Ultra-Small/Ultra-Slim PLC

Panasonic Electric Works established a new world standard "SLIM" PLC. Starting from 10 I/O to 32 I/O, the CPU is only 25(w) x 90(h) x 70(d)mm. This is about 1/4 the size of the traditional bulky PLC style called "Brick". The FP0 saves precious panel space and money. Relay output types have removable screw terminal blocks. The power supply connector is also quick to disconnect. Easy installation... especially when duplicating many systems.

Key Features

- Web Server Available - The world's smallest PLC can be connected to the web!
- Floating Point Math(2)
- 2 Serial Ports(3)
- Calendar Timer Clock (4)
- Fast PWM Output(2)
- ULTRA Small - 1/4 the size of traditional brick PLCs
- 2 Axis Motion Control - Trapezoidal motion control
- PID with Auto Tuning (2)
- 4 High Speed Counters
- 1ms Resolution Timers
- Removable Terminals (1)
- Run-Time Editing

(1) Relay type only (2) Ver 2.0 or above (3) Optional port (4) 10K CPU type only

REAL temperature control

Up to 16 loops of PID and auto tuning are built into this "SLIM" PLC. The FP0 uses floating point math for its PID calculation which is more accurate than an integer PID. With the new thermocouple input units, the FP0 can easily and accurately control temperature while controlling I/O. The PID values can be easy calculated with the built-in auto tuning feature. Up to 16 Auto Tuning loops can run simultaneously. The I-PD algorithm is also available to offer smoother control for sensitive applications.

Expandable

The FP0 is still expandable up to 3 expansion unit right side of the CPU. It is also possible to mix and match with relay, transistor and analog. The FP0 can communicate via Ethernet, Internet, Modem as well as RS232C/485. Or FP0 can send E-mail out with FPWebServer. You can also monitor and edit the program via Modem, Ethernet, RS485 and RS232C. The FP0 is still world smallest PLC but it got powerful feature and industrially built.

Two axes motion control

The FP0 has simultaneous 2 axis trapezoidal motion control. Programming is very simple. All you have to do is to set the low speed, high speed, acceleration time, target position and you are ready to do motion control. You can control up to 9.5KHz total.

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FP0 Models

You may sort models by clicking the arrows in the appropriate column. If you are searching for a particular model but can't find it, give our model search utility a try. All downloads have moved to our separate downloads center.

Click one of the links below to view all related models. Models will appear below the links.

- **Control Units**
- **Digital Expansions**
- **Communication And Network Expansions**
- **Analog And Temperature Expansions**
- **Accessories**
- **Manuals And Software**

Currently viewing: FP0 Control Units

Model Name	Power	Pulse Outputs	Extra Com Ports	Dc Inputs	Npn Outputs	Pnp Outputs	Relay Outputs	Program Size (K)
Sort ▲ ▼	Sort ▲ ▼	Sort ▲ ▼	Sort ▲ ▼	Sort ▲ ▼	Sort ▲ ▼	Sort ▲ ▼	Sort ▲ ▼	Sort ▲ ▼
FP0-C10CRS-A	24VDC	0	RS232	6			4	2.7
FP0-C10RS-A	24VDC	0	NO	6			4	2.7
FP0-C14CRS-A	24VDC	0	RS232	8			6	2.7

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FP0-C14RS-A	24VDC	0	NO	8			6	2.7
FP0-C14RST27	12VDC	0	NO	8			6	2.7
FP0-C16CP-A	24VDC	2	RS232	8		8		2.7
FP0-C16CT-A	24VDC	2	RS232	8	8			2.7
FP0-C16P-A	24VDC	2	NO	8		8		2.7
FP0-C16T-A	24VDC	2	NO	8	8			2.7
FP0-C16TT03	12VDC	2	NO	8	8			2.7
FP0-C32CP-A	24VDC	2	RS232	16		16		5
FP0-C32CT-A	24VDC	2	RS232	16	16			5
FP0-C32P-A	24VDC	2	NO	16		16		5
FP0-C32T-A	24VDC	2	NO	16	16			5
FP0-SL1	24VDC	2	NO					5
FP0-T32CP-A	24VDC	2	RS232	16		16		10
FP0-T32CT-A	24VDC	2	RS232	16	16			10

FP0 – Super Compact PLC

Incredibly small, alone or even as multiple combined units

From I/O 10-points…

30.4mm

90mm
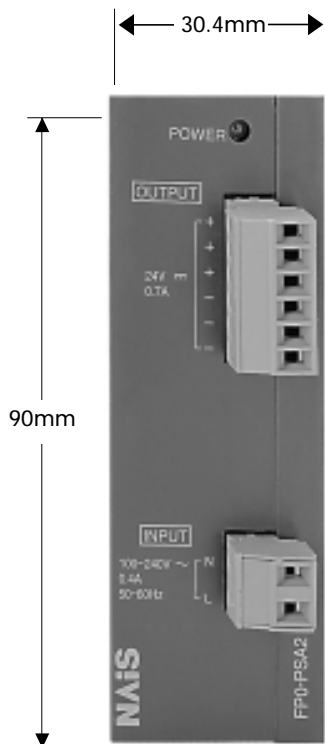
AC Power Supply:
• Supply voltage 85 to 265VAC
• Output 24VDC/ 0.7A for FP0 PLC (DC type)

NOTE:
A seperation between the power supply and the FP0 is needed to allow for heat dissipation.

25mm

90mm
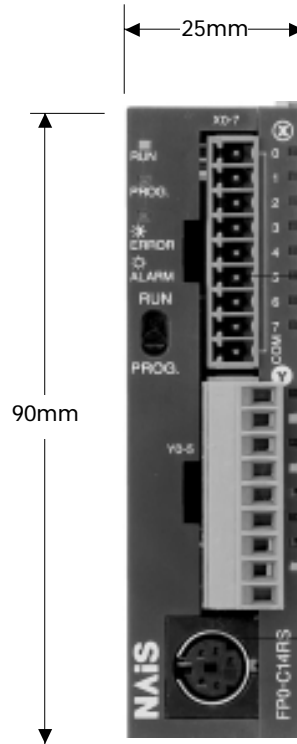
Actual size

Input/output terminal

The photo shows an I/O 14-point control unit. This size is uniform for all except the I/O 32-point control unit.
Supply voltage: 24VDC

TOOL-Port
Hooks up by using the programming software **NAiS** Control FPWIN Pro or FPWIN GR and a single cable.

COM-Port: 2nd RS232C Interface
(optional for all CPU units for serial communication)

Super Compact Size

A control unit a mere 25mm in width. Even expanded to I/O 128 points, the width is still only 105mm. The attachment area is the smallest in its class.

The control unit's dimensions are: W25* x H90 x D60mm. Also, the I/O unit can be expanded to a maximum of 128-points. Even so, the size is still only W105 x H90 x D60mm, a super compact design that breaks all previous common sense rules on small-scale PLCs. With the smallest-ever attachment area, the FP0 is perfect for installation in machines, facilities, and control boards where miniaturization is progressing even further.

*30mm width limited to I/O 32-points control unit.

Choose among 3 types of attachment

DIN rail

Slim attachment plate model

Flat attachment plate model (cannot be used with expansions)

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Specification tables

FP0 Specifications

Type of control unit		C10 series (Relay output type only)	C14 series (Relay output type only)	C16 series (Transistor output type only)	C32 series (Transistor output type only)	S-LINK type	T32 series (Transistor output type only)
Programming method / Control method		Relay symbol/Cyclic operation					
Number of I/O points	No expansion (control unit only)	Total: 10 (Input: 6, Output: 4)	Total: 14 (Input: 8, Output: 6)	Total: 16 (Input: 8, Output: 8)	Total: 32 (Input: 16, Output: 16)	Total: 128 (Input: 64, Output: 64)	Total: 32 (Input: 16, Output: 16)
	W/expansion 1 *Same type of control and expansion units	Max. 58	Max. 62	Max. 112	Max. 128	Expansion section: max.96 points	Max. 128
	W/expansion 2 *Mix type of relay and transistor units	Max. 106	Max. 110	Max. 112	Max. 128		Max. 128
Program memory		EEPROM (No back-up battery required)					
Program capacity		2.7K steps			5K steps		10K steps
Kinds of instruction	Basic	83					
	High-level	115					
Operation speed (cental value/step)		0.9μs (Basic instruction)					
Memory for execution	Relay — Internal relay (R)	1,008 points					
	Relay — Timer/Counter (T/C)	144 points					
	Memory area — Data register (DT)	1,660 words			6,144 words		16,384 words
	Memory area — Index register(IX,IY)	2 words					
Master control relay (MCR)		32 points					
Number of labels (JMP and LOOP)		64 labels					255 labels
Differential points		Unlimited number of points					
Number of step ladder		128 stages					704 stages
Number of subroutines		16 subroutines					100 subroutines
Special functions	High speed counter	1 phase/4 points (10kHz in total) or 2 phases / 2 points (2kHz in total)*				Not available	Available (same as 32 points series)
	Pulse output	Not available		2 points (10 kHz* in total),enable to control 2 channels individually*		Not available	
	PWM output	Not available		0.15Hz to 1kHz		Not available	Available (same as 32 points series)
	Pulse catch input/interrupt input	6 points(with high speed counter)				Not available	
	Interrupt program	7 programs (external 6 points, internal 1 point)				1 program (internal 1 point)	
	Periodical interrupt	0.5ms to 30s					
	Constant scan	Available					
	RS232C port	One RS232C port is mounted on each of the models FP0- C10CR, C14CR,C16CT, C16CP, C32CT, C32CP, T32CT, T32CP and SL1 type (3P terminal block) Transmission speed (Baud rate): 300 to 19200bits/s , 3m Communication method: half duplex Transmission distance: 3m					
Maintenance	Memory back up — Program and system register	Stored program and system register in EEPROM					
	Memory back up — Operation memory	Stored fixed area in EEPROM Counter: 4 points Internal relay: 32 points Data register: 8 words			Stored fixed area in EEPROM Counter: 16 points Internal relay: 128 points Date register: 32 words		Backup is provided by secondary battery. The holding range for the timers, counters, internal relays, and data registers are specified with the programming tool.
	Self-diagnosis functions	Watchdog timer, program syntax checking, etc.					
	Clock/calender function	Not available					Available
	Other functions	Runtime editing, password setting					

* For the limitations while operating units, see the manual.

General Specifications

Item		Description
Rated operating voltage		24VDC
Operating voltage range		21.6 to 26.4VDC
Allowable no voltage time	10 points, 14 points type	5ms (at 21.6 V), 10ms (at 24V)
	16 points, 32 points, S-LINK type	10ms (at 21.6V / 24V)
Ambient temperature		0°C to +55°C
Storage temperature		-20°C to +70°C
Ambient humidity		30 to 85% RH (Non-condensing)
Storage humidity		30 to 85% RH (Non-condensing)
Breakdown voltage		Between input/output terminals and power/ground terminals: 500VAC for 1 minute (for the relay output type, 1500VAC for 1 minute) Between input terminals and output terminals: 500VAC for 1 minute (for the relay output type, 1500VAC for 1 minute)
Insulation resistance		Between input/output terminals and power/ground terminals: Over 100 MΩ (using a 500VDC megger) Between input terminals and output terminals: Over 100MΩ (using a 500VDC megger)
Vibration resistance		10 to 55Hz, 1 sweep/min., double amplitude of 0.75mm, 10min. on 3 axes
Shock resistance		98m/s² or more, 4 times on 3 axes
Noise immunity		1,000V(p-p) with pulse widths 50ns and 1ms (using a noise simulator)
Operating condition		Free from corrosive gasses and excessive dust

FP0 Series

Specification tables

Interfaces

Item	Description
Programming TOOL-Port	RS232, mini DIN socket (5 pin), 9600 or 19200 BAUD, (8 data bits, odd parity, 1 stop bit), Computer link for programming and communication with MEWTOCOL.COM, user configurable modem connection
Communication COM-Port	RS232 (SD, RD, GND) 3 way screw terminal, 300 to 19200 BAUD, (7 or 8 data bits, none/even/odd parity, 1 or 2 stop bits, start code: none/STX, end code: CR/CR+LF/ETX/none, CCU mode for programming and communication with MEWTOCOL.COM, user configurable modem connection, GENERAL PURPOSE MODE controlled by program for general purpose RS232 communication.

Input specifications

Item		Description
Insulation method		Optical coupler
Rated input voltage		24VDC
Operating voltage range		21.6 to 26.4VDC
Rated input current		4.3mA or less (at 24VDC)
Input points per common		6 points/common (C10RS) 8 points/common (C14RS,C16T/C16P,E16T/E16P) 16 points/common (C32T/C32P,E32T/E32P)
ON voltage/ON current		19.2V or less/ 3mA or less
OFF voltage/OFF current		2.4V or more/ 1mA or more
Input impedance		Approx. 5.6kΩ
Response time	OFF➔ ON	50µs or less (at X0,X1)(*)
		100µs or less (at X2 to X5)
		2ms or less (at X6 to XF)
	ON➔ OFF	same as above
Operating indicator		LED display

Note: (*): Since the response time of X0 to X5 is very fast (for high-speed counter input), the FP0 happens to catch chattering noise as an input signal. To prevent this, it is recommended that timer instruction should be included in the program.

Output specifications

1) Relay output type

Item		Description
Output type		Normally open(1 Form A)
Rated control capacity		2A 250VAC, 2A 30VDC(4.5A/common)
Response time	OFF➔ ON	10ms or less
	ON➔ OFF	8ms or less
Life	Mechanical	20million operations or more
	Electrical	100k operations or more
Surge absorber		None
Operation indicator		LED display

The FP0 series conforms to the following standards under the EMC Directive and the Low Voltage Directive.

EMC Directive (89/336/EEC)
EN 50081-2: 1993
EN 50082-2: 1995

Low Voltage Directive (73/23/EEC)
VDE 0160: 1988 (EN 50178: 1995)
(Overvoltage Category II,
non-mains-circuit, pollution degree 2)
EN 61131-2: 1995

2) Transistor output type

Item		Description
Insulation method		Optical coupler
Output type		Open collector
Rated load voltage		24VDC 5 to 24VDC
Load voltage allowable range		4.75 to 26.4VDC
Max. load current		0.1A/points(at DC26.4V) (1A/common)(*1)
Max. inrush current		0.3A
Leakage current at OFF time		100µA or less
Max. voltage down at ON time		1.5V or less
External power supply (For internal circuit)	Voltage	21.6 to 26.4VDC
	Current	240mA or less
Response time	OFF➔ ON	1ms or less
	ON➔ OFF	1ms or less(*2)
Surge absorber		Zener diode
Operating indicator		LED display

Notes:
(*1): 8points/common(C16T/C16P,E16T/E16P), 16points/common(C32T/C32P, T32CP, E32T/E32P)
(*2): 50µs or less at Y0, Y1 only

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