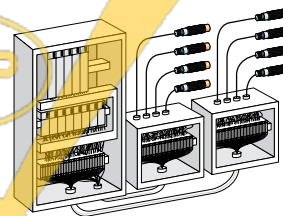# Point-to-point wiring vs. AS-i networking

Industrial automation systems require a large amount of control devices. The number of binary actuators and sensors placed on a typical system has grown over the years.

Current methods for wiring include point-to-point connection or bus systems. However, point-to-point wiring results in large wire bundles, and bus systems can be too complex for networking simple binary devices.

As a solution to these challenges, ifm offers the Actuator Sensor interface (AS-i), a simple network for actuators and sensors. AS-i is cost-effective, easy to install, and features modular components that offer design flexibility. AS-i is a complete networking solution for industrial control applications.
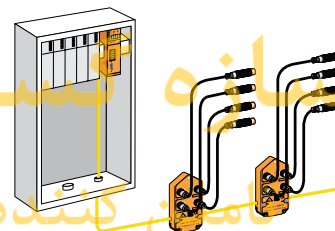
The AS-i network connects hundreds of sensors on a single two-wire cable. AS-i I/O modules use quick plug-and-play functionality that simplifies installation.

AS-i is a simple solution for networking actuators and sensors

An AS-interface network offers a simple, cost-efficient alternative to conventional cabling at the lowest level of the automation. This network can operate directly in conjunction with an existing PLC or can be linked to a higher-level bus system for low-cost remote I/O. AS-interface is tailored to the needs of devices such as sensors and actuators where low connection cost per node is critical and simplicity is essential.

Global support for AS-interface

ifm efector engineers are trained on AS-interface and can help design and implement a network on industrial equipment. On-site technical support is available and application assistance is immediate by calling our technical support hotline: 800-441-8246.

Aggressive product development

ifm is committed to investing in new product development for AS-interface. Our goal is to improve functionality, simplify installation and maintain competitive price points.

Before

Point-to-point wiring is still the most common wiring method found in industry. One cable from each device results in large wire bundles running through the system. Due to the sheer volume of wires, installation time is considerable and troubleshooting is complex.

After

AS-i network connects multiple binary devices with only one 2-wire cable, completely eliminating wire bundles. Its simple, plug-and-play wiring supports all topologies and eliminates device profiles and expensive hardware.

▶ **Visit www.ifm.com/us to view all AS-i networking products.**

	Company	IO-Link	Position Sensors						Motion Control	Vision Sensors
		IO-Link	Inductive	Capacitive	Cylinder/valve position	Photoelectrics/lasers/fiber optics	Distance/Application specific	Ultrasonic	Encoders/Speed monitors	2D/3D inspection
Search Bar	1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

A simple 2-wire flat cable

The normal collection of wire bundles are replaced by a single, two-wire flat cable that carries both data and power.

Insulation displacement

Insulation displacement technology enables fast connection to all devices. The cable is pierced to make the electric connection and features a mechanical profile to proper insure polarity.
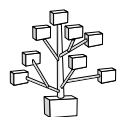
Flexible topology

AS-i supports topologies including open tree, ring, star, and trunk and drop lines to allow maximum design freedom.

Extremely fast system

Data transfer is fast – less than 10 ms on a fully-loaded system of 248 inputs and 248 outputs.

Cost effective

Since actuators and sensors are among the least expensive devices on a network, their connecting hardware should be comparable in price. AS-i's price-per-point is one of the best in industry.
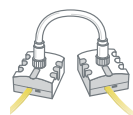
Modular system

AS-i's design flexibility makes it a true plug-and-play networking system. Modular machines can be easily connected with the aid of splitter modules to form a production line.

Best fit

Actuator and sensor manufacturers developed AS-i for the sole purpose of connecting actuators and sensors. Every component on the network is specially designed to fit these binary devices.

Industrial Ethernet and AS-i networking offer the best of both worlds

Industrial Ethernet (IE) is commonly applied as the networking protocol for automation and plant control. IE is well known in industry, can carry large packets of data, and is ideal for HMIs, PLCs, drives, and barcode scanners.
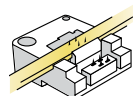
For bit-level data such as sensors and actuators – which account for 90% of devices in automation – a lower level I/O network, such as AS-i, is better suited for these devices.

AS-i offers a better alternative to wiring bit-level devices and is an ideal complement to Industrial Ethernet at the I/O level. A single Ethernet IP address can transmit up to 992 I/O points. AS-i uses quick plug-and-play functionality that simplifies installation in the controls architecture.

Today's networks with Industrial Ethernet

Pyramid level	
	Control room
Visual	
Control	Ethernet IP ProfiNet Modbus TCP
Processing	
Input/output	AS-i networking

ifm is an AS-interface founding member

ifm efector is one of 11 founding members of the AS-interface Association, established in 1990. AS-i is a non-profit independent organization that is currently supported by more than 100 vendors worldwide.

Dedicated sales engineers

ifm's experienced sales engineers understand your applications and provide solutions to your challenges.

Place orders, tech support
800-441-8246

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www.ifm.com/us

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Easy ordering via eShop

Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	*Pressure*	*Flow*	*Level*	*Temperature*	*AS-i network*	*Safety systems*	*RF identification systems*	*Diagnostic systems*	*Power supplies*	*Cordset solutions*
144 - 155	*156 - 175*	*176 - 191*	*192 - 207*	*208 - 225*	*226 - 239*	*240 - 251*	*252 - 253*	*254 - 259*	*260 - 263*	*264 - 277*

AS-i system overview

All of the components needed to create a complete AS-i system are illustrated in this overview. Because of its flexibility, an AS-i system has unlimited design capabilities. Choose from a variety of masters, I/O modules, power supplies and accessories depending on your current controls platform and application environment.

1 AS-i Master / Gateway
Controls the data transfer for the AS-i network.

2 AS-i Power Supply
Couples power and signal together for transmission over the 2-wire flat cable.

3 Cabinet Module
Designed to be an inexpensive solution for connecting control cabinet I/O to the AS-i network.

4 Compact Field Module
Designed specifically for harsh environments.

5 Quick Slide Field Modules
IP67 module features a mounting technology that does not require tools for installation.

6 Quick Slide Pneumatic Output Modules
4 inputs and 1 or 2 solenoid outputs integrated into one housing.

7 Splitter Module
Allows for maximum flexibility in both the design and commissioning phases of a project.

AS-i controller can connect to:
- *Ethernet IP*
- *Profinet*
- *Profibus-DP*
- *DeviceNet*

Technical Specifications:
- *62 nodes per master*
- *4I/4O maximum per node (248 inputs/248 outputs per master)*
- *100 m network length (up to 300 m with repeaters)*
- *Less than 10 ms scan time on a fully loaded system (62 nodes)*

	IO-Link	Position Sensors						Motion Control	Vision Sensors
Company	IO-Link	Inductive	Capacitive	Cylinder / valve position	Photoelectrics / lasers / fiber optics	Distance / Application specific	Ultrasonic	Encoders / Speed monitors	2D / 3D inspection
1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

Controllers and gateways

- AS-i Controllers provide direct connection of AS-i to EtherNet/IP, Profibus and to DeviceNet

- AS-i Backplane Masters provide connection of AS-i to most PLCs

- Single or dual master options available for application versatility

- User friendly display for setup and diagnostics

Type	Number of AS-i Masters	Programming Data Interface	Fieldbus Interface	AS-i Version	Current Consumption From 24 V DC (mA)	Current Consumption From AS-i (mA)	Part No.	List Price (1-pc.)
AS-i Ethernet / IP Controller-E • Full master functions • Color graphic display								
	1	Ethernet RJ 45	Ethernet IP	3.0	< 500	< 10	AC1421	$1,193.00
	2	Ethernet RJ 45	Ethernet IP	3.0	< 500	< 10	AC1422	$1,434.00
AS-i Profinet Gateway • Full master functions • Color graphic display								
	1	Ethernet RJ 45	Profinet	3.0	< 500	< 10	AC1401	$1,193.00
	2	Ethernet RJ 45	Profinet	3.0	< 500	< 10	AC1402	$1,434.00
AS-i Profibus Gateway • Full master functions • Color graphic display								
	1	Ethernet RJ 45	Profibus-DP	3.0	< 500	< 10	AC1411	$1,069.00
	2	Ethernet RJ 45	Profibus-DP	3.0	< 500	< 10	AC1412	$1,238.00
SmartLink DP • AS-i gateway / Profibus DP • Full master functions • Graphic display								
	1	–	Profibus-DP	3.0	< 200		AC1375	$927.00
	2	–	Profibus-DP	3.0	< 400	< 10	AC1376	$1,153.00
AS-i DeviceNet controller E • AS-i controller with DeviceNet interface • Full master functions • Graphic display								
	1	–	DeviceNet	3.0	< 500	< 10	AC1318	$1,529.00
	2	–	DeviceNet	3.0	< 500	< 10	AC1324	$1,727.00

Type	Application	I/O and Configuration	Number of AS-i Masters	Part No.	List Price (1-pc.)
AS-i Backplane Masters					
	AS-i Master for SLC5 PLC Platform	248 inputs and 248 outputs. Configuration via Allen-Bradleys' RSLogix software package. AS-i version 3.0	2	U71000	$1,530.00
	AS-i master for Compactlogix and Micrologix 1500 PLC platforms	248 inputs and 248 outputs. Configuration via Allen-Bradleys' RSLogix software package. AS-i version 3.0	1	U71003	$854.00
	AS-i master for Controllogix PLC platforms	248 inputs and 248 outputs. Configuration via Allen-Bradleys' RSLogix software package. AS-i version 3.0	2	U71005	$1,479.00

Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155	156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277

NEW

AS-i power supplies

- *High efficiency design generates less heat and eliminates external cooling*

- *Couples and de-couples power and signal for transmission over the network*

- *Compact housing with DIN rail occupies minimal cabinet space*

- *Selectable 115 / 230 VAC input voltage with short circuit and overload protection*

Type	Dimensions (mm)	Output Current AS-i (A)	Output Voltage AS-i (V)	Nominal Voltage (V)	Efficiency (%)	Part No.	List Price (1-pc.)
Power supply							
	40 x 124 x 114.6	2.8	30.5 DC	115 / 230 AC	η = 86.9	**AC1256**	**$331.00**
	40 x 124 x 114.6	4	30.5 DC	115 / 230 AC	η = 88	**AC1254**	**$454.00**
	62 x 124 x 114.6	8	30.5 DC	115 / 230 AC	η = 89.4	**AC1258**	**$540.00**
	40 x 124 x 114.6	4	30.5 DC	24 DC	η = 90.5	**AC1257**	**$416.00**
Power supply • 3-phase							
	62 x 124 x 114.6	8	30.5 DC	3 x 400 AC	η = 92	**AC1253**	**$604.00**

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	Company	IO-Link		Position Sensors						Motion Control	Vision Sensors
		IO-Link	Inductive	Capacitive	Cylinder/valve position	Photoelectrics/ lasers/fiber optics	Distance / Application specific	Ultrasonic		Encoders / Speed monitors	2D/3D inspection
Search Bar	1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119		120 - 127	128 - 143

Cabinet modules

- DIN rail mountable modules designed for cabinet or junction box applications

- Removable combicon connectors included for easy connection of periphery devices

- Low profile models available for small enclosures

- Integrated socket for easy addressing

Transistor module

Relay module

Type	Dimensions (mm)	No. of Inputs	No. / Type of Outputs	Max. Input Current per Module	Output Current per Channel / Total (A)	AS-i Profile	AS-i Version	Extended Addressing Mode	Part No.	List Price (1-pc.)
Mini modules for small cabinets										
	59 x 25 x 129	4	4 PNP	200	1 / 4	S-7.A.7	3.0	yes	AC3200	$161.00
	59 x 25 x 129	4	4 PNP	1000	1 / 4	S-7.A.7	3.0	yes	AC3201	$161.00
	108 x 25 x 123	4	4 relay	200	6 / 6	S-7.A.7	3.0	yes	AC3220	$176.00
	108 x 25 x 123	4	4 relay	1000	6 / 6	S-7.A.7	3.0	yes	AC3221	$176.00
Cabinet I/O modules for small cabinets										
	25 x 114 x 105	4	–	200	–	S-0.A.E	2.1	yes	AC2250	$129.00
	25 x 114 x 105	–	4 PNP	–	1 / 4	S-8.0.E	2.1	no	AC2252	$152.00
	25 x 114 x 105	4	4 PNP	200	1 / 4	S-7.0.E	2.1	no	AC2251	$175.00
	25 x 114 x 105	4	4 PNP	200	1 / 4	S-7.A.7	3.0	yes	AC2261	$175.00
	25 x 114 x 105	4	3 PNP	200	1 / 3	S-7.A.E	2.1	yes	AC2264	$175.00
	25 x 114 x 105	4	4 PNP	200	1 / 4	S-7.A.7	3.0	yes	AC2267	$176.00
	25 x 114 x 105	4	2 relay	200	6 / 6	S-7.A.E	2.1	yes	AC2256	$181.00
	50 x 114 x 105	4	4 relay	200	6 / 6	S-7.0.E	2.1	no	AC2258	$224.00

Accessories

Type	Description	Part No.	List Price (1-pc.)
	Addressing unit	AC1154	$509.00
	Cable for addressing unit	E70213	$22.00

Technical Specs

Output voltage supply: AC2267, AC3201, AC3221:
24 VDC power supply for inputs and outputs

All other models: AS-i power supply for inputs only and 24 VDC power supply for outputs only

I/O field modules for industrial automation

- *Field modules feature digital inputs and/or digital outputs*
- *Modules offer three directions of rotation for AS-i cable that provide flexible installation*
- *Simple mounting, no tools required*

Type	Dimensions (mm)	No. of Inputs	No. / Type of Outputs	Max. Input Current per Module (mA)	Output Current per Channel / Total (A)	AS-i Profile	AS-i Version	Extended Addressing Mode	Part No.	List Price (1-pc.)
	45 x 103 x 45	4	–	200	–	S.0.A.E	2.1	yes	AC5215	$167.00
	45 x 103 x 45	4	–	1000	–	S.0.A.E	2.1	yes	AC5290	$167.00
	45 x 103 x 45	–	4 PNP	–	1 / 2	S.8.0.E	2.1	no	AC5208	$186.00
	45 x 103 x 45	2	2 PNP	100	1 / 2	S.B.A.E	2.1	yes	AC5214	$181.00
	45 x 103 x 45	2	2 PNP	200	0.2 / 0.2	S.B.A.E	2.1	yes	AC5224	$181.00
	90 x 103 x 45	4	4 PNP	200	1 / 2	S.7.A.7	3.0	yes	AC5235	$262.00
	90 x 103 x 45	4	4 PNP	1000	1 / 3	S.7.A.7	3.0	yes	AC5293	$262.00

Accessories

Type	Description	Part No.	List Price (1-pc.)
	Addressing unit	AC1154	$509.00
	Cable for addressing unit	E70213	$22.00
	Protective cap – 10 pack	L35001	$8.00

Patchcords

Type	Design		Cable Length	Part No.	List Price (1-pc.)
	Male Female	M12 straight male to M12 straight female	1 M	EVC042	$19.00
			2 M	EVC043	$21.00
			5 M	EVC044	$22.00
	Male Female	M12 straight male to M12 90° female	1 M	EVC047	$19.00
			2 M	EVC048	$21.00
			5 M	EVC049	$22.00

Technical Specs

Output voltage supply: AC5290, AC5293: 24 VDC power supply required for inputs and outputs

AC5224: AS-i power supply for inputs and outputs

All other models: AS-i power supply for inputs only and 24 VDC power supply for outputs only

▶ Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

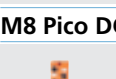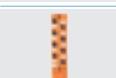|	IO-Link	Position Sensors						Motion Control	Vision Sensors
Company	*IO-Link*	*Inductive*	*Capacitive*	*Cylinder / valve position*	*Photoelectrics / lasers / fiber optics*	*Distance / Application specific*	*Ultrasonic*	*Encoders / Speed monitors*	*2D / 3D inspection*
Search Bar									
1 - 5	*6 - 21*	*22 - 55*	*56 - 61*	*62 - 71*	*72 - 111*	*112 - 117*	*118 - 119*	*120 - 127*	*128 - 143*

Fully potted I/O field modules for outdoor and high vibration areas

- Low profile housing
- Fully potted for outdoor and high vibration environments (IP67 rating)
- Up to 4 amps available for output devices
- ifm ecolink technology in each port enables secure lock-in-place connection
- Flat cable base included

Type	Dimensions (mm)	No. of Inputs	No. of Outputs	Max Input Current per Module (mA)	Output Current per Channel / Total (A)	AS-i Profile	AS-i Version	Extended Addressing Mode	Part No.	List Price (1-pc.)
M12 Micro DC Connectors										
	60 x 118 x 27	4	–	200	–	S-0.A.E	2.1	yes	**AC2457**	**$213.00**
	60 x 118 x 27	2	2 PNP	200	2 / 4	S-3.F.E	2.1	no	**AC2458**	**$254.00**
	60 x 152 x 27	4	4 PNP	200	2 / 4	S-7.F.E	2.1	no	**AC2459**	**$344.00**
M8 Pico DC Connectors										
	30 x 90.5 x 23.5	2	2 PNP	180	180 mA / 180 mA	S-B.A.E	2.1	yes	**AC2482**	**$155.00**
	30 x 90.5 x 23.5	4	–	180	–	S-0.A.E	2.1	yes	**AC2484**	**$146.00**
	30 x 134.5 x 23.5	8	–	180	–	S-7.A.A.	3.0	yes	**AC2488**	**$185.00**

Accessories

Type	Description	Part No.	List Price (1-pc.)
	Addressing unit	**AC1154**	**$509.00**
	Addressing cable	**E70423**	**$43.00**
	Protective cap – 10 pack	**L35001**	**$8.00**

Patchcords

Type	Design		Cable Length	Part No.	List Price (1-pc.)
	Male / Female	M12 straight male to M12 straight female	1 M	**EVC042**	**$19.00**
			2 M	**EVC043**	**$21.00**
			5 M	**EVC044**	**$22.00**
	Male / Female	M12 straight male to M12 90° female	1 M	**EVC047**	**$19.00**
			2 M	**EVC048**	**$21.00**
			5 M	**EVC049**	**$22.00**
	Male / Female	M8 straight male to M8 straight female	1 M	**EVC267**	**$23.00**
			2 M	**EVC268**	**$25.00**
			5 M	**EVC269**	**$28.00**
	Male / Female	M8 straight male to M8 90° female	1 M	**EVC277**	**$23.00**
			2 M	**EVC278**	**$25.00**
			5 M	**EVC279**	**$28.00**

| Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155	156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277
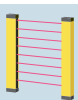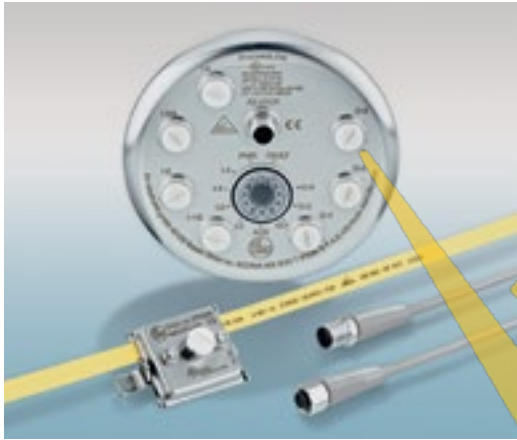
I/O modules for harsh environments

- *Stainless steel modules for use in harsh applications*

- *Resistant to standard cleaning agents (Ecolab tested)*

- *AS-i and 24 V supply via common M12 connector*

- *For direct use in wet areas (protection ratings IP 68 and IP 69 K)*

- *AS-i splitters – high-grade stainless steel flat cable insulation displacement connector suitable for field use*

Type	Dimensions (mm)	No. of Inputs	No. of Outputs	Max Input Current per Module (mA)	Output Current per Channel / Total (A)	AS-i Profile	AS-i Version	Extended Addressing Mode	Part No.	List Price (1-pc.)
I/O modules for harsh environments										
	Ø137.3 x 80	8 passive splitter	–	–	4 / 4	–	–	–	**AC2900**	**$212.00**
	Ø137.3 x 80	4	3 PNP	200	0.7 / 2.1	S-7.A.E.	2.1	yes	**AC2904**	**$402.00**
	Ø137.3 x 80	8	–	400	–	S-0.A.E.	2.1	yes	**AC2910**	**$374.00**

Micro DC patchcords 5-pin MPPE jacket

Type	Design		Cable Length	Part No.	List Price (1-pc.)
	Male Female	M12 straight male to M12 straight female	0.3 M	EVF058	**$39.00**
			0.6 M	EVF059	**$40.00**
			1 M	EVF060	**$41.00**
			2 M	EVF061	**$43.00**
			5 M	EVF062	**$46.00**
			10 M	EVF063	**$53.00**

Accessories

Type	Description	Part No.	List Price (1-pc.)
	Flat cable, AS-i and auxiliary, to 4-pin female M12 Micro DC connector, 316 SS, EPDM O-ring	E70354	**$43.00**
	Flat cable to 4-pin female M12 Micro DC connector, 316 SS, EPDM O-ring	E70454	**$31.00**
	Flat cable splitter, two channel, AS-i or auxiliary, 8 A current rating, 316 SS, EPDM O-ring	E70377	**$41.00**

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	IO-Link	Position Sensors						Motion Control	Vision Sensors
Company	IO-Link	*Inductive*	*Capacitive*	*Cylinder / valve position*	*Photoelectrics / lasers / fiber optics*	*Distance / Application specific*	*Ultrasonic*	*Encoders / Speed monitors*	*2D / 3D inspection*
Search Bar	1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

Analog I/O field modules

- Modules available for various industrial environments

- High resolution and transfer rates

- Up to 4 inputs or 4 outputs of 4…20 mA or 0…10 V per module

Type	Dimensions (mm)	No. of Inputs	No. of Outputs	Max Input Current per Module (mA)	AS-i Profile	AS-i Version	Extended Addressing Mode	Part No.	List Price (1-pc.)
Analog I/O modules for the cabinet									
	25 x 114 x 105	4 x 4…20 mA	–	100 (500)	S-7.3.E	2.1	no	**AC2216**	**$626.00**
	25 x 114 x 105	4 x 0…10 V	–	100 (500)	S-7.3.E	2.1	no	**AC2217**	**$626.00**
	25 x 114 x 105	–	4 x 0…20 mA	–	S-7.3.6	2.1	no	**AC2218**	**$626.00**
	25 x 114 x 105	–	4 x 0…10 V	–	S-7.3.6	2.1	no	**AC2219**	**$626.00**
	25 x 114 x 105	4 x Pt100	–	80 mA	S-7.3.E	2.1	no	**AC2220**	**$617.00**
Analog I/O modules with quick slide housing									
	45 x 103 x 45	4 x 4…20 mA	–	2000 mA	S-7.3.E	2.11 + 3.0	no	**AC5216**[1]	**$390.00**
	45 x 103 x 45	–	2 x 4…20 mA	50 mA	S-7.3.5	2.11 + 3.0	no	**AC5218**	**$195.00**
	45 x 103 x 45	2 x 4…20 mA	–	250 mA	S-7.3.D	2.11 + 3.0	no	**AC5222**[1]	**$318.00**
	45 x 103 x 45	2 x 4…20 mA	–	250 mA	S-7.3.D	2.11 + 3.0	no	**AC5223**[2]	**$318.00**
	45 x 103 x 45	2 x digital 1 x 4…20 mA	1 x 4…20 mA	200 mA	S-7.5.5	3.0	no	**AC5230**	**$353.00**
Analog I/O modules with compact housing									
	60 x 118 x 27	2 x 4…20 mA	–	200 mA	S-7.3.D	2.1	no	**AC2402**[1]	**$324.00**
	60 x 118 x 27	2 x 4…20 mA	–	200 mA	S-7.3.D	2.1	no	**AC2403**[2]	**$333.00**
Analog I/O modules with standard housings									
	83 x 90	4 x 4…20 mA	–	100 (500)	S-7.3.E	2.1	no	**AC2516**	**$641.00**
	83 x 90	4 x 0…10 V	–	100 (500)	S-7.3.E	2.1	no	**AC2517**	**$641.00**
	83 x 90	–	4 x 0…20 mA	–	S-7.3.6	2.1	no	**AC2518**	**$641.00**
	83 x 90	–	4 x 0…10 V	–	S-7.3.6	2.1	no	**AC2519**	**$641.00**
Analog I/O modules for harsh environments									
	Ø137.3 x 80	4 x 4…20 mA	–	380 mA	S-7.3.E.	2.1	no	**AC2916**[1]	**$667.00**
	Ø137.3 x 80	4 x 4…20 mA	–	380 mA	S-7.3.E.	2.1	no	**AC2923**[2]	**$667.00**

1) for 2 and 3-wire sensors   2) for 2 and 4-wire sensors

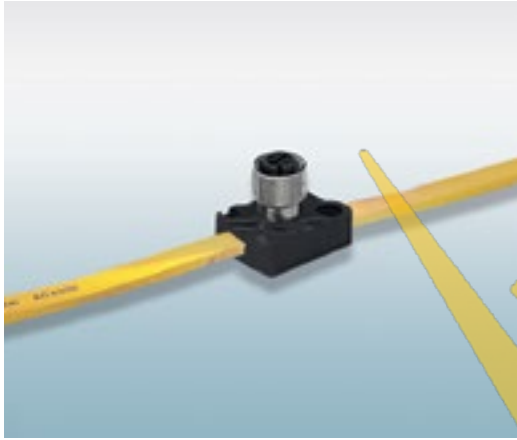| Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155	156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277

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Pneumatic airboxes

● Pneumatic airboxes feature digital inputs combined with pneumatic outputs

● Airboxes offer three directions of rotation for AS-i cable that provide flexible installation

● Simple mounting, no tools required

Type	Dimensions (mm)	No. of Inputs	Output Supply Voltage	No. of Outputs	Max Input Current per Module (mA)	AS-i Profile	AS-i Version	Extended Addressing Mode	Part No.	List Price (1-pc.)
Digital inputs with two 3/2 way valves										
	85 x 108 x 50	4	24 VDC	2 single acting cylinders, monostable	200	S-7.A.E	2.1	yes	AC5243	$343.00
	85 x 108 x 50	4	AS-i	2 single acting cylinders, monostable	200	S-7.A.E	2.1	yes	AC5228	$343.00
Digital inputs with one 5/2 way valve										
	85 x 108 x 50	4	24 VDC	1 double acting cylinder, monostable	200	S-7.A.E	2.1	yes	AC5249	$305.00
	85 x 108 x 50	4	24 VDC	1 double acting cylinder, bistable	200	S-7.A.E	2.1	yes	AC5253	$368.00
	85 x 108 x 50	4	AS-i	1 double acting cylinder, monostable	200	S-7.A.E	2.1	yes	AC5246	$305.00
	85 x 108 x 50	4	AS-i	1 double acting cylinder, bistable	200	S-7.A.E	2.1	yes	AC5251	$368.00
Digital inputs with one 5/3 way valve										
	85 x 108 x 50	4	AS-i	1 double acting cylinder	200	S-7.A.E	2.1	yes	AC5270	$390.00
	85 x 108 x 50	4	24 VDC	1 double acting cylinder	200	S-7.A.E	2.1	yes	AC5271	$390.00

Accessories

Type	Description	Part No.	List Price (1-pc.)
	Addressing unit	AC1154	$509.00
	Cable for addressing unit	E70213	$22.00
	Protective cap – 10 pack	L35001	$8.00
	Silencer – 10 pack	E75232	$55.00
	Push-in T-fitting – 10 pack	E75227	$60.00
	Push-in L-fitting – 10 pack	E75228	$53.00

Patchcords

Type	Design		Cable Length	Part No.	List Price (1-pc.)
	Male / Female	M12 straight male to M12 straight female	1 M	EVC042	$19.00
			2 M	EVC043	$21.00
			5 M	EVC044	$22.00
	Male / Female	M12 straight male to M12 90° female	1 M	EVC047	$19.00
			2 M	EVC048	$21.00
			5 M	EVC049	$22.00

Company	IO-Link	Position Sensors		Cylinder/valve position	Photoelectrics/lasers/fiber optics	Distance/Application specific	Ultrasonic	Motion Control	Vision Sensors
	IO-Link	Inductive	Capacitive					Encoders/Speed monitors	2D/3D inspection
Search Bar	1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

PCB modules for pushbutton applications

- PCB module for control cabinets
- Easy connection with cables or screw terminals
- Up to 4 inputs and 4 outputs for pushbuttons and LEDs
- Short circuit and overload protected

Type	Dimensions (mm)	No. of Inputs	No. of Outputs	Connection	Supply Voltage (V DC)	Max Input Current per Module (mA)	AS-i Profile	AS-i Version	Extended Addressing Mode	Part No.	List Price (1-pc.)
	31 x 77 x 12	4	4	Wire	18…31.6	150	S-7.A.7	3.0	yes	AC2750	$121.00
	31 x 77 x 12	4	4	Screw terminals	18…31.6	150	S-7.A.7	3.0	yes	AC2752	$121.00
	105 x 45	4	3	Wire	26.5…31.6	120	S-7.A.E	3.0	yes	AC2739	$179.00
	32 x 44 x 9	2	1 LED	Cable	26.5…31.6	50	S-7.A.E	2.11	yes	AC2729	$140.00

Technical Specs

Output voltage (AS-i):	18…31.6 V DC
Current consumption:	< 180 mA
Current rating per module:	150 mA
Short circuit protection:	yes
Overload protection:	yes
Ambient temperature:	-25…55 °C
AS-i specification:	2.11 + 3.0
Extended addressing mode:	yes
Housing material:	potted PC

سازه گستر پایتخت

تامین کننده ملزومات برق

الکتریکال – مکانیکال – ابزاردقیق

۰۲۱–۶۶۱۷۲۰۳۲

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Safety Technology		Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products		Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155		156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277

Cables

- ● Flat cable provides 2-wire communication and power for AS-i network

- ● Flat cable easily connects I/O modules
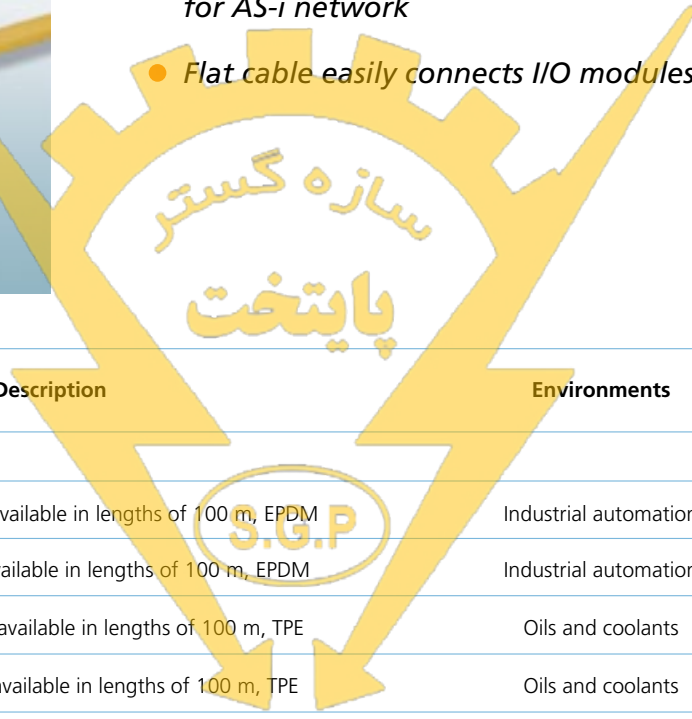
Type	Description	Environments	Part No.	List Price (1-pc.)
AS-i cable				
	AS-i flat cable, yellow, available in lengths of 100 m, EPDM	Industrial automation	**E74005**	**$229.00**
	AS-i flat cable, black available in lengths of 100 m, EPDM	Industrial automation	**E74015**	**$229.00**
	AS-i flat cable, yellow available in lengths of 100 m, TPE	Oils and coolants	**E74205**	**$438.00**
	AS-i flat cable, black available in lengths of 100 m, TPE	Oils and coolants	**E74215**	**$438.00**
	AS-i flat cable, grey available in lengths of 100 m, PVC	Wet and caustic	**U71002**	**$373.00**
	AS-i flat cable, black available in lengths of 100 m, TPE-PVC compound	Wet and caustic	**E74310**	**$603.00**
	AS-i flat cable, yellow available in lengths of 100 m, TPE-PVC compound	Wet and caustic	**E74300**	**$630.00**

Accessories

Type	Description	Part No.	List Price (1-pc.)	Type	Description	Part No.	List Price (1-pc.)
	Flat cable stripping tool	**E70062**	**$37.00**		Flat cable seal – 10 pack	**E70413**	**$37.00**
	Cable clip for AS-i cable – 100 pack	**E70067**	**$95.00**		Cable gland 1/2" NPT	**E10101**	**$7.00**
	Heat-shrink cap for sealing the flat cable ends – 10 pack	**E70113**	**$16.00**		Cable grommet PG11 for AS-i flat cables – 10 pack	**AC3003**	**$21.00**

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	Company	IO-Link ● IO-Link	Position Sensors Inductive	Capacitive	Cylinder / valve position	Photoelectrics / lasers / fiber optics	Distance / Application specific	Ultrasonic	Motion Control Encoders / Speed monitors	Vision Sensors 2D / 3D inspection
Search Bar		1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

Adapters and accessories

- *Splitter boxes split either AS-i or 24 VDC flat cable*

- *Insulation displacement connector distributes AS-i voltage and the external 24 V supply to an M12 socket*

Type	Description	Part No.	List Price (1-pc.)
Flat cable splitters			
	Flat cable splitter, two channel, 8A current rating	E70381	$23.00
	Flat cable splitter, two channel, AS-i or auxiliary, 8 A current rating, 316 SS, EPDM O-ring	E70377	$41.00
	Flat cable splitter, four channels, AS-i or auxiliary, 8 A current rating	E70600	$46.00
Flat cable to M12 taps			
	Insulation displacement connector	E70487	$29.00
	Flat cable to 4-pin female M12 Micro DC connector, 1 m length	E70481	$29.00
	Flat cable to 4-pin female M12 Micro DC connector	AC5005	$15.00
	Flat cable, AS-i and auxiliary, to 4-pin female M12 Micro DC connector, 316 SS, EPDM O-ring	E70354	$43.00
	Flat cable to 4-pin female M12 Micro DC connector, 316 SS, EPDM O-ring	E70454	$31.00
	Distributes AS-i and external voltage via M12 connector	E70588	$52.00
	Flat cable to M12 connector, 303 SS	E70271	$16.00
	Transitions flat cable to round cable, 2 m length	E70498	$18.00

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.

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

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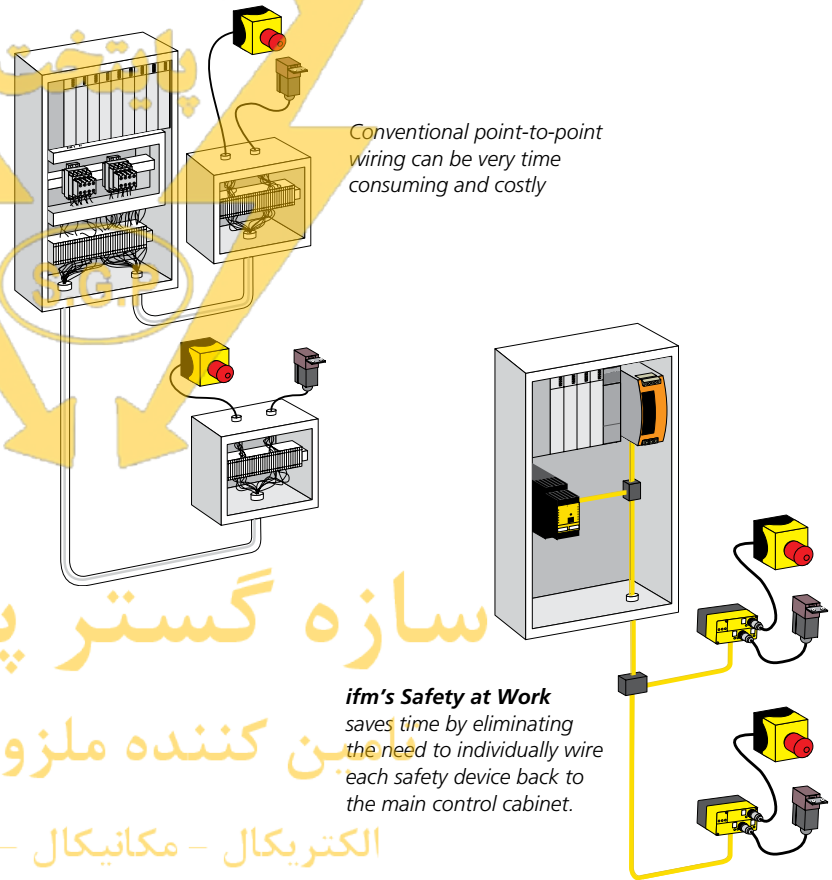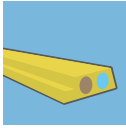
ifm's Safety at Work saves time by eliminating the need to individually wire each safety device back to the main control cabinet.

Visit www.ifm.com/us to view all Safety at Work networking products.

Company	IO-Link	Position Sensors						Motion Control	Vision Sensors
	⬙ IO-Link	Inductive	Capacitive	Cylinder / valve position	Photoelectrics / lasers / fiber optics	Distance / Application specific	Ultrasonic	Encoders / Speed monitors	2D / 3D inspection
1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

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

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.

INSTALL – REBUILD

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.
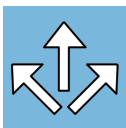
Universal connectivity
The Safety at Work system can be used directly with most major PLCs including Allen Bradley and Siemens, as well as, DeviceNet, Profibus, and Ethernet bus systems. There are no requirements for special safety PLCs.
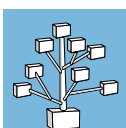
Flexible topology
The Safety at Work system can be configured in ring, star, and trunk and drop topologies. The system is also capable of handling multiple safety zones on one network.

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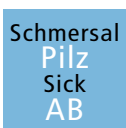
Implements standard safety devices
The system is designed to use standard mechanical safety devices including door switches and e-stop buttons. There are no requirements to use system specific I/O devices.

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.

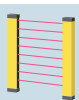| Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155	156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277

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.

See page 229.

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.

See page 230.

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.

See page 244.

	IO-Link	Position Sensors		Cylinder/valve position	Photoelectrics/lasers/fiber optics	Distance/Application specific	Ultrasonic	Motion Control	Vision Sensors
Company	◈ *IO-Link*	*Inductive*	*Capacitive*					*Encoders/Speed monitors*	*2D/3D inspection*
1 - 5	*6 - 21*	*22 - 55*	*56 - 61*	*62 - 71*	*72 - 111*	*112 - 117*	*118 - 119*	*120 - 127*	*128 - 143*

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.

See page 246.

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.

See page 246.

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.

See page 248.

Wiring Solutions

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

See page 238.

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.

See page 239.

| Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155	156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277
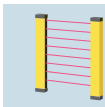
Top product features!

- *2 safe electronic outputs locally, 6 triggerable outputs in the field*

- *4 safe inputs or 8 standard inputs/outputs locally*

- *Configurable with an easy to use drag-and-drop software*

- *Saving of data on chip card for an easy exchange of units*

- *Certification to EN 62061/ SIL3, IEC 61508 / SIL3 and EN ISO13849-1/PLe*

Safety made simpler with ifm's basic safety monitor

ifm's safety relay (monitor) evaluates the data exchange between safety modules and the AS-i controls. If the data transmission is disrupted or a wire break occurs, the safety monitor will fail to safe.

As a component of the AS-i Safety at Work system, the safety relay monitors the code sequences that are to be transmitted. In the case of message deviations or timeouts, the AS-i safety monitor ensures the safe state of the system. The new AS-i safety monitor processes up to four safe inputs or eight standard inputs / outputs locally and up to 31 safety modules / intelligent e-stops. One AS-i safety relay can replace many traditional safety relays.

The ASIMON configuration and diagnostic software provides clear and quick assignment of the safety-related components via a simple drag-and-drop interface.

Safety relay functions such as "e-stop", "stop categories 0 or 1", "two-hand operation", "enable switch" can be monitored via the software.

The safety monitor can be retrofitted on existing AS-i installations. Safe and non-safe I /O signals can be transmitted via the same system bus. All controllers, power supplies and bus components can still be used.

The Safety at Work system simplifies wiring by eliminating wire bundles that form when connecting numerous input / output devices. The system provides an ideal safety solution for industries such as conveying, special machines, material handling and the food industry.
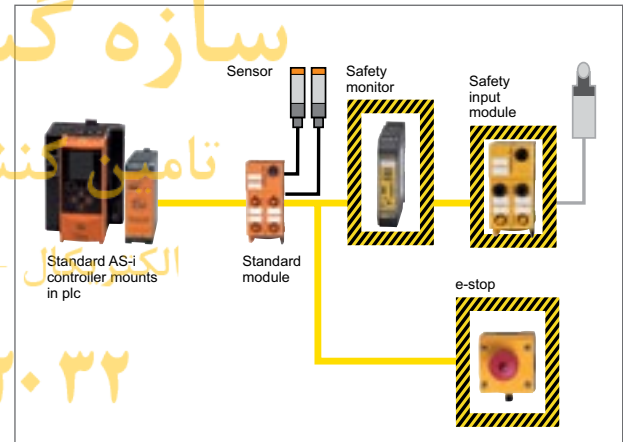
System overview with safety-related components
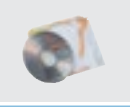
	IO-Link	Position Sensors						Motion Control	Vision Sensors
Company	*IO-Link*	*Inductive*	*Capacitive*	*Cylinder/valve position*	*Photoelectrics/ lasers/fiber optics*	*Distance / Application specific*	*Ultrasonic*	*Encoders / Speed monitors*	*2D/3D inspection*
1 - 5	*6 - 21*	*22 - 55*	*56 - 61*	*62 - 71*	*72 - 111*	*112 - 117*	*118 - 119*	*120 - 127*	*128 - 143*

Product + accessory selector

Type	Dimensions	Description	Channels	Outputs	Part No.	List Price (1-pc.)
	99 x 22.5 x 114	AS-i safety monitor	2	semi-conductor	**AC041S**	**$844.00**

Accessories

Type	Description	Part No.	List Price
	Configuration software ASIMON V3 G2 for safety monitor	**E7050S**	**$177.00**
	USB interface cable for the connection of the safety monitor to PC	**E7051S**	**$45.00**
	Chip card to save the configuration data	**E7052S**	**$11.00**
	Safety relay expansion module, 2 independent channels, without delay, for AS-i safety monitor with semi-conductor outputs	**E7053S**	**$323.00**

▶ Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

Technical Specs

Operating voltage: 24 V DC
AS-i interface: 1
Stop category to EN 60204-1: 0/1
Semi-conductor outputs: 2
Current rating per output: 0.7 A
Service button: yes
AS-i profile: S-7.5.5
Ambient temperature: 0…55 °C
Protection: IP 20
Connection: Combicon screw terminals

Simple and comprehensive website

Data sheets, application examples, software downloads, virtual product demos… just one click away.

✎ **Place orders, tech support**
800-441-8246

🔖 **Visit our product catalog**
www.ifm.com/us

🛒 **Shop for products online**
Easy ordering via eShop

Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	*Pressure*	*Flow*	*Level*	*Temperature*	*AS-i network*	*Safety systems*	*RF identification systems*	*Diagnostic systems*	*Power supplies*	*Cordset solutions*
144 - 155	156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277

Top product features!

- *Easy connection of standard mechanical safety devices including door switches and E-stop buttons*

- *Non-safe relay outputs and LED output options available*

- *Rated up to category 4 according to EN954-1 and SiL 3 according to IEC61508*

- *2-wire flat cable carries power and signal to each safety device*

- *Up to 50% reduction of installation in the field*

A variety of safety I/O modules to fit your fail-safe requirements

ifm offers a variety of input/output modules that receive safe and mechanical input signals. The AS-i safety controller communicates the input signals to intelligent safety devices, such as e-stops and door switches within the Safety at Work system.

Both field and cabinet modules are available. ifm safety field input modules do not require any tools. Connection is simple and is made via the AS-i system flat cable. Cabinet modules simply mount on din rail.

Safety pcb modules are available for pushbutton applications.

Modules are available with a standard output signal and can be used with your mechanical safety devices.
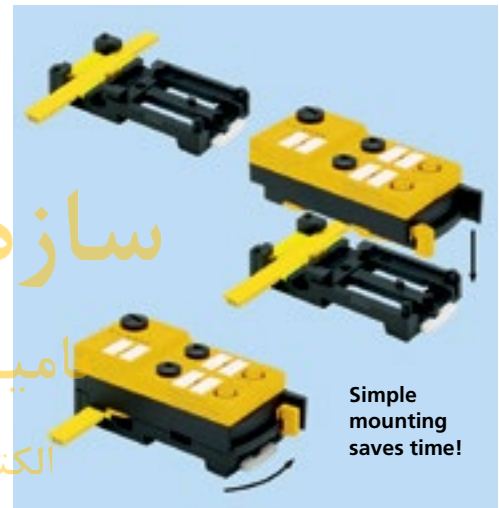
Simple mounting saves time!

ifm's quick slide safety modules (Part No. AC505S) offer simple mounting. The module can accept the AS-i flat cable in three different directions to provide flexible cable routing.

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		IO-Link	Position Sensors						Motion Control	Vision Sensors
	Company	IO-Link	Inductive	Capacitive	Cylinder/valve position	Photoelectrics/lasers/fiber optics	Distance/Application specific	Ultrasonic	Encoders/Speed monitors	2D/3D inspection
Search Bar	1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

Product + accessory selector

Type	Dimensions (mm)	Inputs	Non-Safe Outputs	Part No.	List Price (1-pc.)
Quick slide safety field input modules					
	103 x 45 x 45	2 safe mechanical inputs	–	**AC505S**	**$246.00**
	103 x 45 x 45	2 safe solid state inputs	2 non-safe outputs	**AC507S**	**$272.00**
	103 x 45 x 45	2 safe solid state inputs, aux	2 non-safe outputs	**AC508S**	**$272.00**
	103 x 45 x 45	2 x 2 safe solid state inputs	2 non-safe outputs	**AC509S**	**$265.00**
Cabinet mounted safety modules					
	108 x 25 x 105	2 safe mechanical inputs	2 non-safe relay outputs	**AC009S**	**$312.00**
Intelligent safety e-Stop modules					
	67 x 59 x 105	2 safe inputs	–	**AC010S**	**$348.00**
	67 x 59 x 105	2 safe inputs	–	**AC011S**	**$348.00**
Safety PCB modules					
	44 x 31 x 9	2 safe mechanical inputs		**E7015S**	**$175.00**
	44 x 32 x 21	2 safe mechanical inputs	–	**AC015S***	**$170.00**

*with contacter pins

الکتریکال – مکانیکال – ابزاردقیق

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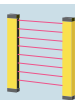| Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155	156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277

Top product features!

- *Up to 31 safety door switches can be connected per network*

- *Solenoid lock is rated for 2500 N force*

- *Large LEDs for easy status and fault indication*

- *Rotatable actuating head for different mounting positions*

- *Suited for applications up to PLd according to EN ISO 13849-1 standard*

Safety at Work intelligent door switches with guard locking

ifm's intelligent safety door switches are safety switches with an integrated solenoid lock which allow the user to implement interlocking devices according to EN 1088.

An integrated locking mechanism keeps protective doors securely locked while equipment is operating within an enclosed guarded area.
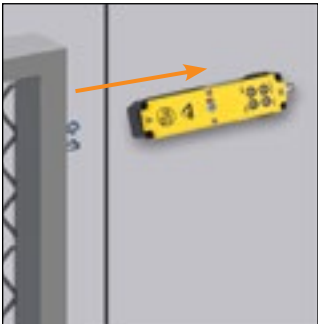
ifm safety door switches are typically mounted on the frame of the guard door. Generally the key is mounted on the moving door and the switch body is mounted to the framing so that when the door closes, the key is fully inserted into the switch.

The door switch is connected to an input module via the AS-i system cable. AS-i reduces wiring time and is the protocol for the Safety at Work system.

As AS-i safety input signals are received by the intelligent door switches, the solenoid monitoring contacts are detected. AS-i output signals trigger the guard locking solenoid and the green/red LEDs for feedback. Evaluation is made via an AS-i safety monitor.

Company	IO-Link	Position Sensors						Motion Control	Vision Sensors
	IO-Link	Inductive	Capacitive	Cylinder/valve position	Photoelectrics/ lasers/fiber optics	Distance / Application specific	Ultrasonic	Encoders / Speed monitors	2D/3D inspection
1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

Product + accessory selector

Type	Description	Part No.	List Price (1-pc.)
	Power to unlock, solenoid supply ext. 24 V DC	AC901S	$393.00
	Power to lock, solenoid supply ext. 24 V DC	AC902S	$393.00
	Power to unlock, solenoid supply by AS-i	AC903S	$393.00
	Power to lock, solenoid supply by AS-i	AC904S	$393.00

Accessories

Type	Description	Part No.	List Price	Type	Description	Part No.	List Price
	Safety slide bolt, metal	E7901S	$247.00		Hinged actuator, left/right	E7905S	$13.00
	Safety slide bolt, plastic	E7902S	$157.00		Hinged actuator, top/bottom	E7906S	$16.00
	Actuator, straight	E7903S	$11.00		Distribution of the AS-i voltage / external 24V supply to M12 connector, 1M cable	E70481	$29.00
	Actuator, angled	E7904S	$11.00		Distribution of the AS-i voltage to M12 socket	AC5005	$15.00

▶ Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

Technical Specs	AC901S / AC902S	AC903S / AC904S
Operating voltage:	22.5…31.6 V DC	22.5…31.6 V DC
Current consumption:	≤ 45	≤ 400
Auxiliary voltage guard locking solenoid:	24 V DC	AS-i
Locking force:	≤ 2500 N	
Life:	10^6 switching operations	
Safety related inputs:	2	
AS-i profile:	S-7.B.E.	
Ambient temperature:	-20…55 °C	
Protection:	IP 67	
Connection:	Via connector M12 x 1	

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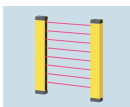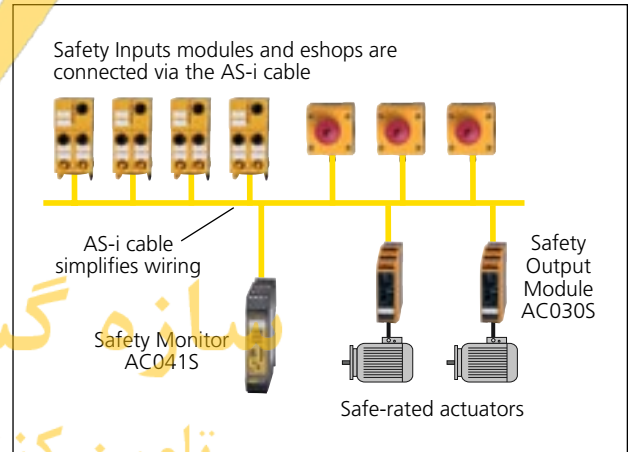| Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
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Top product features!

- *1 dependent safety relay output, double channel forced contacts*

- *4 standard inputs (e.q. for start, EDM, etc.)*

- *Control category 4 according to EN 954-1, IEC 61508 / SIL 3 and EN 13849 / PL e*

- *1 Local LED output (alarm) and 1 process output for optional start validation requests*

- *Create up to 6 independent safety zones*

ifm's safe output module for the control cabinet AC030S incorporates data technology that can provide a safe output signal to motor starters or valve assemblies.

The output module is controlled by safety relay monitor, AC041S, which can be configured by using its diagnostic software ASIMON V3.0.

In conjunction with safety relay monitor, AC041S, up to 6 additional independent safety zones can be established. Each safety output module AC030S provides a decentralized safety output in the field for control of the safe-rated actuators.

The Safety at Work system simplifies wiring by eliminating wire bundles that form when connecting numerous input / output devices. The system provides an ideal safety solution for industries such as automotive assembly, conveying, special machines, material handling and the food industry.

Safety Inputs modules and eshops are connected via the AS-i cable

AS-i cable simplifies wiring

Safety Monitor AC041S

Safety Output Module AC030S

Safe-rated actuators

The new Safety at Work output module enables decentralized control of actuators. Each module is mounted in the control cabinet and is connected to an actuator via the AS-i cable. In the example above, the output module is controlled by the AC041S Safety Monitor, which can ensure a safe state of the actuators.

Company	IO-Link	Position Sensors		Cylinder / valve position	Photoelectrics / lasers / fiber optics	Distance / Application specific	Ultrasonic	Motion Control	Vision Sensors
	IO-Link	Inductive	Capacitive					Encoders / Speed monitors	2D / 3D inspection
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Search Bar

Product + accessory selector

Type	Dimensions	Description	Non-Safe Digital Inputs	Safety Outputs	Part No.	List Price (1-pc.)
Safety at Work output module						
	108 x 25 x 105 mm	Safe SmartLine output module	4	1 safety relay output	AC030S	$558.00

▶ Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

Technical Specs

Operating voltage:	26.5…31.6 V DC
Total current consumption:	≤ 200 mA
Relay output positively driven:	1 pcs.
Max. current load of the output 2 safety-related NO contacts:	3 A
Non-safe inputs:	4
Slide switch R/P:	yes
AS-i profile:	S-7.A.E.
Operating temperature:	-25…55 °C
Protection:	IP 20
Connection via Combicon screw terminals:	yes

Reliable service center

The ifm service center team provides tech support, product quotes, delivery information and order placement.

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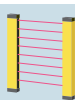| Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
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