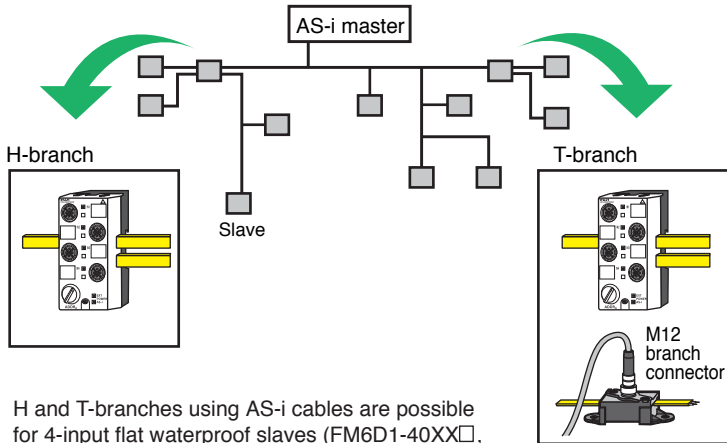


Flexible wiring method

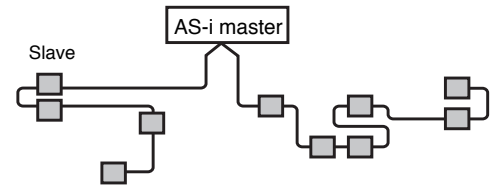
AS-i enables highly flexible wiring. Three kinds of network topology, tree, line, and star, are available. Conventional wiring and cable quantities can be greatly reduced. No terminating resistors are required.

Tree structure

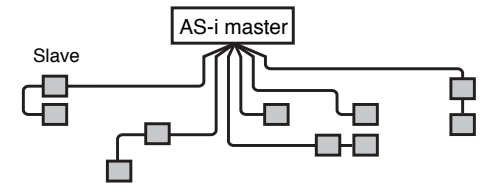


H and T-branches using AS-i cables are possible for 4-input flat waterproof slaves (FM6D1-40XX□, FM6DB1-40XX□).

Line structure

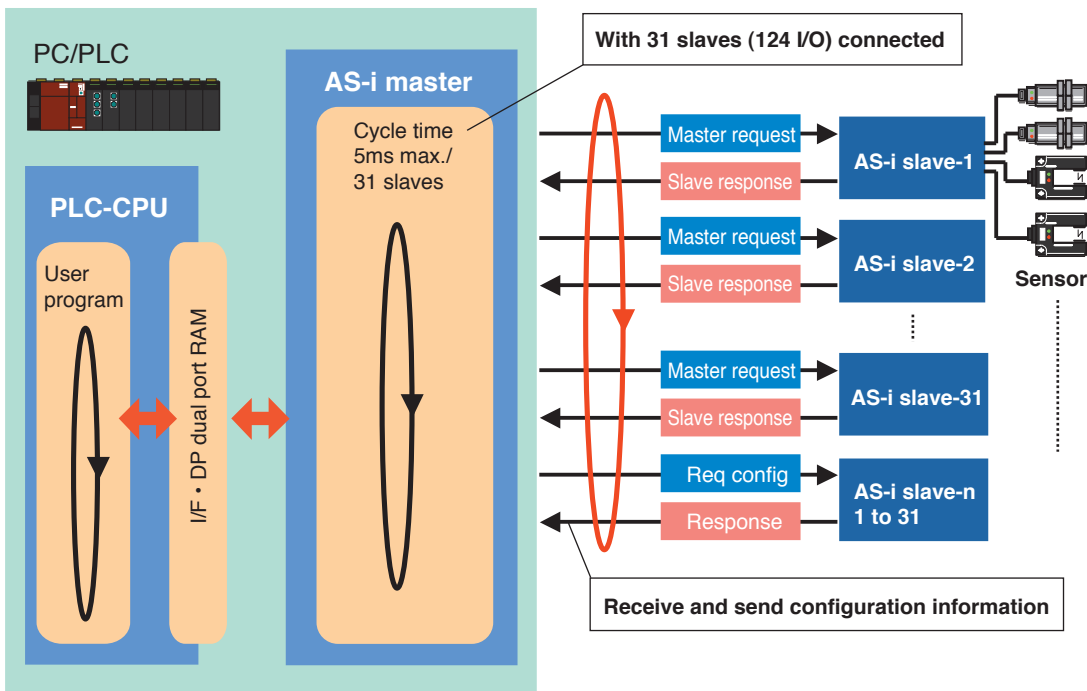


Star structure



High-speed response

- The data transmission time (cycle time) is approx. 5ms. when connecting 31 slaves, 10ms when connecting 62 slaves.
- Self diagnosis is performed simultaneously on slave configuration information.



Features

■ Reduced installation and wiring time

A single AS-i cable (2-core) can send data and supply power. Waterproof-type slaves and AS-i cables can be easily connected by tightening a screw on the actual slave, using piercing technology.

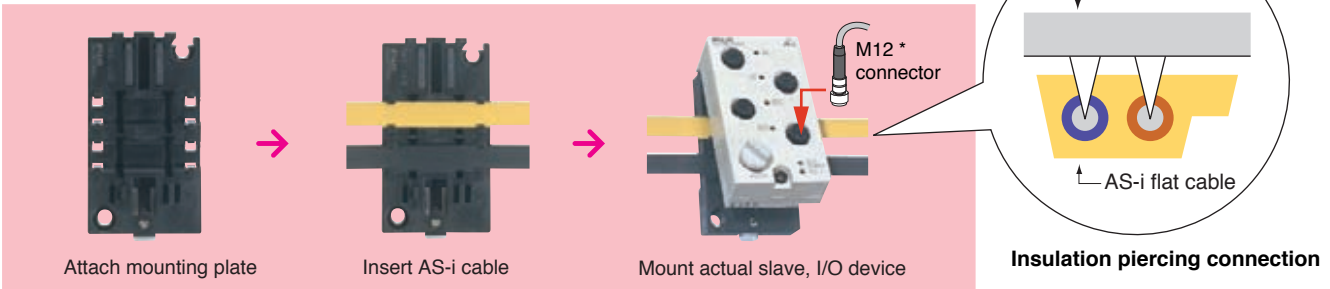
- The asymmetrical cross-section of the AS-i cable facilitates polarity confirmation and prevents connection error.
- After a slave is removed, the pin holes are blocked by the elasticity of the cable to recover insulation.

Conventional method



*The actuators and sensors (I/O devices) are connected to slaves via connectors by snapping action. This helps reduce man-hour and prevent connection error.

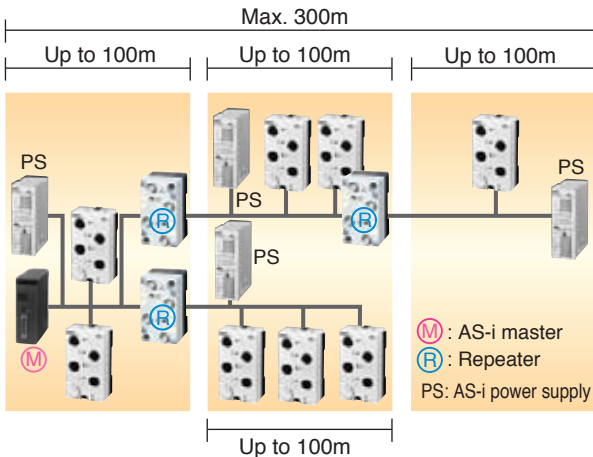
Connection via AS-i cable



■ Superior communications

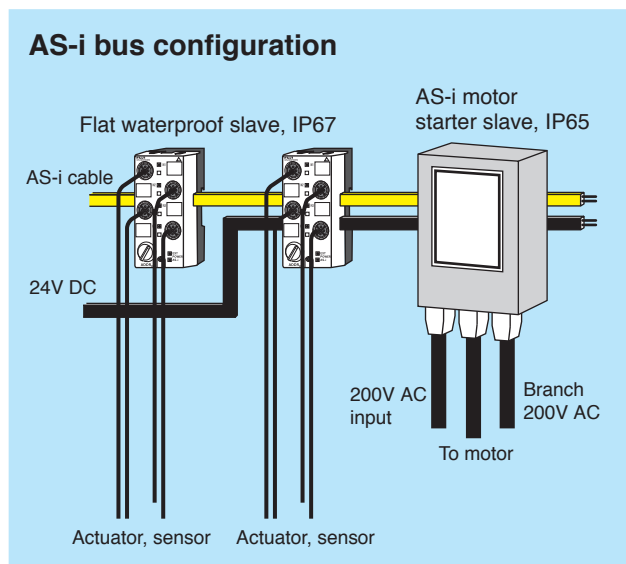
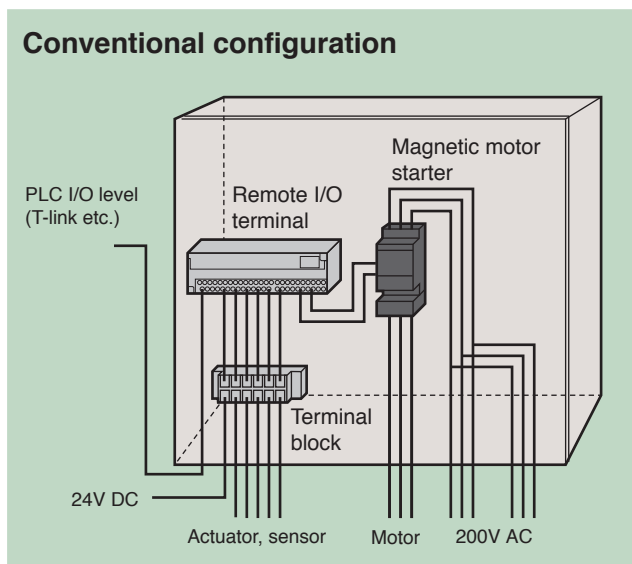
- The standard transmission distance of 100m can be extended to up to 300m using repeaters.
- AS-i features a rapid cycle time of approx. 5ms when connecting 31 standard slaves, and 5ms when connecting 62 A/B slaves.
- In AS-i system of version 2.1, up to 434 I/O signals (62 slaves) for sensors and actuators can be sent on 2-core serial wiring.

- In protected mode, the address of a failed slave is indicated on a master (except NB6). After the slave is replaced, the automatic addressing function automatically assigns the original address to the new slave (when replacing only one slave).



■ Superior environmental resistance

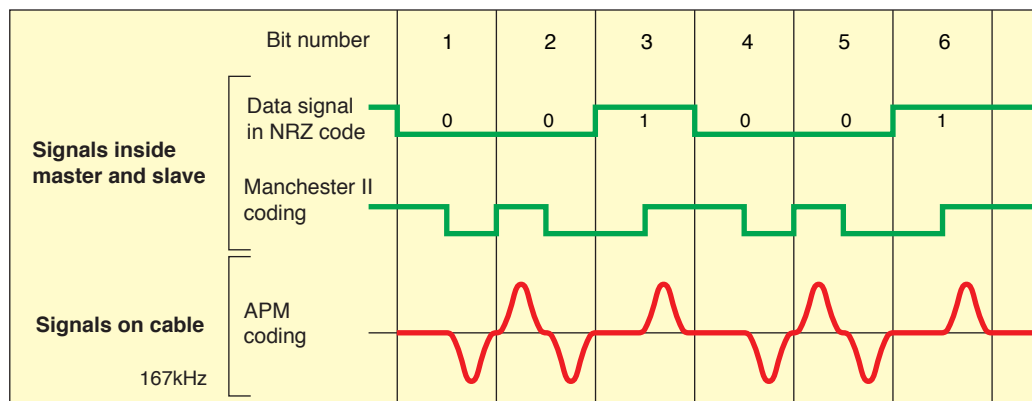
Slaves now have outstanding environmental resistance (IP65, 67). This reduces the number of relay boxes required and contributes to downsizing.



Conveyance line application example

■ Excellent noise immunity

Transmission signals employing a \sin^2 waveform have superior noise immunity.



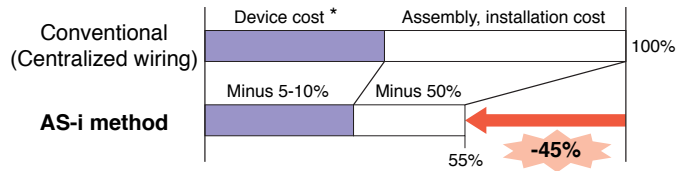
In AS-i, data signals are first encoded in Manchester II code, and are then sent out on AS-i cable in \sin^2 waveform using alternating pulse modulation (APM). APM has the following advantages.

- Emission
As the \sin^2 waveform has a narrow spectrum bandwidth, noise radiated from AS-i cables does not affect other devices

- Immunity
As APM has good regularity and redundancy, very effective error detection is possible to ensure highly reliable data.

Cost savings with AS-i

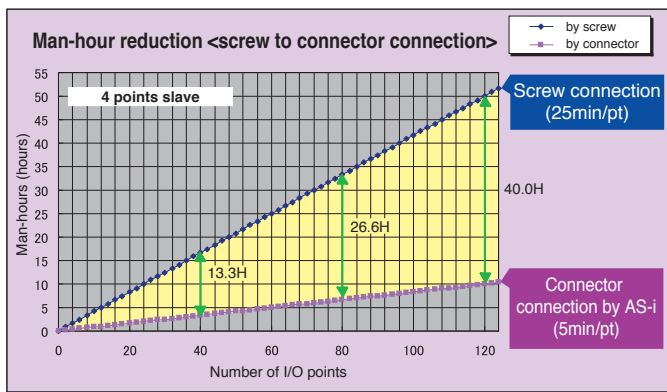
Example of a conveyance line



* Cost includes controllers, I/O devices, cables, sensors, relay boxes, etc.

The figure on the left is an example of the cost savings for one of our customers. On average, about 30% can be saved with most equipment by introducing AS-i. Though the cost of introducing AS-i devices may be higher, most 15% to 30% savings can be expected in most cases.

Man-hour savings



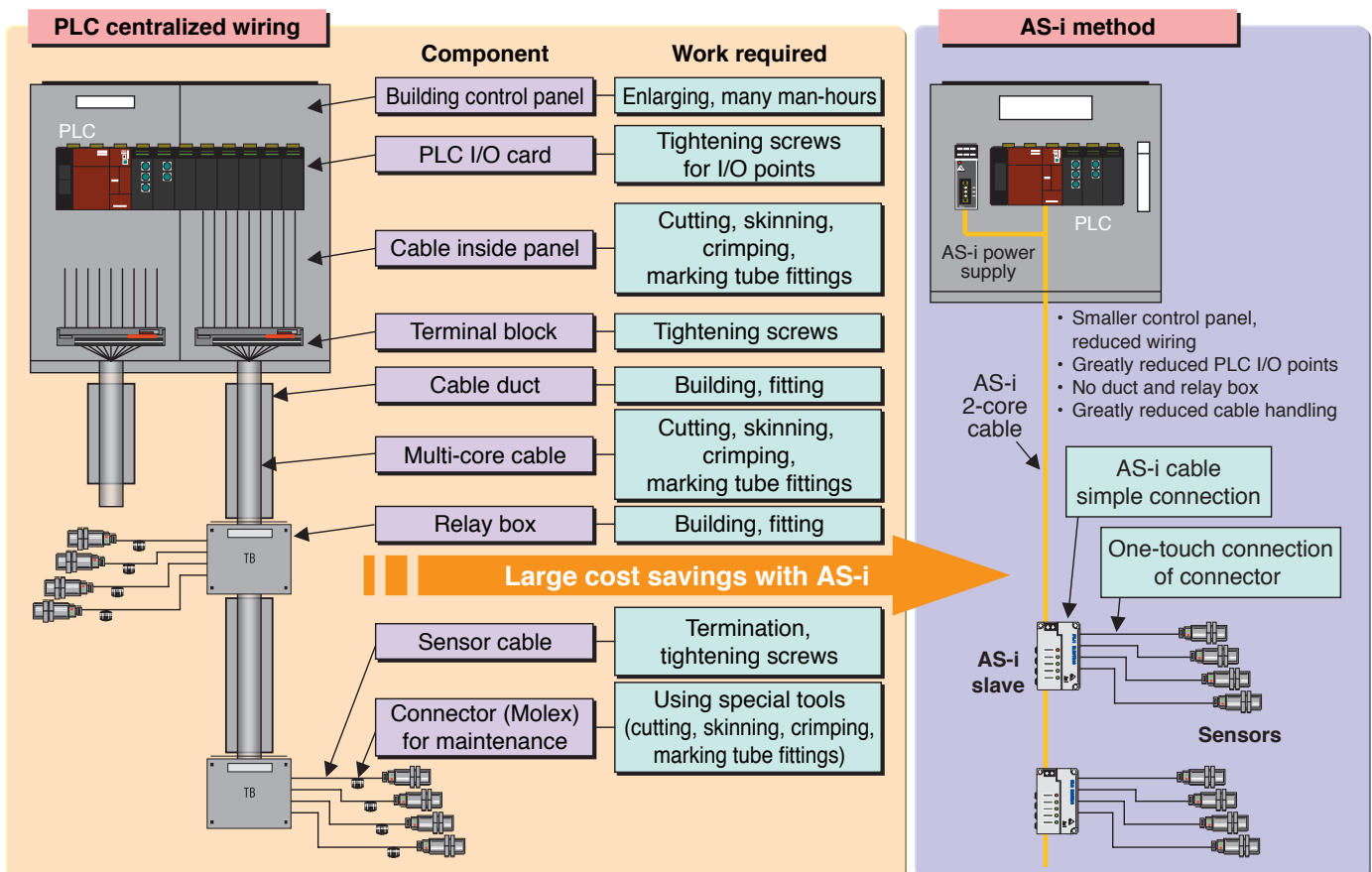
The figure on the left is an example of lower man-hours for one of our customers. The man-hours include the following:

1. Measuring cable length (tape measure)
2. Cutting cable (nipper)
3. Skinning sheath (wire stripper)
4. Attaching crimp terminal (crimping tool)
5. Connecting cable to terminal (screwdriver)
6. Checking connections

* Tools in parentheses for each task are not required for AS-i connector connection.

The more I/O points and the higher the pay, the greater the cost savings.

Smaller control panel



Contents

Applications	12
AS-Interface system configuration	13
Quick reference guide	15
AS-i safety	22
AS-Interface cables	29
AS-Interface masters	
AS-Interface master, NP1L-AS2.....	30
AS-Interface master, NP1L-AS1.....	32
AS-Interface master, NJ-ASL	33
AS-Interface master, NB6 basic unit	34
DeviceNet/AS-i gateway.....	36
T-link/AS-i gateway.....	38
AS-Interface slaves	
Flat waterproof slave, FM6D1/FM6DB1	40
Slim waterproof slave, FM6D2	48
Analog slave, FM6A	54
Flat dustproof slave, FM4D/FM4DB	58
Slim dustproof slave, FM4D1/FM4DB1	65
Compact terminal-block type slave, FM2D1.....	71
Terminal block type slave, FM1D	73
AS-i motor starter slave, FE16D.....	75
NEW Digital picking slave, FM4DP.....	79
Inverters connectable to AS-i devices	82
AS-Interface power supply	
AS-i power supply, FP1AA	83
AS-Interface accessories	
Repeater and extender.....	85
Addressing unit, FL1HA-E.....	87
AS-i accessories.....	90
Introduction to FUJI FA sensors	93
AS-Interface related products	
Connectors	94
AS-i conformed signal tower	96
CC-Link/AS-i gateway	98
T-branch connector	99
Type number index	100
General Terms and Conditions of Sale	101
Safety Precautions	102
Installation Precautions	103
Sales network	108
Degree of protection	110