Panasonic

Programmable Logic Controller

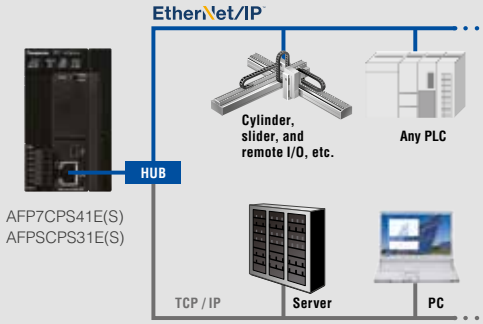
FP7 SERIES

Move

Control machinery and facilities

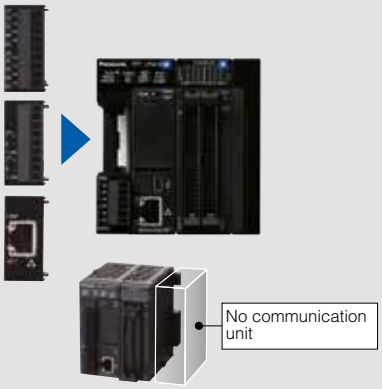
Apart from a high operation speed and a large capacity, the FP7 features great ease of use, which is important for design-in, use in production, and maintenance.





Ethernet/IP compatibility

Models with built-in Ethernet ports add functionality to the CPU. Easy connection with all kinds of robots and PLCs enables control and communication.

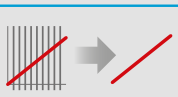


Cassette system reduces unit cost and footprint

Serial communication and analog functionality of the CPUs can be expanded easily and at low cost. Moreover, when the FP7 is used as a serial communication unit, as many as 35 channels can be used. This helps to reduce cost and footprint.

Analog input unit

- Does not depend on CPU scanning
- Analog buffering
- High-speed conversion: 25μs/ch
- Overall accuracy: ±0.05% F.S. (at +25°C +77°F)



Analog sampling that does not depend on the CPU

Sampling and data collection takes place in the analog unit! This is ideal for high-accuracy measurement applications because with the fixed cycle, analog signals can be held in the buffer.

Dependent on scan by the CPU

The scan gets delayed when the CPU slows down due to other processes and sampling becomes sporadic.

Sampling in the analog unit

Accurate sampling possible thanks to a fixed cycle.

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Collect

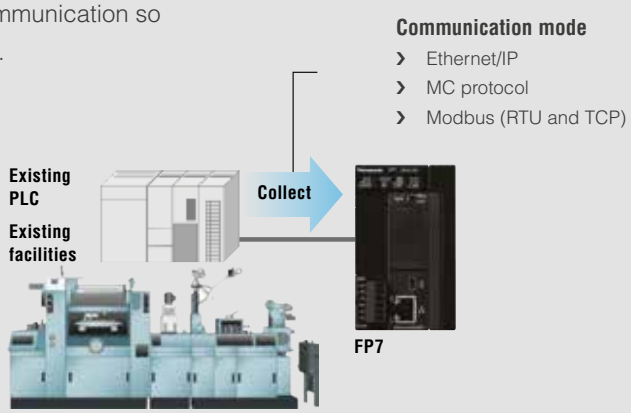
Collects production site information

The FP7 can collect multiple data related to production such as voltage, electric power, temperature, production output, alarm notifications, etc.



■ Supports all types of protocol

The FP7 supports many different protocols for Ethernet / serial communication so that the FP7 can easily be installed in existing production facilities.



Store

Logs and stores collected information

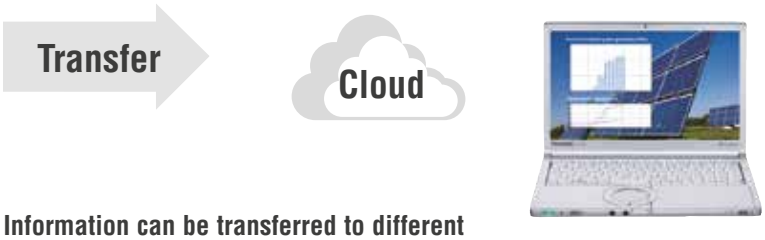
The FP7 stores and logs the collected information securely.

■ Data logging with the FP7 series

The FP7 series supports data logging of process data on commercial SD cards. Up to 16 log files can be created in parallel. For secure storage, high-capacity SD (SDHC) memory cards with up to 32GB can be used.

■ Intelligent data space management thanks to shared program and data registers

The available data space is distributed depending on whether operation programs or collected data need more space. It is not necessary to purchase expensive upgrade models because there is not enough data space available.

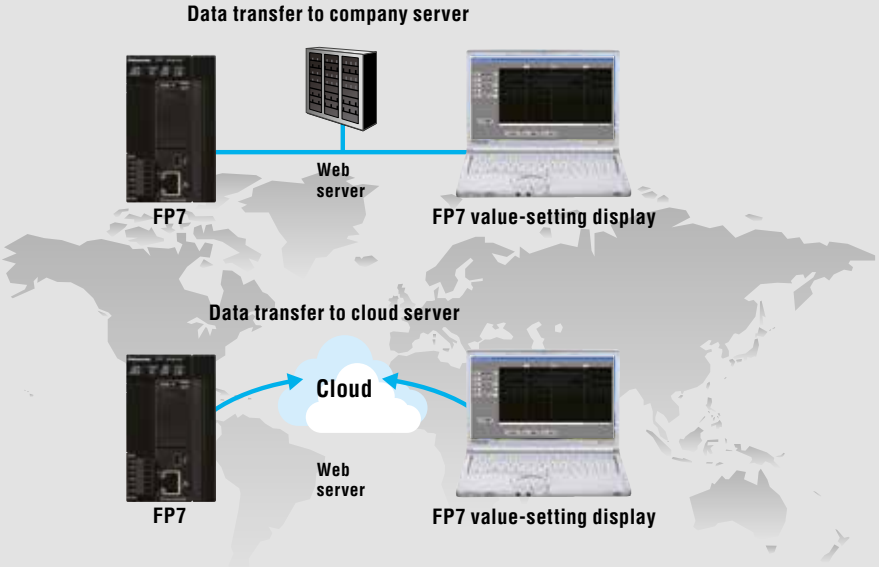


Information can be transferred to different types of media

Wherever the collected information is needed, the FP7 transmits it, be it to a PC, a server, the cloud, or anywhere else.

■ HTTP(S) client function (SSL-compatible)

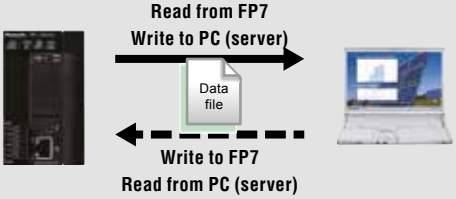
Transfer data from the FP7 to a web server for easy viewing with a browser. Send and receive data from multiple FP7 units on a schedule controlled by the FP7. Communicate both inside the firewall on an intranet and outside the firewall to the wider world through the Internet.



Allow users from around the world to access the current state of their equipment.

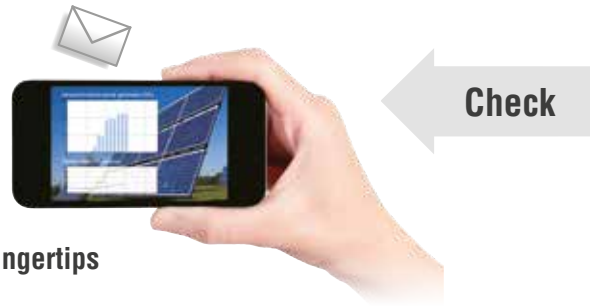
■ Information can be transferred to different types of media

Allows the PC to read the logging data in the FP7's SD memory card and to write setting values and other parameters.



■ FTP(S) client function (SSL-compatible)

The FP7 can generate and write data files to an FTP server on a PC as well as read data files from the FTP server.
The sessions use SSL, thus protecting IDs and passwords.



All information at your fingertips

Data collected by the FP7 can be displayed in a web browser. Whether you are using a smartphone or a PC, it is easy to check the current state of the production site.

■ Web-server function

Monitor and control the FP7 without the need for a dedicated software. Users can check the accumulated data in the FP7 with a browser and send control commands as required.

■ Information updates via e-mail

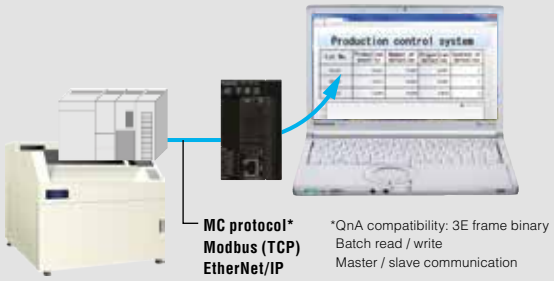
Supervise the operation of the equipment via e-mail. Receive and view daily reports as well as get notifications if a malfunction occurs.

■ E-mail sending function (SSL-compatible)

Configure the FP7 to send e-mails on a preset schedule or when a preset condition changes in the PLC. The e-mails can be sent with data files attached and are protected by SSL.

■ Local & remote connectivity

The standard CPU boards with Ethernet interface offer connectivity without limits, from remote programming to monitoring and data logging to FTP server, MEWTOCOL (client/server), Ethernet/IP and Modbus TCP.



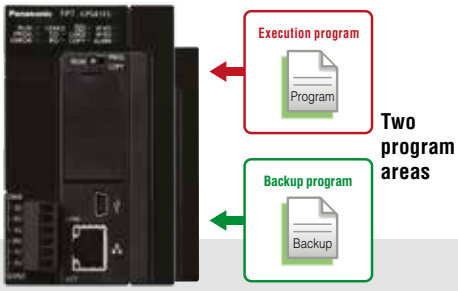
Archiving of events

All events concerning the CPU or the programs are logged. All program changes are registered, which is useful for debugging and tracing the cause of malfunctions.

Date of occurrence	Time	Trigger event
2014/11/21	14:05:35	Power: ON
2014/11/21	14:07:13	Open cover
2014/11/21	14:20:25	Insert SD memory card.
2014/11/21	14:30:19	Close cover
2014/11/21	14:31:00	Download program
2014/11/21	14:33:10	Switch operation mode to RUN
2014/11/21	14:35:12	Program edition during RUN
2014/11/21	14:35:32	Upload program
2014/11/21	14:40:07	Power: OFF

Built-in program backup for fast recovery of factory defaults

The CPU can store two programs, one for execution and one for backup. In the event of a fault, no SD memory card is needed to return to a previously saved backup program.

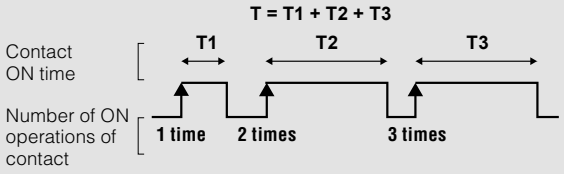


Hour meter operation

Indication of maintenance schedules for PLC and peripheral equipment.

Input contacts (X):
Automatically measure and log total ON times and number of ON operations of connected sensors.

Output contacts (Y):
Automatically measure and log total ON times and number of ON operations of connected actuators. The maintenance schedules for relays, motors, etc. can be optimized.



Data backup without battery

Fewer maintenance tasks need to be performed because the PLC requires no battery. And, to save power, the FP7 can be switched off without hesitation.

Item	Without battery	With battery
Program holding	Yes	Yes
Data register holding [1]	Yes	Yes
Clock / calendar operation	No [2]	Yes

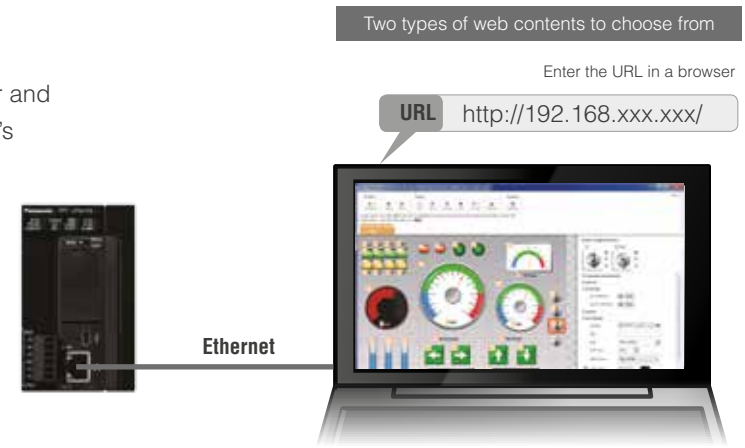
Notes: 1) Data register (DT) of up to 256k words can be backed up.
2) Clock / calendar operation can be maintained for about a week if the PLC is switched off. Allow at least 30 minutes of ON time before switching the PLC off again.

Clock / calendar adjustable via Ethernet

The battery-free operation works because the built-in clock / calendar function can be adjusted via Ethernet after the PLC has been switched on.

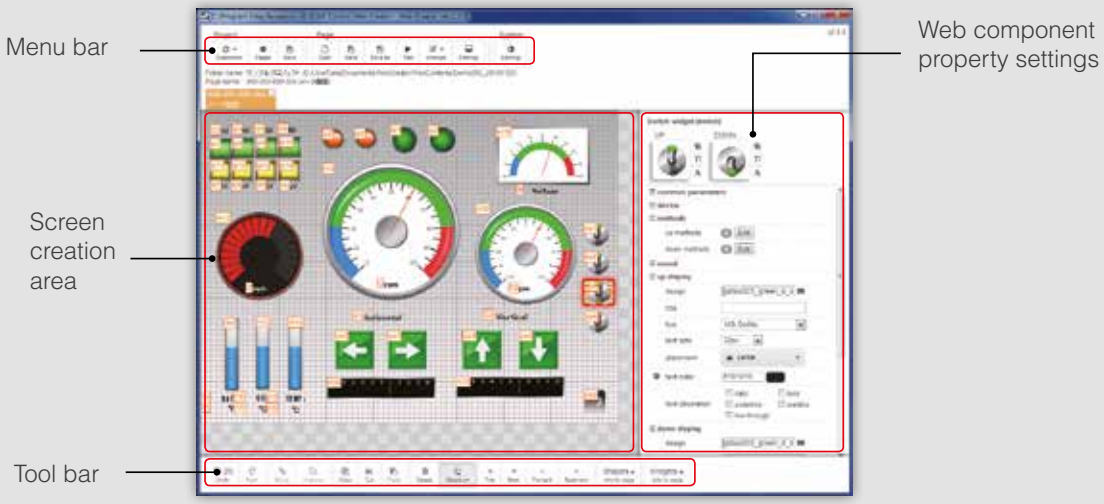
Custom Web

Users set up their own screens with Control Web Creator and upload them to the FP7. Then, the information in the FP7's internal web server can be monitored with any browser.



Control Web Creator

This is a graphics creation tool that allows you to easily design web content that is published by the FP7. You can creatively design content by arranging web components such as switches, lamps, and meters on the screen and then setting the properties. Your content will be linked to information in the PLC without you needing any knowledge of HTML.



- Same style of operation as GTWIN, the screen design tool for touch panels.
- Components can be arranged by dragging and dropping.
- Component details are defined in an easy way using the object properties.
- Components do not lose quality when enlarged or reduced, and you can color them as desired.
- Images can be pasted in.

System Web

The CPU comes with its own preset web content so you can start displaying data right away. Use it to check the status of the FP7 (settings, operation history, errors, etc.).

You can view the data registers, etc., using a PC or smartphone.

FP7

A new era of automation control. Visualize production site conditions by collecting and transferring information.

Features

- Compact size with room for expansion functions.
- Equipped with a cassette interface.
  Add-on cassettes can be added to the CPU to increase functionality without increasing the width of the unit. Communication cassettes support communication via RS232C, RS422, and RS485.
- Up to 16 different units can be connected to a single CPU.
- High-capacity SD (SDHC) memory cards up to 32GB are supported.
- High performance (min. scan time 1ms, max. 20μs for 60k steps); the processing speed is less susceptible to frequent Ethernet communication.
- GT power supply terminals.

Item	AFP7CPS21	AFP7CPS31	AFP7CPS31E	AFP7CPS41E
Power supply	24V DC or FP power supply unit			
Max. number of inputs/output	8.192 / 8.192			
Max. number of expansion units	16	64 (4x16)		
Operation speed	14ns/step	11ns/step (basic instructions)		
Program memory	Built-in flash ROM (no backup battery required)			
Program capacity	64k steps	120k steps		196k steps
Internal relays (R)	32768			
Timers (T)	4096 points: 1–4,294,967,295 (in units of 10μs, 1ms, 10ms, 100ms or 1s)			
Counters (C)	1024 points: 1–4,294,967,295			
Ethernet function	–		Built-in	
Constant scan time	0–125ms			
Clock/calendar function	Built-in			

FP7 CPUs

Description	Part number
64k steps, operation speed 14ns, no Ethernet support	AFP7CPS21
120k steps, operation speed 11ns, no Ethernet support	AFP7CPS31
120k steps, operation speed 11ns, Ethernet communication available	AFP7CPS31E
196k steps, operation speed 11ns, Ethernet communication available	AFP7CPS41E

FP7 communication cassettes

For communication with programmable displays or PCs and for data exchange between PLCs

› Serial communication functions can be added to the CPU. 6 types are available including RS232C dedicated cassettes, cassettes to support either RS422/RS485 or Ethernet, and cassettes that support any combination of RS232C and RS485.

› Protocol supports MODBUS-RTU.
Communication can easily be accomplished using comfortable communication instructions.

Communication cassettes

Specifications	Part number
RS232C, 1 channel (insulated)	AFP7CCS1
RS232C, 2 channels (insulated)	AFP7CCS2
RS422 or RS485, 1 channel (insulated)	AFP7CCM1
RS422 or RS485, 2 channels (insulated)	AFP7CCM2
RS232C, 1 channel (insulated) and RS485, 1 channel (insulated)	AFP7CCS1M1
Ethernet 100Base-TX/10Base-T	AFP7CCET1

FP7 application cassettes

For analog and temperature input

› Analog I/O and temperature input functions can be added to the CPU. Low cost expansion of the CPU with an analog function is easy and installation space can be reduced.

› **Low cost addition of functions**
Reduced cost and space are realized compared to the analog input and output unit.

Application cassettes

Specifications	Part number
2 channels, analog input 0–10V/0–5V/0–20mA, resolution 12 bit, conversion speed 1ms/channel (non-insulated)	AFP7FCAD2
2 channels, analog input 0–5V/0–10V/0–20mA, resolution 12 bit, conversion speed 1ms/channel (non-insulated); 1-channel analog output 0–10V/0–20mA	AFP7FCA21
2 channels, thermocouple input, K/J type, resolution 0.1°C, conversion speed 100ms/2 channels (insulated)	AFP7FCTC2

FP7 analog input and output units

Channel insulation is switchable to support various devices

- **20 times faster conversion than in previous model**
  A conversion rate of 25µs/channel is possible, 20 times faster than the previous model's 500µs/channel conversion speed. The system's production efficiency can be improved due to precise control. High-speed sampling can be achieved, independent of the PLC's scan time.
- **High-accuracy control**
  High accuracy of ±0.05% (at 25°C) of full scale can be achieved. The high-resolution performance allows users to achieve reliable control.
- **Noise-resistant with isolated channels**
  Channel insulation can be activated to guard against interference from other channels. No need to worry about the power supply system of the objects being measured.
- **Multi-channel type (8 channels) available with high-speed processing**

Specifications	Part number
4 channels, analog output, voltage/current, conversion speed 25µs/channel, resolution max. 16 bit, accuracy max. ±0.05% F.S. (at 25°C), insulation between channels	AFP7DA4H
4 channels, analog input, voltage/current, conversion speed 25µs/channel, resolution max. 16 bit, accuracy max. ±0.05% F.S. (at 25°C), insulation between channels	AFP7AD4H
8 channels, analog input, voltage/current, conversion speed 25µs/channel, resolution max. 16 bit, accuracy max. ±0.1% F.S. (at 25°C)	AFP7AD8

FP7 thermocouple & RTD units

Multiple types of thermocouples and RTD supported

- Ten types of thermocouples (K, J, T, N, R, S, B, E, PLII and WRe5-26) are supported. They can be used in combination with voltage and current inputs.
- Three types of RTDs (Pt100, JPt100 and Pt1000) are supported for each channel.
- Sensor types can be set in the programming software or by a user program.
- Wire breakage detection function (when any of the A, B and C terminals is disconnected).

Specifications	Part number
8 channels, analog input, resolution 0.1°C, K, J, T, N, R, S, B, E, types	AFP7TC8
8 channels, analog input, resolution 0.1°C, Pt100/JPt100/Pt1000	AFP7RTD8

FP7 digital input, output and mixed I/O units

Inputs/outputs can be added as necessary

- I/O mixed units are available.
- A single I/O mixed unit has 32 input points and 32 output points. The necessary I/O points can be efficiently obtained, resulting in a compact PLC at reduced cost. Dedicated input or output units are also available.
- Transistor output units are designed for a 300mA current capacity.
- The 64-point transistor output unit is equipped with 8 outputs with a current capacity of 300mA. Large indicator lamps, magnetic contacts, etc. that previously required relay outputs or external relays can be driven directly.
- Input time constants are configurable.
- Response speed can be selected from 0.1ms, 0.5ms, 1ms, 5ms, 10ms, 20ms, or 70ms, depending on the output devices to be used.

Input, output and mixed I/O units

Type	Number of points	Connection method	Specifications	Part number
DC input	16	Terminal block	12-24VDC, configurable input time constant	AFP7X16DW
	32	MIL connector	12-24VDC, configurable input time constant	AFP7X32D2
	64	MIL connector	12-24VDC, configurable input time constant	AFP7X64D2
Relay output	16	Terminal block	Relay, 2A/output, 5A/common, 16 outputs/common	AFP7Y16R
Transistor output, sink (NPN)	16	Terminal block	Load current 1.0A, 5A/common, 16 outputs/common	AFP7Y16T
	32	MIL connector	Load current 0.3A, 3.2A/common, 32 outputs/common	AFP7Y32T
	64	MIL connector	Load current 0.3A/0.1A, 3.2A/common, 32 outputs/common	AFP7Y64T
Transistor output, source (PNP)	16	Terminal block	Load current 1.0A, 5A/common, 16 outputs/common	AFP7Y16P
	32	MIL connector	Load current 0.3A, 3.2A/common, 32 outputs/common	AFP7Y32P
	64	MIL connector	Load current 0.3A/0.1A, 3.2A/common, 32 outputs/common	AFP7Y64P
DC input, transistor output, sink (NPN)	Input: 32, output: 32	MIL connector	Input: 24VDC, 32 inputs/common Output: load current 0.3A/0.1A, 3.2A/common, 32 outputs/common	AFP7XY64D2T
DC input, transistor output, source (PNP)	Input: 32, output: 32	MIL connector	Input: 24VDC, 32 inputs/common Output: load current 0.3A/0.1A, 3.2A/common, 32 outputs/common	AFP7XY64D2P

Multi I/O unit

- Supports a wide range of devices such as encoders and two-wire system sensors.
- Input: Total 16 points.
- Supports ultra-high speed pulse output and dual polarity.
- Output: Total 16 points.

Product name	Specifications	Part number
FP7 multi input/output unit	DC input: Max. 16 High-speed counter: Max. 4 channels (4 outputs per channel) Interrupt input: Max. 8 Transistor output: Max. 16 Pulse output: Max. 4 channels (4 outputs per channel) PWM output: Max. 4 channels (4 outputs per channel) Comparison output: Max. 8	AFP7MXY32DWD
FP7 multi input/output unit (positioning type)	Max. 4 channels for positioning (trapezoidal control with acceleration / deceleration)	AFP7MXY32DWDH

EtherCat motion control unit

- Up to 32 synchronous groups! (32 groups of 2 axes to 2 groups of 32 axes)
- Industry's fastest class with 0.5ms control cycle (16 axes (2-axis interpolation × 8 groups). Our company created send/receive allocation.)
- Control system: Cyclic position control.
- Positioning table: 1,000 tables / axis.

Product name	Specifications	Part number
FP7 EtherCAT unit	16 real axes, 8 virtual axes, 0.5ms control cycle	AFP7MC16EC
	32 real axes, 16 virtual axes, 1ms control cycle	AFP7MC32EC
	64 real axes, 32 virtual axes, 2ms control cycle	AFP7MC64EC

FP7 positioning units

High-accuracy positioning control can be achieved at reduced cost

- Equipped with electronic cam and electronic gear functions.
- Virtual axes are supported and operable without connecting to external encoders.
- Organized wiring to servo amplifier.
- A servo ON output terminal is provided that allows simple and neat wiring to the servo amplifier.
- Dedicated configuration tool.
- Parameter and positioning operation settings can be made easily. Test operation is also supported. Positioning operations can be checked even while the CPU is in program mode.

Specifications				Part number
Output type	No. of axes controlled	Max. operation speed	Functions	
Transistor	2	1–500kpps	Electronic gear and cam function, linear interpolation, circular interpolation	AFP7PP02T
	4			AFP7PP04T
Line driver	2	1–4Mpps		AFP7PP02L
	4			AFP7PP04L

FP7 pulse output units

Super high-speed positioning control can be achieved

- The pulse output request is received from the CPU and the startup time for pulse output is the industry's fastest at 1µs. Tact time is reduced with repeated short-distance positioning operations.
- **Neater wiring to servo and amplifier**
  Equipped with a servo ON output terminal, wiring to the servoamplifier is neater.
- **Migration from FP2 series is easy**
  The handling corresponds to the previous FP2 positioning unit (multi-function type). Program transfer is easy.

Specifications				Part number
Output type	No. of axes controlled	Max. operation speed	Functions	
Transistor	2 (independent)	1–500kpps	Linear acceleration, S-shaped acceleration and deceleration control	AFP7PG02T
	4 (independent)			AFP7PG04T
Line driver	2 (independent)	1–4Mpps		AFP7PG02L
	4 (independent)			AFP7PG04L

FP7 high-speed counter units

One of the fastest of its kind has been added to the lineup

- Industry-leading in its class with 16Mpps (for two-phase factor 4 input mode).
- Accurate, real-time surveillance of inverter and motor rotation speed variation.
- Supports 5/12/24V DC and differential input.
- Supports a wide range of input signals from 12 to 24V DC, 5V DC and differential input with one unit.
- Powerful application support.
- Input pulse frequencies are automatically measured in the unit, and a built-in ring counter can easily detect index table positions. An integrated clock allows accurate line speed adjustments and work length measurements.

No. of channels	Specifications	Part number
2 channels	16MHz (for two-phase factor 4 input mode) 4MHz (for incremental/decremental input mode)	AFP7HSC2T
4 channels		AFP7HSC4T

FP7 serial communication unit

Attach one or two communication cassettes to this communication unit

- A total of five types of cassettes can be freely combined supporting RS232C, RS422, or RS485 and up to 4 channels.
- Up to eight serial communication units can be attached to the CPU, offering a max. of 35 communication channels.

Specifications	Part number
For 2 serial communication cassettes, max. 8 units can be installed per CPU	AFP7NSC

FP7 expansion units

High expandability thanks to bus expansion and distributed installation

- Expansion with up to 3 expansion slave blocks is possible.
- Therefore a maximum of 64 I/O units and intelligent units can be connected.
- Distributed installation with high-speed bus transmission.

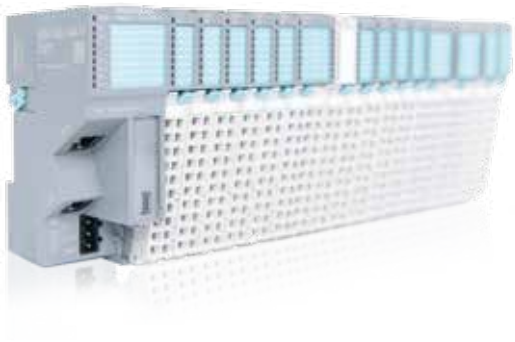
Specifications	Part number
Expansion master unit, up to 3 expansion slave units can be connected to one expansion master unit	AFP7EXPM
Expansion slave unit, up to 16 I/O units and intelligent units can be connected to one expansion slave unit	AFP7EXPS

Fieldbus Master Units (FMU)

Part number
AFP7NPFBM (PROFIBUS)
AFP7NDNM (DeviceNet)
AFP7NCANM (CANopen)
AFP7NPFNM (PROFINET)

The FP7 expansion Fieldbus Master Units (FMU) enable manufacturer-independent communication at field level. The units are available for four bus systems: PROFINET; PROFIBUS, DeviceNet and CANopen. For each network type, ready-made function libraries are available for the programming software Control FPWIN Pro. These libraries drastically shorten the time needed to develop your applications, and consequently save valuable human resource costs.

Remote I/O units

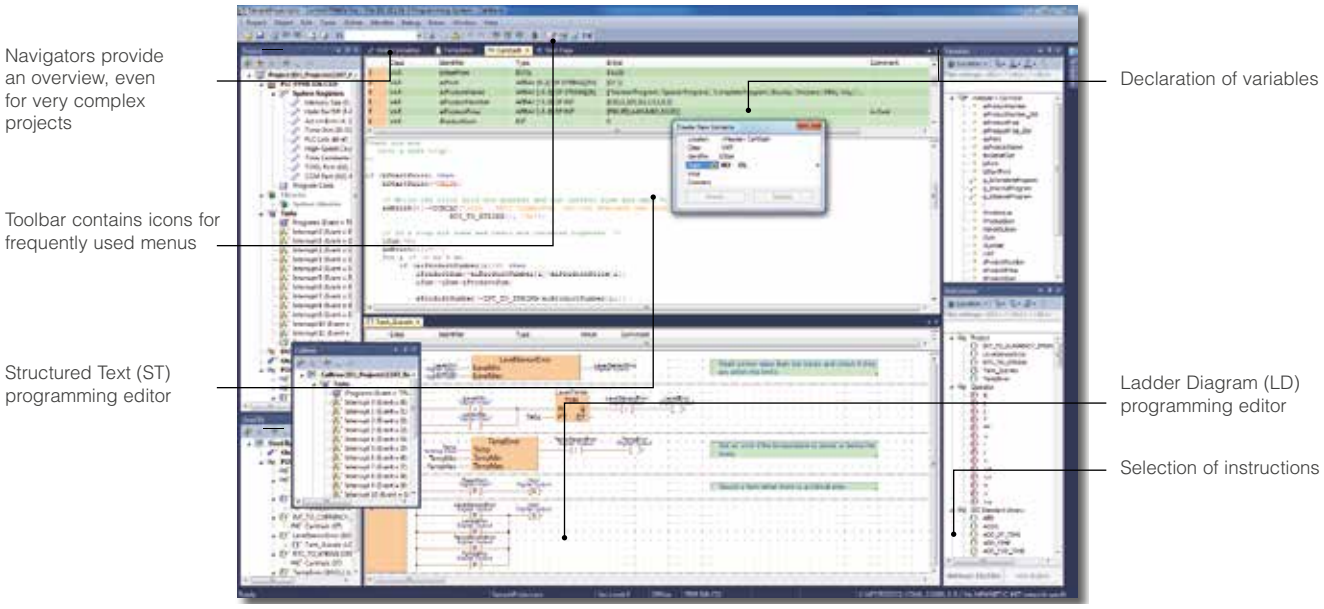


Our TB20 I/O units have three components: a separate front connector, an electronic unit, and a base unit. A locking mechanism ensures that all units can be quickly mounted and securely attached on DIN rails while guaranteeing a reliable electrical connection.

Bus coupler	Part number
TB20-C, Bus coupler ModbusTCP	600-170-1AA11
TB20-C, Bus coupler EtherNet/IP	600-175-1AA11
Digital input units	**Part number**
8 IN, 24V DC	600-210-0AH01
16 IN, 24V DC	600-210-0AP21
Digital output units	**Part number**
2 OUT, 24V DC, 500mA	600-220-0AB01
4 OUT, 24V DC, 500mA	600-220-0AD01
8 OUT, 24V DC, 500mA	600-220-0AH01
16 OUT, 24V DC, 500mA	600-220-0AP21
2 OUT, 24V DC, 2A	600-220-0BB01
4 OUT, 24V DC, 2A	600-220-0BD01
Digital mixed units	**Part number**
4 IN / 4 OUT, 24V DC, 500mA	600-230-0AH01
8 IN / 8 OUT, 24V DC, 500mA	600-230-0AP21

Analog input units	Part number
2 IN, I, 0/4–20mA, ±2mA, 12 bit	600-250-4AB01
4 IN, I, 0/4–20mA, ±20mA, 12 bit	600-250-4AD01
2 IN, I, 0/4–20mA, ±20mA, isolated, 16 bit	600-250-7BB01
4 IN, I, 0/4–20mA, ±20mA, isolated, 16 bit	600-250-7BD01
8 IN, I, 0/4–20mA, ±20mA, isolated, 16 bit	600-250-7BH21
2 IN, U, ±10V, 0–10V, 1–5 , 12 bit	600-252-4AB01
4 IN, U, ±10V, 0–10V, 1–5V, 12 bit	600-252-4AD01
2 IN, U, ±10V, 0–10V, 1–5V, isolated, 16 bit	600-252-7BB01
4 IN, U, ±10V, 0–10V, 1–5V, isolated, 16 bit	600-252-7BD01
8 IN, U, ±10V, 0–10V, 1–5V, isolated, 16 bit	600-252-7BH21
1/2 IN, R, RTD, 16 bit, 2/3/4-wire	600-253-4AB01
2/4 IN, R, RTD, 16 bit, 2/3/4-wire	600-253-4AD01
2 IN, TC, isolated, 16 bit	600-254-4AB02
4 IN, TC, isolated, 16 bit	600-254-4AD02
8 IN, TC, isolated, 16 bit	600-254-4AH22
Analog output units	**Part number**
2 OUT, I, 0/4–20mA, 12 bit	600-260-4AB01
4 OUT, I, 0/4–20mA, 12 bit	600-260-4AD01
2 OUT, U, ±10V, 0–10V, 1–5V, 12 bit	600-261-4AB01
System units	**Part number**
Power and isolation unit, 24V DC, 8A	600-710-0AA01
Potential distributor 9 x 24V DC	600-720-0AH01
Potential distributor 9 x GND	600-720-0BH01

Control FPWIN Pro 7



The most important Control FPWIN Pro highlights at a glance:

- One software for all FP series PLCs.
- 5 programming languages (instruction list, ladder diagram, function block diagram, sequential function chart, structured text).
- Well-structured navigator provides a clear overview of programming organization units (POUs), tasks, system registers, etc., simplifying project management.
- Reuse of ready-made functions and function blocks saves time needed for programming and debugging.
- Remote programming, service, monitoring, and diagnostics via RS232 (COM), modem, Ethernet, USB.
- Forced ON/OFF for input and output contacts via the PC.
- Extensive comments for online documentation created hand in hand with the program.
- Names of variables, functions, function blocks and comments can be written in all languages thanks to Unicode.
- Improved programming comfort: snap function, automatic placement of newly inserted elements, existing connection retained while moving elements.
- Keyboard-control mode to accelerate programming.
- 8 languages are supported: English, German, French, Italian, Spanish, Japanese, Korean, and Chinese.
- Clock / calendar function on the PLC can be set in the software.
- All IEC functions support the FP7.
- New communication and pointer functions.
- New family of overloaded and type-safe instructions for 32-bit type PLCs (FP7) and 16-bit type PLCs.
- SD card instructions.

Product	Part number
Control FPWIN Pro 7 programming software, version 7 (for all FP series PLCs)	FPWINPRO7
Control FPWIN Pro upgrade to version 7 (upgrades all former versions of Control FPWIN Pro to version 7)	FPWINPRO7S-UPGRADE

Ready-made libraries	Part number
Ethernet Library	NCL-ET1-LIB
Process and Temperature Control Library	NCL-PTC-LIB
Inverter Serial Communication Library	NCL-ISC-LIB
GSM Communication Library	NCL-CG-LIB
Modem Communication Library	NCL-CMEU-LIB
Motion Control Library	NCL-MC-LIB
Modbus Library, master and slave functionality	NCL-MODBUS-LIB
Control configurator MS open version	NCLCCMSLIB
Many other ready-made libraries including Master/Slave of PROFIBUS/ DeviceNet/CANopen function blocks can be downloaded from www.panasonic-electric-works.com (download area)	

FP7 CPUs

Description	Part number
120k steps, operation speed 11ns, no Ethernet support	AFP7CPS31
120k steps, operation speed 11ns, Ethernet communication available	AFP7CPS31E
196k steps, operation speed 11ns, Ethernet communication available	AFP7CPS41E
64k steps, operation speed 14 ns, no Ethernet support	AFP7CPS21

FP7 communication cassettes

Description	Part number
RS232C, 1 channel (insulated)	AFP7CCS1
RS232C, 2 channels (insulated)	AFP7CCS2
RS422 or RS485, 1 channel (insulated)	AFP7CCM1
RS422 or RS485, 2 channels (insulated)	AFP7CCM2
RS232C, 1 channel (insulated) and RS485	AFP7CCS1M1
Ethernet 100Base-TX/10Base-T	AFP7CCET1

FP7 application cassettes

Description	Part number
2-channel analog input voltage/current	AFP7FCAD2
2-channel analog input, 1-channel analog output	AFP7FCA21
2-channel thermocouple input, K/J type	AFP7FCTC2

FP7 digital input, output and mixed I/O units

Description	Part number
16 IN, 12–24V DC, configurable input time constant	AFP7X16DW
32 IN, 12–24V DC, configurable input time constant	AFP7X32D2
64 IN, 12–24V DC, configurable input time constant	AFP7X64D2
16 OUT, relay, 2A/point, 5A/common, 16 points/common	AFP7Y16R
16 OUT, transistor, PNP, load current 1.0A, 5A/common, 16 points/common	AFP7Y16P
16 OUT, NPN, load current: 1.0A, 5A/common, 16 points/common	AFP7Y16T
32 OUT, transistor, PNP, load current 0.3A, 3.2A/common, 32 points/common	AFP7Y32P
32 OUT, NPN, load current 0.3A, 3.2A/common, 32 points/common	AFP7Y32T
64 OUT, transistor, PNP, load current 0.3A/0.1A, 3.2A/common, 32 points/common	AFP7Y64P
64 OUT, NPN, load current 0.3A, 0.1A, mixed 3.2A/common, 32 points/common	AFP7Y64T
32 IN, 32 OUT, transistor, PNP, input: 24V DC, 32 points/common Output: load current 0.3A/0.1A, 3.2A/common, 32 points/common	AFP7XY64D2P
32 IN, 32 OUT, NPN, input: 24V DC, 32 points/common Output: load current: 0.3A, 0.1A, mixed 3.2A/common, 32 points/common	AFP7XY64D2T

FP7 multi I/O unit

Description	Part number
High-speed counter and interrupt input, pulse output, PWM output, positioning function	AFP7MXY32DWDH

FP7 analog input and output units

Description	Part number
Input unit, 4 channels, voltage/current, conversion time 25µs/channel, resolution max. 16 bit, accuracy: max. ±0.05% F.S. (at 25°C)	AFP7AD4H
Output unit, 4 channels, voltage/current, conversion time 25µs/channel, resolution max. 16 bit, accuracy: max. ±0.05% F.S. (at 25°C)	AFP7DA4H
Input unit, 8 channels, voltage/current, conversion time 25µs/channel, resolution max. 16 bit, accuracy: max. ±0.1% F.S. (at 25°C)	AFP7AD8

FP7 thermocouple & RTD units

Description	Part number
8 channels, analog input, resolution 0.1°C, K, J, T, N, R, S, B, E, types	AFP7TC8
8 channels, analog input, resolution 0.1°C, Pt100/JPt100/Pt1000	AFP7RTD8

FP7 high-speed counter units

Description	Part number
2 channels, 16MHz (for two-phase factor 4 input mode), 4MHz (for incremental/decremental input mode)	AFP7HSC2T
4 channels, 16MHz (for two-phase factor 4 input mode), 4MHz (for incremental/decremental input mode)	AFP7HSC4T

FP7 positioning units

Description	Part number
Line driver, 2 axes, 1–4Mpps, electronic gear and cam function, linear interpolation, circular interpolation	AFP7PP02L
Line driver, 4 axes,1–4Mpps, electronic gear and cam function, linear interpolation, circular interpolation	AFP7PP04L
Transistor, 2 axes,1–500kpps, electronic gear and cam function, linear interpolation, circular interpolation	AFP7PP02T
Transistor, 4 axes,1–500kpps, electronic gear and cam function, linear interpolation, circular interpolation	AFP7PP04T

FP7 motion control units

Description	Part number
FP7 EtherCAT unit, 16 axes, electronic gear, clutch, and cam function	AFP7MC16EC
FP7 EtherCAT unit, 32 axes, electronic gear, clutch, and cam function	AFP7MC32EC
FP7 EtherCAT unit, 64 axes, electronic gear, clutch, and cam function	AFP7MC64EC

FP7 pulse output units

Description	Part number
Line driver, 2 axes, 1–4Mpps	AFP7PG02L
Line driver, 4 axes, 1–4Mpps	AFP7PG04L
Transistor, 2 axes, 1–500kpps	AFP7PG02T
Transistor, 4 axes, 1–500kpps	AFP7PG04T

FP7 serial communication unit

Description	Part number
2 cassettes per unit, max. 8 units can be installed per CPU	AFP7NSC

FP7 expansion units

Description	Part number
Up to 3 slave units can be connected to one expansion master unit	AFP7EXPM
Up to 16 I/O units and intelligent units can be connected to one expansion slave unit	AFP7EXPS

FP7 Fieldbus master units

Description	Part number
FP7 CANopen Master FMU	AFP7NCANM
FP7 DeviceNet Master FMU	AFP7NDNM
FP7 PROFIBUS Master FMU	AFP7NPFBM
FP7 Profinet Master FMU	AFP7NPFNM

FP7 Web Creator

Description	Part number
Web content creation software for the web-server function of the FP7 CPU	AFPSWCKEY

Control FPWIN Pro

Description	Part number
Control FPWIN Pro programming software, version 7, version for all FP series PLCs	FPWINPRO7
Control FPWIN Pro upgrade to version 7	FPWINPRO7S-UPGRADE
Programming cable for FP0R/FP0/FP-e/FPG/FPX/FP2 TOOL port to PC, 9-pin Sub-D to 5-pin miniDIN, L type, 3m	AFC8513D
Cable with USB 1.1 to RS232 with 9-pin Sub-D converter, 2m	CABUSBSER9D
Programming cable USB A to USB B, 2m	AFPXCABUSB2D
Programming cable, USB A to mini USB B (5-pin), 2m, USB2.0 compatible	CABMINIUSB5D

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