

## Databank - Product Bulletin

### The FX1S – A new Family of Micro Controllers



The FX1S family is the prefix of the latest range of micro controllers - in fact some would say Super Micro's!. These new units will be phased in over time as both an upgrade to the existing FX0S product ranges **but** also as a range of products which fill the functionality gap between the FX0S and the highly successful FX0N.

#### Increased functions and increased power!

- *Big program memory* - FX1S has 2000 steps.
- *Large data storage* - FX1S has 256 data registers.
- *High speed pulse train outputs* - FX1S PLCs have two 100kHz pulse train outputs as STANDARD!
- *High speed counters* - FX1S has an excellent array of high speed counters; Single phase high speed counters will accept signals up to 60kHz while two phase inputs can be as high as 30kHz.
- *Positioning was never easier* - Combining the pulse train outputs and the high speed counters with 5 new dedicated positioning instructions means easier control – especially with the NEW ABS instruction which links the FX1S PLC to the Mitsubishi MR-H, MR-J, MR-J2 and MR-J2-Super servo amplifiers.
- *Advanced instructions* – Continuing the tradition of the generic FX family FX1S PLCs have a wide range of useful and easy to use instructions including PID, FIFO (SFWR, SWRD) and a new 70 year Hour Meter instruction for maintenance monitoring to name but a few.
- *Real value with Real Time Calendar Clock* - FX1S comes with a built in Real Time Calendar Clock and 6 instructions to handle time and event scheduling.
- *Flexible communication* - Optional communication boards mean the FX1S can be used to control communications with peripheral devices or be part of a large multi-product network – options include RS232, RS422, RS485 and a converter board to link to existing FX0N ADP blocks.
- User interfacing with the FX1S PLC has many new benefits as well. A NEW 8 channel potentiometer option board allows users to set variables by a simple twist of a screw driver. Alternatively the NEW FX1N-5DM maintenance panel (option) allows maintenance engineers to check time and date information as well as setting timer counter and data register values.

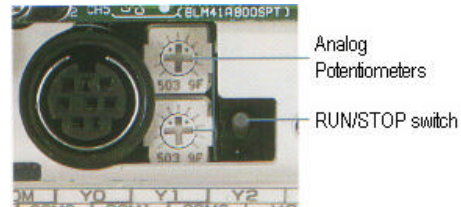
**The FX1S family is certainly more product power than ever before  
in a micro or modular micro PLC.**

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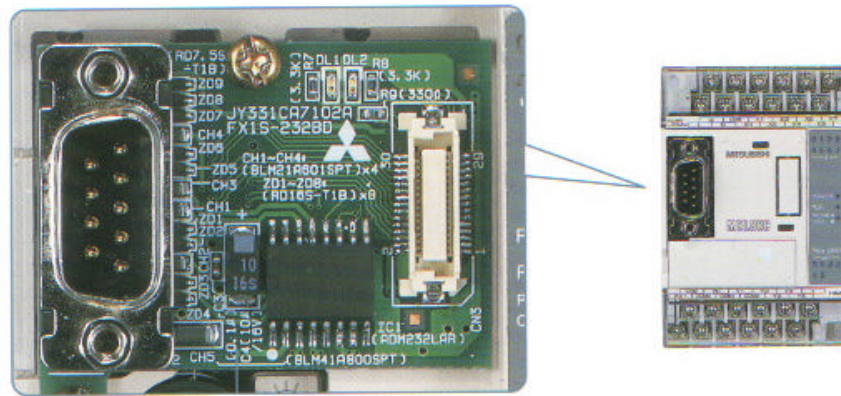
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### Features and options:

The programming port, analog potentiometers and RUN/STOP switch can be found directly beneath the programming port cover.

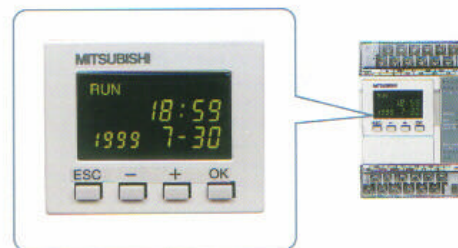


Optional communications boards – Once the top cover is removed, the communication boards can plug directly in to the top of the FX1S.



The FX1N-5DM maintenance panel can be used on its own (in the same 'connection' port as the communications boards)

**or**  
 in combination with the communications boards (see below).



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### Major Specifications

	<b>FX0S</b>	<b>FX1S</b>
Built in program steps	800	2000
Memory type	EEPROM	EEPROM
Optional memory cassette	Not applicable	Yes – FX1N-EEPROM-8L
Instruction speed	1.6 to 3.6	0.55 to 1.0
Basic instruction $\mu$ S		
Instruction speed	10 to several hundred	2 to several hundred
Applied instruction $\mu$ S		
Number of basic instructions	22	29
Number of applied instructions	35	85
Auxiliary relay (M coils)	512	512
State relays (S coils)	64	128
Timers (T)	56	64
Counters (C)	16	32
High speed counters	1 phase, 4 points 7kHz 2 phases, 1 point, 2kHz	1 phase, 6 points, 60kHz 2 phases, 2points, 30kHz
Data registers (D)	32	256
Program pointers (P)	64	64
File registers (D)	Not applicable	1500 points max (taken from program memory in blocks of 500)
High speed pulse train outputs	1 point, 2kHz	2 points, 100kHz
Real Time Calendar clock (RTCC)	Not applicable	Yes
Expansion I/O	Not applicable	Not applicable
Special function blocks	Not applicable	Not applicable
Communication boards	Not applicable	Yes, RS 232 > FX1N-232-BD RS 422 > FX1N-422-BD RS 485 > FX1N-485-BD  FX1N-CNV-BD allows the FX0N ADP blocks to be used as alternative solutions
Potentiometer inputs	1 built in	2 built in and 8 provided by option board FX1N-8AV-BD

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### Hardware specification

FX1S is available in four I/O ranges: 10, 14, 20 and 30 points.  
 As with FX0S the FX1S is non-expandable.

#### General

Item		Specification
Power supply	AC Models (FX1S-**M*-ES/UL)	100 ~ 240V AC (+10%, -15%) 50/60Hz
	DC Models (FX1S-**M*-DS*)	24V DC (upto 400mA)
Temperature	Operating	0 ~ 55 degrees C
	Storage	-20 ~ 70 degrees C
Humidity		35 ~ 85% RH (no condensation)

#### Inputs

Item	I/O range characteristics	
	X0 ~ X7	X10 and above
Input signal	24V DC (+/- 10%)	
Input current	7mA / 24V DC	5mA / 24V DC
On trigger current	4.5mA or greater	3.5mA or greater
Off trigger current	Less than 1.5mA	Less than 1.5mA
Input type	All inputs can be configured as sink or source	
Indication	LED turns ON when active	
Isolation	Opto-coupler	

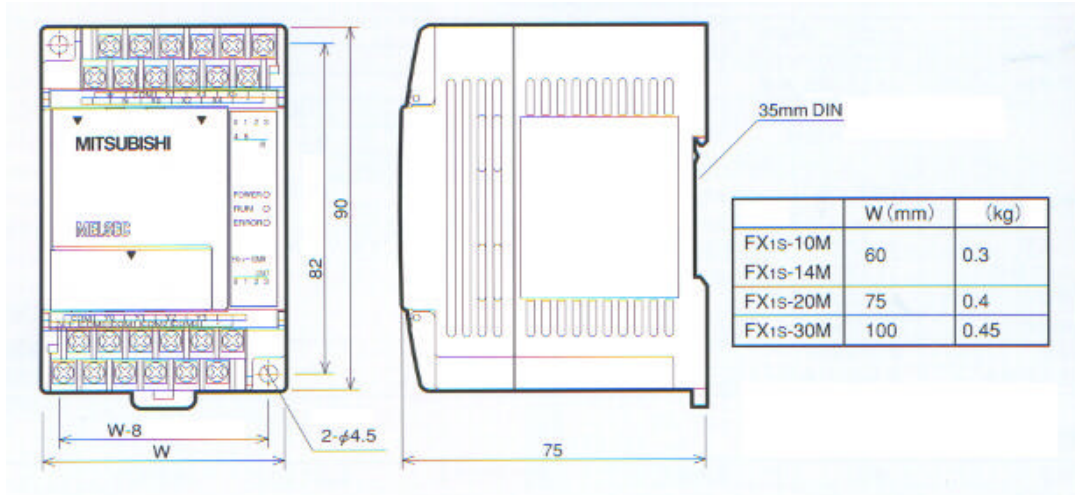
#### Outputs

Item	Relay	Transistor (source type)
Operating range	Upto 250V AC or 30V DC	5 ~ 30V DC
Switching current	2A per point or 8A per 4 points	0.5A per point or 0.8A per 4 points
Inductive load	80VA	12W / 24V DC
Lamp load	100W	1.5W / 24V DC
Leakage current	~	Less than 0.1mA
Response time	10mS	On/OFF time: less than 0.2mS Note Y0 an dY1 can operate with ON/OFF times up to 0.2μS
Indication	LED turns ON when active	
Isolation	Mechanical	Opto-coupler

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### Outline –



### Models available:

	Power supply	Inputs (transistor)	Outputs		Total I/O
			Relay	Transistor	
FX1S-10MR-DS	DC	6	4	~	10
FX1S-14MR-DS		8	6	~	14
FX1S-20MR-DS		12	8	~	20
FX1S-30MR-DS		16	~	~	30
FX1S-10MT-DSS		6	~	4	10
FX1S-14MT-DSS		8	~	6	14
FX1S-20MT-DSS		12	~	8	20
FX1S-30MT-DSS		16	~	14	30
FX1S-10MR-ES//UL		AC	6	4	~
FX1S-14MR-ES//UL	8		6	~	14
FX1S-20MR-ES//UL	12		8	~	20
FX1S-30MR-ES//UL	16		14	~	30

Please note: As FX1S will be phased in not all models shown here will be available at the time of 1<sup>st</sup> launch.

All specifications are subject to change without notice.