MITSUBISHI ELECTRIC
FACTORY AUTOMATION

FX Family

Profibus Networking Solutions

Master, Slave and Remote I/Os
the whole solution, all from one series

PROFI PROCESS FIELD BUS *BUS*

	Total Profibus control solution from one series reduces maintenance burdens
IMPROVED COMMUNICATION	Total Profibus control solution from one series reduces maintenance burdens
SPEED UP	Profibus/DP compliance; 244 byte handling of acyclic communication up to 12 MBPS
SIMPLER OPERATION	Reduced installation time with easy set-up and configuration software and even automatic program block generation
MORE FLEXIBILITY	Reduced spares handling by using common I/O blocks for PLC nodes and remote I/O levels

Simple, effective and reliable

Common control applied at all levels

Two sides of the same coin

Generally open networking has been a good thing enabling many users to mix exactly the right type of control at all levels. But sometimes it has been achieved at a cost, for example:

■ Each manufacturer may be motivated to support only their products

■ Integration may not be so easy as it should be

■ Product solutions and product quality may be variable across manufacturers

■ Economies of scale, purchasing from a single manufacturer, may not be maximised

Something special

Being a manufacturer ourselves we can completely understand these problems, which is why we created a rather unique solution.

We have developed a Profibus/DP I/O and control solution based on the popular FX PLC family which offers users an alternative. It is built on using the same I/O devices at three levels.

Profibus/DP is a popular fieldbus network with Process and Control engineers. Its open communication ability enables leading products from many manufactures to be linked together in a single harmonious communication process.

An open approach

In common with many manufacturers Mitsubishi Electric has enabled a wide range of its own products to be networked on various industrial networks such as CC-Link, Profibus/DP, DeviceNET, CANopen and of course Ethernet and MELSECNET to name but a few.

In the case of Profibus/DP there is comprehensive support across Mitsubishi's whole automation portfolio; from remote I/O solutions such as MELSEC ST series through to compact masters for FX PLCs and advanced DPV2 masters for System Q. In addition, many Mitsubishi power and drives products are also connectable inclucing inverters, servos and robots in addition to PLCs, HMIs and LV products.

1 Remote I/O devices

2 Intelligent PLC slave stations

3 Comprehensive PLC master stations

Increased savings and confidence

This elegantly simple solution will help to lower many of the costs that open network users can face. For example:

- **Reduced costs of ownership**
  as one manufacturer will take responsibility for elements at multiple levels of your architecture.

- **Reduce spares handling**
  as common components are used through out the system.

- **Reduced maintenance**
  as engineers only have to learn one control concept and can focus on supporting a reduced set of components.

- **Easier upgrade and system extension**
  as remote I/O nodes can be "grown" or redefined into intelligent slave stations.

- **Increased system reliability**
  as many elements come from one of the top global automation suppliers.

Master

Slave

Remote I/O

Flexible, common devices reduces maintenance overheads and can help to increase system availability
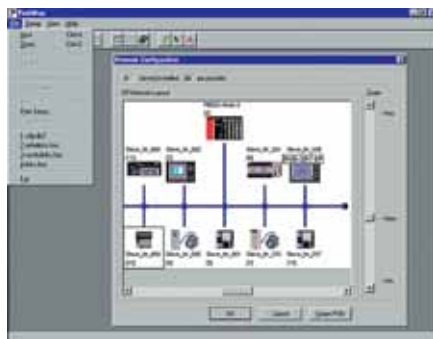
Screenshot GX Configurator-DP

User-friendly configuration

Mitsubishi Electric automation users can also benefit from using GX Configurator DP. This is Mitsubishi's own Profibus/DP configuration software that can even automatically generate configuration code to be loaded into your own FX or System Q PLC program, saving users time and money.

Even more solutions

Other Mitsubishi, Profibus/DP solutions include:

- **Profibus/DP, DPV1/V2 master** for Mitsubishi's Modular PLC, System Q. This allows users to take full advantage of many of the extended features of the Profibus/DP network not always supported by all manufacturers.

- **MR-MG30 Profibus/DP to Mitsubishi SSCNET II** motion control network. This handy bridging module allows users to connect their SSCNET II networked not always supported by all manufacturers.

- **Mitsubishi ST slice I/O.** For users who need the greatest I/O flexibility, even down to a single point. Other benefits include easy maintenance with hot swapping and encoded switching modules.
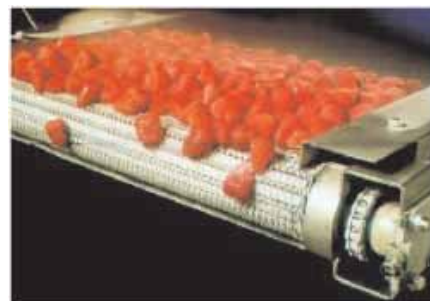
From car manufacturing to the delicate handling and sorting of fresh fruit – Profibus/DP has delivered benefits for over a decade

Specifications ///

Specifications		FX3U-64DP-M	FX0N-32NT-DP	FX3U-32-DP	FX2N-32DP-IF(-D)
Module type		Profibus/DP Master module, class 1	Profibus/DP Intelligent slave	Profibus/DP Intelligent slave	Profibus/DP Remote I/O bridge
Transmission data		32 bytes/slave (normal service mode), 244 bytes/slave (extended service mode)	20 bytes/unit	144 bytes/unit	200 bytes/unit
Max. number of units per system		1 unit (on a PLC), 3 units (within a Profibus/DP network)	1 unit (on a PLC), 64 units (within a Profibus/DP network)	8 units	1 unit (per remote I/O station), 64 units (within a Profibus/DP network)
Profibus standard	Max. number of repeaters/ communication path	3 units	—	—	—
	Max. number of stations/ segment	32 stations	—	—	—
	No. of connectable nodes per master	64 slaves	—	—	—
Transmission type		Bus network			
Supported transmission speed (bps) and bus length	9.6 k / 19.2 k / 93.75 k	1,200 m / segment			
	187.5 k	1,000 m / segment			
	500 k	400 m / segment			
	1.5 M	200 m / segment			
	3 M / 6 M / 12 M	100 m / segment			
Profibus/DP network connector		9-pin D-SUB			
Global control		Synchronization, unsynchronization, freeze and unfreeze modes are supported			
Terminal resistor		Not built-in			
LED indicators		POWER, RUN, FROM/TO, TOKEN and ERROR	POWER, DC (24 V DC external), RUN, BF (communication error) and DIA (Diagnostic data)	POWER, FROM/TO, TOKEN, RUN, and DIA (Diagnostic data)	POWER, RUN, BF (communication error) and DIA (Diagnostic data)
Applicable PLC		Mitsubishi FX3U series PLC	Mitsubishi FX0N, FX2N, FX1N, FX2NC and FX3U PLCs	Mitsubishi FX3U series PLC	Not applicable
No. of occupied I/O points		8 points taken from the PLC extension bus (either input or output)			Not applicable
Power supply		24 V DC (max. 155 mA/from base unit)	24 V DC (max. 60 mA), 5 V DC (max. 170 mA from the PLC bus)	24 V DC (max. 145 mA/from base unit)	FX2N-32DP-IF: 100 – 240 V AC FX2N-32DP-IF-D: 24 V DC (14W)
Dimensions (W × H × D) mm		43 x 90 x 87	43 x 90 x 87	43 x 90 x 87	75 x 105 x 87
Weight		0.2 kg	0.3 kg	0.2 kg	0.4 kg