

## MICREX-SX Series SPH2000

# Model Expansion of CPU Modules

We are pleased to announce that we have released the CPU modules suitable for the redundancy function of SPH2000 in MICREX-SX series.

### 1. Released Model

Part name	Type (Product code)	Major specifications
SPH2000 CPU module	NP1PM-256H	Program memory: 256k steps, data memory 2M word with redundancy function and USB interface

SXXERO (SX zero) is the nickname of SPH2000.

The redundancy function is added to the module having a program memory of 256k steps.

There is no plan to add the redundancy function to the module having a program memory of 48k steps.

### 2. Date of Release

June 1, 2007

### 3. Product Overview

#### 3-1 Features

(1) Highly-reliable system can be configured as standard

Inexpensive and user-friendly redundant system can be configured using the CPU redundant system equipment, standard double power supplies, hot plugging base board, insulation analog between channels, various standard I/O modules, etc.

(2) Outstanding redundancy function

The CPU module can be installed either on the same base board or on another base board.

When the hot plugging base board is used, the CPU module can be replaced with the other one even during operation.

A maximum of four sets of redundant CPU systems can be configured.

The data is equalized through the commercial LAN cross cable (Ethernet cable) in category 5.

(3) Redundancy performance has further improved than that of our previous model SPH300.

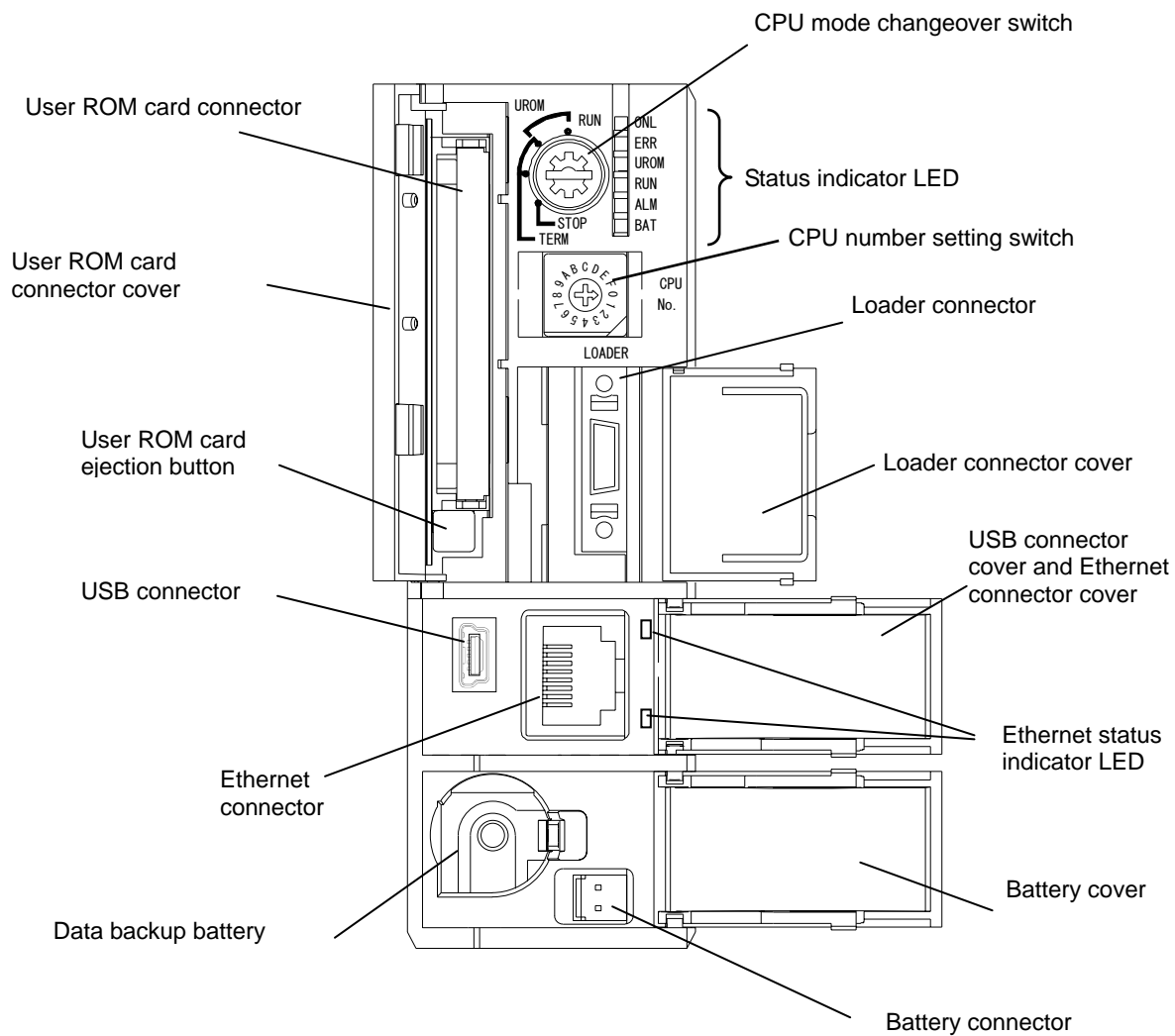
	SPH2000(NP1PM-256H)	SPH300
Max capacity for equalization	320k words	8k words
Equalization performance	250ms / 320k words	160ms / 8k words (Set tact: 10ms)
Equalization bus	Ethernet 100Mbps	SX bus 25 Mbps
Equalization timing	Specified task (Two or more tasks can be specified.)	Default task

3-2 Basic Specifications

Type	NP1PM-48R (now on sale)	NP1PM-48E (now on sale)	NP1PM-256E (now on sale)	NP1PM-256H (Just released)	
Execution control system	Stored program, cyclic scanning method (default task), periodic task, event task				
Input/output connection system	Input/output by direct connection (SX bus), Remote input/output (using a remote I/O link such as DeviceNet or OPCN-1)				
Input/output control system	On SX bus: Refresh in synchronization with task Remote I/O link: Periodical refresh every 10ms (asynchronous with scanning)				
CPU	32-bit processor				
Programming languages	Conform to IEC61131-3. IL language, ST language, LD language, FBD language, and SFC element				
Command execution time	Sequence command	30ns or over per command			
	Applied command	40ns or over per command			
Program memory capacity	49,512 steps		262,144 steps		
Maximum program capacity in 1POU	8,192 steps				
Memory (Default value)	Input/output memory (I/Q)	512 words			
	Standard memory (M)	65,536 words		1,703,936 steps	
	Retain memory (M)	8,192 words		262,144 steps	
	Instance memory (M) for systems FB	16,384 words Timer: 512 points Addition timer: 128 points Counter: 256 points Edge detection: 1,024 points Others: 8,192 words		65,536 words Timer: 2,048 points Addition timer: 512 points Counter: 1,024 points Edge detection: 4,096 points Others: 32,768 words	
	System memory	512 words			
Data format	BOOL, INT, DINT, UINT, UDINT, REAL, TIME, DATE, TOD, DT, STRING, WORD, DWORD, arrangement, and structure				
Number of tasks	Default task (cyclic scan): 1 Periodic task: 4 Event task: 4 (Max four tasks can be executed among a sum of periodic tasks and event tasks.)				
Program instance (No. of POU/resource)	256 However, a maximum of 128 instances can be registered in the tasks.				
No. of POU's in one project	2,000				
User ROM card (CF memory) interface	Standard equipment				
USB interface	Standard equipment (USB-miniB)				
Ethernet function	None	10 Base-T / 100 base-TX (Note 1)			
Diagnostic function	Self-diagnosis (memory check, ROM sum check), monitoring system configuration, monitoring module failure				
Security function	Project download/upload, collation, and clear etc. are restricted by use of a password.				
Calendar function	Time range: Up to 23h:59m:59s in December 31, 2069 with an accuracy of 27 second/month When the power is supplied, the time is adjusted to the multi-CPU system clock.				
Backup of the memory by battery	Backup range: Data memory, calendar IC memory Battery: Lithium primary cell, Battery change time: Within 5 minutes (at 25°C), Backup time: 5 years (at 25°C)				
Backup of the memory by built-in flash memory	The flash memory built in the CPU can store application programs, system definition files, and ZIP files.				
Backup by user ROM card (CF memory)	The user ROM card (CF memory) can store application programs, other programs, system definition files, ZIP files, compressed projects, and user files.				
Internal power consumption	DC24V, 200mA or less				
Mass	Approx. 220g				

Note 1 Redundancy function by NP1PM-256H and the communication function through Ethernet TCP/IP or UDP/IP cannot be used simultaneously.

### 3-3 External View



### 3-4 Support version of programming support tool

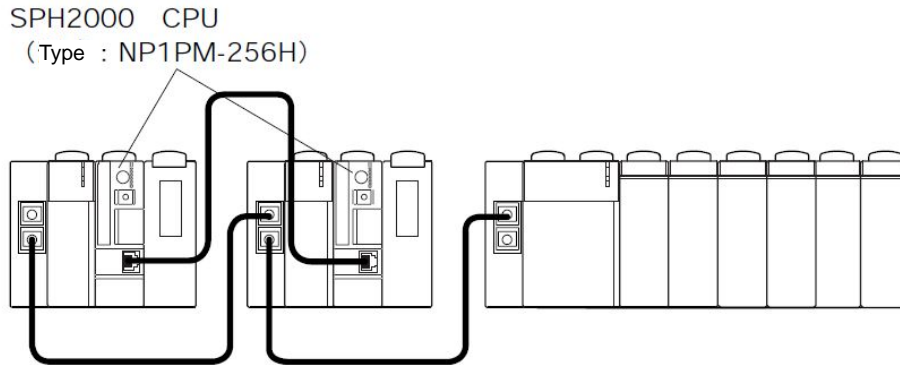
- Expert (D300win) V3 (NP4H-SEDBV3): V3.4.0.0 or later

#### 4. Overview of the Redundant System Function

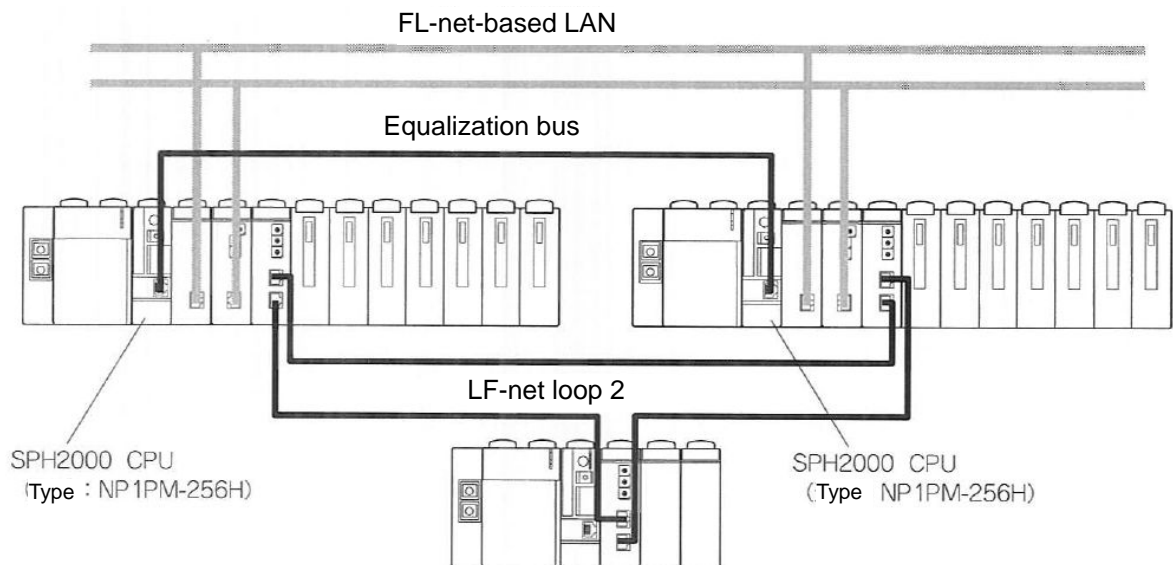
##### (1) Redundant range

The SPH2000 uses the redundant system based on the cold/warm-standby method, and is not applicable to the N: 1 redundancy system. The redundant system by Multi-CPU of SPH300 and SPH2000 is not available either.

- Double modules



- Double systems



(2) Redundant function

Function	Double modules	Double systems
Modules or systems used for redundancy function	Power, CPU, LE-net loop2	Power, CPU system bus FL-net-based LAN LE-net loop2 Redundant PE link
Equalization bus	Ethernet (100BASE-TX) through the CPU Ethernet port.	
Operation/standby changeover factor	Module failure, omission, etc.	
Operation/standby changeover time	Maximum: 130ms	Maximum: 200ms
Equalizing	Maximum 320K words	
Equalizing time	Maximum 320K words / 250ms	
Selection of equalized data	Distribution of M, RM, FM, and SFM is possible.	
Equalization timing	Executing end of specified task	
Equalization of data by the message	Available	Not available
Equalization in writing CF data	Available	Not available

(3) Module Used for Redundancy

O: Double O: Single x: Not usable

Classification of operation	Outline	CPU	Power supply	LE-net loop2	FL-net-based LAN Note 1	Redundant PE link Note 1	Other modules
Single system	Single system	O	O	O	O	O	O
Double modules	Double systems for cold/warm standby The existing module can be used as a single module.	O Notes 3	O	O Notes 2 Notes 5	O Notes 2	O Notes 2	O
Double systems	Double systems for cold/warm standby The other module can be used in the LE-net loop2 slave I/O station.	O Notes 4	O	O Notes 2	O Notes 2	O Notes 2	x

Notes 1: The FL-net-based LAN and the redundant PE link are the products of Fuji Electric FA Components & Systems.

Notes 2: Up to eight modules can be mounted on SX bus.

Notes 3: Up to four operation modules and up to four standby modules can be mounted.

Notes 4: The above module is not applicable to the multi-CPU system.

Notes 5: Double FB systems can be configured.