Panasonic

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: ±0.6 % → ±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.

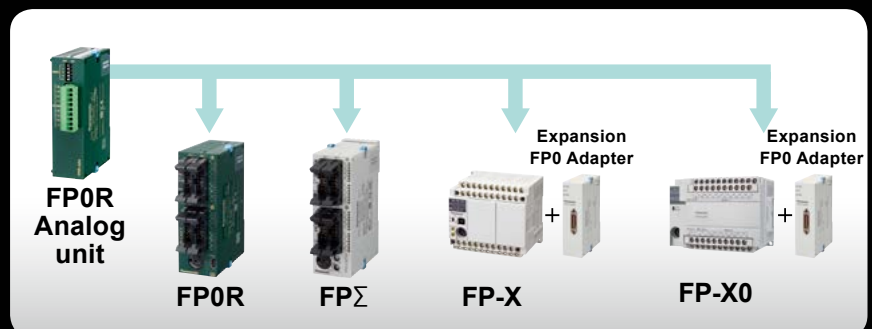## Select among 5 input ranges and 6 output ranges

Five selectable input settings: ±10 V, ±5 V, 0 to +10 V, 0 to +5 V, 0 to 20 mA
Sixth output setting: ±10 V, ±5 V, 0 to +10 V, 0 to +5 V, 0 to 20 mA, 4 to 20 mA
With ±10 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
Analog
unit

FP0R   FPΣ   FP-X   FP-X0

Expansion FP0 Adapter   Expansion FP0 Adapter

+   +

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

Item \ Part No.	Product name	Analog input units		Analog I/O units (Only input section)	
		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			

Item \ Part No.	Product name	Analog output unit	Analog I/O units (Only output section)	
		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

25.0 (0.984) 10.0 (0.394) 60.0 (2.362) 90.0 (3.543) 4.5 (0.177) 3.5 (0.138)

AFP0RAD8 AFP0RDA4 AFP0RA42 Analog unit

25.0 (0.984) 10.0 (0.394) 60.0 (2.362) 90.0 (3.543) 4.5 (0.177) 3.5 (0.138)

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