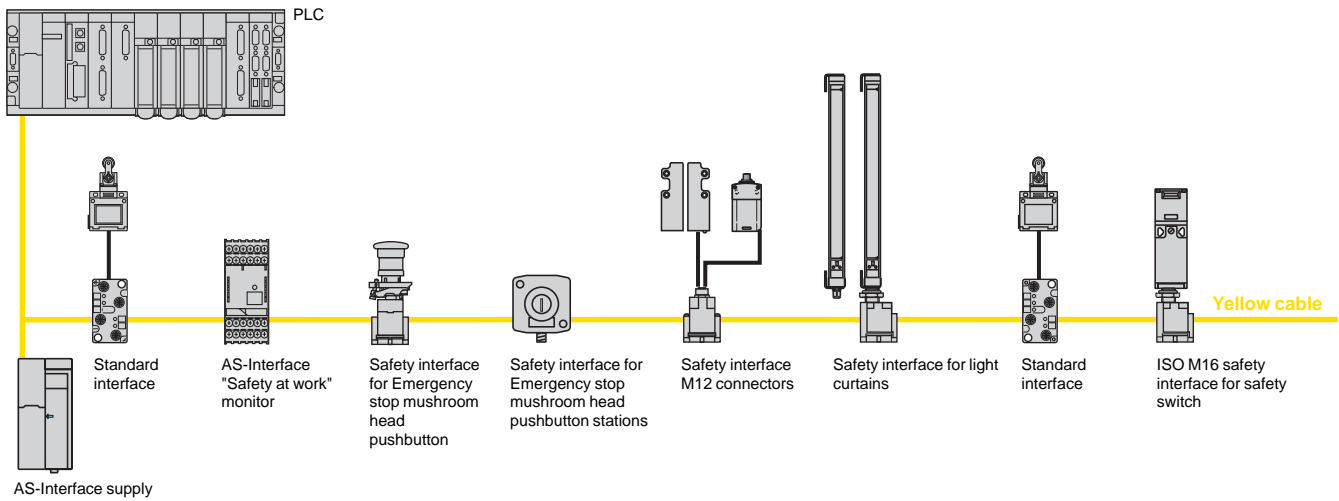


## Operating principle



AS-Interface, the recognised cabling system for sensors and actuators, has evolved. Standard process information and information relating to safety can now be transmitted over the same cable.

Capable of managing safety functions up to Performance Level PL e/Category 4 conforming to standard EN/ISO 13849-1 and SILCL 3 conforming to standard EN/IEC 61508, the AS-Interface "Safety at work" system meets the needs of the most common safety applications, such as:

- monitoring of Emergency stops with instantaneous opening contacts (stop category 0),
- monitoring of Emergency stops with time delay opening contacts (stop category 1),
- monitoring of switches with and without interlocking,
- monitoring of light curtains, etc.

Parameters for options relative to the selected safety function (for example, start button monitoring) may be set for all pre-defined, certified functions. Safety is incorporated into the AS-Interface cabling system by adding a safety monitor and safety interfaces connected together with other standard AS-Interface components on the yellow cable.

Safety information is exchanged only between the safety monitor, the AS-Interface line master and the safety interfaces. This is transparent for the other standard AS-Interface components.

Based on this principle, AS-Interface cabling systems that are already installed can be updated with safety functions without having to replace the existing components (masters, I/O interfaces, power supplies, etc.). Safety circuits are diagnosed readily, and with no additional wiring, by the standard AS-Interface cabling system master communicating with the safety monitor(s) via the yellow cable.

The AS-Interface "Safety at work" system is configured using software ASISWIN2 running on Windows. A library of pre-defined and certified safety functions is made available by the software and the user can graphically select the desired safety functions, even at the last minute, using the "Drag and drop" method in the configuration software. Knowledge of a programming language or specific tools is not necessary to parameter the system. The configuration is loaded into the safety monitor(s) by means of a PC by carrying out a secure serial transmission and using the parameter setting connector on the front face of the monitor.

To meet the various safety requirements, the AS-Interface "Safety and work" monitor is available in two versions:

- monitors for basic monitoring of safety devices,
- monitors for enhanced monitoring of safety devices.

AS-Interface "Safety at work" monitors for basic and enhanced monitoring are available with:

- 1 safety output with 2 contacts, or
- 2 independent safety outputs with 2 x 2 contacts.

In addition to safety outputs with volt-free contacts, AS-Interface "Safety at work" safety monitors are equipped, depending on the model, with one or two solid-state signalling outputs and LEDs on the front face indicating the status of the system and of the monitoring circuits. To monitor more safety functions simultaneously or to stop several safety circuits at different locations, an increased number of safety monitors can be used in an AS-Interface cabling system.

The safety interfaces are connected directly on the yellow cable via an insulation displacement connector (IDC). Their addressing is carried out using self-addressing via the AS-Interface cabling system master or manually, using addressing terminal ASISTERV2.

The compactness of the safety interfaces enables their direct attachment to control devices such as Emergency stop buttons or switches.

In addition to interfaces that can be attached to products, versions with 1 or 2 M12 connectors are also available.

#### Monitoring functions

	AS-Interface "Safety at work" monitors	
	For basic monitoring of safety devices ASISAFEMON1, ASISAFEMON2	For enhanced monitoring of safety devices ASISAFEMON1B, ASISAFEMON2B
Monitoring of safety devices	<ul style="list-style-type: none"> <li>■ Emergency stops</li> <li>■ Safety switches</li> <li>■ Safety light curtains</li> </ul>	<ul style="list-style-type: none"> <li>■ Emergency stops</li> <li>■ Safety switches</li> <li>■ Safety light curtains</li> <li>■ Button for validation of linked devices</li> <li>■ Conditionally dependent devices</li> <li>■ Devices with bouncing contacts</li> </ul>
Logic functions	<ul style="list-style-type: none"> <li>■ "OR" (up to 2 devices)</li> </ul>	<ul style="list-style-type: none"> <li>■ "OR" (up to 6 devices)</li> <li>■ "AND"</li> <li>■ "FLIP FLOP"</li> <li>■ On-delay</li> <li>■ Off-delay</li> <li>■ "PULSE" on positive edge</li> </ul>
External device monitoring (EDM)	<ul style="list-style-type: none"> <li>■ Feedback loop</li> </ul>	<ul style="list-style-type: none"> <li>■ Feedback loop</li> <li>■ Feedback loop monitoring over the AS-Interface cabling system</li> </ul>
Start devices	<ul style="list-style-type: none"> <li>■ Automatic start</li> <li>■ Start monitored by the AS-Interface cabling system slave</li> <li>■ Start monitored by connection to monitor</li> <li>■ Start monitored by the safety interface</li> </ul>	<ul style="list-style-type: none"> <li>■ Automatic start</li> <li>■ Start monitored by the AS-Interface cabling system slave</li> <li>■ Start monitored by connection to monitor</li> <li>■ Start monitored by the safety interface</li> </ul>
Output devices	<ul style="list-style-type: none"> <li>■ Stop category 1</li> <li>■ Stop category 0</li> </ul>	<ul style="list-style-type: none"> <li>■ Stop category 1</li> <li>■ Stop category 0</li> </ul>

#### References

AS-Interface "Safety at work" monitors					
Type	Number of safety circuits	Solid-state outputs for PLC	Supply	Reference	Weight kg
For basic monitoring of safety devices	2 NO	1	24 V ~	<b>ASISAFEMON1</b>	0.350
	2 x 2 NO	2	24 V ~	<b>ASISAFEMON2</b>	0.450
For enhanced monitoring of safety devices	2 NO	1	24 V ~	<b>ASISAFEMON1B</b>	0.350
	2 x 2 NO	2	24 V ~	<b>ASISAFEMON2B</b>	0.450

#### Configuration software

- Reference ASISWIN2 is the full version of configuration software AS-Interface "Safety at work" version 2+ and must be installed if no previous version of this software has been installed.
- Reference SSVASISWINUP is an update for configuration software AS-Interface "Safety at work" and can be used if ASISWIN2 has been installed using Safety Suite V1. An update from version 2.03 to version 2+ for the configuration software AS-Interface "Safety at work" will then be performed.

Description	For use with	Operating system	Language	Reference	Weight kg
AS-Interface "Safety at work" configuration software CD-ROM + user manual	<input type="checkbox"/> Safety monitors ASISAFEMON1/2 for basic monitoring of safety devices	Windows 95, Windows 98, Windows ME, Windows NT®, IT, Windows 2000, Windows XP	FR, EN, DE, IT, ES, PT	<b>ASISWIN2</b> <i>Software available on Safety Suite V2 software pack</i>	0.520
	<input type="checkbox"/> Safety monitors ASISAFEMON●B for enhanced monitoring of safety devices				
ASISWIN2 software update CD-ROM + user manual	<input type="checkbox"/> Safety monitors ASISAFEMON1/2 for basic monitoring of safety devices	Windows 95, Windows 98, Windows ME, Windows NT®, IT, Windows 2000, Windows XP	FR, EN, DE, IT, ES, PT	<b>SSVASISWINUP</b> <i>Software update available on Safety Suite V2 software pack</i>	0.520
	<input type="checkbox"/> Safety monitors ASISAFEMON●B for enhanced monitoring of safety devices				

#### Setting-up and diagnostic tools

Description	Application	Reference	Weight kg
Adjustment terminal	Addressing and diagnostics of AS-Interface V2.1 interfaces AS-Interface I/O test whilst powered-up AS-Interface interface diagnostics	<b>ASITERV2</b>	0.500
AS-Interface line analyser	Identification of transmission errors on the AS-Interface line	<b>ASISA01</b>	0.160

#### Accessories

Description	Function	Reference	Weight kg
Cables	Parametering, RS 232	<b>ASISCP</b>	0.100
	Transfer between 2 monitors	<b>ASISCM</b>	0.500



ASISAFEMON●



ASITERV2



ASISA01