Panasonic

NEW

Programmable Controller

FP7 SERIES

CE Conforming to EMC Directive

New Units were Added to the FP7 Series

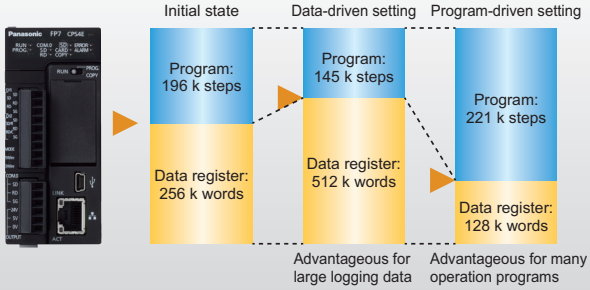
New functions have been added to all CPU units

CPU units NEW

AFP7CPS3E	**Program capacity: 120 k steps** With Ethernet
AFP7CPS3	**Program capacity: 120 k steps** Without Ethernet

In all CPU units, the program capacity and data register number can be shared. (Note 1)

Example of 196 k steps type CPU unit (**AFP7CPS4E**)



•The both capacity can be shared, eliminating the need to repurchase upgrade models when more capacity of program or data register needed.

AFP7CPS4E

Program	Data register
234 k steps approx.	64 k words approx.
221 k steps approx.	128 k words approx.
196 k steps approx.	256 k words approx.
145 k steps approx.	512 k words approx.
52 k steps approx.	976 k words approx.

AFP7CPS3E / AFP7CPS3

Program	Data register
120 k steps approx.	128 k words approx.
96 k steps approx.	256 k words approx.
64 k steps approx.	416 k words approx.
32 k steps approx.	576 k words approx.

Note 2: For data register (DT), data up to 256 k words can be backed up.

The history of change in program can be automatically recorded. (Note 1)

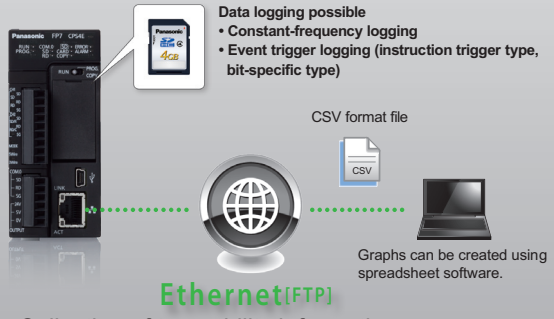
Date of occurrence	Time	Trigger
2012/11/21	14:05:35	Power: ON
2012/11/21	14:07:13	Open cover.
2012/11/21	14:20:25	Insert SD memory card.
2012/11/21	14:30:19	Close cover.
2012/11/21	14:31:00	Download program.
2012/11/21	14:33:10	Switch operation mode to RUN.
2012/11/21	14:35:12	Program edition during RUN
2012/11/21	14:35:32	Upload program
2012/11/21	14:40:07	Power: OFF

*Data logs are virtual.

- Access record can be used during debugging.
- Efficient to find out cause on accident figure.

Operational events to CPU and program editing events are logged. Automatic logs of program download and upload are useful, especially for program debugging.

Logging data on an SD memory card is available. (Note 1)



- Collection of traceability information
- No logger unit offers lower costs.

Note 1: Ver. 1.12 or later CPU unit firmware and Ver. 1.12 or later **Control FPWIN GR7** are required for this function.

Output units NEW

AFP7Y32P	**32 points, Transistor output (Source)**
AFP7Y64P	**64 points, Transistor output (Source)**

Input and Output unit NEW

AFP7XY64D2P	**32 points, 24 V DC input 32 points, Transistor output (Source)**

CPU Units

■GENERAL SPECIFICATIONS

Item	Specifications
Allowed momentary power off time	CPU unit (when directly connected to 24 V DC) 4 ms (at 20.4 V), 7 ms (at 24 V), 10 ms (at 28.8 V) 10 ms [when AC power supply unit (**AFP7PSA1** / **AFP7PSA2**) is used]

■CONTROL SPECIFICATIONS

Item		AFP7CPS3E / AFP7CPS3			
Memory capacity	Memory selection pattern (Note 1)	1	2	3	4
	Program (steps)	121500	96000	64000	32000
	Data register (words) (Note 2)	131072	262144	425984	589824
	Number of max. program block (PB)	243	192	128	64
Programming method		Relay symbol method			
Control method		Cyclic operation method			
Program memory		Built-in flash ROM (No backup battery required)			
Operation speed		Basic instruction: From min. 11 ns/step			
External input (X)		8,192 points (Note 3)			
External output (Y)		8,192 points (Note 3)			
Internal relay (R)		32,768 points			
System relay (SR)		Internal operation status of various relays is shown			
Link relay (L)		16,384 points			
Timer (T)		4,096 points: Timer capable of counting (units: 10 µs, 1 ms, 10 ms, 100 ms or 1 sec.) × 4,294,967,295			
Counter (C)		1,024 points, Counter capable of counting 1 to 4,294,967,295			
Link data register (LD)		16,384 words			
System data register (SD)		Internal operation status of various registers is shown			
Index register (I0 to IE)		15 long words			
Master control relay (MCR)		Unlimited			
Number of labels (LOOP)		Max. 65,535 points for each program block (PB)			
Differential points		Unlimited			
Number of step ladders		Unlimited			
Number of subroutines		Max. 65,535 points for each program block (PB)			
Number of interrupt program		1 periodical interrupt program			
SD memory card function		SDHC memory cards of up to 32 GB are usable.			
Constant scan		Available (0 to 125 ms)			
Clock / calendar (Note 4)		Year (last two digits), month, day, hour (24-hour display), minute, second and day of week			
Battery backup		For Clock / calendar			
Battery life (Value applies when no power is supplied at all.)		3.3 years or more [actual usage value: 20 years approx. (at 25 °C 77 °F)]			
Safety function		Password / Read disable setting / Encryption (every PB)			
Self-diagnosis function		Watchdog timer and program syntax check			
Comment storage		Available (3 MB) (No backup battery required)			
PLC link function		Max. 16 units, Link relay: 1,024 points, Link register: 128 words (Data transfer and remote programming are not supported) (Link area allocation is switchable between the first and the second half)			
Program edition during RUN		Available			

Notes: 1) The factory default setting is Pattern 1.
2) For data register (DT), data up to 262,144 words can be backed up.
3) Hardware configuration governs the actually usable number of I/O points. When I/O points are not actually used, usable as internal relays
4) Precision of calendar; At 0 °C 32 °F, less than 95 seconds error per month, At 25 °C 77 °F, less than 15 seconds error per month, At 55 °C 131 °F, less than 130 seconds error per month

■COMMUNICATION SPECIFICATIONS FOR COM PORT

Item	Specifications
Interface	RS232C 1 channel
Transmission distance	15 m 49.213 ft
Transmission speed	300,600,1200,2400,4800,9600,19200,38400, 57600,115200,230400 bits/sec.
Communication method	Half-duplex system
Synchronous method	Start-stop synchronization system
Transmission format	Stop bit: 1 bit / 2 bits Parity: Invalid / Valid (Odd / Even) Data length: 7 bits / 8 bits Start code: with STX / without STX End code: CR / CR + LF / Null / ETX
Data transmission order	Transmit from bit 0 in character units.
Connection	General-purpose communication, Computer link and MODBUS-RTU

■DEDICATED POWER SUPPLY OUTPUT PORT SPECIFICATIONS FOR GT SERIES PROGRAMMABLE DISPLAY

Terminal	Connecting Programmable Display model
5 V	For 5 V DC type GT series
24 V	For 24 V DC type GT series

Note: 5 V and 24 V DC types are not usable at the same time.

■LAN COMMUNICATION PORT SPECIFICATIONS (For AFP7CPS3E only)

Item	Specifications
Communication interface	Ethernet 100BASE-TX / 10BASE-TX
Communication speed	100 Mbps, 10 Mbps Auto negotiation function
Total cable length	100 m 328.084 ft (500 m 1,640.420 ft when a repeater is used)
Number of nodes	Max. 254 units
Number of simultaneous connections	Max. 20 connections (User connection: 16, System connection: 4)
Communication protocol (Communication layer)	TCP / IP, UDP
DNS	Supports name servers
DHCP / DHCPV6	Automatic IP address acquisition
FTP server	File transfer, Server function, Number of user: 3
SNTP	Time adjustment function
General-purpose communication	16 kB / 1 connection
Dedicated communication	Slave communication (MEWTOCOL-COM,MEWTOCOL7-COM, MEWTOCOL-DAT,MODBUS-TCP) Master communication (MEWTOCOL-COM,MEWTOCOL-DAT, MODBUS-TCP)

■USB PORT SPECIFICATIONS

Item	Specifications
Standard	USB2.0 Fullspeed 12 Mbps (USB miniB type)
Communication function	Computer link (Slave)

Input and Output Units

■INPUT SPECIFICATIONS

Item		I/O mixed unit (input side)
		DC input / Source output type
Insulation method		Photocoupler insulation
Rated input voltage		24 V DC
Rated input current		3.4 mA
Impedance		7.5 kΩ
Min. ON voltage / Min. ON current		19.2 V / 2.5 mA
Max. OFF voltage / Max. OFF current		5 V / 1.5 mA
Response time	OFF→ON	0.2 ms or less (Note)
	ON→OFF	0.2 ms or less (Note)
Input points per common		32 points/common
Operating mode indicator		32 points LED display (lights when ON, selectable by switch)
External connection method		Connector (MIL-compliant 40 pins, one use)

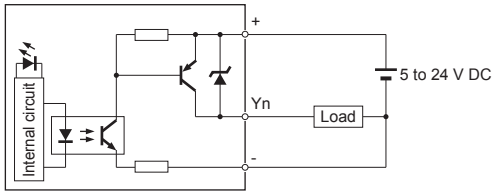
Note: Changeable by settable input time constant

■OUTPUT SPECIFICATIONS

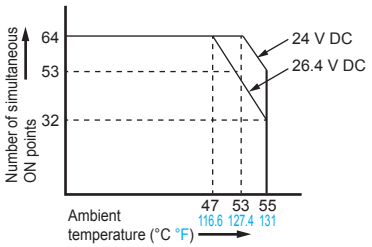
Item		Transistor output units		I/O mixed unit (output side)
		Source type (PNP open collector)		
		32 points type	64 points type	32 points type
Insulation method		Photocoupler insulation		
Output type		Open collector		
Rated load voltage		5 to 24 V DC		
Load voltage allowable range		4.75 to 26.4 V DC		
Max. load current	0.3 A (Y0 to Y7)	0.3 A (20.4 to 26.4 V DC)	0.3A (20.4 to 26.4 V DC) 30 mA (4.75 V DC)	
	0.1 A (other than that above)	30 mA (4.75 V DC)	0.1 A (20.4 to 26.4 V DC) 15 mA (4.75 V DC)	
Common restriction		3.2 A/common		
Max. surge current		0.6 A		
OFF state leakage current		1 µA or less		
ON state maximum voltage drop		0.5 V or less		
Response time	OFF→ON	0.1 ms or less (at load current 2 mA or more)		
	ON→OFF	0.5 ms or less (at load current 2 mA or more)		
External power supply	Voltage	4.75 to 26.4 V DC		
	Current (at 24 V)	130 mA	90 mA/common	90 mA
Surge absorber		Zener diode		
Short circuit protection		–		
Output points per common		32 points/common		
Operating mode indicator		32 points LED display (lights when ON)	32 points LED display (lights when ON, selectable by switch)	
External connection method		Connector (MIL-compliant 40 pins)	Connector (MIL-compliant 40 pins, two use)	Connector (MIL-compliant 40 pins, one use)

■I/O CIRCUIT DIAGRAMS

● Transistor output unit [Output circuit diagram]

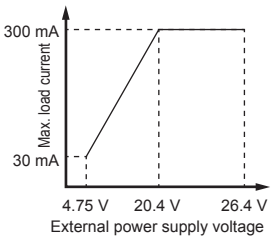


Limitations on simultaneous ON points [64 points]



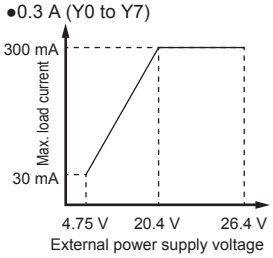
Note: Reduce load current according to the graph below by the external power supply voltage.

[32 points]

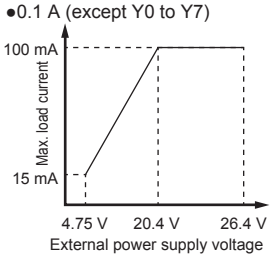


[64 points]

●0.3 A (Y0 to Y7)

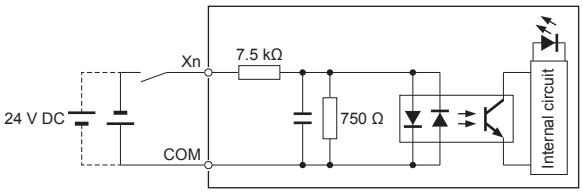


●0.1 A (except Y0 to Y7)

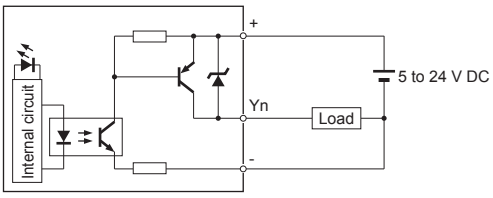


● I/O mixed unit [I/O circuit diagram]

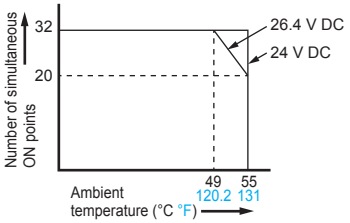
[Input circuit]



[Output circuit]

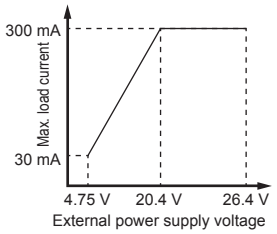


Limitations on simultaneous ON points (common to input and output)

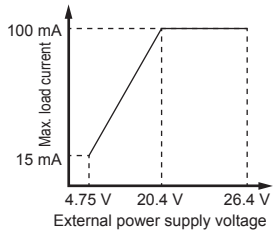


Note: Reduce load current according to the graph below by the external power supply voltage.

● 0.3 A (Y0 to Y7)



● 0.1 A (except Y0 to Y7)



Unit General Specifications

■COMMON GENERAL SPECIFICATIONS

Item	Specifications
Ambient temperature	0 to +55 °C +32 to +131 °F, at storage: -40 to +70 °C -40 to +158 °F
Ambient humidity	10 to 95 % RH (at 25 °C 77 °F, no condensation), at storage: 10 to 95 % RH (at 25 °C 77 °F, no condensation)
Breakdown voltage	500 V AC for 1 minute
Insulation resistance	100 MΩ or more (at 500 V DC)
Vibration resistance	5 to 8.4 Hz, single amplitude of 3.5 mm 0.138 in, 1 sweep/min. (IEC61131-2); 8.4 to 150 Hz, constant acceleration of 9.8 m/s², 10 sweep (1 octove/min.) (IEC6111-2)
Shock resistance	147 m/s² or more , 3 times each in X, Y, and Z directions (IEC61131-2)
Noise immunity	1,000 V [p-p] with pulse width 50 ns and 1 µs (using a noise simulator)
Operating condition	Free from corrosive gasses and excessive dust

Note: Please refer to the unit's specification sheet for details of breakdown voltage and insulation resistance.

■INDIVIDUAL GENERAL SPECIFICATIONS

Item	CPU unit		Output units		Input and Output units
	AFP7CPS3E	**AFP7CPS3**	**AFP7Y32P**	**AFP7Y64P**	**AFP7XY64D2P**
Rated voltage range	20.4 to 28.8 V DC	20.4 to 28.8 V DC	–	–	–
Current consumption	200 mA or less	200 mA or less	50 mA or less	75 mA or less	55 mA or less
Net weight	220 g approx. (with terminal block and end unit)	220 g approx. (with terminal block and end unit)	95 g approx.	115 g approx.	115 g approx.

Product Types

■CPU units

Product name		Power supply voltage	Operation speed	Max. program capacity	Ethernet function	Part No.
FP7 CPU units	120 k steps standard model	24 V DC	From 11 ns	120 k steps	Built-in	**AFP7CPS3E**
	120 k steps standard model	24 V DC	From 11 ns	120 k steps	–	**AFP7CPS3**

Note: One End unit is included to the CPU unit.

■Input and Output units

Product name	Type	Number of points	Connection method	Specifications	Part No.
FP7 Output units	Transistor output Source (PNP)	32 points	MIL connector	Load current: 0.3 A, 3.2 A/common, 32 points/common	**AFP7Y32P**
		64 points		Load current: 0.3 A, 0.1 A, mixed 3.2 A /common, 32 points/common	**AFP7Y64P**
FP7 Input and Output unit	DC input Transistor output Source (PNP)	Input: 32 points Output: 32 points		Input: 24 V DC, 32 points/common Output: load current: 0.3 A, 0.1 A, mixed 3.2 A/common, 32 points/common	**AFP7XY64D2P**

Panasonic Industrial Devices SUNX Co., Ltd.
Global Sales Department
2431-1 Ushiyama-cho, Kasugai-shi, Aichi, 486-0901, Japan
■Telephone: +81-568-33-7861 ■Facsimile: +81-568-33-8591

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