

FP0

ARCT1B164E

# Panasonic

ideas for life

Programmable Controllers

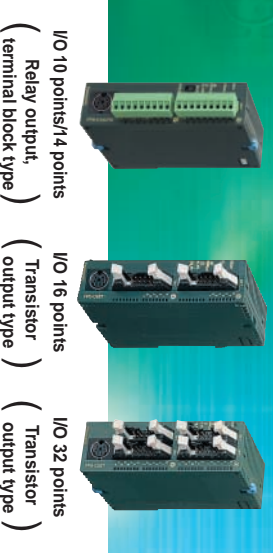
# FP0

ZERO

## Suitable for Installation Virtually Anywhere



Actual size:  
W30 × H90 × D60 (mm)  
W1.181 × H3.543 × D2.362 (inch)



I/O 10 points/14 points  
(Relay output,  
terminal block type)

I/O 16 points  
(Transistor  
output type)

I/O 32 points  
(Transistor  
output type)



These materials are printed on ECF pulp.  
These materials are printed with earth-friendly vegetable-based (soybean oil) ink.

## Matsushita Electric Works, Ltd.

Automation Controls Business Unit

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<http://www.nais-e.com/>

# Panasonic

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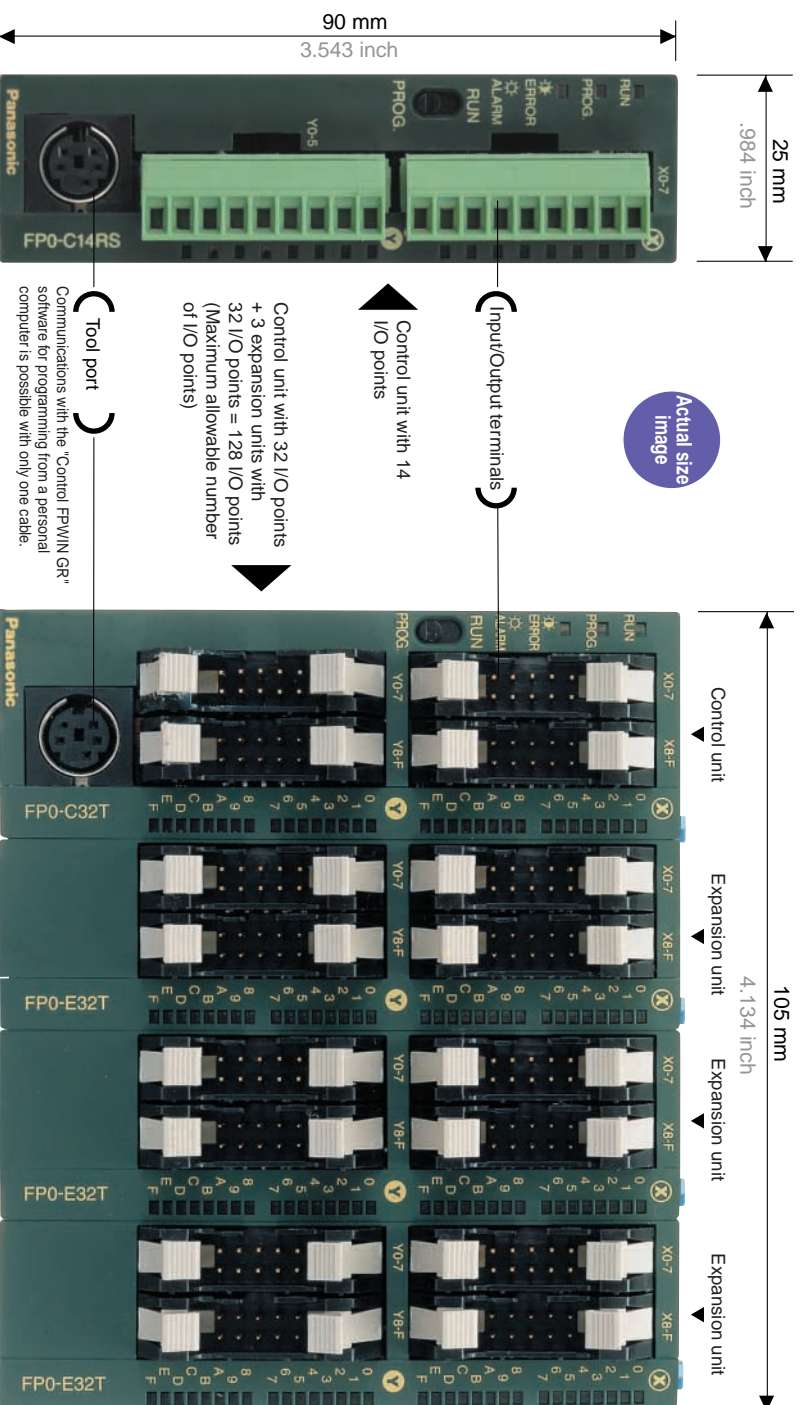
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Printed in Japan.

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Panasonic Electric Works

# Excellent space-saving design!



**From 10 I/O points**

**Up to 128 I/O points**

**The control unit width is only 25 mm .984 inch\*. Only 105 mm 4.134 inch even in combination with expansion units having a maximum of 128 I/O points**

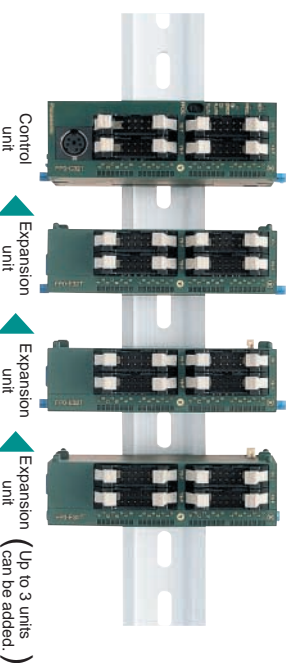
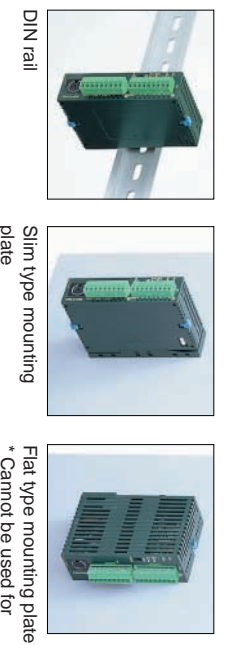
**Up to three expansion units can be directly connected without connection cables.**

\* The width of the control unit with 32 I/O points and the S-LINK control unit is 30 mm 1.181 inch. The control unit can fit in your pocket: W 25 × H 90 × D 60 mm W .984 × H 3.543 × D 2.362 inch

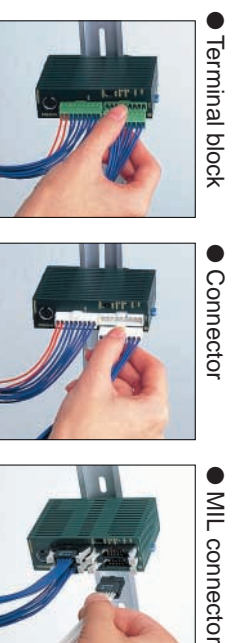
The number of I/O points can be expanded up to 128. Even with the maximum expansion, the size is only W 105 × H 90 × D 60 mm W 4.134 × H 3.543 × D 2.362 inch. The ultra-compact body size and installation area beyond comparison with the conventional compact PLCs facilitate the miniaturization of target machines, equipment, and control panels.

- Three selectable installation methods

The expansion units can be directly connected to the control unit with a simple operation using the expansion connector and lock lever on the unit side. Dedicated cables or motherboards are not necessary for expansion.



**A terminal block type and a connector type are available. Both can be detached for easy wiring.**



**Terminal block type** (European type, made by Phoenix Contact): Installation of electric wires having a cross section of 0.2 to 1.25 mm<sup>2</sup> is possible without crimp terminals.

**Connector type** (made by Molex): Ideal for installation during mass production. Installation of electric wires having a cross section of 0.2 to 0.75 mm<sup>2</sup> is available

**Wire-press sockets** are attached to the units with 16 or 32 I/O points. Installation of electric wires having a cross section of 0.2 to 0.3 mm<sup>2</sup> is possible without stripping the wire cover.

Available for: FP0-C10CRS, C14RS, C14CRS, E8RS, E8YRS, E16RS

Available for: FP0-C10CRM, C14RM, C14CRM, E8RM, E16RM

Available for: FP0-C16T, C16CT, C32T, C32CT, T32CT, E8X, E8YT, E16X, E16YT, E16TE32T

**EEPROM is used as the program memory. Program rewriting is possible even when running!**

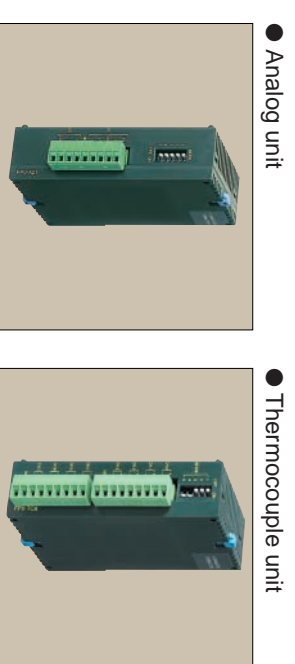
- **Rewriting in RUN mode**  
Programs can be rewritten for debugging or activation adjustments during the operation of FP0.
- **No backup battery required**  
EEPROM is used as the program memory. Programs and device data can be stored without backup batteries, ensuring safe use in mass-produced machines.
- **Password protection**  
Program rewriting can be password-protected. Program rewriters can be limited, enhancing maintenance reliability.

**High-speed operation of 0.9 μs per basic instruction meets the need for a quick response.**

- **High-speed operation**  
Each basic instruction can be operated in 0.9 μs. A 500-step program can be scanned in approx. 1 ms. The highest processing speed in this class of controller has been achieved.

- **Pulse catch function**  
Can read pulses as short as 50 μs. Ideal for sensor input.
- **Interrupt input function**  
Reliable processing is available without being affected by the scan time.

**Wide variety of intelligent units**



Analog I/O, A/D conversion, and D/A conversion units are available. Up to three units can be connected, allowing multi-channel analog control.

Available for: FP0-A21, FP0-A90, FP0-A04V, FP0-A04I

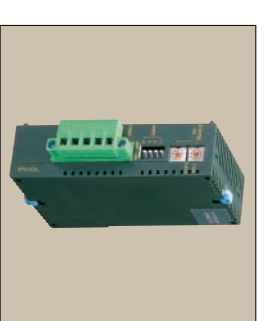
● CC-Link slave unit



Supports CC-Link, which is an open network. Reading/Writing of four-word data through a maximum of 16 input and 16 output points.

Available for: FP0-CCLS

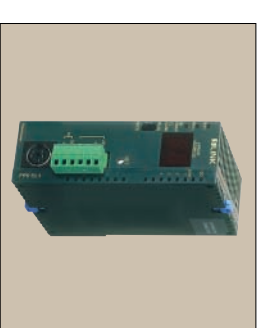
● I/O link unit



A link unit to enable FP0 to serve as a slave station of MEWNET-F (remote I/O system).

Available for: FP0-IOL

● S-LINK control unit



Can be directly connected to the S-LINK wire-saving system and control up to 64 input and 64 output points.

\* S-LINK is a trademark of SUNKY Limited.

Available for: FP0-SL1

● Power supply unit

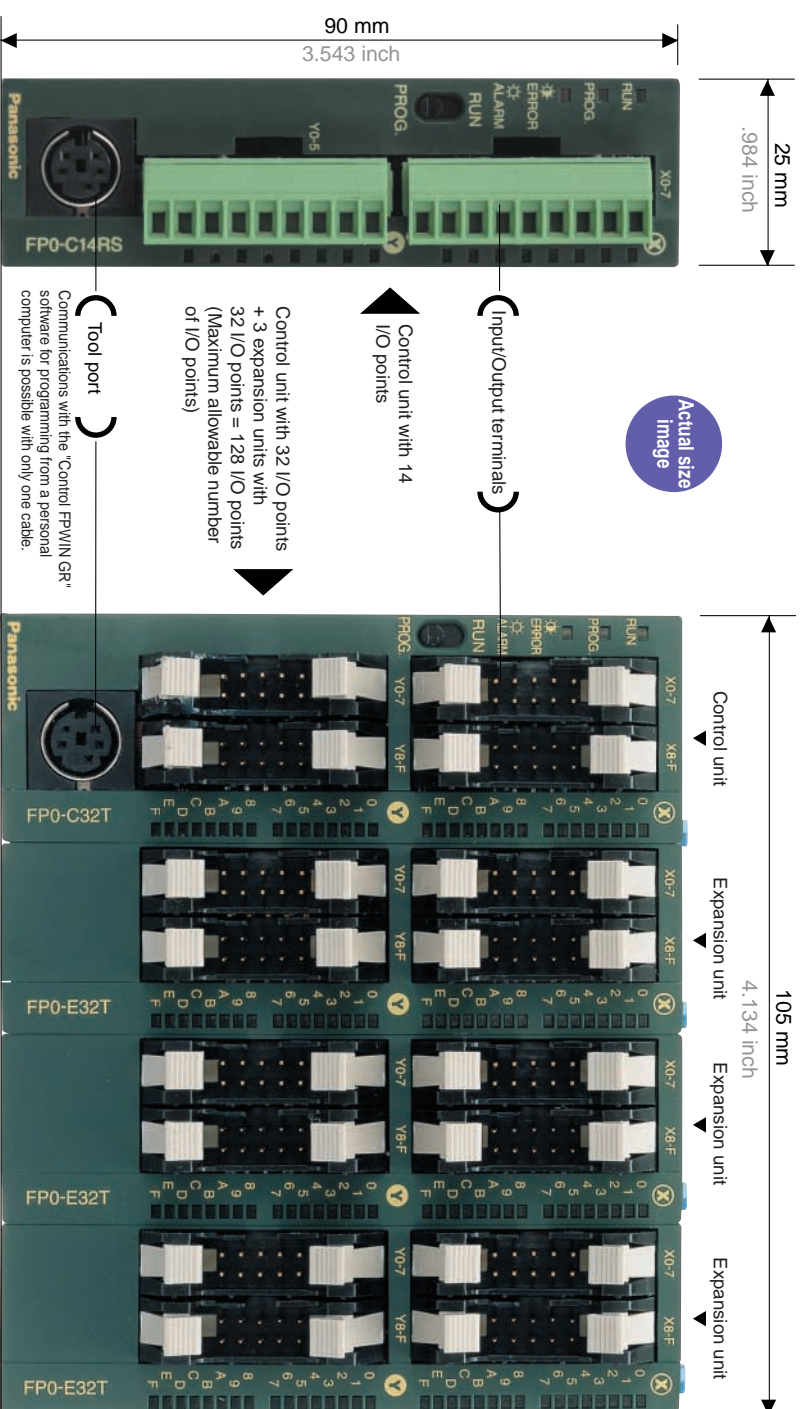


A power supply unit having the same height and depth as that of FP0. Input: 100 to 240 V AC universal. Output: 24 V AC up to 0.7 A

Available for: FP0-PSA4



# Excellent space-saving design!



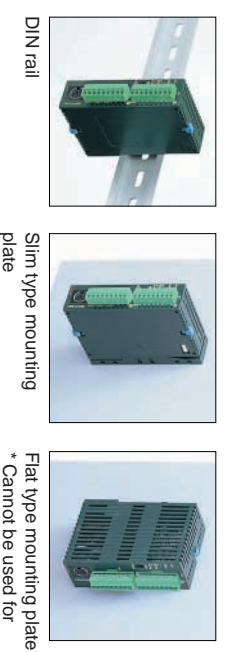
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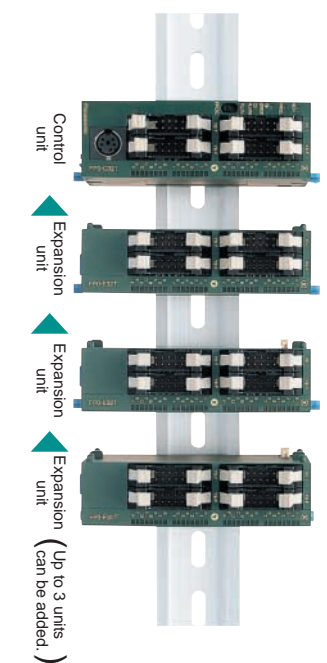
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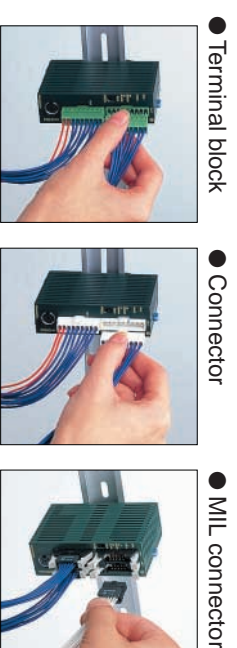
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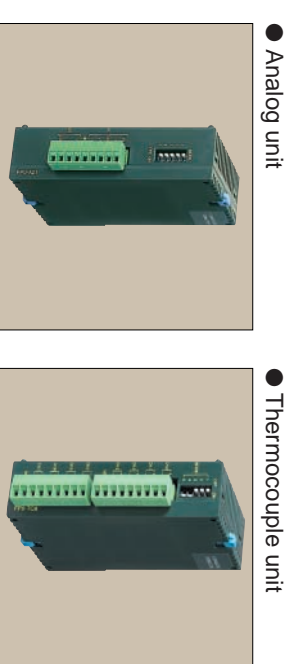
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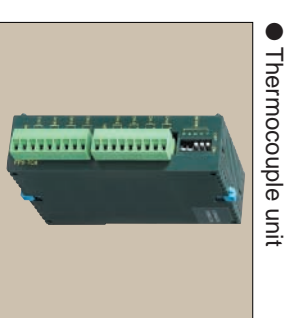
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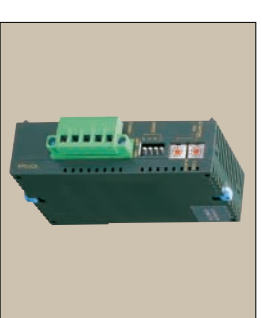
Total accuracy: ± 0.8 °C (K/J/T range). Two types are available: 4-ch/8-ch types. Up to three units can be connected, allowing high-accuracy multi-point temperature control of a maximum of 24 channels.

Available for: FP0-TC4, FP0-TC8



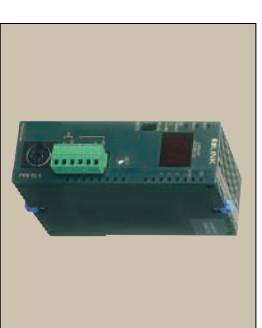
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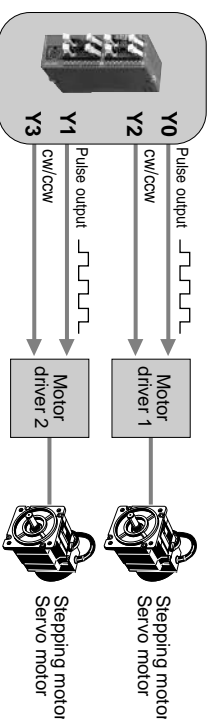
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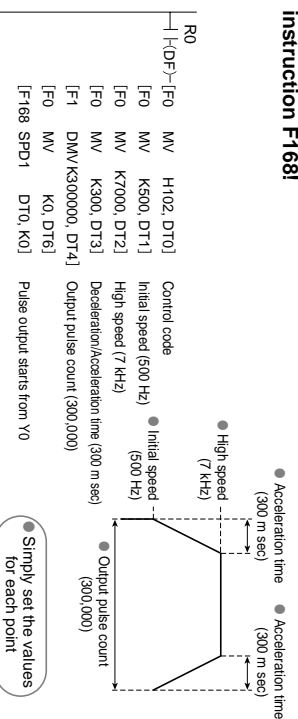
## Equipped with 2-axis independent positioning, high-speed counter and PWM output

### ● Pulse output function (For transistor output type only)

The FP0 comes equipped with 2 channels of pulse output up to 10 KHz (5 KHz during 2-channel output). Since these two channels can be separately controlled, the FP0 is also suitable for 2-axis independent positioning. Setting for automatic trapezoid control, automatic return to home position and JOG operation are very easy, by using special instructions.

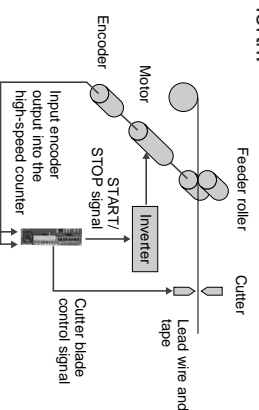


### Position control is a breeze with the auto trapezoid control Instruction F168!



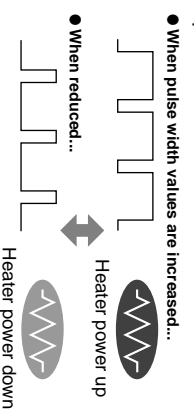
### ● High-speed counter function

The high-speed counter is prepared for 4 channels in single phase, and 2 channels in 2-phase. In single phase, the 4-channel total is 10 KHz, and in 2-phase the 2-channel total is 2 KHz total speed, making the unit suitable for inverter control, and so forth.



### ● PWM output function (For transistor output type only)

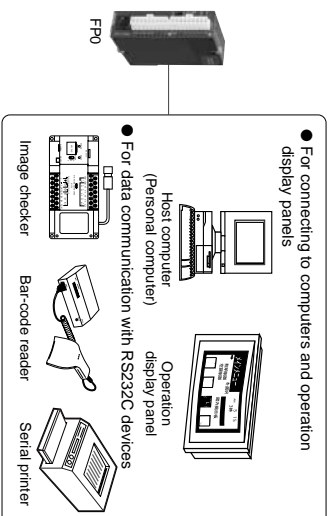
Its PWM output (Pulse Width Modulation output) function makes it possible to provide temperature control with a single compact FP0 unit.



## RS232C port enables serial communications. (Product No. C10CR, C14CR, C16CT, C32CT, T32CT, SL1)

The RS232C port allows the direct connection to computers and operation display panels. Also, bi-directional data communication with bar-code readers and other RS232C devices is made easy.

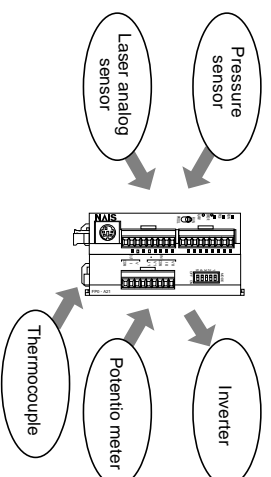
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\* RS232C port is equipped on the control units for both relay types and transistor output types.



## Wide variety of analog units available

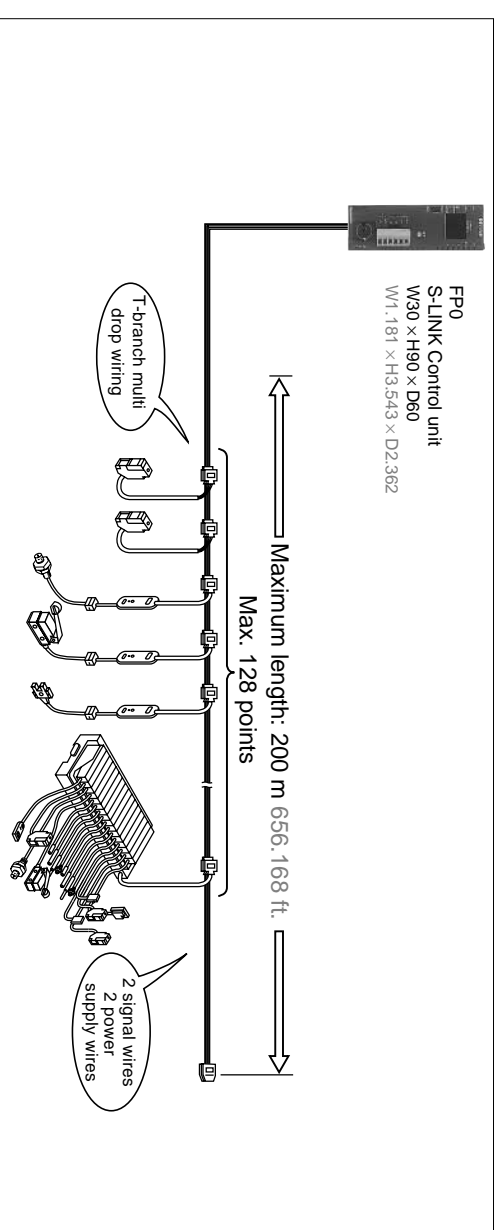
Even with compact body, the following analog units are available.

- FP0-A21 (AFP0480) : 2 input, 1 output
- FP0-A80 (AFP0401) : 8 input
- FP0-A04V (AFP04121) : Voltage 4 output
- FP0-A04I (AFP04123) : Current 4 output
- FP0-TC4 (AFP0420) : Thermocouple 4 input
- FP0-TC8 (AFP0421) : Thermocouple 8 input



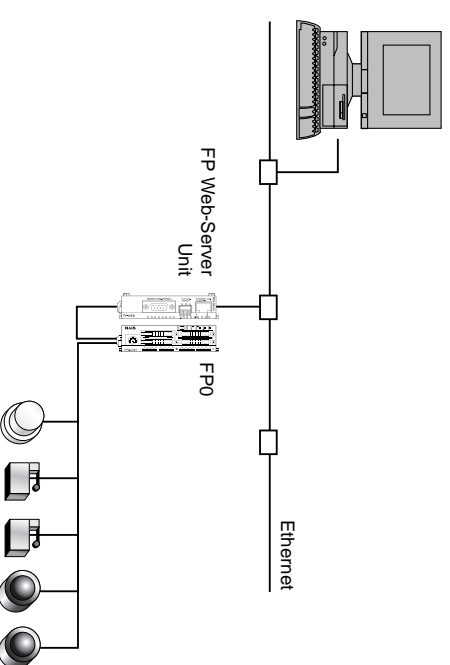
## Can be directly connected to the S-LINK wire-saving system (SUNX Ltd.).

The FP0 S-Link control unit makes sensor wiring and control panel simple by using easy T-shape connectability and 4-wire cable. It can control up to 128 input/output of S-Link I/O devices. Adding up to three FP0 Expansion units you can have flexible I/O configuration capability.



## Surveillance possible of FP0 operation status from a Web browser using FP Web-Server Unit

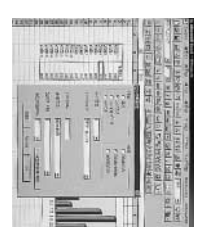
Connecting an FP0 to the FP Web-Server unit with an RS232C cable and then setting up using the dedicated software (FP Web Configurator Tool) makes surveillance possible of the FP0 running conditions from a PC Web browser.



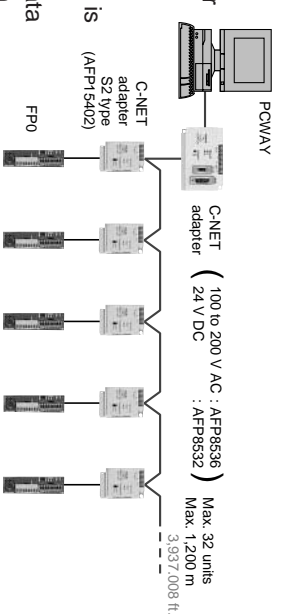
## By using C-NET, you can use multiple FP0s as data collection terminals.

By using the C-NET network and exclusive adapters, you can connect multiple FP0s by multi-drop connection with 2-wire cables. You can use computers for distributed control or have network terminals for a centralized management system.

### ● PCWAY



The Excel add-in software (PCWAYT) is available for data collection of the networked PLCs. PLC status and data registers value can be simply shown and managed on Excel worksheets, which also makes it possible to transmit Email when malfunctions occur or to make status inquiries.

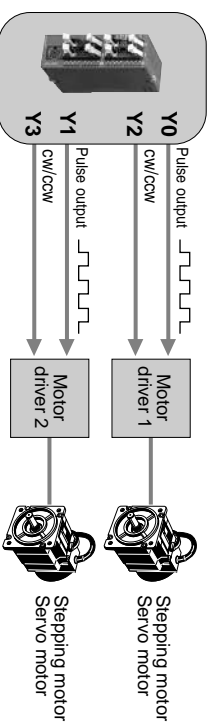




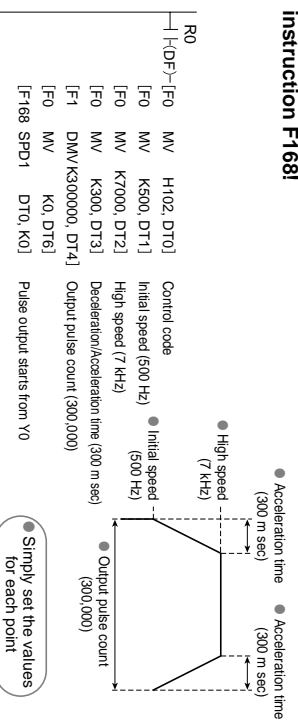
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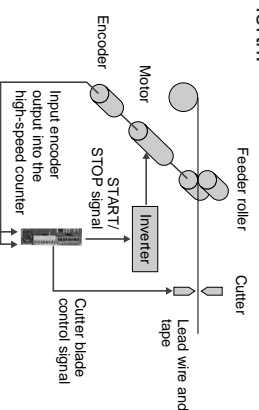


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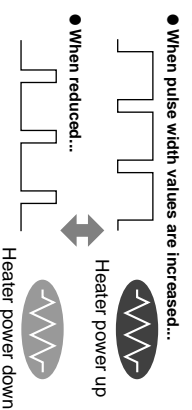
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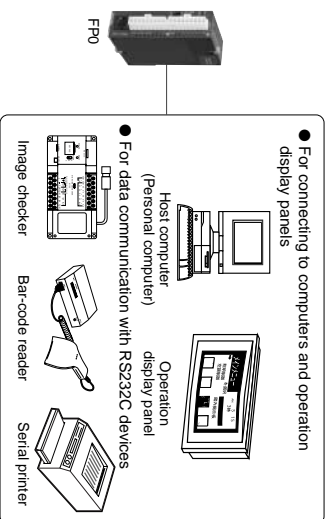
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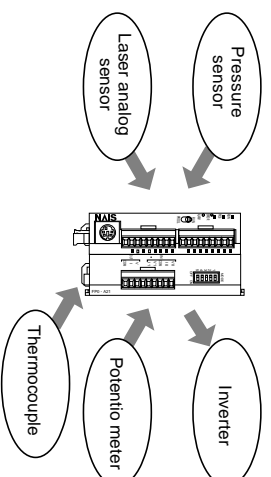
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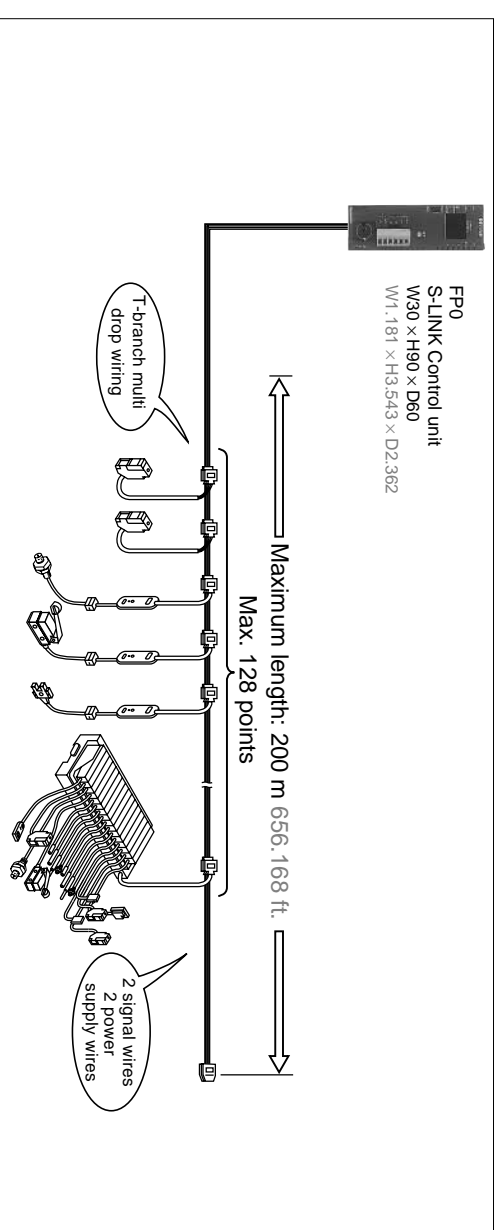
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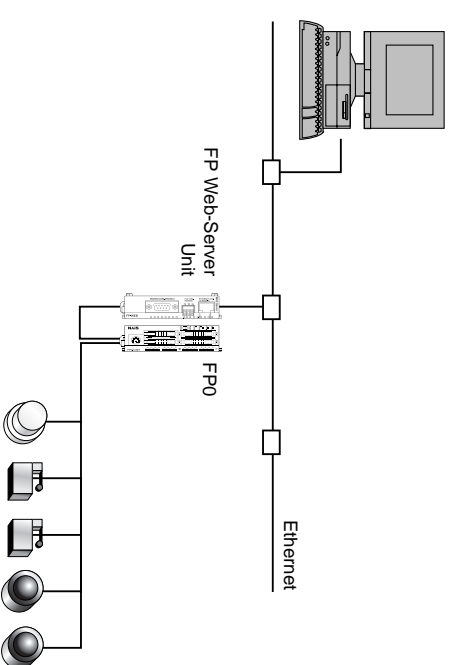
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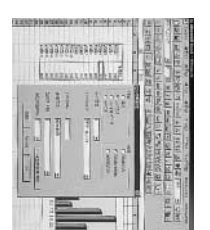
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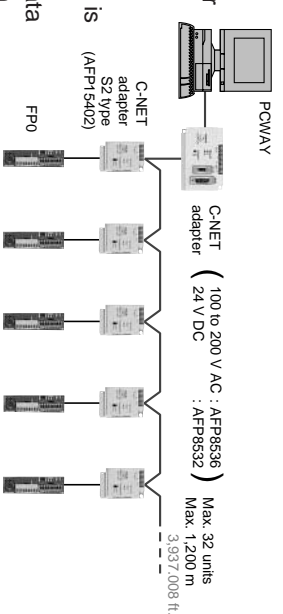
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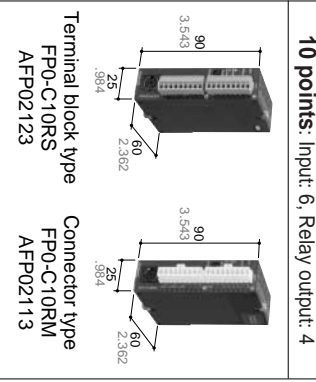
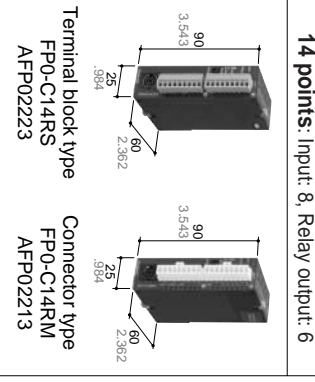
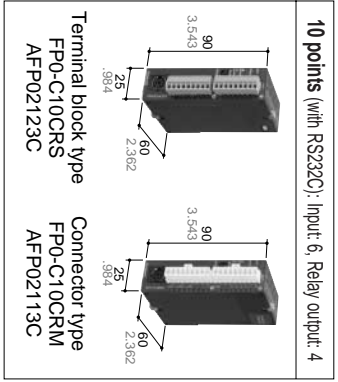
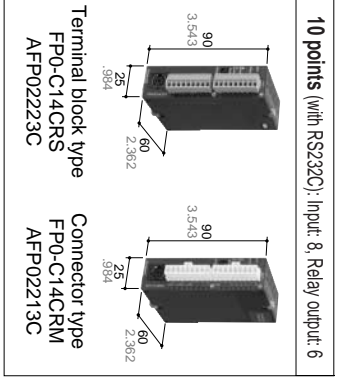
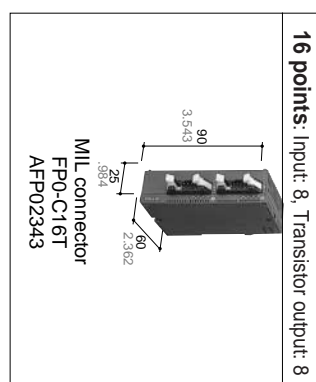
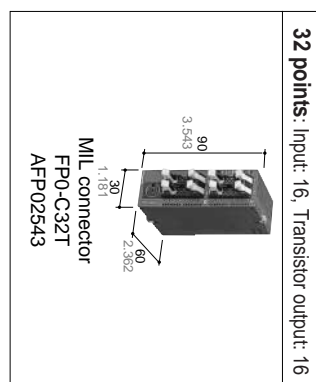
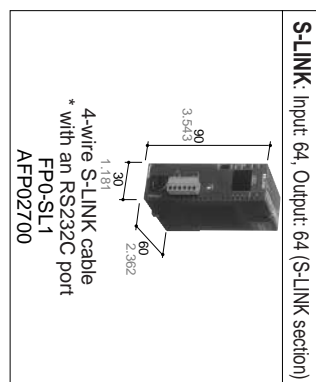
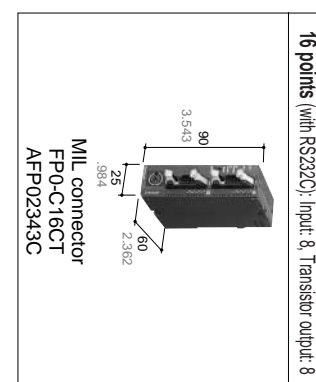
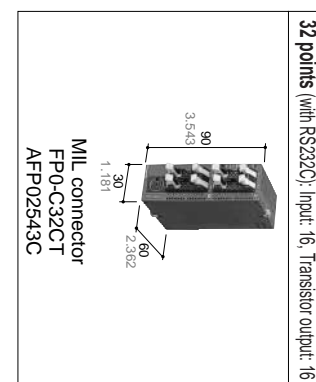
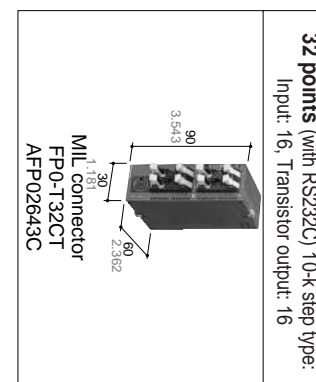
- **Control units**
- Units having 10 to 32 I/O points are available depending on the output type.
- A model having an RS232C port has been added to each type.
- A type that can be directly connected to the S-LINK wire-saving system (SUNX Ltd.) is also available.
- A 10-k step type with a calendar timer function and an RS232C port is also available.

- **Precautions for selection**

PNP transistor output type is also available.  
 Replace "4" in the second last digit of Product No. with "5" to order the PNP output type.  
 The price is the same.

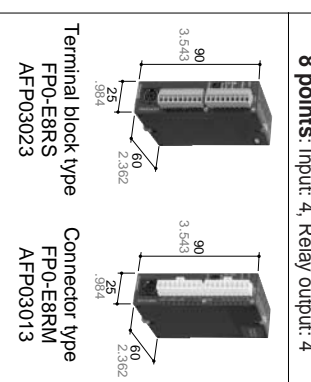
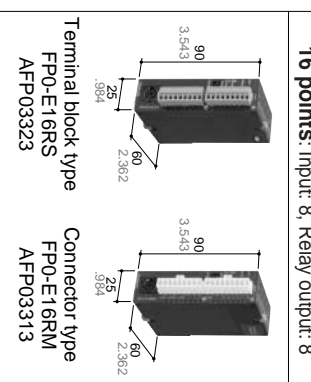
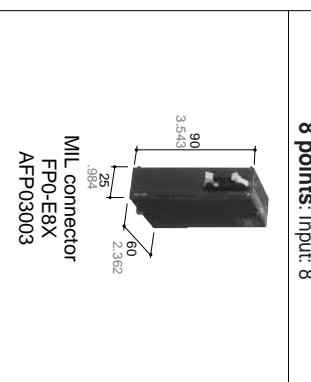
**E.g.: AFP02543 → AFP02553**

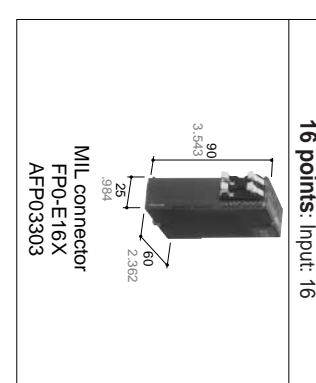
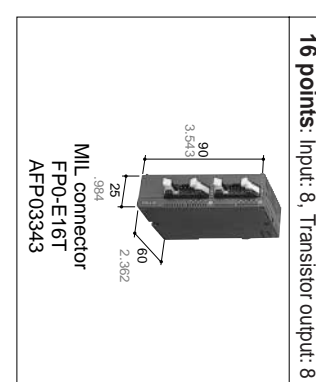
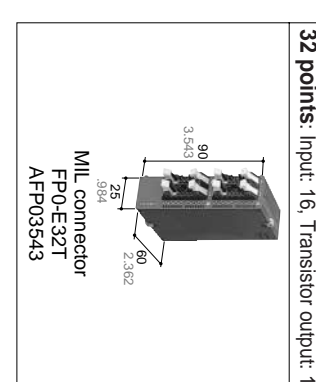
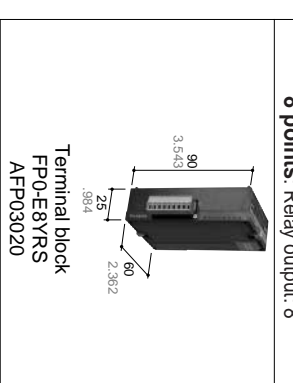
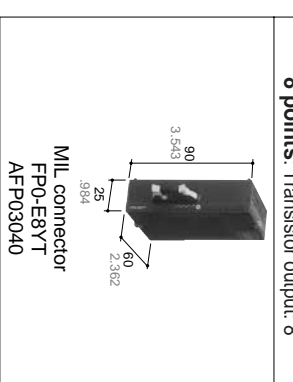
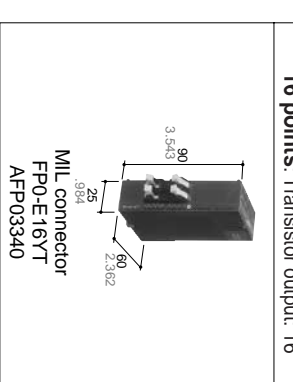
The last character of the product number for the NPN output type is "T", and that for the PNP output type is "P".  
 NPN output type: FP0-C16T  
 → PNP output type: FP0-C16P

<p><b>10 points:</b> Input: 6, Relay output: 4</p>  <p>Terminal block type FP0-C10RS AFP02123</p> <p>Connector type FP0-C10CRM AFP02113C</p>	<p><b>14 points:</b> Input: 8, Relay output: 6</p>  <p>Terminal block type FP0-C14RS AFP02223</p> <p>Connector type FP0-C14CRM AFP02213C</p>	
<p><b>10 points (with RS232C):</b> Input: 6, Relay output: 4</p>  <p>Terminal block type FP0-C10CRS AFP02123C</p> <p>Connector type FP0-C10CRM AFP02113C</p>	<p><b>10 points (with RS232C):</b> Input: 8, Relay output: 6</p>  <p>Terminal block type FP0-C14CRS AFP02223C</p> <p>Connector type FP0-C14CRM AFP02213C</p>	
<p><b>16 points:</b> Input: 8, Transistor output: 8</p>  <p>MIL connector FP0-C16T AFP02343</p>	<p><b>32 points:</b> Input: 16, Transistor output: 16</p>  <p>MIL connector FP0-C32T AFP02543</p>	<p><b>S-LINK:</b> Input: 64, Output: 64 (S-LINK section)</p>  <p>4-wire S-LINK cable * with an RS232C port FP0-SL1 AFP02700</p>
<p><b>16 points (with RS232C):</b> Input: 8, Transistor output: 8</p>  <p>MIL connector FP0-C16CT AFP02343C</p>	<p><b>32 points (with RS232C):</b> Input: 16, Transistor output: 16</p>  <p>MIL connector FP0-C32CT AFP02543C</p>	<p><b>32 points (with RS232C):</b> 10-k step type: Input: 16, Transistor output: 16</p>  <p>MIL connector FP0-T32CT AFP02643C</p>

- **Expansion units**

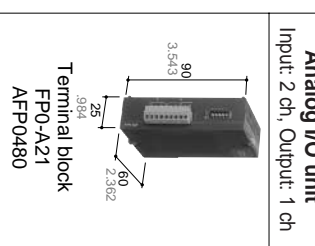
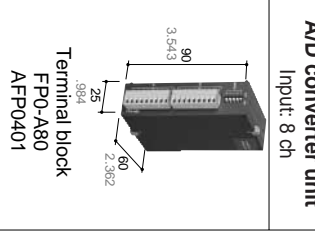
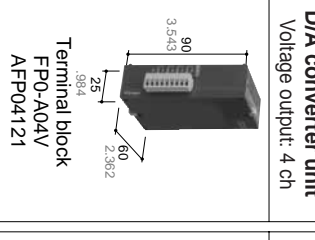
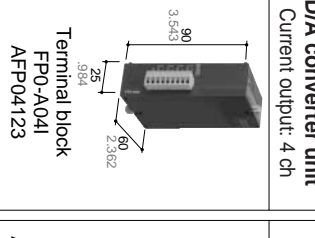
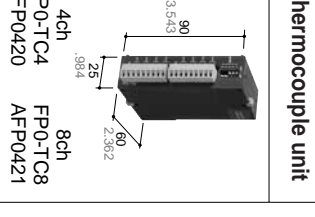
● The input-only and output-only types added to the lineup enhance the flexibility of I/O expansion.

<p><b>8 points:</b> Input: 4, Relay output: 4</p>  <p>Terminal block type FP0-E8RS AFP03023</p> <p>Connector type FP0-E8RM AFP03013</p>	<p><b>16 points:</b> Input: 8, Relay output: 8</p>  <p>Terminal block type FP0-E16RS AFP03323</p> <p>Connector type FP0-E16RM AFP03313</p>	<p><b>8 points:</b> Input: 8</p>  <p>MIL connector FP0-E8X AFP03003</p>
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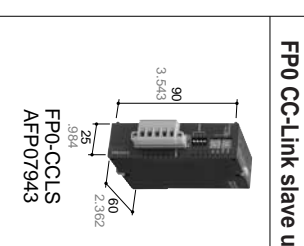
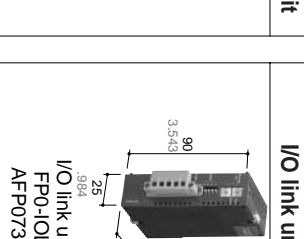
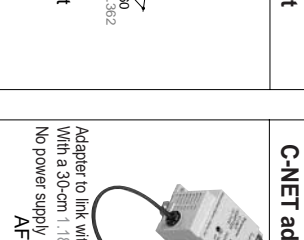
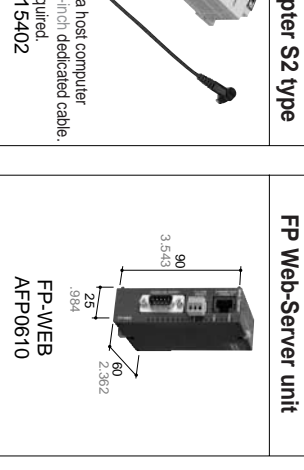
<p><b>16 points:</b> Input: 16</p>  <p>MIL connector FP0-E16X AFP03303</p>	<p><b>16 points:</b> Input: 8, Transistor output: 8</p>  <p>MIL connector FP0-E16T AFP03343</p>	<p><b>32 points:</b> Input: 16, Transistor output: 16</p>  <p>MIL connector FP0-E16YT AFP03340</p>
<p><b>8 points:</b> Relay output: 8</p>  <p>Terminal block FP0-E8YRS AFP03020</p>	<p><b>8 points:</b> Transistor output: 8</p>  <p>MIL connector FP0-E8YT AFP03040</p>	<p><b>16 points:</b> Transistor output: 16</p>  <p>MIL connector FP0-E16YT AFP03340</p>

- **Intelligent units**

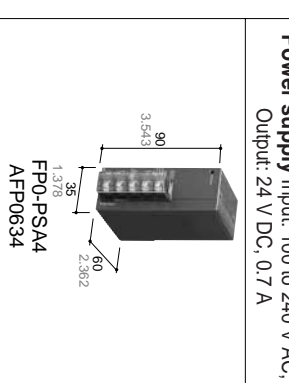
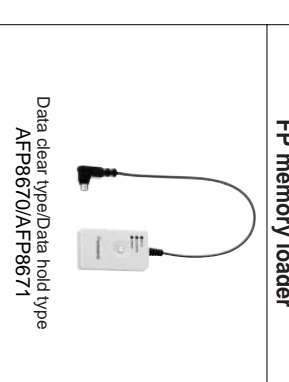
● Addition of the analog I/O unit to the lineup enabled analog control by FP0.

<p><b>Analog I/O unit</b> Input: 2 ch, Output: 1 ch</p>  <p>Terminal block FP0-A21 AFP0480</p>	<p><b>A/D converter unit</b> Input: 8 ch</p>  <p>Terminal block FP0-A80 AFP0401</p>	<p><b>D/A converter unit</b> Voltage output: 4 ch</p>  <p>Terminal block FP0-A04V AFP04121</p>	<p><b>D/A converter unit</b> Current output: 4 ch</p>  <p>Terminal block FP0-A04I AFP04123</p>	<p><b>Thermocouple unit</b></p>  <p>4ch FP0-TC4 AFP0420</p> <p>8ch FP0-TC8 AFP0421</p>
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- **Link/communication units**

<p><b>FP0 CC-Link slave unit</b></p>  <p>FP0-CCLS AFP07943</p>	<p><b>I/O link unit</b></p>  <p>I/O link unit FP0-IOL AFP0732</p>	<p><b>C-NET adapter S2 type</b></p>  <p>Adapter to link with a host computer. With a 30-cm 1.181-inch dedicated cable. No power supply required. AFP15402</p>	<p><b>FP Web-Server unit</b></p>  <p>FP-WEB AFP0610</p>
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- **Power supply unit and others**

<p><b>Power supply unit and others</b></p> <p>Power supply Input: 100 to 240 V AC, Output: 24 V DC, 0.7 A</p>  <p>FP0-PSA4 AFP0634</p>	<p><b>FP memory loader</b></p>  <p>Data clear type/Data hold type AFP8670/AFP8671</p>
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- **Control units**
- Units having 10 to 32 I/O points are available depending on the output type.
- A model having an RS232C port has been added to each type.
- A type that can be directly connected to the S-LINK wire-saving system (SUNX Ltd.) is also available.
- A 10-k step type with a calendar timer function and an RS232C port is also available.

**10 points:** Input: 6, Relay output: 4

Terminal block type  
FP0-C10RS  
AFP02123

Connector type  
FP0-C10RM  
AFP02113

**14 points:** Input: 8, Relay output: 6

Terminal block type  
FP0-C14RS  
AFP02223

Connector type  
FP0-C14RM  
AFP02213

**10 points (with RS232C):** Input: 6, Relay output: 4

Terminal block type  
FP0-C10CRS  
AFP02123C

Connector type  
FP0-C10CRM  
AFP02113C

**10 points (with RS232C):** Input: 8, Relay output: 6

Terminal block type  
FP0-C14CRS  
AFP02223C

Connector type  
FP0-C14CRM  
AFP02213C

- **Precautions for selection**
- PNP transistor output type is also available.
- Replace "4" in the second last digit of Product No. with "5" to order the PNP output type.
- The price is the same.

**E.g.: AFP02543 → AFP02553**

The last character of the product number for the NPN output type is "T", and that for the PNP output type is "P".  
NPN output type: FP0-C16T  
→ PNP output type: FP0-C16P

**16 points:** Input: 8, Transistor output: 8

MIL connector  
FP0-C16T  
AFP02343

**S-LINK:** Input: 64, Output: 64 (S-LINK section)

4-wire S-LINK cable  
\* with an RS232C port  
FP0-SL1  
AFP02700

**32 points:** Input: 16, Transistor output: 16

MIL connector  
FP0-C32T  
AFP02543

**32 points (with RS232C):** 10-k step type:  
Input: 16, Transistor output: 16

MIL connector  
FP0-T32CT  
AFP02643C

**16 points:** Input: 4, Relay output: 4

Terminal block type  
FP0-E8RS  
AFP03023

Connector type  
FP0-E8RM  
AFP03013

**8 points:** Input: 8

MIL connector  
FP0-E8X  
AFP03003

- **Expansion units**
- The input-only and output-only types added to the lineup enhance the flexibility of I/O expansion.

**16 points:** Input: 8, Relay output: 8

Terminal block type  
FP0-E16RS  
AFP03323

Connector type  
FP0-E16RM  
AFP03313

**8 points:** Input: 8

MIL connector  
FP0-E8X  
AFP03003

**16 points:** Input: 16

MIL connector  
FP0-E16X  
AFP03303

**16 points:** Input: 8, Transistor output: 8

MIL connector  
FP0-E16T  
AFP03343

**32 points:** Input: 16, Transistor output: 16

MIL connector  
FP0-E32T  
AFP03543

**8 points:** Relay output: 8

Terminal block  
FP0-E8YRS  
AFP03020

**8 points:** Transistor output: 8

MIL connector  
FP0-E8YT  
AFP03040

**16 points:** Transistor output: 16

MIL connector  
FP0-E16YT  
AFP03340

## Intelligent units

- Addition of the analog I/O unit to the lineup enabled analog control by FP0.

**Analog I/O unit**  
Input: 2 ch, Output: 1 ch

Terminal block  
FP0-A21  
AFP0480

**A/D converter unit**  
Input: 8 ch

Terminal block  
FP0-A80  
AFP0401

**D/A converter unit**  
Voltage output: 4 ch

Terminal block  
FP0-A04V  
AFP04121

**D/A converter unit**  
Current output: 4 ch

Terminal block  
FP0-A04I  
AFP04123

**Thermocouple unit**

4ch FP0-TC4  
AFP0420

8ch FP0-TC8  
AFP0421

## Link/communication units

**FP0 CC-Link slave unit**

FP0-CCLS  
AFP07943

**I/O link unit**

I/O link unit  
FP0-IOL  
AFP0732

**C-NET adapter S2 type**

Adapter to link with a host computer.  
With a 30-cm 1.181-inch dedicated cable.  
No power supply required.  
AFP15402

**FP Web-Server unit**

FP-WEB  
AFP0610

## Power supply unit and others

**Power supply unit and others**  
Power supply Input: 100 to 240 V AC,  
Output: 24 V DC, 0.7 A

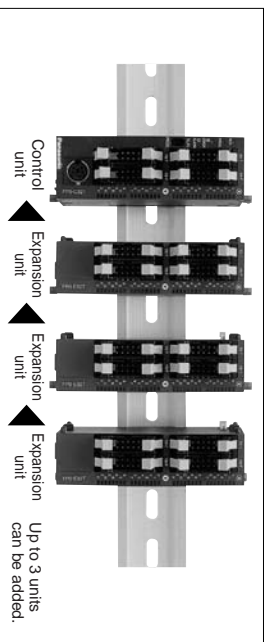
FP0-PSA4  
AFP0634

**FP memory loader**

Data clear type/Data hold type  
AFP8670/AFP8671

### Unit combination limitations

- Up to three expansion or intelligent units can be added to one control unit.
- There is no limitation on the type or the order of units to be added.
- A mixed combination of the relay output type and the transistor output type is also possible.



### Relay output type combinations

$$\left( \begin{array}{c} \text{Total number of} \\ \text{I/O points} \end{array} \right) = \left( \begin{array}{c} \text{Control unit} \\ \text{X20 - /Y20 -} \end{array} \right) + \left( \begin{array}{c} \text{Expansion unit 1)} \\ \text{X40 - /Y40 -} \end{array} \right) + \left( \begin{array}{c} \text{Expansion unit 2)} \\ \text{X60 - /Y60 -} \end{array} \right) + \left( \begin{array}{c} \text{Expansion unit 3)} \\ \text{X60 - /Y60 -} \end{array} \right)$$

Input 6	Output 4	10	Input 6	Output 4	10	Input 6	Output 4	10	Input 6	Output 4	10
Input 8	Output 6	14	Input 8	Output 6	14	Input 8	Output 6	14	Input 8	Output 6	14
Input 10	Output 8	18	Input 10	Output 8	18	Input 10	Output 8	18	Input 10	Output 8	18
Input 12	Output 10	22	Input 12	Output 10	22	Input 12	Output 10	22	Input 12	Output 10	22
Input 14	Output 12	26	Input 14	Output 12	26	Input 14	Output 12	26	Input 14	Output 12	26
Input 16	Output 14	30	Input 16	Output 14	30	Input 16	Output 14	30	Input 16	Output 14	30
Input 18	Output 16	34	Input 18	Output 16	34	Input 18	Output 16	34	Input 18	Output 16	34
Input 20	Output 18	38	Input 20	Output 18	38	Input 20	Output 18	38	Input 20	Output 18	38
Input 22	Output 20	42	Input 22	Output 20	42	Input 22	Output 20	42	Input 22	Output 20	42
Input 24	Output 22	46	Input 24	Output 22	46	Input 24	Output 22	46	Input 24	Output 22	46
Input 26	Output 24	50	Input 26	Output 24	50	Input 26	Output 24	50	Input 26	Output 24	50
Input 28	Output 26	54	Input 28	Output 26	54	Input 28	Output 26	54	Input 28	Output 26	54
Input 30	Output 28	58	Input 30	Output 28	58	Input 30	Output 28	58	Input 30	Output 28	58
Input 32	Output 30	62	Input 32	Output 30	62	Input 32	Output 30	62	Input 32	Output 30	62

### Expansion method

- Additional cables are not necessary for expansion because the units can be directly connected to one another using the expansion connector and lock lever on the unit side.

### Transistor output type combinations

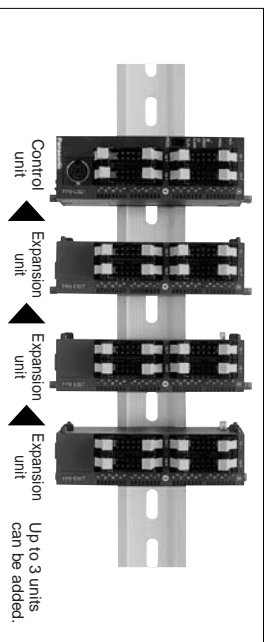
$$\left( \begin{array}{c} \text{Total number of} \\ \text{I/O points} \end{array} \right) = \left( \begin{array}{c} \text{Control unit} \\ \text{X20 - /Y20 -} \end{array} \right) + \left( \begin{array}{c} \text{Expansion unit 1)} \\ \text{X40 - /Y40 -} \end{array} \right) + \left( \begin{array}{c} \text{Expansion unit 2)} \\ \text{X60 - /Y60 -} \end{array} \right) + \left( \begin{array}{c} \text{Expansion unit 3)} \\ \text{X60 - /Y60 -} \end{array} \right)$$

Input 8	Output 8	16	Input 8	Output 8	16	Input 8	Output 8	16	Input 8	Output 8	16
Input 16	Output 16	32	Input 16	Output 16	32	Input 16	Output 16	32	Input 16	Output 16	32
Input 24	Output 24	48	Input 24	Output 24	48	Input 24	Output 24	48	Input 24	Output 24	48
Input 32	Output 32	64	Input 32	Output 32	64	Input 32	Output 32	64	Input 32	Output 32	64
Input 40	Output 40	80	Input 40	Output 40	80	Input 40	Output 40	80	Input 40	Output 40	80
Input 48	Output 48	96	Input 48	Output 48	96	Input 48	Output 48	96	Input 48	Output 48	96
Input 56	Output 56	112	Input 56	Output 56	112	Input 56	Output 56	112	Input 56	Output 56	112
Input 64	Output 64	128	Input 64	Output 64	128	Input 64	Output 64	128	Input 64	Output 64	128



### ■ Unit combination limitations

- Up to three expansion or intelligent units can be added to one control unit.
- There is no limitation on the type or the order of units to be added.
- A mixed combination of the relay output type and the transistor output type is also possible.



### ● Relay output type combinations

$$\left( \begin{array}{c} \text{Total number of} \\ \text{I/O points} \end{array} \right) = \left( \begin{array}{c} \text{Control unit} \\ \text{I/O points} \end{array} \right) + \left( \begin{array}{c} \text{Expansion unit 1)} \\ \text{I/O points} \end{array} \right) + \left( \begin{array}{c} \text{Expansion unit 2)} \\ \text{I/O points} \end{array} \right) + \left( \begin{array}{c} \text{Expansion unit 3)} \\ \text{I/O points} \end{array} \right)$$

X20 - /Y20 -      X40 - /Y40 -      X80 - /Y80 -

Input 6	Output 4	10	Input 6	Output 4	10	Input 6	Output 4	10	Input 6	Output 4	10
Input 8	Output 6	14	Input 8	Output 6	14	Input 8	Output 6	14	Input 8	Output 6	14
Input 10	Output 8	18	Input 6	Output 4	10	Input 4	Output 4	8	Input 6	Output 4	10
Input 12	Output 10	22	Input 8	Output 6	14	Input 4	Output 4	8	Input 8	Output 6	14
Input 14	Output 12	26	Input 6	Output 4	10	Input 8	Output 8	16	Input 6	Output 4	10
Input 16	Output 14	30	Input 6	Output 4	10	Input 4	Output 4	8	Input 6	Output 4	10
Input 18	Output 16	34	Input 8	Output 6	14	Input 4	Output 4	8	Input 8	Output 6	14
Input 20	Output 18	38	Input 6	Output 4	10	Input 8	Output 8	16	Input 6	Output 4	10
Input 22	Output 20	42	Input 8	Output 6	14	Input 4	Output 4	8	Input 8	Output 6	14
Input 24	Output 22	46	Input 6	Output 4	10	Input 8	Output 8	16	Input 6	Output 4	10
Input 26	Output 24	50	Input 8	Output 6	14	Input 4	Output 4	8	Input 8	Output 6	14
Input 28	Output 26	54	Input 6	Output 4	10	Input 8	Output 8	16	Input 6	Output 4	10
Input 30	Output 28	58	Input 8	Output 6	14	Input 4	Output 4	8	Input 8	Output 6	14
Input 32	Output 30	62	Input 6	Output 4	10	Input 8	Output 8	16	Input 6	Output 4	10

### ■ Expansion method

- Additional cables are not necessary for expansion because the units can be directly connected to one another using the expansion connector and lock lever on the unit side.

### ● Transistor output type combinations

$$\left( \begin{array}{c} \text{Total number of} \\ \text{I/O points} \end{array} \right) = \left( \begin{array}{c} \text{Control unit} \\ \text{I/O points} \end{array} \right) + \left( \begin{array}{c} \text{Expansion unit 1)} \\ \text{I/O points} \end{array} \right) + \left( \begin{array}{c} \text{Expansion unit 2)} \\ \text{I/O points} \end{array} \right) + \left( \begin{array}{c} \text{Expansion unit 3)} \\ \text{I/O points} \end{array} \right)$$

X20 - /Y20 -      X40 - /Y40 -      X60 - /Y60 -

Input 8	Output 8	16	Input 8	Output 8	16	Input 8	Output 8	16	Input 8	Output 8	16
Input 16	Output 16	32	Input 16	Output 16	32	Input 16	Output 16	32	Input 16	Output 16	32
Input 24	Output 24	48	Input 8	Output 8	16	Input 8	Output 8	16	Input 8	Output 8	16
Input 32	Output 32	64	Input 16	Output 16	32	Input 16	Output 16	32	Input 16	Output 16	32
Input 40	Output 40	80	Input 8	Output 8	16	Input 8	Output 8	16	Input 8	Output 8	16
Input 48	Output 48	96	Input 16	Output 16	32	Input 16	Output 16	32	Input 16	Output 16	32
Input 56	Output 56	112	Input 8	Output 8	16	Input 8	Output 8	16	Input 8	Output 8	16
Input 64	Output 64	128	Input 16	Output 16	32	Input 16	Output 16	32	Input 16	Output 16	32

## Performance specifications

Model	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					
No expansion (control unit only)	10 points [Input: 6, NPN Output: 4]	14 points [Input: 8, NPN Output: 6]	16 points [Input: 8, NPN Output: 8]	32 points [Input: 16, NPN Output: 16]	S-LINK section: max. 128 points [Input: 64, NPN Output: 64]	32 points [Input: 16, NPN Output: 16]
Number of I/O points	Max. 58 points	Max. 62 points	Max. 112 points	Max. 128 points	Expansion section: Max. 96 points	Max. 128 points
W/Expansion 1 • Same type of control and expansion units	Max. 106 points	Max. 110 points	Max. 112 points	Max. 128 points	Max. 128 points	Max. 128 points
W/Expansion 2 • Mix type of relay and transistor units	EEP-ROM (no back up battery required)					
Program memory	2.7 k steps					
Program capacity	5 k steps					
Number of instructions	83					
Operation speed (central value/step)	0.9 μs/step (for basic instructions)					
Relay	Internal relay (R)					
Timer/Counter (T/C)	1,008 points					
Data register (DT)	114 points					
Index register (IX/IX')	6,144 words					
Master control relay points (MCR)	2 words					
Number of labels (JMP and LOOP)	32 points					
Differential points	64 labels					
Number of step ladder	Unlimited number of points					
Number of subroutines	128 stages					
High speed counter	16 subroutines					
Pulse output	1 phase/4 points (10 kHz in total) or 2 phases/2 points (2 kHz in total)*					
PWM output	2 points (10 kHz* in total), enable to control 2 channels individually**					
Pulse catch input/interrupt input	0.15 Hz to 1 kHz					
Interrupt program	6 points (with high speed counter)					
Periodical interrupt	7 programs (external 6 points, internal 1 point)					
Constant scan	0.5 ms to 30 s					
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 19,200 bits/s, Transmission distance: 3 m 9.843 ft Communication method: half duplex					
Memory back up	Stored fixed area in EEPROM Counter: 4 points Internal relay: 32 points Data register: 8 words					
Maintenance	Stored program and system register in EEPROM					
Self-diagnostic function	Watchdog timer, program syntax check					
Clock/Calendar function	Runtime editing, password setting					
Other functions	Available					

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

## General specifications

Item	Description
Rated voltage	24 V DC
Operating voltage range	21.6 to 26.4 V DC
Allowed momentary power off time	5 ms (at 21.6 V), 10 ms (at 24 V) 10 ms (at 21.6 V / 24 V)
Ambient temperature	0 to +55 °C 32 to +131 °F
Storage temperature	-20 to +70 °C -4 to +158 °F
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: 500 V AC for 1 minute (for the relay output type, 1500 V AC for 1 minute)
Insulation resistance	Between input/output terminals and power/ground terminals: Over 100 MΩ (using a 500V DC megger)
Vibration resistance	Between input terminals and output terminals: Over 100 MΩ (using a 500V DC megger)
Shock resistance	10 to 55 Hz, 1 sweep/min. Double amplitude of 0.75 mm .030 inch, 10 min. on 3 axes
Noise immunity	98 m/s <sup>2</sup> or more, 4 times on 3 axes
Operating condition	1,000 V (p-p) with pulse widths 50 ns and 1 μs (using a noise simulator) Free from corrosive gasses and excessive dust

## Input specification (As for the limitation on the number of simultaneous ON points, please refer to the manual.)

Item	Description
Rated input voltage	24 V DC
Operating voltage range	21.6 to 26.4 V DC
Rated input current	Approx. 4.3 mA (at 24 V DC)
Input impedance	Approx. 5.6 kΩ
Input points per common	±common, 4 points/common (E8RS/E8RM), 6 points/common (C10RS/C10RM), 8 points/common (C14RS/C14RM, C16T, E16T, E16R, E8X), 16 points/common (C32T/E32T/E16X)
Min. ON voltage/ON current	19.2 V / 3 mA
Max. OFF voltage/OFF current	2.4 V / 1 mA
Response time	50 μs or less (at X0, X1) Note 1) (at 24V DC and under the ambient temperature of 25 °C 77 °F) 100 μs or less (at X2 to X5) Note 1) (at 24 V DC and under the ambient temperature of 25 °C 77 °F)
Insulation method	ON → OFF: Same as above OFF → ON: Photocoupler

Note 1) Since the response time of X0 to X5 is very fast (for high-speed counter input), the FP0 happens to chattering noise as an input signal.

To prevent this, it's recommended that the timer should be put in the ladder program.

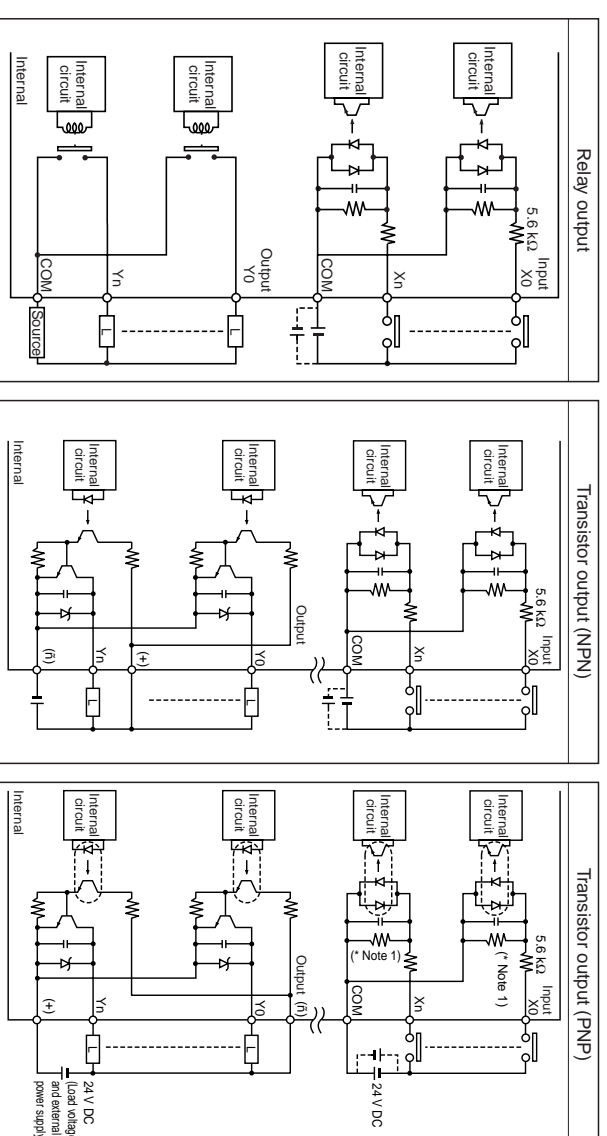
## Output specification

Item	Description
Output type	1a (1 form A, normally open)
Rated control capacity	2 A 250 V AC, 2 A 30 V DC (4.5 A common)
Response time	OFF → ON: Approx. 10 ms ON → OFF: Approx. 8 ms
Life time	Mechanical: Min. 2 × 10 <sup>7</sup> operations Electrical: Min. 10 <sup>5</sup> operations
Surge absorber	None
Operating indicator	LED display

### 1. Relay output type

Item	Description
Output type	Open collector
Rated load voltage	NPN type: 5 to 24 V DC, PNP type: 24 V DC
Load voltage allowable range	NPN type: 4.75 to 26.4 V DC PNP type: 21.6 to 26.4 V DC
Max. load current	0.1 A/point (1 A/common)
Max. inrush current	0.3 A
OFF state leakage current	100 μA or less
ON state voltage drop	1.5 V or less
Response time	OFF → ON: 1 ms or less ON → OFF: (50 μs or less at Y0 and Y1 only)
Voltage range for external power supply	21.6 to 26.4 V DC
Surge absorber	Zener diode
Output points per common	8 points/common (C16T, C16P, C16CT, C16CP, E16T, E16P, E8YT, E8YP)
Insulation method	16 points/common (C32T, C32P, C32CT, C32CP, E32T, E32P, E16YT, E16YP)
	Photocoupler

## I/O circuit diagram



Note: For transistor output types, make sure that the externally supplied voltage between the (+) and (-) terminals is between 21.6 and 26.4 V DC.



## ■ Performance specifications

Model	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					
No expansion (control unit only)	10 points [Input: 6, NPN Output: 4]	14 points [Input: 8, NPN Output: 6]	16 points [Input: 8, NPN Output: 8]	32 points [Input: 16, NPN Output: 16]	S-LINK section: max. 128 points [Input: 64, NPN Output: 64]	32 points [Input: 16, NPN Output: 16]
Number of I/O points	Max. 58 points	Max. 62 points	Max. 112 points	Max. 128 points	Expansion section: Max. 96 points	Max. 128 points
W/Expansion 1 • Same type of control and expansion units	Max. 106 points	Max. 110 points	Max. 112 points	Max. 128 points	Max. 128 points	Max. 128 points
W/Expansion 2 • Mix type of relay and transistor units	EEP-ROM (no back up battery required)					
Program memory	2.7 k steps					
Program capacity	5 k steps					
Number of instructions	83					
Operation speed (central value/step)	0.9 μs/step (for basic instructions)					
Relay	Internal relay (R)					
Timer/Counter (T/C)	1,008 points					
Data register (DT)	114 points					
Index register (IX/IX')	6,144 words					
Master control relay points (MCR)	2 words					
Number of labels (JMP and LOOP)	32 points					
Differential points	64 labels					
Number of step ladder	Unlimited number of points					
Number of subroutines	128 stages					
High speed counter	16 subroutines					
Pulse output	1 phase/4 points (10 kHz in total) or 2 phases/2 points (2 kHz in total)*					
PWM output	2 points (10 kHz* in total), enable to control 2 channels individually*					
Pulse catch input/interrupt input	0.15 Hz to 1 kHz					
Interrupt program	6 points (with high speed counter)					
Periodical interrupt	7 programs (external 6 points, internal 1 point)					
Constant scan	0.5 ms to 30 s					
RS232C port	One RS232C port is mounted on each of the models FP0-C10CR, C14CR, C16CT, C16CP, C32CT, C32CP. Transmission speed (Baud rate): 300 to 19,200 bits/s, Transmission distance: 3 m 9.843 ft					
Memory back up	Stored fixed area in EEPROM Counter: 4 points Internal relay: 32 points Data register: 8 words					
Maintenance	Stored program and system register in EEPROM					
Self-diagnostic function	Watchdog timer, program syntax check					
Clock/Calendar function	Runtime editing, password setting					
Other functions	Available					

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

## ■ General specifications

Item	Description
Rated voltage	24 V DC
Operating voltage range	21.6 to 26.4 V DC
Allowed momentary power off time	5 ms (at 21.6 V), 10 ms (at 24 V) 10 ms (at 21.6 V / 24 V)
Ambient temperature	0 to +55 °C 32 to +131 °F
Storage temperature	-20 to +70 °C -4 to +158 °F
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: 500 V AC for 1 minute (for the relay output type, 1500 V AC for 1 minute)
Insulation resistance	Between input/output terminals and power/ground terminals: Over 100 MΩ (using a 500V DC megger)
Vibration resistance	Between input terminals and output terminals: Over 100 MΩ (using a 500V DC megger)
Shock resistance	10 to 55 Hz, 1 sweep/min. Double amplitude of 0.75 mm .030 inch, 10 min. on 3 axes
Noise immunity	98 m/s <sup>2</sup> or more, 4 times on 3 axes
Operating condition	1,000 V (p-p) with pulse widths 50 ns and 1 μs (using a noise simulator) Free from corrosive gasses and excessive dust

## ■ Input specification (As for the limitation on the number of simultaneous ON points, please refer to the manual.)

Item	Description
Rated input voltage	24 V DC
Operating voltage range	21.6 to 26.4 V DC
Rated input current	Approx. 4.3 mA (at 24 V DC)
Input impedance	Approx. 5.6 kΩ
Input points per common	±common, 4 points/common (E8RS/E8RM), 6 points/common (C10RS/C10RM), 8 points/common (C14RS/C14RM, C16T, E16T, E16R, E8X), 16 points/common (C32T/E32T/E16X)
Min. ON voltage/ON current	19.2 V / 3 mA
Max. OFF voltage/OFF current	2.4 V / 1 mA
Response time	50 μs or less (at X0, X1) Note 1) (at 24V DC and under the ambient temperature of 25 °C 77 °F) 100 μs or less (at X2 to X5) Note 1) (at 24 V DC and under the ambient temperature of 25 °C 77 °F)
Insulation method	ON → OFF: Same as above OFF → ON: Photocoupler

Note 1) Since the response time of X0 to X5 is very fast (for high-speed counter input), the FP0 happens to chattering noise as an input signal. To prevent this, it's recommended that the timer should be put in the ladder program.

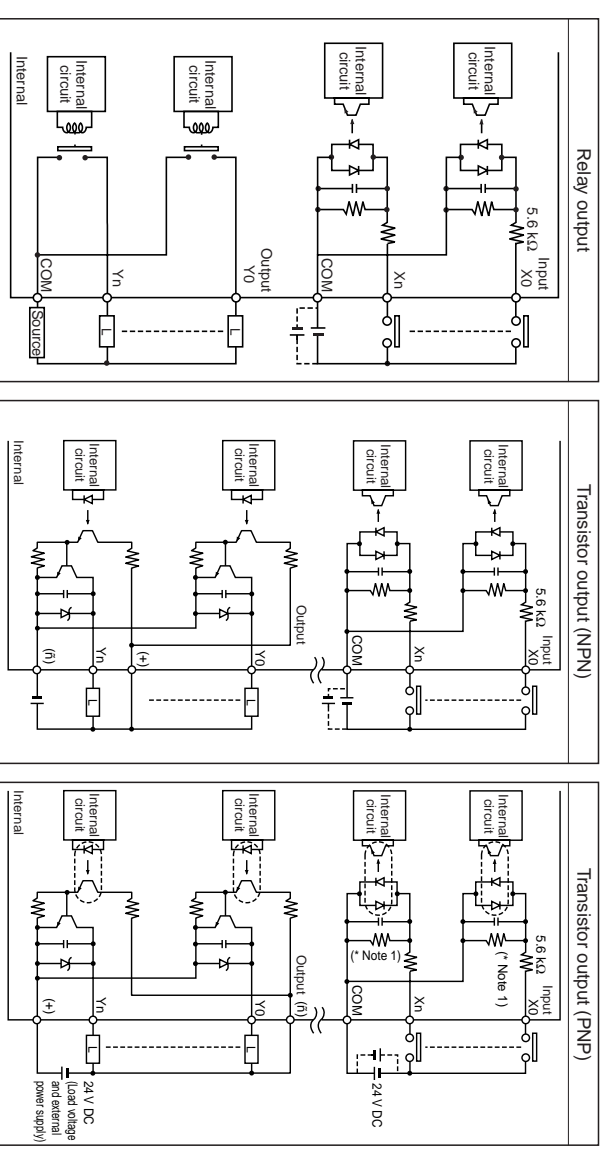
## ■ Output specification

Item	Description
Output type	1a (1 form A, normally open)
Rated control capacity	2 A 250 V AC, 2 A 30 V DC (4.5 A common)
Response time	OFF → ON: Approx. 10 ms ON → OFF: Approx. 8 ms
Life time	Mechanical: Min. 2 × 10 <sup>7</sup> operations Electrical: Min. 10 <sup>6</sup> operations
Surge absorber	None
Operating indicator	LED display

### 2. Transistor output type

Item	Description
Output type	Open collector
Rated load voltage	NPN type: 5 to 24 V DC, PNP type: 24 V DC
Load voltage allowable range	NPN type: 4.75 to 26.4 V DC PNP type: 21.6 to 26.4 V DC
Max. load current	0.1 A/point (1 A/common)
Max. inrush current	0.3 A
OFF state leakage current	100 μA or less
ON state voltage drop	1.5 V or less
Response time	OFF → ON: 1 ms or less ON → OFF: (50 μs or less at Y0 and Y1 only)
Voltage range for external power supply	21.6 to 26.4 V DC
Surge absorber	Zener diode
Output points per common	8 points/common (C16T, C16P, C16CT, C16CP, E16T, E16P, E8YT, E8YP)
Insulation method	16 points/common (C32T, C32P, C32CT, C32CP, E32T, E32P, E16YT, E16YP)
	Photocoupler

## ■ I/O circuit diagram



Note: For transistor output types, make sure that the externally supplied voltage between the (+) and (-) terminals is between 21.6 and 26.4 V DC.

## ■ Analog unit specifications

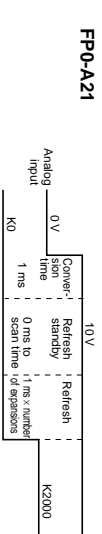
### 1. Analog input specifications

Item	FP0-A21	Description	FP0-A80
Number of input points	2 channels/unit	6 channels/unit	Number of input points can be changed: 2, 4, 6 and 8 channels.
Input range	Voltage range 0 to 5 V (0 to K 4000) (Note 1) Current range -100 to +100 mA (K 2000 to K 4000) (Note 1)	0 to 5 V (0 to K 4000) (Note 1) -100 to +100 mA (K 2000 to K 4000) (Note 1)	0 to 5 V (0 to K 4000) (Note 1) -100 to +100 mA (K 2000 to K 4000) (Note 1)
Resolution	1/4000 (12 bits)	1/4000 (12 bits)	Note 2)
Conversion speed	±1% F.S. or less (0 to 55 °C), ±0.5% F.S. or less (25 °C)	1 mS/channel (Note 2)	
Overall precision	±1% F.S. or less (0 to 55 °C), ±0.5% F.S. or less (25 °C)	±1% F.S. or less (0 to 55 °C), ±0.5% F.S. or less (25 °C)	
Input impedance	1 MΩ or more	1 MΩ or more	
Voltage range	250 V	250 V	
Current range	±15 V	±15 V	
Absolute maximum input	±30 mA	±30 mA	
Insulation method	Between analog input terminal and FP0 internal circuit: optical coupler isolation (non-isolated between channels) Between analog output terminal and FP0 internal circuit: optical coupler isolation (non-isolated between channels) Between analog output terminal and D/A converter unit: external power supply based on insulation-type DDCC converter Between analog input terminal and analog output terminal: based on insulation-type DDCC converter	Between analog output terminal and FP0 internal circuit: optical coupler isolation (non-isolated between channels) Between analog output terminal and D/A converter unit: external power supply based on insulation-type DDCC converter Between analog input terminal and analog output terminal: based on insulation-type DDCC converter	Between analog output terminal and FP0 internal circuit: optical coupler isolation (non-isolated between channels) Between analog output terminal and D/A converter unit: external power supply based on insulation-type DDCC converter Between analog input terminal and analog output terminal: based on insulation-type DDCC converter
Number of I/O contact points	None	32 input contact points	Can be switched on and off.

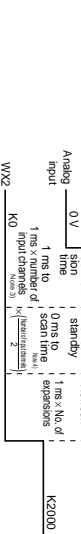
Notes

- 1) If the analog input value exceeds the upper or lower limit, the digital value will preserve the upper or lower limit.
- 2) The number for the input contact point being used varies depending on the expansion position.

### FP0-A21



### FP0-A80



- 3) Settings value switch for the number of input channels.
- 4) With each one scan of the control unit, the data for two channels will be loaded into it. In other words, if the input channel number switch is set to 8-channel, the data in the control unit will be updated once every four scans.

## ■ Thermocouple unit specifications

Item	Description
Item	4-channel, 8-channel
Input points	(The number of input points can be changed 2, 4, 6 and 8 channels.)
Input range	Thermocouple types K and J -100.0 to 500.0 °C/-148.0 to 790.0 °F (Note 1) Thermocouple type T -100.0 to 400.0 °C/-148.0 to 752.0 °F
Thermocouple type R	Thermocouple type R 0.0 to 1500.0 °C/32.0 to 1590.0 °F (Note 1)
Digital output	K and J (When using °C): K -1001 to K 5000 K and J (When using °F): K -1480 to K 7900 (Note 1) (When range over using °C: K-1001, K 5001 or K 8000) (When range over using °F: K-1481, K 7901 or K 8000) (When the thermocouple broken: K 8000) (Note 2) (Until the temperature can be measured at the initial startup, K 8001) (Note 3) T (When using °C): K -1000 to K 4000 T (When using °F): K -1480 to K 7520 (Note 1) (When range over using °C: K-1001, K 4001 or K 8000) (When range over using °F: K-1481, K 7521 or K 8000) (When the thermocouple broken: K 8000) (Note 2) (Until the temperature can be measured at the initial startup, K 8001) (Note 3) R (When using °C): K 15900 to K 15900 (Note 1) R (When using °F): K 15901 to K 15901 (Note 1) (When range over using °C: K 0, K 15901 or K 18000) (When range over using °F: K 0, K 15901 or K 18000) (When the thermocouple broken: K 18000) (Note 2) (Until the temperature can be measured at the initial startup, K 18001) (Note 3)
Resolution	0.1 °C
Sampling cycle	300 ms: When using 2 channels for an input points (Note 4) 500 ms: When using 4 channels for an input points (Note 4) 700 ms: When using 6 channels for an input points (Note 4) 900 ms: When using 8 channels for an input points (Note 4)
Overall accuracy	Range for K and J (-100 to 500 °C): ±0.8 °C or less (-100 to 400 °C): ±0.8 °C or less Range for T (0 to 99.9 °C): ±2.5 °C or less (100 to 299.9 °C): ±2 °C or less (300 to 1500 °C): ±2 °C or less
Input impedance	more than 1 MΩ
Insulation method	• Between thermocouple input terminals and control unit internal circuits: Photo-coupler insulation/DDC-DC insulation • Between thermocouple input terminal channels: PhotoMOS relay insulation
Input/Output points	Input: 32 points (Note 6)

Notes

- 1) The measurement range available for degree Celsius is not available for degree Fahrenheit, of which the upper-limit measurement is set lower than degree Celsius, since the digital value (temperature value displayed) for degree Fahrenheit is bigger than that for degree Celsius.
- 2) When the thermocouple is broken, the digital value will remain K8000 or K18000 within 70 seconds since broken. Practice in the ladder program a process for avoiding a risk, would be resulting from a broken thermocouple, and exchange the thermocouple.
- 3) Until the conversion data will be ready after the initial startup was made, the digital value shows K8001 or K18001. Those are not a temperature data. Create a ladder program, so that they are not acquired as a temperature data.
- 4) The settings of the input channel selection switch.
- 5) Conversion values for 6-time measurements (6 from the latest 8 measurements, excluding the max. and min.) are averaged, so that it takes time for the digital value to be displayed due to the rapid temperature change.
- 6) The control unit reads the data for 2 channels per 1 scan by the control unit. Read data by utilizing the sample program given in the product specifications and manual.

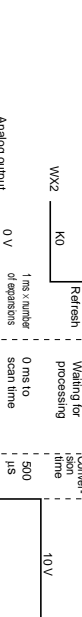
### 2. Analog output specifications

Item	FP0-A21	FP0-A04V	FP0-A01
Number of output points	1 channel/unit	4 channels/unit	Current output: 4 channels/unit
Output range	Voltage range -10 to +10 V range (K -2000 to K +2000) (Note 1) Current range 0 to 20 mA (K 0 to K 4000) (Note 1)	—	4 to 20 mA (K 0 to K 4000) (Note 1)
Resolution	1/4000 (12 bits)	1/4000 (12 bits)	
Conversion speed	±1% F.S. or less (0 to 55 °C), ±0.5% F.S. or less (25 °C)	500 μs/channel (Note 2)	
Overall precision	±1% F.S. or less (0 to 55 °C), ±0.5% F.S. or less (25 °C)	±1% F.S. or less (0 to 55 °C), ±0.5% F.S. or less (25 °C)	
Output impedance	0.5 Ω or less	—	
Max. output current	±10 mA	±10 mA	
Max. output current	30 Ω or less	1000 Ω or less	500 Ω or less
Insulation method (Note 2)	Between analog output terminal and FP0 internal circuit: optical coupler isolation (non-isolated between channels) Between analog output terminal and D/A converter unit: external power supply based on insulation-type DDCC converter Between analog input terminal and analog output terminal: based on insulation-type DDCC converter	Between analog output terminal and FP0 internal circuit: optical coupler isolation (non-isolated between channels) Between analog output terminal and D/A converter unit: external power supply based on insulation-type DDCC converter Between analog input terminal and analog output terminal: based on insulation-type DDCC converter	Between analog output terminal and FP0 internal circuit: optical coupler isolation (non-isolated between channels) Between analog output terminal and D/A converter unit: external power supply based on insulation-type DDCC converter Between analog input terminal and analog output terminal: based on insulation-type DDCC converter
Number of I/O contact points	16 output contact points	16 input contact points, 32 output contact points (Note 3)	

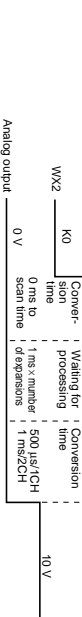
Notes

- 1) If the digital input value exceeds the upper or lower limit, D/A conversion will not take place. (Analog output will remain as the previous data.)
- 2) The number for the output contact point being used varies depending on the expansion position.

### FP0-A21



### FP0-A04V, FP0-A01



- 3) The data for two channels will be output to the D/A converter unit with one scan of the control unit.

## ■ CC-Link slave unit specifications

### 1. Communication specifications

Version	CC-Link Ver. 1.10
Communication method	Broadcast polling method
Transmission speed	10 Mbit/s, 5 Mbit/s, 2.5 Mbit/s, 625 kbit/s, 156 kbit/s
Max. transmission distance (Note 1)	CC-Link high-performance cable 100 m 160 m 2.5 Mbit/s 400 m 625 kbit/s 900 m 156 kbit/s 1200 m
Interface	RS485
Station type	Remote device station
Number of occupied stations	FP0: 1 to 4 stations (switch changeover), FP0: 1 station

Note 1) Length of the multi-drop connected cables at both ends

The cable length has restrictions in communication speed. CC-Link version, and dedicated cables to be used.

For details concerning the CC-Link, refer to the CC-Link Partner Association. When an FP0 thermocouple unit is used with an FP0 CC-Link slave unit, the measurement accuracy of the thermocouple unit which is installed on the left of the CC-Link slave unit is as shown in the table below.

Thermocouple	Standard specifications		When CC-Link slave unit with a thermocouple unit	
	K, J, T	R	0 - 99.9 °C	100 - 299.9 °C
	0.8 °C	2 °C	3 °C	5 °C
	3 °C	2 °C	2.5 °C	4 °C

## ■ I/O Link unit specifications

Item	Description
Communication method	Two-wire, half duplex
Synchronous method	Asynchronous method
Transmission line	2-wire cable (Twisted-pair cable or VCTF 0.75 mm <sup>2</sup> × 2C equivalent)
Transmission distance (Total distance)	Max: 700 m 2,296,588 ft. (using twisted pair cable) Max: 400 m 1,312,336 ft. (using VCTF cable)
Transmission speed (Baud rate)	0.5 Mbit/s
Number of control I/O point per an I/O link unit	64 points (Input: 32 points and Output: 32 points) (Note)
Remote I/O map allocation	32X32Y
Interface	Conforming to RS485
Transmission error check	CRC (Cyclic Redundancy Check) method

Note: This point number is the number of points that can be linked for inputting and outputting via the host PLC and network MENVET-F. If the output for the I/O link unit error flag is set to ON, this number becomes 63 points (31 input points and 32 output points).

## ■ Power supply unit specifications

Product number	FP0-PSA4	FP0-PSA1
Part number	AFP0634	AFP0631
Rated voltage	100 to 240 V AC	
Variable input voltage range	85 to 264 V AC	
Rated frequency	50/60 Hz	
Frequency range	47 to 63 Hz	
Number of phases	Single-phase	
Surge current	30 A (0 - P) or less, with cold start	
Leakage current	0.75 mA or less	
Allowable momentary power of fuses	10 ms or more	
Rated voltage	24 V DC	
Voltage accuracy	±5%	
Rated current	0.7 A (Note)	0.6 A
Output current range	0 to 0.7 A	0 to 0.6 A
Ripple voltage	500 mV or less	
Over-current protection	0.735 A or more	0.63 A or more
Over-voltage protection	Available	Available

Note: Start up may not be possible if a device with a large inrush current is connected even if below the rated current. In such a case, we recommend suppressing the inrush current by inserting a 1 to 2Ω resistor between the power supply unit and the device.

## ■ Current consumption

Item	Type of unit	Control unit current consumption	Expansion unit current consumption	
FP0 expansion unit	FP0-C10	100 mA or less	—	
	FP0-C14	100 mA or less	—	
	FP0-C16	40 mA or less	—	
	FP0-C32	60 mA or less	—	
	FP0-T32	60 mA or less	—	
	S-LINK control unit	FP0-SL1	150 mA or less	—
	FP0 intelligent unit	FP0-EBX	10 mA or less	—
		FP0-E8R	15 mA or less	—
		FP0-E8YR	10 mA or less	—
		FP0-E8YT/P	15 mA or less	—
FP0-E16R		20 mA or less	—	
FP0-E16T/P		25 mA or less	—	
FP0-E16YT/P		20 mA or less	—	
FP0-E32T/P		40 mA or less	—	
FP0 intelligent unit	FP0-A80	20 mA or less	—	
	FP0-A04V	20 mA or less	—	
	FP0-A04I	20 mA or less	—	
	FP0-TC4	20 mA or less	—	
	FP0-TC8	25 mA or less	—	
	FP0-CCLS	40 mA or less	—	
Link/Communication units	FP0-IOL	30 mA or less	—	
	FP0-WEB	50 mA or less	—	
Link/Communication units	AFP15402 (C-NET adapter)	50 mA or less	—	
		95 mA or less (at 24 V DC), 240 mA or less (at 12 V DC)	—	

This refers to the current consumed via the power supply connector of the control unit. If expansion units or intelligent units are added, the current is increased by the value indicated below.

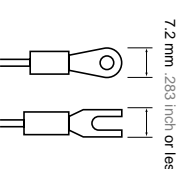
This refers to the current consumed via the power supply connector of the expansion unit. Units with no value indication don't have a power supply connector.

## ■ FP Web-Server unit specifications

Communication functions	RS232C ↔ Ethernet conversion (PLC remote programming via Ethernet) E-mail sending function Web-server function Transparent communication (Server/Client) PPP server function
Communication interface	RS232C terminal block-3-pin. Mainly used for PLC connection RS232C D-Sub 9-pin. Mainly used for Modem connection 10 BASE-T (RJ45): Used for Ethernet connection and setup
RS232C communication	Transmission speed: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bits/s Data length: 7 bits/8 bits, Parity: Even/Odd/None
Ethernet communication	10 M bits (10BASE-T: RJ45)
Supported protocol	TCP, UDP, IP, DHCP, FTP, TELNET, HTTP, SMTP, and PPP
Memory size	Approx. 148 kB (for storing him files)
Setup method	Setup using FP Web Configurator Tool

## Applicable crimp terminals

Manufacturer	Part number	Applicable wiring
JST	V1-25-M3 (round type) V1-25-S3A (blk. type)	0.35 to 1.65 mm <sup>2</sup> AWG #22 to #15
Mfg Co., Ltd.	V2-M3 (round type) V2-S3A (blk. type)	1.04 to 2.00 mm <sup>2</sup> AWG #17 to #14





## ■ Analog unit specifications

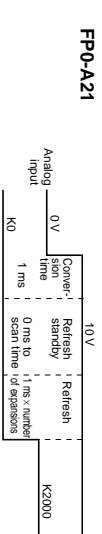
### 1. Analog input specifications

Item	FP0-A21	Description	FP0-A80
Number of input points	2 channels/unit	6 channels/unit	Number of input points can be changed: 2, 4, 6 and 8 channels.
Input range	Voltage range 0 to 5 V (0 to K 4000) (Note 1) Current range -100 to +100 mA (K 2000 to K 4000) (Note 1)	0 to 5 V (0 to K 4000) (Note 1) -100 to +100 mA (K 2000 to K 4000) (Note 1)	0 to 5 V (0 to K 4000) (Note 1) -100 to +100 mA (K 2000 to K 4000) (Note 1)
Resolution	1/4000 (12 bits)	1/4000 (12 bits)	1/4000 (12 bits)
Conversion speed	±1% F.S. or less (0 to 55 °C), ±0.5% F.S. or less (25 °C)	±1% F.S. or less (0 to 55 °C), ±0.5% F.S. or less (25 °C)	±1% F.S. or less (0 to 55 °C), ±0.5% F.S. or less (25 °C)
Overall precision	1 MΩ or more	1 MΩ or more	1 MΩ or more
Input impedance	250 Ω	250 Ω	250 Ω
Absolute	Voltage range Current range	Voltage range Current range	Voltage range Current range
Insulation method	Between analog input terminal and FP0 internal circuit: optical coupler isolation (non-isolated between channels) Between analog output terminal and DA converter unit: external power supply based on insulation-type DDC converter	Between analog output terminal and FP0 internal circuit: optical coupler isolation (non-isolated between channels) Between analog output terminal and DA converter unit: external power supply based on insulation-type DDC converter	Between analog output terminal and FP0 internal circuit: optical coupler isolation (non-isolated between channels) Between analog output terminal and DA converter unit: external power supply based on insulation-type DDC converter
Number of I/O contact points	32 input contact points	16 output contact points, 32 output contact points (Note 3)	16 output contact points, 32 output contact points (Note 3)

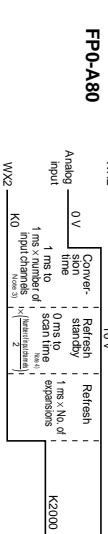
Notes

- 1) If the analog input value exceeds the upper or lower limit, the digital value will preserve the upper or lower limit.
- 2) The number for the input contact point being used varies depending on the expansion position.

### FP0-A21



### FP0-A80



- 3) Settings value switch for the number of input channels.
- 4) With each one scan of the control unit, the data for two channels will be loaded into it. In other words, if the input channel number switch is set to 8-channel, the data in the control unit will be updated once every four scans.

## ■ Thermocouple unit specifications

Item	Description
Item	4-channel, 8-channel
Input points	(The number of input points can be changed 2, 4, 6 and 8 channels.)
Input range	Thermocouple types K and J: -100.0 to 500.0 °C/-148.0 to 790.0 °F (Note 1) Thermocouple type T: -100.0 to 400.0 °C/-148.0 to 752.0 °F
Thermocouple type R	Thermocouple type R: 0.0 to 1500.0 °C/32.0 to 1590.0 °F (Note 1)
Digital output	K and J (When using °C): K: -1001 to K 5000 K and J (When using °F): K: -1480 to K 7900 (Note 1) (When range over using °C: K: -1001, K 5001 or K 8000) (When range over using °F: K: -1481, K 7901 or K 8000) (When the thermocouple broken: K: 8000) (Note 2) (Until the temperature can be measured at the initial startup, K: 8001) (Note 3) T (When using °C): K: -1000 to K 4000 T (When using °F): K: -1480 to K 7520 (Note 1) (When range over using °C: K: -1001, K 4001 or K 8000) (When range over using °F: K: -1481, K 7521 or K 8000) (When the thermocouple broken: K: 8000) (Note 2) (Until the temperature can be measured at the initial startup, K: 8001) (Note 3) R (When using °C): K: 1500 to K 15900 (Note 1) R (When using °F): K: 15901 to K 18000 (When range over using °C: K: 1501, K 15901 or K 18000) (When range over using °F: K: 1591, K 18001) (When the thermocouple broken: K: 18000) (Note 2) (Until the temperature can be measured at the initial startup, K: 18001) (Note 3)
Resolution	0.1 °C
Sampling cycle	300 ms: When using 2 channels for an input points (Note 4) 500 ms: When using 4 channels for an input points (Note 4) 700 ms: When using 6 channels for an input points (Note 4) 900 ms: When using 8 channels for an input points (Note 4)
Overall accuracy	Range for K and J: (-100 to 500 °C): ±0.8 °C or less (-100 to 400 °C): ±0.8 °C or less Range for T: (0 to 99.9 °C): ±2.5 °C or less (100 to 299.9 °C): ±2 °C or less (300 to 1500 °C): ±2 °C or less
Input impedance	more than 1 MΩ
Insulation method	• Between thermocouple input terminals and control unit internal circuits: Photo-coupler insulation/DC-DC insulation • Between thermocouple input terminal channels: PhotoMOS relay insulation
Input/Output points	Input: 32 points (Note 6)

Notes

- 1) The measurement range available for degree Celsius is not available for degree Fahrenheit, of which the upper-limit measurement is set lower than degree Celsius, since the digital value (temperature value displayed) for degree Fahrenheit is bigger than that for degree Celsius.
- 2) When the thermocouple is broken, the digital value will remain K8000 or K18000 within 70 seconds since broken. Practice in the ladder program a process for avoiding a risk, would be resulting from a broken thermocouple, and exchange the thermocouple.
- 3) Until the conversion data will be ready after the initial startup was made, the digital value shows K8001 or K18001. Those are not a temperature data. Create a ladder program, so that they are not acquired as a temperature data.
- 4) The settings of the input channel selection switch.
- 5) Conversion values for 6-time measurements (6 from the latest 8 measurements, excluding the max. and min.) are averaged, so that it takes time for the digital value to be displayed due to the rapid temperature change.
- 6) The control unit reads the data for 2 channels per 1 scan by the control unit. Read data by utilizing the sample program given in the product specifications and manual.

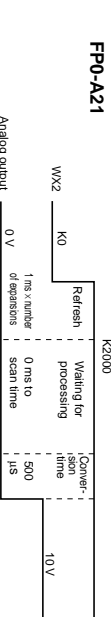
### 2. Analog output specifications

Item	FP0-A21	FP0-A04V	FP0-A01
Number of output points	1 channel/unit	4 channels/unit	Current output: 4 channels/unit
Output range	Voltage range Current range	Voltage range Current range	Voltage range Current range
Resolution	1/4000 (12 bits)	1/4000 (12 bits)	1/4000 (12 bits)
Conversion speed	±1% F.S. or less (0 to 55 °C), ±0.5% F.S. or less (25 °C)	±1% F.S. or less (0 to 55 °C), ±0.5% F.S. or less (25 °C)	±1% F.S. or less (0 to 55 °C), ±0.5% F.S. or less (25 °C)
Overall precision	0.5 Ω or less	0.5 Ω or less	0.5 Ω or less
Output impedance	Voltage range Current range	Voltage range Current range	Voltage range Current range
Max. output current	30 Ω or less	1000 Ω or less	500 Ω or less
Insulation method (Note 2)	Between analog output terminal and FP0 internal circuit: optical coupler isolation (non-isolated between channels) Based on insulation-type DDC converter	Between analog output terminal and FP0 internal circuit: optical coupler isolation (non-isolated between channels) Based on insulation-type DDC converter	Between analog output terminal and FP0 internal circuit: optical coupler isolation (non-isolated between channels) Based on insulation-type DDC converter
Number of I/O contact points	16 output contact points	16 input contact points, 32 output contact points (Note 3)	16 output contact points, 32 output contact points (Note 3)

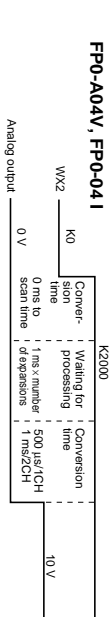
Notes

- 1) If the digital input value exceeds the upper or lower limit, D/A conversion will not take place. (Analog output will remain as the previous data.)
- 2) The number for the output contact point being used varies depending on the expansion position.

### FP0-A21



### FP0-A04V, FP0-A01



- 3) The data for two channels will be output to the D/A converter unit with one scan of the control unit.

## ■ CC-Link slave unit specifications

### 1. Communication specifications

Version	CC-Link Ver. 1.10
Communication method	Broadcast polling method
Transmission speed	10 Mbit/s, 5 Mbit/s, 2.5 Mbit/s, 625 kbit/s, 156 kbit/s
Max. transmission distance (Note 1)	CC-Link high-performance cable
Interface	RS485
Station type	Remote device station
Number of occupied stations	FP0: 1 to 4 stations (switch changeover), FP0: 1 station

Note 1) Length of the multi-drop connected cables at both ends

The cable length has restrictions in communication speed. CC-Link version, and dedicated cables to be used.

For details concerning the CC-Link, refer to the CC-Link Partner Association. When an FP0 thermocouple unit is used with an FP0 CC-Link slave unit, the measurement accuracy of the thermocouple unit which is installed on the left of the CC-Link slave unit is as shown in the table below.

Thermocouple	Standard specifications			When CC-Link slave unit with a thermocouple unit
	K, J, T	0 - 99.9 °C	3 °C	
R	100 - 299.9 °C	2.5 °C	6 °C	5 °C
	300 - 1500 °C	2 °C	4 °C	4 °C

## ■ I/O Link unit specifications

Item	Description
Communication method	Two-wire, half duplex
Synchronous method	Asynchronous method
Transmission line	2-wire cable (Twisted-pair cable or VCTF 0.75 mm <sup>2</sup> × 2C equivalent)
Transmission distance (Total distance)	Max: 700 m 2,296,588 ft. (using twisted pair cable) Max: 400 m 1,312,336 ft. (using VCTF cable)
Transmission speed (Baud rate)	0.5 Mbit/s
Number of control I/O points per an I/O link unit	64 points (Input: 32 points and Output: 32 points) (Note)
Remote I/O map allocation	32X32Y
Interface	Conforming to RS485
Transmission error check	CRC (Cyclic Redundancy Check) method

Note: This point number is the number of points that can be linked for inputting and outputting via the host PLC and network MEWNET-F. If the output for the I/O link unit error flag is set to ON, this number becomes 63 points (31 input points and 32 output points).

## ■ Power supply unit specifications

Product number	FP0-PSA4	FP0-PSA1
Part number	AFP0634	AFP0631
Rated voltage	100 to 240 V AC	
Variable input voltage range	85 to 264 V AC	
Rated frequency	50/60 Hz	
Frequency range	47 to 63 Hz	
Number of phases	Single-phase	
Surge current	30 A (0 - P) or less, with cold start	
Leakage current	0.75 mA or less	
Allowable momentary power of fuses	10 ms or more	
Rated voltage	24 V DC	
Voltage accuracy	±5%	
Rated current	0.7 A (Note)	0.6 A
Output current range	0 to 0.7 A	0 to 0.6 A
Ripple voltage	500 mV or less	
Over-current protection	0.735 A or more	0.63 A or more
Over-voltage protection	Available	Available

Note: Start up may not be possible if a device with a large inrush current is connected even if below the rated current. In such a case, we recommend suppressing the inrush current by inserting a 1 to 2Ω resistor between the power supply unit and the device.

## ■ Current consumption

Control unit	Type of unit	Control unit current consumption	Expansion unit current consumption	
FP0 expansion unit	FP0-C10	100 mA or less	—	
	FP0-C14	100 mA or less	—	
	FP0-C16	40 mA or less	—	
	FP0-C32	60 mA or less	—	
	FP0-T32	60 mA or less	—	
	S-LINK control unit	FP0-SL1	150 mA or less	—
	FP0 intelligent unit	FP0-EBX	10 mA or less	—
		FP0-E8R	15 mA or less	—
		FP0-E8YR	10 mA or less	—
		FP0-E8YT/P	15 mA or less	—
FP0-E16R		20 mA or less	—	
FP0-E16T/P		25 mA or less	—	
FP0-E16YT/P		20 mA or less	—	
FP0-E32T/P		40 mA or less	—	
FP0 intelligent unit	FP0-A80	20 mA or less	—	
	FP0-A04V	20 mA or less	—	
	FP0-A04I	20 mA or less	—	
	FP0-TC4	20 mA or less	—	
	FP0-TC8	25 mA or less	—	
	FP0-CCLS	40 mA or less	—	
Link/Communication units	FP0-IOL	30 mA or less	—	
	FP0-WEB	50 mA or less	—	
Link/Communication units	AFP15402 (C-NET adapter)	50 mA or less	—	
			40 mA or less	
		40 mA or less	40 mA or less	
		95 mA or less (at 24 V DC), 240 mA or less (at 12 V DC)	—	

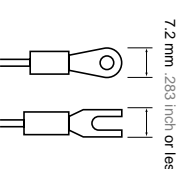
This refers to the current consumed via the power supply connector of the control unit. If expansion units or intelligent units are added, the current is increased by the value indicated below.

## ■ FP Web-Server unit specifications

Communication functions	RS232C ↔ Ethernet conversion (PLC remote programming via Ethernet) E-mail sending function Web-server function Transparent communication (Server/Client) PPP server function
Communication interface	RS232C terminal block 3-pin. Mainly used for PLC connection RS232C D-Sub 9-pin. Mainly used for Modem connection 10 BASE-T (RJ45): Used for Ethernet connection and setup
RS232C communication	Transmission speed: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bits/s Data length: 7 bits/8 bits, Parity: Even/Odd/None
Ethernet communication	10 M bits (10BASE-T: RJ45)
Supported protocol	TCP, UDP, IP, DHCP, FTP, TELNET, HTTP, SMTP, and PPP
Memory size	Approx. 148 kB (for storing him files)
Setup method	Setup using FP Web Configurator Tool

## Applicable crimp terminals

Manufacturer	Part number	Applicable wiring
JST	V1-25-M3 (round type) V1-25-S3A (blk. type)	0.35 to 1.65 mm <sup>2</sup> AWG #22 to #15
Mfg Co., Ltd.	V2-M3 (round type) V2-S3A (blk. type)	1.04 to 2.00 mm <sup>2</sup> AWG #17 to #14



## 1 Control units

Product name	Built-in memory (Program capacity)	Specifications				Product number	Part number
		Number of I/O points	Power supply voltage	Input	Output		
FP0 C10 Control Unit	EEPROM (2.7 k steps)	10	24 V DC	24 V DC Sink/Source (±common)	Relay output: 2 A	FP0-C10RS	AFP02123
FP0 C10 Control Unit with RS232C port	EEPROM (2.7 k steps)	10	24 V DC	24 V DC Sink/Source (±common)	Relay output: 2 A	FP0-C10CRM	AFP02123C
FP0 C14 Control Unit	EEPROM (2.7 k steps)	14	24 V DC	24 V DC Sink/Source (±common)	Relay output: 2 A	FP0-C14RS	AFP02223
FP0 C14 Control Unit with RS232C port	EEPROM (2.7 k steps)	14	24 V DC	24 V DC Sink/Source (±common)	Relay output: 2 A	FP0-C14CRM	AFP02223C
FP0 C16 Control Unit	EEPROM (2.7 k steps)	16	24 V DC	24 V DC Sink/Source (±common)	Transistor output: NPN 0.1 A PNP 0.1 A	FP0-C16RS	AFP02343
FP0 C16 Control Unit with RS232C port	EEPROM (2.7 k steps)	16	24 V DC	24 V DC Sink/Source (±common)	Transistor output: NPN 0.1 A PNP 0.1 A	FP0-C16CRM	AFP02343C
FP0 C32 Control Unit	EEPROM (5 k steps)	32	24 V DC	24 V DC Sink/Source (±common)	Transistor output: NPN 0.1 A PNP 0.1 A	FP0-C32RS	AFP02543
FP0 C32 Control Unit with RS232C port	EEPROM (5 k steps)	32	24 V DC	24 V DC Sink/Source (±common)	Transistor output: NPN 0.1 A PNP 0.1 A	FP0-C32CRM	AFP02543C
FP0 T32 Control Unit with RS232C port and Clock/Calendar function	EEPROM (10 k steps)	32	24 V DC	24 V DC Sink/Source (±common)	Transistor output: NPN 0.1 A PNP 0.1 A	FP0-T32CT	AFP02643C
FP0 S-LINK Control Unit with RS232C port	EEPROM (5 k steps)	128 (S-LINK section)	24 V DC	—	—	FP0-SL1	AFP02700

## 2 Expansion units

Product name	Number of I/O points	Power supply voltage	Specifications		Connection type	Product number	Part number
			Input	Output			
FP0 E8 Expansion Unit	8	—	24 V DC Sink/Source (±common)	—	MIL connector	FP0-E8X	AFP03003
	8	24 V DC	24 V DC Sink/Source (±common)	Relay output: 2 A	Terminal block	FP0-E8RS	AFP03023
FP0 E16 Expansion Unit	8	—	—	—	Terminal block	FP0-E8RM	AFP03013
	8	—	—	Relay output: 2 A	MIL connector	FP0-E8YR	AFP03050
FP0 E16 Expansion Unit	16	—	24 V DC Sink/Source (±common)	—	MIL connector	FP0-E16X	AFP03303
	16	24 V DC	24 V DC Sink/Source (±common)	Relay output: 2 A	Terminal block	FP0-E16RS	AFP03323
FP0 E16 Expansion Unit	16	—	24 V DC Sink/Source (±common)	—	Molex connector	FP0-E16RM	AFP03313
	16	—	24 V DC Sink/Source (±common)	—	MIL connector	FP0-E16Y	AFP03343
FP0 E32 Expansion Unit	16	—	—	—	MIL connector	FP0-E16YT	AFP03340
	32	—	24 V DC Sink/Source (±common)	Transistor output: NPN 0.1 A	MIL connector	FP0-E32P	AFP03543

Notes 1) The control units and relay output type expansion units come with a power cable (part number AFP0581).

2) The transistor output type expansion units need no power cable.

3) Preferably use the specific terminal block screwdriver (part number AFP0806, Phoenix type code SZSQ, 4 × 2.5 mm, .098 inch) or equivalent.

4) Use the specific Molex connector press-fit tool (part number AFP0805, Molex type code 51067-0900, 9 pins).

5) Use the specific Molex connector press-fit tool (part number AFP0805, Molex type code 57189-5000) or equivalent.

6) The transistor output units have a press-fit socket for wire-pressed terminal cable and contacts.

7) Use the press-fit tool (part number AXYS2000) for wire-pressed terminal cable.

## 3 Intelligent units

Product name	Specifications	Product number	Part number
FP0 Analog I/O Unit	Input specifications Number of channels : 2 channels Input range : 0 to 5 V, -10 to +10 V (Resolution: 1/4000) 0 to 20 mA (Resolution: 1/4000)	FP0-A21	AFP0480
FP0 A/D Converter Unit	Output specifications Number of channels : 1 channels Output range : -10 to +10 V (Resolution: 1/4000) 0 to 20 mA (Resolution: 1/4000)	FP0-A80	AFP0401
FP0 D/A Converter Unit	Input specifications Number of channels : 8 channels Input range : 0 to 5, -10 to +10 V (Resolution: 1/4000) 0 to 20 mA (Resolution: 1/4000)	FP0-A04V	AFP04121
FP0 Thermocouple Unit	Output specifications Number of channels : 4 channels Output range : -10 to +10 V (Resolution: 1/4000) 4 to 20 mA (Resolution: 1/4000)	FP0-A04I	AFP04123
		FP0-TC4	AFP0420
FP0 Thermocouple Unit	Specifications Number of channels : 2 channels Input range : 0 to 5 V, -10 to +10 V (Resolution: 0.1 °C) Resolution: 0.1 °C	FP0-TC8	AFP0421

## 4 Link/communication units

Product name	Specifications	Power supply voltage	Product number	Part number
FP0 CC-Link Slave Unit	This unit is for making the FP0 function as a slave station of the CC-Link bus. Only one unit can be connected to the furthest right edge of the FP0 expansion bus. Accuracy will change if an FP0 thermocouple unit is used at the same time. For details, please refer to the catalog or to the CC-Link Unit manual.	24 V DC	FP0CCCLS	AFP07943
FP0 I/O Link Unit	This is a link unit designed to make the FP0 function as a station to MEWNET-F (remote I/O system).	24 V DC	FP0IOL	AFP0732
C-NET Adapter S2 Type (for FP0 side)	This is an RS485 adapter designed to allow use of the Computer link function for connecting to a host computer via C-NET. It comes with a 30cm 11.811 inch FP0 tool port cable. A power supply is not required.	—	—	AFP15402
C-NET Adapter (RS485) (for computer side)	This is an RS485 adapter designed to allow use of the Computer link function for connecting to a network-connected PLC via C-NET from a host computer.	100 to 240 V AC 24 V DC	—	AFP8536 AFP8532
FP Web-Server Unit	Unit for connecting FP series/RS232C interface and Ethernet Web-Server function and E-mail sending function	24 V DC	FP-WEB	AFP0610

## 5 Power supply unit

Product name	Specifications	Product number	Part number
FP0 Power Supply Unit	Input voltage: 100 to 240 V AC	Output: 0.7 A, 24 V DC	FP0-PSA4
FP0 Power Supply Unit	Input voltage: 100 to 240 V AC	Output: 0.7 A, 24 V DC	FP0-PSA4

## 6 Programming tools

Product name	Specifications		Part number
	English-language menu	Specifications	
Standard Programming Tool Software Control FPWIN GR Ver.2	Standard	Upgrade (to upgrade from Ver.1.1)	AFPS10520
	Chinese-language menu	Standard	AFPS10520R
Conforms to IEC61131-3 Programming Tool Software Control FPWIN Pro Ver.5	Standard	Upgrade (to upgrade from Ver.1.1)	AFPS10820
	Korean-language menu	Standard	AFPS10820R
PC Connection Cable	Between D-sub 9 pins and DIN 5 pins, 3 m length	Full type (for all type FP series PLC) Small type (for FP0, FP2, FP1, FP-e and FP-M) Upgrade (for full type)	AFPS50540 AFPS51540 AFPS50540R
FP Memory Loader	Data clear type	English-language menu	AFCS503

## 7 Options and additional parts

Product name	Specifications	Part number
FP Memory Loader	Data clear type	AFP8670
Terminal Screwdriver	Relay output type Necessary when wiring terminals block (Phoenix).	AFP8671
Molex Connector Pressure Contact Tool	Necessary when wiring relay output type and Molex connectors. (MOLEX: 57189-5000)	AFP0806
Multi-Wire Connector Pressure Contact Tool	Necessary when wiring transistor output type connectors.	AFP0805
Slim 30 Type Mounting Plate	Screw-stop attachment plate for 30 mm 1.181 inch width the unit.	AXYS2000
Slim Type Mounting Plate	Screw-stop attachment plate for FP0 expansion unit. Slim model.	AFP0811 (set for 10) AFP0803 (set for 10)
Flat Type Mounting Plate	Screw-stop attachment plate for FP0 control unit. Flat model.	AFP0804 (set for 10)
Relay Output Molex Type I/O Cable	Loose-wiring cable (9 leads) AWG20, with Molex socket attached at one end. 0.5 mm <sup>2</sup> , 1 set: 2 cables (blue & white).	Length: 1 m 3.281 ft. AFP0551 (2 cable set) Length: 3 m 9.843 ft. AFP0553 (2 cable set)
Transistor Output Type I/O Cable	Wire-pressed terminal cable (10 leads) AWG22, 0.3 mm <sup>2</sup> with connectors attached at one end, 1 set: 2 cables (blue & white).	Length: 1 m 3.281 ft. AFP0521 (2 cable set) Length: 3 m 9.843 ft. AFP0523 (2 cable set)
Flat Cable Connector for FP0 Transistor Type Unit	If you are using flat cable connector, request the part specified below for a connector with an asymmetrical design to prevent mistaken polarity. (10-pin)	AXM110915
Terminal Socket	Attaches to relay output and terminal block type. Additional part	AFP0802 (2 sockets per pack)
Molex Socket	Attaches to relay output and Molex connector types. Additional part	AFP0801 (2 sockets per pack)
Wire-Press Socket	Attaches to transistor output type. Additional part	AFP0807 (2 sockets per pack)
Power Cable	Attaches to FP0 various units. Additional part. Length: 1 m 3.281 ft.	AFP0561 (1 socket per pack)



## 1 Control units

Product name	Built-in memory (Program capacity)	Specifications				Product number	Part number
		Number of I/O points	Power supply voltage	Input	Output		
FP0 C10 Control Unit	EEPROM (2.7 k steps)	10	24 V DC	24 V DC Sink/Source (±common)	Relay output: 2 A	FP0-C10RS	AFP02123
FP0 C10 Control Unit with RS232C port	EEPROM (2.7 k steps)	10	24 V DC	24 V DC Sink/Source (±common)	Relay output: 2 A	FP0-C10CRM	AFP02123C
FP0 C14 Control Unit	EEPROM (2.7 k steps)	14	24 V DC	24 V DC Sink/Source (±common)	Relay output: 2 A	FP0-C14RS	AFP02223
FP0 C14 Control Unit with RS232C port	EEPROM (2.7 k steps)	14	24 V DC	24 V DC Sink/Source (±common)	Relay output: 2 A	FP0-C14CRM	AFP02223C
FP0 C16 Control Unit	EEPROM (2.7 k steps)	16	24 V DC	24 V DC Sink/Source (±common)	Transistor output: NPN 0.1 A PNP 0.1 A	FP0-C16RS	AFP02343
FP0 C16 Control Unit with RS232C port	EEPROM (2.7 k steps)	16	24 V DC	24 V DC Sink/Source (±common)	Transistor output: NPN 0.1 A PNP 0.1 A	FP0-C16CRM	AFP02343C
FP0 C32 Control Unit	EEPROM (5 k steps)	32	24 V DC	24 V DC Sink/Source (±common)	Transistor output: NPN 0.1 A PNP 0.1 A	FP0-C32RS	AFP02543
FP0 C32 Control Unit with RS232C port	EEPROM (5 k steps)	32	24 V DC	24 V DC Sink/Source (±common)	Transistor output: NPN 0.1 A PNP 0.1 A	FP0-C32CRM	AFP02543C
FP0 T32 Control Unit with RS232C port and Clock/Calendar function	EEPROM (10 k steps)	32	24 V DC	24 V DC Sink/Source (±common)	Transistor output: NPN 0.1 A PNP 0.1 A	FP0-T32CT	AFP02643C
FP0 S-LINK Control Unit with RS232C port	EEPROM (5 k steps)	128 (S-LINK section)	24 V DC	—	—	FP0-SL1	AFP02700

## 2 Expansion units

Product name	Number of I/O points	Power supply voltage	Specifications		Connection type	Product number	Part number
			Input	Output			
FP0 E8 Expansion Unit	8	—	24 V DC Sink/Source (±common)	—	MIL connector	FP0-E8X	AFP03003
	8	24 V DC	24 V DC Sink/Source (±common)	Relay output: 2 A	Terminal block	FP0-E8RS	AFP03023
FP0 E16 Expansion Unit	8	—	—	—	Terminal block	FP0-E8RM	AFP03013
	8	24 V DC	—	Relay output: 2 A	MIL connector	FP0-E8YR	AFP03050
FP0 E16 Expansion Unit	16	—	24 V DC Sink/Source (±common)	—	MIL connector	FP0-E16X	AFP03303
	16	24 V DC	24 V DC Sink/Source (±common)	Relay output: 2 A	Terminal block	FP0-E16RS	AFP03323
FP0 E16 Expansion Unit	16	—	24 V DC Sink/Source (±common)	—	Molex connector	FP0-E16RM	AFP03313
	16	—	24 V DC Sink/Source (±common)	—	MIL connector	FP0-E16Y	AFP03343
FP0 E32 Expansion Unit	16	—	—	—	MIL connector	FP0-E16YT	AFP03340
	32	—	24 V DC Sink/Source (±common)	Transistor output: NPN 0.1 A	MIL connector	FP0-E32T	AFP03543

Notes 1) The control units and relay output type expansion units come with a power cable (part number AFP0581).  
 2) The transistor output type expansion units need no power cable.  
 3) Preferably use the specific terminal block screwdriver (part number AFP0806, Phoenix type code SZSQ, 4 x 2.5 mm, .098 inch) or equivalent.  
 4) The transistor output units have a press-fit socket for wire-pressed terminal cable and contacts.  
 Use the press-fit tool (part number AXYS2000) for wire-pressed terminal cable.

## 3 Intelligent units

Product name	Specifications	Product number	Part number
FP0 Analog I/O Unit	Input specifications Number of channels : 2 channels Input range : 0 to 5 V, -10 to +10 V (Resolution: 1/4000) 0 to 20 mA (Resolution: 1/4000)	FP0-A21	AFP0480
FP0 A/D Converter Unit	Output specifications Number of channels : 1 channels Output range : -10 to +10 V (Resolution: 1/4000) 0 to 20 mA (Resolution: 1/4000)	FP0-A80	AFP0401
FP0 D/A Converter Unit	Input specifications Number of channels : 8 channels Input range : 0 to 5, -10 to +10 V (Resolution: 1/4000) 0 to 20 mA (Resolution: 1/4000)	FP0-A04V	AFP04121
FP0 Thermocouple Unit	Output specifications Number of channels : 4 channels Output range : -10 to +10 V (Resolution: 1/4000) 4 to 20 mA (Resolution: 1/4000)	FP0-A04I	AFP04123
		FP0-TC4	AFP0420
FP0 Thermocouple Unit	Specifications Number of channels : 2 channels Input range : 0 to 5 V, -10 to +10 V (Resolution: 1/4000) 0 to 20 mA (Resolution: 1/4000)	FP0-TC8	AFP0421

## 4 Link/communication units

Product name	Specifications	Power supply voltage	Product number	Part number
FP0 CC-Link Slave Unit	This unit is for making the FP0 function as a slave station of the CC-Link bus. Only one unit can be connected to the furthest right edge of the FP0 expansion bus. Accuracy will change if an FP0 thermocouple unit is used at the same time. For details, please refer to the catalog or to the CC-Link Unit manual.	24 V DC	FP0CCCLS	AFP07943
FP0 I/O Link Unit	This is a link unit designed to make the FP0 function as a station to MEWNET-F (remote I/O system).	24 V DC	FP0IOL	AFP0732
C-NET Adapter S2 Type (for FP0 side)	This is an RS485 adapter designed to allow use of the Computer link function for connecting to a host computer via C-NET. It comes with a 30cm 11.811 inch FP0 tool port cable. A power supply is not required.	—	—	AFP15402
C-NET Adapter (RS485) (for computer side)	This is an RS485 adapter designed to allow use of the Computer link function for connecting to a network-connected PLC via C-NET from a host computer.	100 to 240 V AC 24 V DC	—	AFP8536 AFP8532
FP Web-Server Unit	Unit for connecting FP series/RS232C interface and Ethernet Web-Server function and E-mail sending function	24 V DC	FP-WEB	AFP0610

## 5 Power supply unit

Product name	Specifications	Product number	Part number	
FP0 Power Supply Unit	Input voltage: 100 to 240 V AC	Output: 0.7 A, 24 V DC	FP0-PSA4	AFP0634

## 6 Programming tools

Product name	Specifications		Part number
	English-language menu	Specifications	
Standard Programming Tool Software Control FPWIN GR Ver.2	Standard	Upgrade (to upgrade from Ver.1.1)	AFPS10520
	Chinese-language menu	Standard	AFPS10520R
Conforms to IEC61131-3 Programming Tool Software Control FPWIN Pro Ver.5	Standard	Upgrade (to upgrade from Ver.1.1)	AFPS10820
	Korean-language menu	Standard	AFPS10820R
PC Connection Cable	Between D-sub 9 pins and DIN 5 pins, 3 m length	Full type (for all type FP series PLC) Small type (for FP0, FP2, FP1, FP-e and FP-M) Upgrade (for full type)	AFPS50540 AFPS51540 AFPS50540R
FP Memory Loader	Data clear type	English-language menu	AFCS503

## 7 Options and additional parts

Product name	Specifications	Part number
FP Memory Loader	Data clear type	AFP8670
Terminal Screwdriver	Relay output type	AFP8671
	Necessary when wiring terminals block (Phoenix).	AFP0806
Molex Connector Pressure Contact Tool	Necessary when wiring relay output type and Molex connectors. (MOLEX: 57189-5000)	AFP0805
Multi-Wire Connector Pressure Contact Tool	Necessary when wiring transistor output type connectors.	AXYS2000
Slim 30 Type Mounting Plate	Screw-stop attachment plate for 30 mm 1.181 inch width the unit.	AFP0811 (set for 10)
Slim Type Mounting Plate	Screw-stop attachment plate for FP0 expansion unit. Slim model.	AFP0803 (set for 10)
Flat Type Mounting Plate	Screw-stop attachment plate for FP0 control unit. Flat model.	AFP0804 (set for 10)
Relay Output Molex Type I/O Cable	Loose-wiring cable (9 leads) AWG20, with Molex socket attached at one end. 0.5 mm <sup>2</sup> , 1 set: 2 cables (blue & white).	Length: 1 m 3.281 ft. AFP0551 (2 cable set) Length: 3 m 9.843 ft. AFP0553 (2 cable set)
Transistor Output Type I/O Cable	Wire-pressed terminal cable (10 leads) AWG22, 0.3 mm <sup>2</sup> with connectors attached at one end, 1 set: 2 cables (blue & white).	Length: 1 m 3.281 ft. AFP0521 (2 cable set) Length: 3 m 9.843 ft. AFP0523 (2 cable set)
Flat Cable Connector for FP0/FP0 Transistor Type Unit	If you are using flat cable connector, request the part specified below for a connector with an asymmetrical design to prevent mistaken polarity. (10-pin)	AXM110915
Terminal Socket	Attaches to relay output and terminal block type. Additional part	AFP0802 (2 sockets per pack)
Molex Socket	Attaches to relay output and Molex connector types. Additional part	AFP0801 (2 sockets per pack)
Wire-Press Socket	Attaches to transistor output type. Additional part	AFP0807 (2 sockets per pack)
Power Cable	Attaches to FP0 various units. Additional part. Length: 1 m 3.281 ft.	AFP0561 (1 socket per pack)





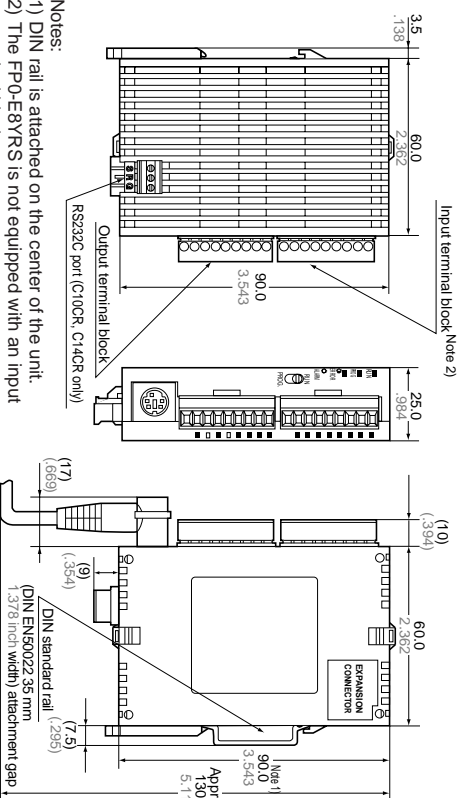


## Control units and expansion units \* For the relay output type, the terminal block type is listed as the representative type.

FP0-C10RS/C10RM/C10CRS/C10CRM/C14RS/C14RM/C14CRS/C14CRM  
 FP0-E8RS/E8RM/E8YRS/E16RS/E16RM

### External dimensions (unit: mm inch)

<Reference measuring for wiring>



### Terminal array

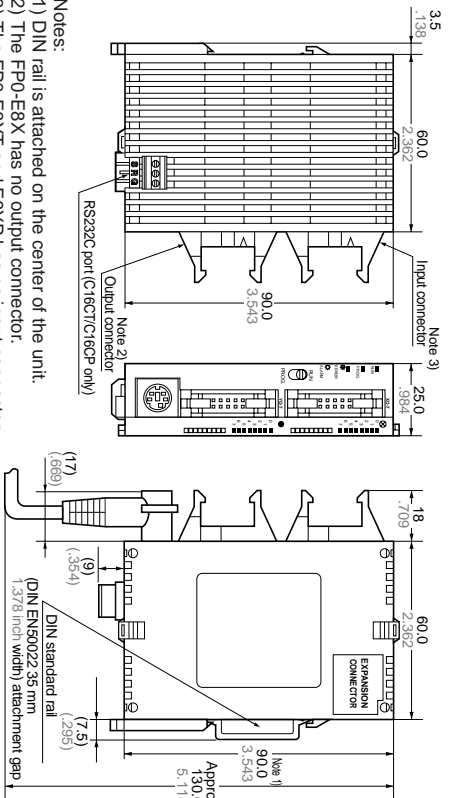
	C10RS/C10RM/ C10CRS/C10CRM	C14RS/C14RM/ C14CRS/C14CRM	E8RS/E8RM	E16RS/E16RM/ E8YRS
Input	X0	X0	X0	X0
	X1	X1	X1	X1
	X2	X2	X2	X2
	X3	X3	X3	X3
	X4	X4	X4	X4
	X5	X5	X5	X5
	COM	COM	COM	COM
Output	Y0	Y0	Y0	Y0
	Y1	Y1	Y1	Y1
	(NC)	Y2	Y2	Y2
	(NC)	Y3	Y3	Y3
	COM	COM	(NC)	Y4
	COM	COM	(NC)	Y5
	COM	COM	(NC)	Y6
			Y7	
			COM	

- Notes:  
 1) DIN rail is attached on the center of the unit.  
 2) The FP0-E8YRS is not equipped with an input terminal block.

### FP0-C16T/C16P/C16CT/C16CP/E16T/E16P/E8X/E8Y/E8YP

### External dimensions (unit: mm inch)

<Reference measuring for wiring>



### Terminal array

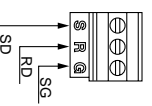
Input (8 points/common)

X0	X1
X2	X3
X4	X5
X6	X7
COM	COM

Output (8 points/common)

Y0	Y1
Y2	Y3
Y4	Y5
Y6	Y7
(+)	(-)

### RS232C port

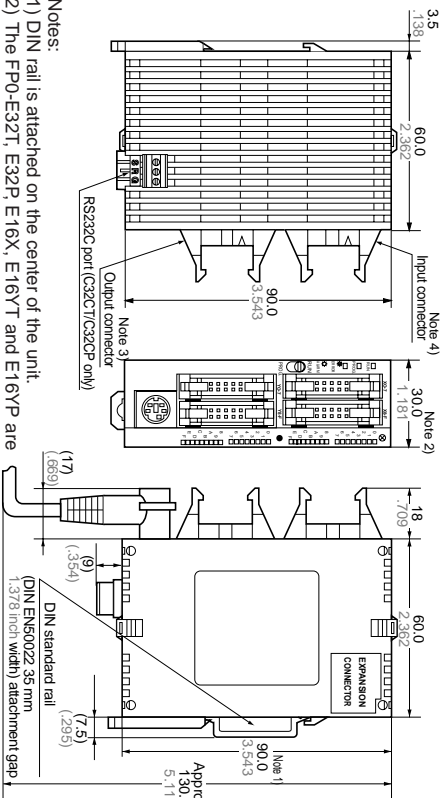


Note: Two COM terminals on the input circuit are connected inside the unit.

### FP0-C32T/C32P/C32CT/C32CP/E32T/E32P/E16X/E16YT/E16YP

### External dimensions (unit: mm inch)

<Reference measuring for wiring>



### Terminal array

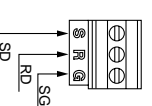
Input (16 points/common)

X0	X1
X2	X3
X4	X5
X6	X7
COM	COM

Output (16 points/common)

Y0	Y1
Y2	Y3
Y4	Y5
Y6	Y7
(+)	(-)

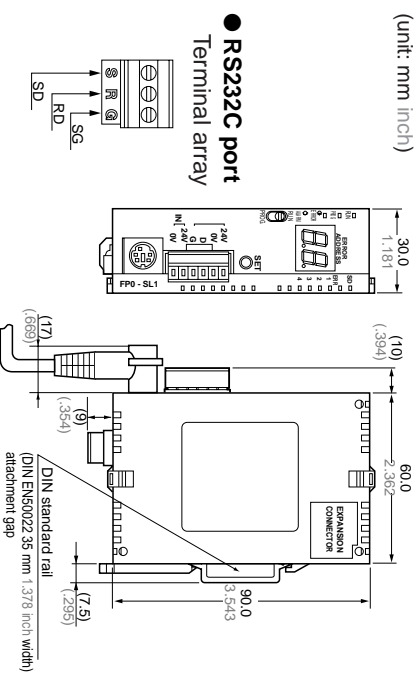
### RS232C port



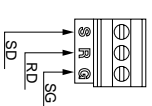
- Notes:  
 1) Four COM terminals on the input circuit are connected inside the unit.  
 2) Two (+) terminals and two (-) terminals on the output circuit are connected respectively inside the unit.

## FP0 S-LINK Control Unit

External dimensions (unit: mm inch)  
 <Reference measuring for wiring>

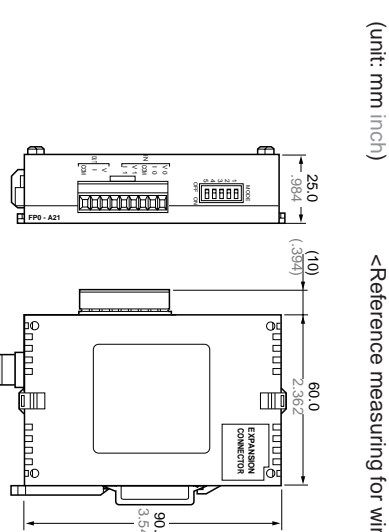


### RS232C port



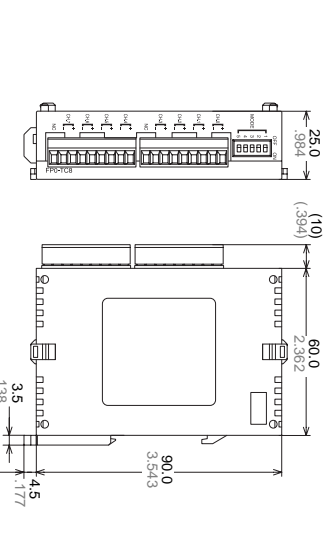
## FP0 Analog I/O Unit, D/A Converter Unit

External dimensions (unit: mm inch)  
 <Reference measuring for wiring>



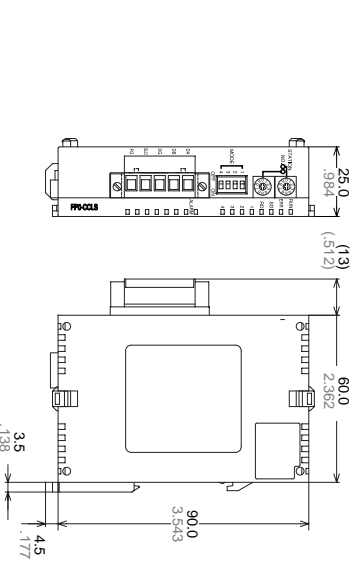
## FP0 A/D Converter Unit, Thermocouple Unit

External dimensions (unit: mm inch)  
 <Reference measuring for wiring>



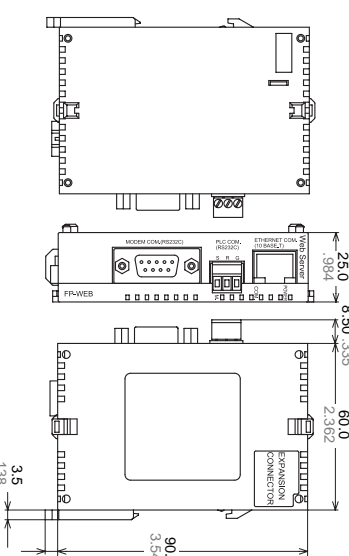
## FP0 CC-Link Unit, I/O Link Unit

External dimensions (unit: mm inch)  
 <Reference measuring for wiring>



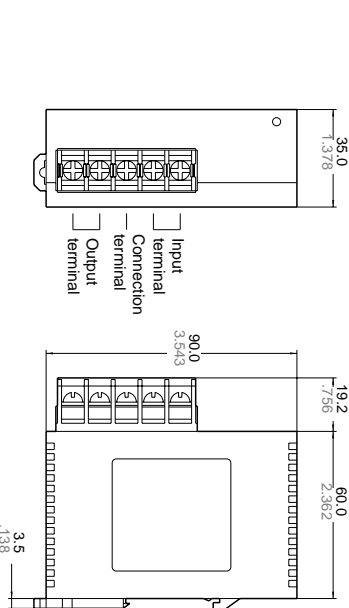
## FP0 Web-Server Unit

External dimensions (unit: mm inch)  
 <Reference measuring for wiring>



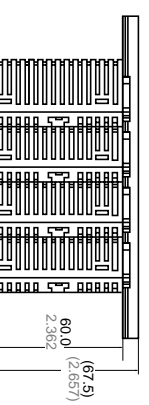
## FP0 Power Supply Unit

External dimensions (unit: mm inch)  
 <Reference measuring for wiring>

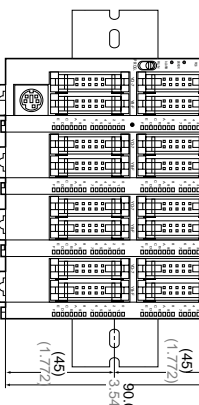


## External Dimensions During Expansions

### Top view (with DIN rail attached)



### Front view



### A+B+C+D dimensions

Control unit type	A	A+B	A+B+C	A+B+C+D
FP0-C10CRS	30 mm	55 mm	80 mm	105 mm
FP0-C10CRS	1.181 inch	2.165 inch	3.150 inch	4.134 inch
FP0-C10RM	25 mm	50 mm	75 mm	100 mm
FP0-C10CRM	98.4 mm	1.969 inch	2.953 inch	3.937 inch
FP0-C14RS				
FP0-C14CRS				
FP0-C14RM				
FP0-C16T				
FP0-C16CT				
FP0-C16CP				
FP0-C32T				
FP0-C32P				
FP0-C32CT				
FP0-C32CP				
FP0-SL1				
FP0-SL2CT				
FP0-SL2CP				





# Panasonic

ideas for life

Programmable Controllers

# FP0

ZERO

## Suitable for Installation Virtually Anywhere



Actual size:  
W30 × H90 × D60 (mm)  
W1.181 × H3.543 × D2.362 (inch)

I/O 10 points/14 points  
( Relay output,  
terminal block type )



I/O 16 points  
( Transistor  
output type )



I/O 32 points  
( Transistor  
output type )



Please contact .....

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