Programmable Controller
FPΣ (SIGMA)

* Refer to our website for details of product.

RoHS compliance

*1 **FP0R** expansion units only
*2 Conforming to EMC Directive

Related Information ■ General terms and conditions..... F-3

panasonic.net/id/pidsx/global

Features

- **Abundant program capacity - 32 k steps**
  The 32 k step program capacity can accommodate an increase in the number of programs accompanying functionality enhancements, expansions, or changes of equipment.
- **Independent comment memory**
  All of 100,000 I/O comments, 5,000 lines of block comments, and 5,000 lines of remark comments are saved in **FPΣ** together with programs.
- **High-speed RISC processor**
  Equipped with a RISC processor, achieving high-speed processing with a scan time of less than 2 ms for 5,000 steps.
- **High-speed positioning unit**
  The 4 Mpps maximum frequency and startup speed of 0.005 ms allow use for linear servo control.
- **Simple temperature control**
  A temperature control program can be written in only one line by using the PID instruction F356 (EZPID), facilitating temperature control by a PLC, which had previously been considered difficult.

High-performance and ultra-compact PLC

SPECIFICATIONS

Item			Descriptions			
			AFPG2543H / AFPG2543HTM	**AFPG2643H / AFPG2643HTM**	**AFPG2423H / AFPG2423HTM**	**AFPG2653H / AFPG2653HTM**
Number of controllable I/O points		Control unit	32 points (DC input: 16, NPN output: 16)	32 points (DC input: 16, NPN output: 16)	24 points (DC input: 16, relay output: 8)	28 points (DC input: 16, PNP output: 12)
		With **FP0R** expansion units	Max. 128 points (up to 3 units) * When using transistor output type expansion units	Max. 128 points (up to 3 units) * When using transistor output type expansion units	Max. 120 points (up to 3 units) * When using transistor output type expansion units	Max. 124 points (up to 3 units) * When using transistor output type expansion units
		With **FPΣ** expansion units	Not possible	Max. 288 points (up to 4 units) * When using transistor output type expansion units	Max. 280 points (up to 4 units) * When using transistor output type expansion units	Max. 284 points (up to 4 units) * When using NPN output type expansion units
		With **FP0R** and **FPΣ** expansion units	Max. 128 points * When using transistor output type expansion units	Max. 384 points * When using transistor output type expansion units	Max. 376 points * When using transistor output type expansion units	Max. 380 points * When using NPN output type expansion units
Programming method / Control method			Relay symbol / Cyclic operation			
Program memory / Program capacity			Built-in flash ROM (no backup battery required) / 32 k steps			
Number of instructions		Basic instructions	93			
		High-level instructions	216	218	216	218
Operation speed			Basic instruction: 0.32 μs~/step			
Operation memory	Relay	Internal relay (R)	4,096 points: R0 to R255F (Note 1)			
		Timer / Counter (T/C)	1,024 points (Note 1, 2) [for initial setting, timer: 1,008 points (T0 to T1007), counter: 16 points (C1008 to C1023)] Timer: Counts each unit up to 32,767 times (units: 1 ms, 10 ms, 100 ms, or 1 sec.). Counter: Counts 1 to 32,767.			
		Link relays (L)	2,048 points			
	Memory area	Data register (DT)	32,765 words (DT0 to DT32764) (Note 1)			
		Link data register (LD)	256 words			
		Index register (I)	14 words (I0 to ID)			
Differential points			Unlimited			
Master control relay points (MCR)			256			
Number of labels (JP and LOOP)			256			
Number of step ladders			1,000 stages			
Number of subroutines			100 subroutines			
Pulse catch input			8 points (X0 to X7)			
Number of interrupt programs			9 programs (8 external input points (X0 to X7), 1 periodical interrupt point 0.5 ms to 30 sec.)			
Self-diagnosis function			E. g. watchdog timer, program syntax check			
Clock / calendar function			Available year (last two digits), month, day, hour (24-hour display), minute, second and day of week; however, this function can only be used when a battery is installed. (Note 3)			
Potentiometer (Volume) input			2 points, resolution: 10 bits (K0 to K1000)			
Battery life			220 days or more (actual usage value: approx. 840 days (+25 °C +77 °F). Suggested replacement interval: 1 year. (Value applies when no power is supplied at all.)			
Comment storage			All kinds of comments, including I/O comments, remarks, and block comments, can be stored (without backup battery).			
Link function			Computer link (1 : 1, 1 : N) (Note 4), General-purpose communication (1 : 1, 1 : N) (Note 4, 5), PLC link (Note 6)			
Other functions			Program edition during RUN, constant scan, forced on/off, password, floating-point operation, and PID processing			
Linear/Circular interpolation for positioning			Not available	Available	Not available	Available

Notes: 1) If no battery is used, only the fixed area is backed up (counters 16 points: C1008 to C1023, internal relays 128 points: R2480 to R255F, data registers 55 words: DT32710 to DT32764). When the optional battery is used, data can be backed up. Areas to be held and not held can be specified using the system registers. (Exclusive instructions allow writing and reading data in flash ROM.)
2) The number of points can be increased by using an auxiliary timer.
3) Precision of calendar timer: - At 0 °C +32 °F, less than 119 seconds error per month.
- At +25 °C +77 °F, less than 51 seconds error per month.
- At +55 °C +131 °F, less than 148 seconds error per month.
4) An optional communication cassette (RS-232C type) is required in order to use 1 : 1 communication.
5) An optional communication cassette (RS-485 type) is required in order to use 1 : N communication.
6) An optional communication cassette (RS-485 type) is required.
When the communication cassette is attached and it communicates, re-send processing is recommended.