FP0 - incredibly small

The FP0 control unit's dimensions are W25 x H90 x D60mm. With up to 3 expansion units the FP0 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 the trend in miniaturisation continues.

The FP0 offers outstanding performance and flexibility:

- Flexible configuration from 10 to 128 I/Os
- 0.9µs per step ultra fast CPU processing
- Large capacity with 2.7k, 5k and 10k memory size
- Programme memory uses EEPROM
- Analog modules featuring 8 input channels or 2 input and 1 output channels
- A second RS232 serial port for connection to intelligent devices or modems for telemetry applications
- Built-in functions for interrupt processing, high-speed counting and pulse output for axis control

- **FP0-E8YP,** output 8 points PNP
- **FP0-E8YT,** output 8 points NPN
- **FP0-E16YP,** output 16 points PNP
- **FP0-E16YT,** output 16 points NPN

Transistor output type

- **FP0-E16P,** input 8 points, output 8 points PNP
- **FP0-E16T,** input 8 points, output 8 points NPN
- **FP0-E32P,** input 16 points, output 16 points PNP
- **FP0-E32T,** input 16 points, output 16 points NPN

Analog units




Product		FP0-A21	FP0-A80	FP0-A04V	FP0-A04I
Input data	Channels	2	8		
	Voltage mode	0 to 5V / -10V to +10V	-100mV to +100mV 0V to 5V -10V to +10V		
	Current mode	0 to 20mA			
	Thermocouple mode	K, J, T, R types			
	Resolution	12-bit (1/4000)			
	Conversion speed for voltage / current for thermocouple	1ms / channel 560ms	2ms / channel --		
Output data	No. of outputs	1 channel		4	4
	Voltage mode	-10V to +10V		-10V to +10V	--
	Current mode	0 to 20mA		--	4 to 20mA
	Resolution	12-bit		12-bit	
	Conversion speed	500µs / ch.		500µs / ch.	
	• Multiple floating point calculation, accurate PID and auto-tuning can be performed with great efficiency. • An FPWIN Pro function block facilitates programming the FP0-A80 module. • An FPWIN Pro function block facilitates writing and reading channels 0 to 3 of the FP0-A04V and FP0-A04I modules.				

Analogue Signal Processing

FP0 Analogue Units

General specifications

Item	Description
Rated operating voltage	24VDC
Operating voltage range	21.6 to 26.4VDC
Rated current consumption	FP0-A80: 60mA or less, FP0-A21/A04V: 100mA or less, FP0-A04I: 130mA or less
Ambient temperature	0°C to +55°C
Storage temperature	-20°C to +70°C
Size	90 x 25 x 60mm
Weight	Approximately 100g

Analogue input specification

Item	Description		
Product	FP0-A21		FP0-A80
Number of channels	2 channels/unit		8 channels/unit
Input range selectable (2 CH)	Voltage mode	0 to 5V/-10V to +10V	-100 to +100mV/0 to 5V/-10V to +10V
	Current mode	0 to 20mA	0 to 20mA
	Thermocouple mode	K, J, T type thermocouple K up to 1000°C or -100°C to terminal temperature (selectable) J up to 750°C or -100°C to terminal temperature (selectable) T up to 350°C or -100°C to terminal temperature (selectable)	–
Digital output	0 to 5V/0 to 20mA: K 0 to K 4000 (H 0000 to H 0FA0) *1 -10 to +10V (-100 to +100mV): K -2000 to K +2000 (HF830 to H07D0)		
	Thermocouple: The value of broken wire detection is K 20000. For plus: K temperature of terminal *2 to K 1000 (Unit is Celsius) For minus: K-100 to K temperature of terminal *3 (Unit is Celsius)		–
Resolution	12 bits (1/4000)		
Conversion speed	Voltage/current mode: 1ms/channel Thermocouple mode: 560ms/channel		2ms/channel
Overall accuracy	Voltage/current mode: 1% for full-scale (0 to 55°C), 0.6% for full-scale (at 25°C)		
	Thermocouple mode: Offset error (0 to 55°C), 2% for full-scale (K-type) 2.7% for full-scale (J-type) 5.8% for full-scale (T-type) Linearity error (0 to 55%): 1% for full scale		–
Input impedance	Voltage mode: 1M ohm or more Current mode: 250ohm		
Maximum input	Voltage mode: +/- 15V Current mode: +30mA		
Insulation	Optical coupler insulation between analogue input terminal and FP0 internal circuit (No insulation between analogue inputs) DC/DC converter insulation between analogue input terminal and analogue I/O unit external power supply		
	DC/DC converter insulation between analogue input terminal and analogue output terminal		–
FP0 input address	32 input contact points: First 16 points analogue input CH0 data (WX2) *4 Last 16 points analogue input CH1 data (WX3) *4		32 input contact points: First 16 points analogue input CH0, 2,4,6 data (WX2) *4 Last 16 points analogue input CH1,3,5,7 data (WX3) *4

*1 K means decimal constants.
*2 Reference temperature → Reference points is start points.
*3 Reference temperature → Reference points is end points.
*4 The address varies depending on the position of the analogue unit. (WX2/3, WX4/5 or WX6/7)

Analogue output specification

Item		Description		
Product		FP0-A21	FP0-A04V	FP0-A04I
Number of channels		1	4	4
Output signal selectable	Voltage mode Current mode	-10V to +10V 0 to 20mA	-10V to +10V	4 to 20mA
Digital input *1		0 to 20mA: K 0 to K 4000 -10V to +10V: K -2000 to K+2000	K -2000 to K+2000	K 0 to K 4000
Resolution		12 bits (1/4000)		
Conversion speed		500ms	500μs	500μs
Overall accuracy		1% for full-scale (0 to 55°C), 0.6% for full-scale (at 25°C)		
Output impedance		Voltage mode: less than 0.50Ω		-
Maximum output current		Voltage mode: +/- 10mA		-
Allowable output load resistance		Less than 300Ω	1000Ω or more	Less than 500Ω
Insulation		Optical coupler insulation between analogue output terminal and FP0 internal circuit DC/DC converter insulation between analogue output terminal and analogue I/O unit external power supply DC/DC converter insulation between analogue output terminal and analogue input terminal		
Reserved CPU addresses *4		16 output points	32 output points	32 output points