Simplify Your Safety Wiring

For networking safety components, point-to-point wiring is still the most common wiring method on industrial machines. This type of wiring results in large wire bundles running through the system. Due to the sheer volume of wires, installation time is considerable and troubleshooting is complex.

ifm's Safety at Work system is a simple solution for integrating all of your safety components with one two-wire cable. Its plug-and-play wiring supports all topologies and can be connected to most standard PLCs and higher level networks.

Seamless Integration of Safety Components

ifm efector's Safety at Work system connects safety-related components directly to the AS-i network to provide seamless integration into standard PLCs and higher level industrial networks.
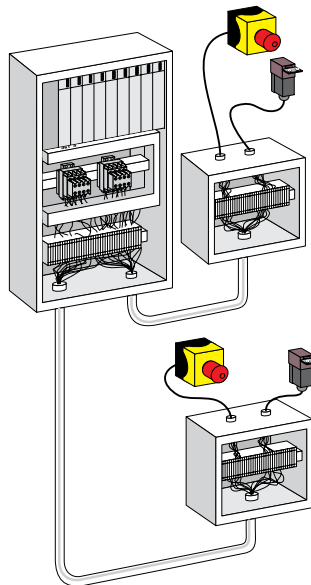
Mechanical safety components such as door switches, emergency stop buttons and safety input modules are connected with the AS-i two-wire cable that carries power and signal to each safety device. The system simplifies wiring by eliminating wire bundles that form when connecting numerous input/output devices.

Plug-and-play wiring reduces installation time and eliminates junction boxes and additional input cards. The system provides fast and flexible expansion. Any modifications to the system, such as changing or adding e-stop buttons can be made quickly and easily. Safety zones can be configured and changed through a drag-and-drop configuration software.
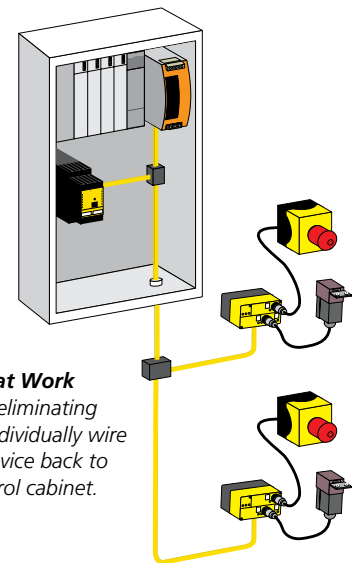
The Safety at Work system provides status indication and diagnostic information for each safety device. The system offers increased diagnostic feedback for trouble-shooting and indicates where and when a fault occurs – without the need for additional wires for feedback.

Conventional point-to-point wiring can be very time consuming and costly

ifm's Safety at Work *saves time by eliminating the need to individually wire each safety device back to the main control cabinet.*
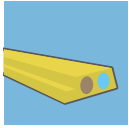
Saves wiring time

Safety at Work is plug-and-play. Connect an entire safety system with one cable that carries both data and power. This eliminates the need to individually wire each safety device back to the main control cabinet.

Simplifies design and build time

With less wires to handle, termination points are reduced. The system uses minimal cabinet space and machine drawings are less complex.

Saves time in disassembly and rebuild

Save installation and reduce rebuild-time by days. Equipment can be disassembled and rebuilt faster with Safety at Work's single-cable design.
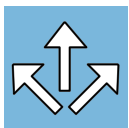
Provides diagnostic feedback

The Safety at Work system provides increased diagnostic feedback for trouble-shooting. The system indicates where and when a fault occurs without any additional wiring.

Simple zone control

No more wiring changes! Safety zones can be configured easily and changed through a drag-and-drop configuration software.

Universal connectivity

The Safety at Work system can be used directly with most major PLCs including Allen Bradley and Siemens, as well as, DeviceNet, Profibus, and Ethernet bus systems. There are no requirements for special safety PLCs.
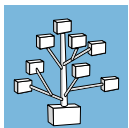
Flexible topology

The Safety at Work system can be configured in ring, star, and trunk and drop topologies. The system is also capable of handling multiple safety zones on one network.

Implements standard safety devices

The system is designed to use standard mechanical safety devices including door switches and e-stop buttons. There are no requirements to use system specific I/O devices.

Approved technology

Complies with the requirements:, Type 4 (IEC 61496-1), SIL 3 (IEC 61508), SILcl 3 (IEC 62061) and PL e (EN ISO 13849-1)

Internationally approved

An international consortium of automation suppliers designed Safety at Work to reduce the cost of connecting widely distributed safety I/O. The Safety at Work system is the first fully-approved industrial safety networking system. The system is rated by TUV for up to SIL 3 according to IEC 61508, IEC 62061, and PL e according to ISO 13849-1.

The Safety at Work system uses the internationally accepted AS-i protocol. With over 3 million nodes installed, AS-i has been a major success in automation since 1994.

Safety at Work system overview

Safety at Work utilizes the standard AS-i protocol. This provides the backbone for the system to transmit safety-related information. The basis is the transmission of dynamic code sequences (8x4-bit data sequence) which are stored in every safety module.

During installation and start-up, the safety monitor must learn these code sequences. While in operation the safety monitor constantly compares the target sequence with the current sequence of the safety module. If the safety module provides a wrong code sequence (e.g. 4x0 bit), the safety monitor switches to the safe state.

✓ *Saves wiring time*

✓ *Simplifies design and build time*

✓ *Provides diagnostic feedback without additional wires*

✓ *Saves time in disassembly and rebuild*

✓ *Simple expandability*

   Approved technology to IEC61508 and EN ISO13849

✓ *Simple zone control up to 8 safety zones*

✓

Controllers and Gateways

Various controller options are available to fit directly to a plc or connected to higher-level networks such as EtherNet IP, Profibus, etc. A stand-alone option is available that can act as a plc.

Power Supplies

Safety-at-Work power supplies provide power for network modules and input devices. Also, 24 VDC power supplies are used to provide power to output devices over the Safety-at-Work network.

Safety Relays

ifm safety relays, or monitors, evaluate the data exchange between the safety modules and the Safety-at-Work controls. If the data transmission is disrupted or a wire-break occurs, the safety relay will fail to safe.

All of the components needed to create a complete Safety at Work system are illustrated in this overview.

Because of its flexibility, a Safety at Work system has unlimited design capabilities.

Choose from a variety of controllers, I/O modules, power supplies and accessories depending on your current controls platform and application environment.

Safe input modules

I/O Modules are used to connect standard safety devices such as e-stops, door switches and light curtains to the Safety-at-Work System.

E-stop

Fully functional ifm e-stop buttons are designed to directly interface with the Safety at Work system.

Available with LED indication or key release.

Guard Locking Door Switches

AS-i door switches with guard locking have the function to keep moving-equipment safe as long as a dangerous state is present.

Wiring Solutions

Various AS-i splitters and branching modules can be used to provide maximum flexibility when designing and commissioning a project.

Accessories

A variety of accessories are available to help connect nodes and periphery devices to the Safety-at-Work system. In addition, products for extending the network, diagnosing faults and addressing modules are also available.