

Makeover for FP0R Analog Units

Greatly Improved Performance, Extended Functions



NEW

Analog Input Unit
Input: 4 channels

AFP0RAD4



NEW

Analog Input Unit
Input: 8 channels

AFP0RAD8



NEW

Analog Output Unit
Output: 4 channels

AFP0RDA4



NEW

Analog I/O Unit
Input: 2 channels / Output: 1 channel

AFP0RA21



NEW

Analog I/O Unit
Input: 4 channels / Output: 2 channels

AFP0RA42

Higher resolution: 14 bits (previously 12 bits)

Higher resolution: 12 bits → 14 bits (analog input, output)
Higher precision: $\pm 0.6\%$ → $\pm 0.2\%$ (at 25 °C 77 °F)
Achieve high-resolution analog control in applications such as film winding, tension control, winding speed control, and other operations.



Enables move to multi-channel systems and optimization

Up to 8-channel input: Easier transition to multi-channel systems
And, with free combination of input/output, systems can be optimized.

Select among 5 input ranges and 6 output ranges

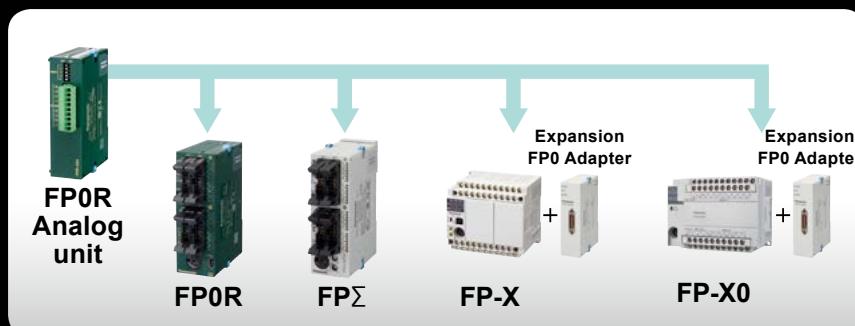
Five selectable input settings: $\pm 10\text{ V}$, $\pm 5\text{ V}$, 0 to $+10\text{ V}$, 0 to $+5\text{ V}$, 0 to 20 mA
Sixth output setting: $\pm 10\text{ V}$, $\pm 5\text{ V}$, 0 to $+10\text{ V}$, 0 to $+5\text{ V}$, 0 to 20 mA, 4 to 20 mA
With $\pm 10\text{ V}$ support it is even possible to control the rotation of motors.

Easy backward compatibility

Use compatibility mode to retain existing ladder programming.
You can use a DIP switch to enable compatibility mode, which allows operation at 12-bit resolution (using program resources).

Can also be used with other PLCs outside the FP0R series

Use in connection with FPΣ, FP-X, and FP-X0 series PLCs is possible.



FP0R series Control unit Features

- **Large capacity program/data memory**
Program capacity: 32 k steps max., Data register: 32 k words max.
- **USB tool port provided as standard equipment**
Capable of high-speed program transfer with USB 2.0
- **Battery-less automatic backup of all data**
The F type has a built-in FeRAM, industry's first, that allows the automatic saving of all data without a backup battery.
- **Ultra-high speed processing**
80 ns / step (ST instruction)
* Within a range of 0 to 3,000 program steps
- **Multi-axis control available without expansion units**
Built-in pulse outputs for four axes (50 kHz max. each)

SPECIFICATIONS

Product name		Analog input units		Analog I/O units (Only input section)	
Item	Part No.	AFP0RAD4	AFP0RAD8	AFP0RA21	AFP0RA42
Number of input / output channels		4 / 0	8 / 0	2 / 1	4 / 2
Input range (digital input range)	Voltage	-10 to +10 V 14 bits (-8,000 to +8,000) -5 to +5 V 14 bits (-8,000 to +8,000) 0 to +10 V 14 bits (0 to +16,000) 0 to +5 V 14 bits (0 to +16,000)			
	Current	0 to 20 mA 14 bits (0 to +16,000)			
Absolute maximum input	Voltage	±15 V			
	Current	±30 mA			
Input impedance	Voltage	1 MΩ approx.			
	Current	250 Ω approx.			
Max. resolution		14 bits (1/16,000)			
Overall accuracy	Voltage	±0.2 % F.S. or less (at +25°C +77°F) ±0.4 % F.S. or less (at 0 to +50°C +32 to +122°F)			
	Current	±0.3 % F.S. or less (at +25°C +77°F) ±0.6 % F.S. or less (at 0 to +50°C +32 to +122°F)			
Conversion speed		2 ms/all channels			
Other functions		Averaging processing (moving, number of times) Compatibility function for existing programs (12 bits)			
Insulation method	Between input terminals and internal circuit	Photocoupler and isolated DC/DC converter			
	Between channels	Not insulated			

Product name		Analog output unit		Analog I/O units (Only output section)	
Item	Part No.	AFP0RDA4	AFP0RA21	AFP0RA42	
Number of input / output channels		0 / 4	2 / 1	4 / 2	
Output range (analog output setting range)	Voltage	-10 to +10 V 14 bits (-8,000 to +8,000) -5 to +5 V 14 bits (-8,000 to +8,000) 0 to +10 V 14 bits (0 to +16,000) 0 to +5 V 14 bits (0 to +16,000)			
	Current	0 to 20mA 14 bits (0 to +16,000) 4 to 20mA 14 bits (0 to +16,000)			
Output impedance	Voltage	0.5 Ω or less			
Max. output current	Voltage	±10 mA			
Permissible output load resistance	Current	500 Ω or less			
Max. resolution		14 bits (1/16,000)			
Overall accuracy	Voltage	±0.2 % F.S. or less (at +25°C +77°F) ±0.4 % F.S. or less (at 0 to +50°C +32 to +122°F)			
	Current	±0.3 % F.S. or less (at +25°C +77°F) ±0.6 % F.S. or less (at 0 to +50°C +32 to +122°F)			
Conversion speed		500 μs/all channels			
Other functions		Compatibility function for existing programs (12 bits)			
Insulation method	Between the output terminals and internal circuit	Photocoupler and isolated DC/DC converter			
	Between channels	Not insulated			

PRODUCT TYPES

Product name	Number of channels	Part No.
FP0R Analog input unit	Input: 4 channels	AFP0RAD4
FP0R Analog input unit	Input: 8 channels	AFP0RAD8
FP0R Analog I/O unit	Input: 2 channels / Output: 1 channel	AFP0RA21
FP0R Analog I/O unit	Input: 4 channels / Output: 2 channels	AFP0RA42
FP0R Analog output unit	Output: 4 channels	AFP0RDA4

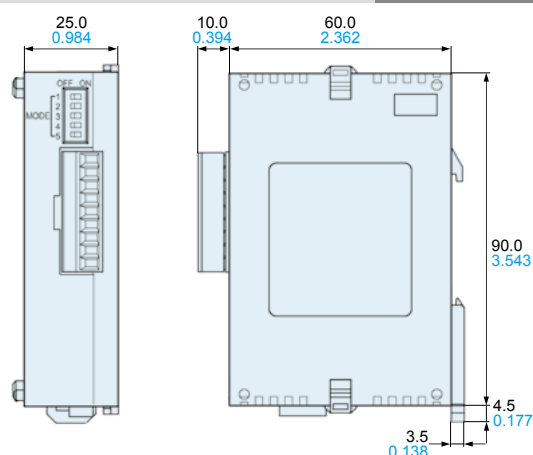
PREVIOUS MODEL SUBSTITUTION TABLE

Analog type		Previous model	New model
Input			AFP0RAD4
		AFP0401	AFP0RAD8
Output	Voltage	AFP04121	AFP0RDA4
	Current	AFP04123	
Input / Output		AFP0480	AFP0RA21
			AFP0RA42

DIMENSIONS (Unit: mm in)

The CAD data can be downloaded from our website.

AFP0RAD4 AFP0RA21 Analog unit



AFP0RAD8 AFP0RDA4 AFP0RA42 Analog unit

