

March 2009
 Fuji Electric Systems Co., Ltd.
 Controller Div. Automation &
 Solution Business
 Headquarters

MICREX-SX Series SPH3000

Notice of Release of New Series of CPU Modules

We would like to thank you for your continued patronage of Fuji Programmable Controllers.

Please be informed that Fuji Electric FA has started the sale of the SPH3000, a new series of CPU Modules.

1. New models

Product name	Model (Product code)	Outline specification
SPH3000 CPU Modules	NP1PU-048E	Program memory: 48K steps, data memory: 256K words Built-in Ethernet and SD memory card slot
	NP1PU-256E	Program memory: 256K steps, data memory: 2M words Built-in Ethernet and SD memory card slot
SD Memory Card	NP8PSD-002	User ROM card for SPH3000 Industrial SD memory card: 2GB

2. Date of release

March 2009

3. Overview of products

3-1 Features

(1) High-speed processing

Due to improvements in the processing speed of instructions, the performance of the SPH3000 is better than that of our previous SPH300 Series.

Instruction type	SPH3000	SPH300	SPH2000	SPH200
Sequence instructions	9 ns min.	20 ns min.	30 ns min.	70 ns min.
Data instructions	8 ns min.	40 ns min.	40 ns min.	140 ns min.
Floating-point operations	88 ns min.	80 ns min.	270 ns min.	56,000 ns min.

(2) More data memory

The CPU Module with 48K steps of program memory has 256K words of data memory; the CPU Module with 256K steps has 2M words of data memory. That is eight times more memory than our previous SPH300 Series.

(3) Ethernet provided as standard feature

The SPH3000 incorporates our popular total communications function of the SPH2000 Series, thus making it possible to use the SPH3000 as an Intelligent Ethernet Module.

(4) SD memory card slot provided as standard feature

The SPH3000 comes with a slot for an SD memory card as an auxiliary memory device for programs and data.

3-2 Specifications

Item		Specification	
Type		NP1PU-048E	NP1PU-256E
Program	Program memory capacity	49,152 steps (2 words per step)	262,144 steps (2 words per step)
	Maximum program capacity	16,384 steps per POU	
Data	Data memory capacity	262,144 words	2,097,152 words
	I/O memory (I/Q)	512 words (up to 8,192 points)	
	Standard memory (M)	98,304 words (default)	1,703,936 words (default)
	Retain memory (RM)	40,960 words (default)	237,568 words (default)
	Instance memory for user function blocks (FM)	40,960 words (default)	73,728 words (default)
	Instance memory for system function blocks (SFM)	81,920 words (default) Timer: 2,560 points (default) Integrating timer: 640 points (default) Counter: 1,280 points (default) Edge detection: 5,120 points (default) Others: 40,960 words (default)	
	System memory (SM)	512 words	
Temporary area		32,768 words (per task)	
Temporary area		16,384 words per POU	
Number of elements of array data		16-bit data arrays: 32,768 32-bit data arrays: 16,384	
Number of tasks		4 (task settings) + 1 (default) The default task has a constant scan function.	
Task settings		Number of scheduled interrupt tasks: 4 max.	
		Number of event interrupt tasks: 4 max.	
Tack-time setting range		1 to 10 ms (in 0.5-ms increments)	
Operating ambient temperature		0 to 55°C	
Internal current consumption		200mA max.	
Weight		Approximately 220g	

3-3 Comparison with previous products

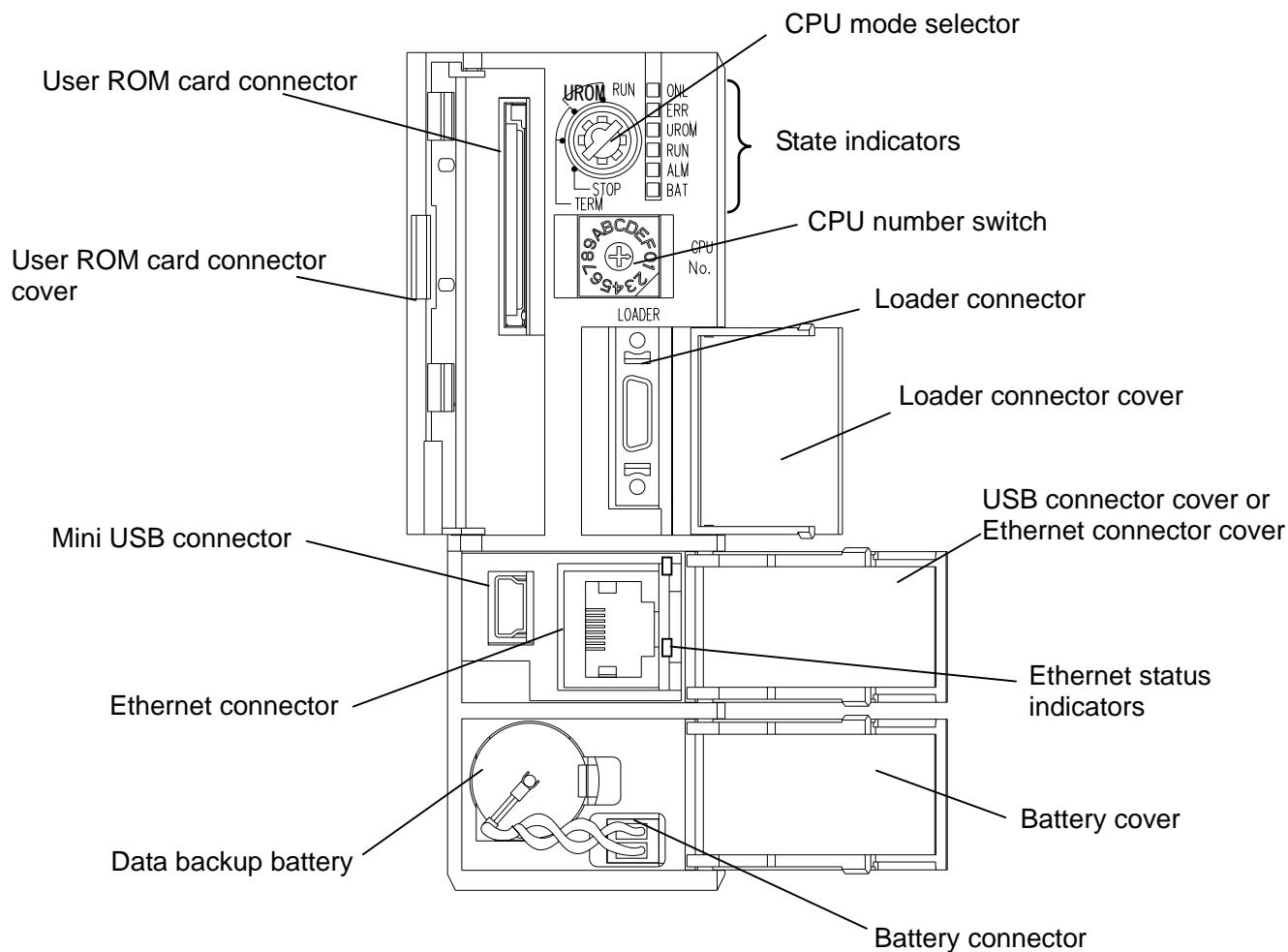
(1) Memory comparison

	Item	SPH200	SPH2000	SPH300	SPH3000	Remarks
Memory capacity	User program memory	8K or 16K steps	48K or 256K steps	32K, 74K, 117K or 245K steps	48K or 256K steps	
	User data memory	16K to 32K words	96K to 2M words	32K to 512K words	256K to 2M words	
	IQ area	Up to 512 words Remote master 1 line Up to 128 words	Up to 512 words I/O expansion (4,096 words)	Up to 512 words I/O expansion (4,096 words) Remote master: 1 line, Up to 512 words	Up to 512 words I/O expansion (4,096 words)	SPH2000: I/O expansion : NP1PM-256E/256H only
	User ROM	Special user ROM cards (Object)	Compact flash memory (source, object, data)	Compact flash memory (source, object, data)	SD memory card (source, object, and data)	

(2) Function comparison

	Function	SPH200	SPH2000	SPH300	SPH3000	Remarks
Interface	LEDs	OK	OK	OK	OK	
	Self-diagnostics	OK	OK	OK	OK	
	RS-422 (for Loader only)	OK	OK	OK	OK	
	USB (for Loader only)	NA	OK	OK	OK	
	Battery backup	OK	OK	OK	OK	
	Calendar	OK	OK	OK	OK	
	Ethernet	NA	OK	NA	OK	SPH2000:NP1PM-48R is Impossible NP1PM-256H is impossible while in redundant mode.
	Compact Flash memory	NA	OK	OK	NA	
	SD card	NA	NA	NA	OK	
Application	Instruction specifications	OK	OK	OK	OK	Same instructions and data types.
	Task specifications	OK	OK	OK	OK	
	FB/FCT specifications	OK	OK	OK	OK	
	Constant scan	NA	OK	NA	OK	
	Battery-free operation	OK	OK	OK	OK	SPH200: User ROM is required.
Engineering	Debugging functions	OK	OK	OK	OK	Condition monitor, condition stop, step execution
	Sampling trace	NA	OK	OK	OK	SPH300:NP1PS-32/32R is impossible
	Online changes	OK	OK	OK	OK	
	PG registration/cancellation	OK	OK	OK	OK	
	Routing	OK	OK	OK	OK	
System errors	Fail-soft start	OK	OK	OK	OK	
	Fail-soft maintenance	OK	OK	OK	OK	
	I/O hold/clear	OK	OK	OK	OK	
	IO expansion (4,096 words)	NA	OK	OK	OK	Multi-CPU is not supported. Only NP1PM-256H while in redundant mode. SPH300: NP1PS-74 or higher SPH2000: NP1PM-256E/256H only
	Eight links between processors	NA	OK	OK	OK	
	Processor bus	OK	OK	OK	OK	
	Multi-CPU	NA	OK	OK	OK	
	Redundancy	NA	OK	OK	NA	SPH2000: NP1PM-256E6H only
	Life mounting	NA	OK	OK	OK	

3-4 External appearance



(1) Ethernet specifications

Item	Specification
Interface	100Base-TX or 10Base-T
Baud rate	100M or 10M bps automatic selection full-duplex
Media control	IEEE 802.3u
Interface selection method	Auto negotiation and auto-MDIX
Protocol	General-purpose communications mode, fixed-buffer communications mode, loader command communications mode, FTP server, FTP client, SNTP client, and email
Max. number of simultaneous communications nodes	10

(2) User ROM card specifications

Item	Sub item	Specification
Main unit	Supported standards	SD Physical Layer Specification Version 2.00
	Supported memory cards	SD memory cards and SDHC memory cards
	Specifications	Power supply: 100mA max. at 3.3V \pm 0.3V
Card specifications (See note.)	Model	NP8PSD-002
	Specifications	SD memory cards Applicable standard: SD Card Spec. V1.1 Memory capacity: 2GB Size: 32 x 24 x 2.1 (L x W x H) Operating voltage: 2.7 to 3.6V Operating ambient temperature: -40 to 85°C No. of insertions: 10,000 Weight: 2g
Interfacing with PC	SD memory card slot USB-connected SD memory card reader	

Note: SD memory cards other than the ones specified above are compatible and in theory can be used. The performance of other SD memory cards, however, may not be adequate in terms of environment resistance and product quality.

3-5 Programming support tool versions

The following SX-Programmer version is required to use these CPU Modules.

* Expert (D300win) V3 (NP4H-SEDBV3) : V3.5.0.0 or later