly developed Safety Fieldbox, the Schmersal Group now offers five different installation solutions to make machines and equipment safer. This variety of versions is currently a unique selling point on the market. It enables manufacturers and operators of machines to select the optimum safety system, especially with respect to economic viability and efficiency.

- IO Parallel – An inexpensive universal standard solution with terminals provides parallel wiring for safety switchgear devices. Suitable for smaller machines, it requires just a few switches to provide protection.
- PFB and PDM safety installation systems for applications with exclusively electronic safety switchgear devices, available as passive distributor module (PDM) or passive fieldbox (PFB) They allow mixed series connection with up to four different electronic safety switchgear devices s per module. Multiple modules can be connected to larger systems. Suitable for more complex machines and equipment.
- Safety Fieldbox – for the installation of up to eight different switchgear devices. Communication with the safety controller via Profinet/Profisafe. Suitable for 'Safety Integrated' systems.
- SD Interface – Proprietary diagnostic interface for the transfer of non-safety-related data for series connection of electronic safety switchgear devices. Simple installation solution for small and medium-sized machines.
- AS Interface – wiring solution for safety switchgear devices with built-in AS-i Safety-at-Work interface. Enables the setup of individually scalable safety solutions for different machine sizes with simple, quick assembly, also very useful for more extensive diagnostics functions. All major safety switchgear range from Schmersal can be supplied with AS-i Safety Interface.

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