

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



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.

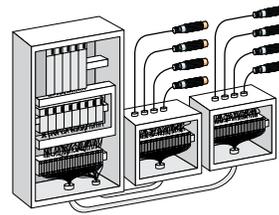
Aggressive product development

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.

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.

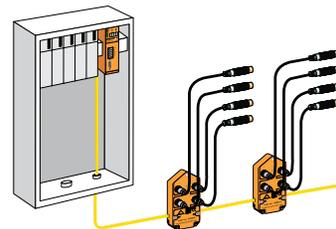
Current methods for wiring include point-to-point connection or bus systems. However, point-to-point wiring results in large wire bundles, and bus systems can be too complex for networking simple binary devices.

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.



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.



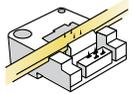
After

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.



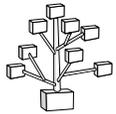
A simple 2-wire flat cable

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 properly 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.

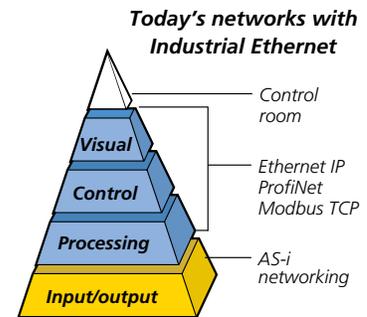
Industrial Ethernet and AS-i networking offer the best of both worlds

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 HMI's, 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.



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.

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.

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)

