Fuji Electric

Innovating Energy Technology

Programmable Controller

MICREX-SX Series

SPH3300 • SPH2200

Speeds up equipment control by using a new computational engine.
Enables easy and highly-compatible migration of control systems by using a model transition function.

- ☑ Significantly improves processing performance
- ☑ Improves productivity by coming standard with a logging function
- ☑ Greatly reduces the time and effort of PLC migration by using a model transition function

CE

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22B1-E-0042

Inherits our established performance and evolves into a speedy and smart

Our flagship MICREX-SX Series model has a long track record of use in various machine control applications and now comes equipped with new functions that contribute to improved productivity.
Realizes more advanced data utilization by improving processing speed while maintaining high reliability.

Significantly improves control performance

Enhances instruction processing and communication performance through a new computational engine.
Enables even faster equipment control.

Improves productivity

Uses a logging function to collect and store user memory data at any desired timing. Improves efficiency when starting up machines and equipment, and transfers data to and utilizes data from upper-layer systems.

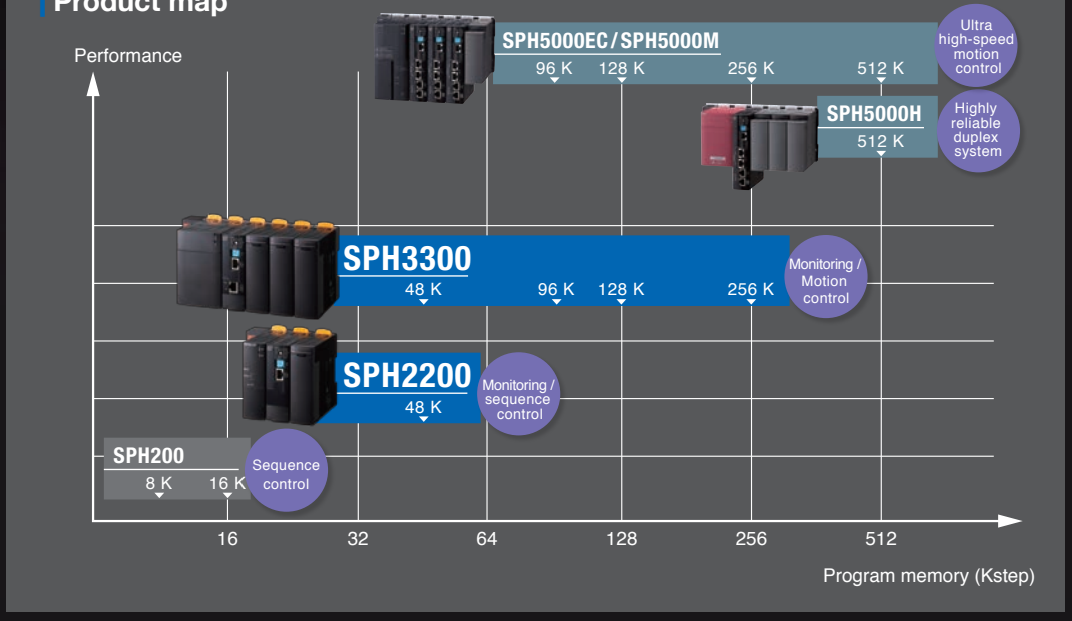
Reduces the time and effort of PLC migration

Offers tools that support easy migration from existing models. User can easily migrate PLC project without changing system definition or resource settings.

and reliability, CPU module

MICREX-SX Series
SPH3300 · SPH2200

Product map



CPU module for motion control

SPH3300

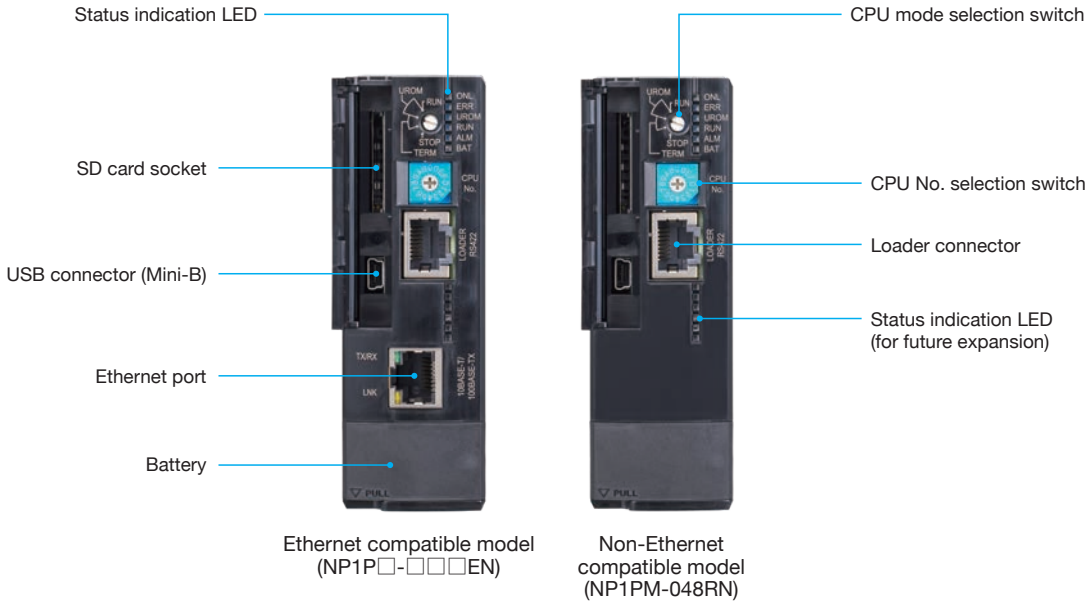
Model	Program memory	Sequence instruction Applied instruction	Communication port		
NP1PU-048EN	48 Ksteps	≥ 5 ns ≥ 1 ns	Loader connector	USB2.0	Ethernet (100BASE-TX /10BASE-T)
NP1PU-096EN	96 Ksteps				
NP1PU-128EN	128 Ksteps				
NP1PU-256EN	256 Ksteps				

CPU module for monitoring and sequence control

SPH2200

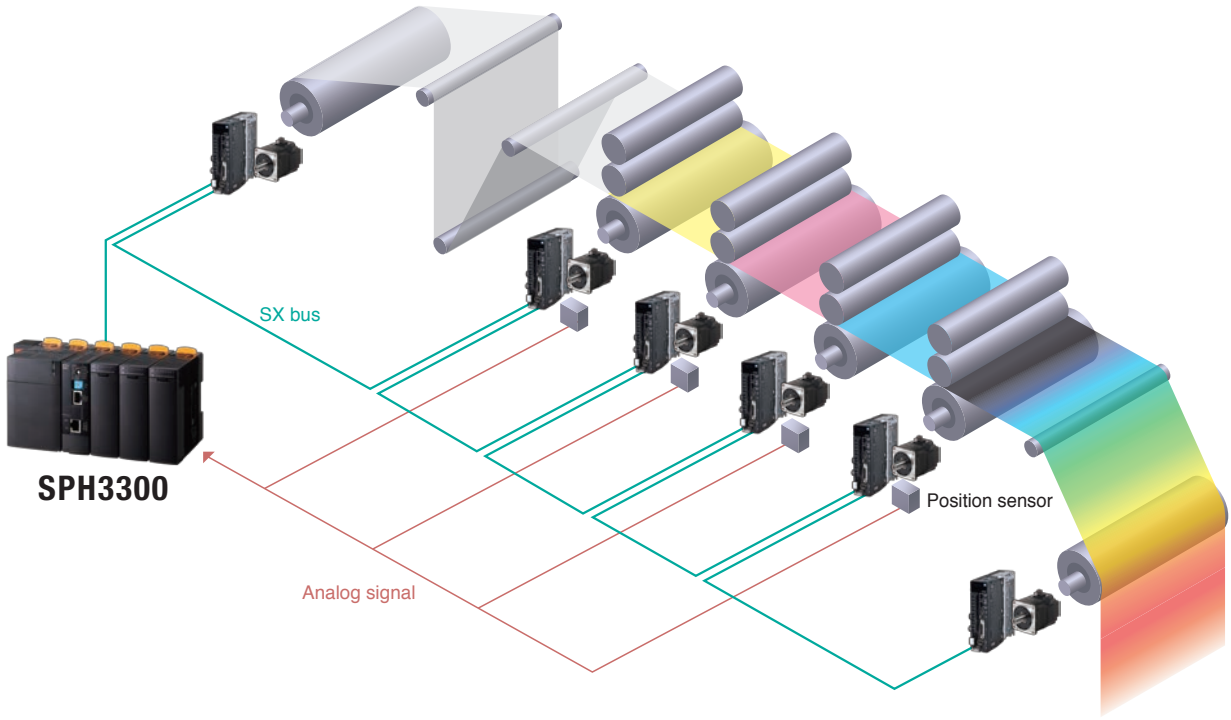
Model	Program memory	Sequence instruction Applied instruction	Communication port		
NP1PM-048EN	48 Ksteps	≥ 12 ns ≥ 3 ns	Loader connector	USB2.0	Ethernet (100BASE-TX 10BASE-T)
NP1PM-048RN					

Module appearance



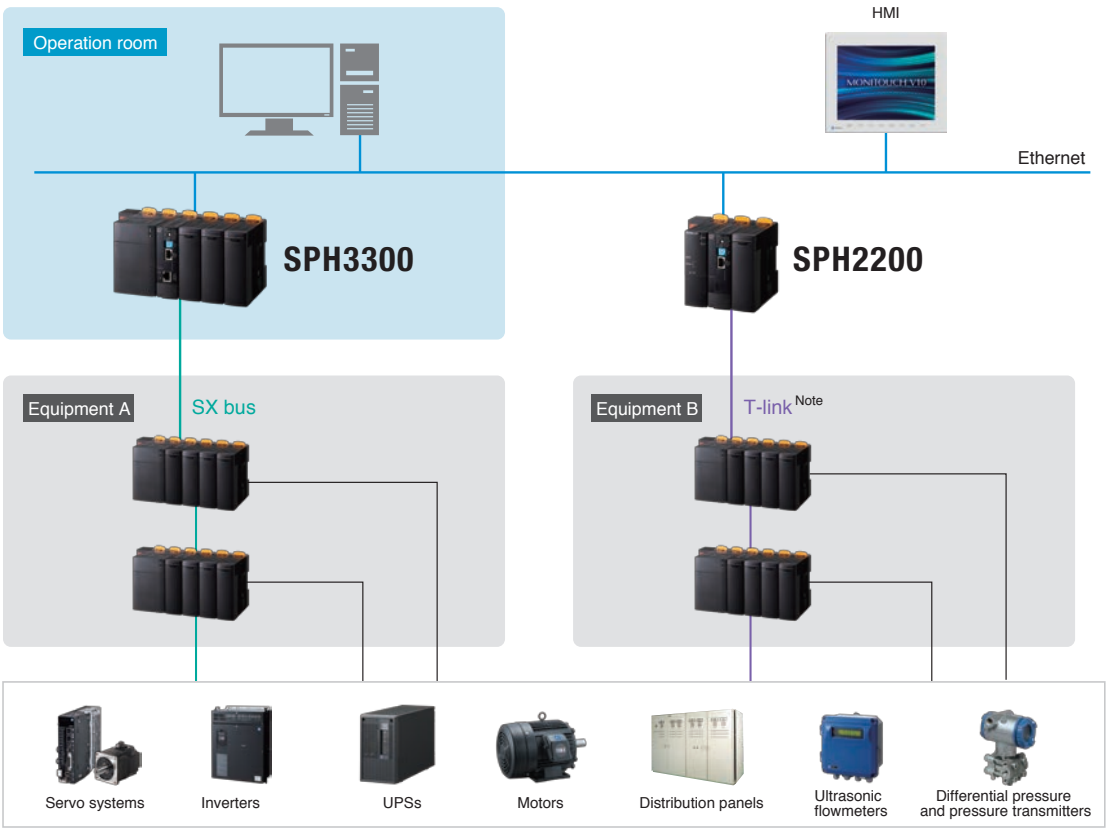
Machinery & equipment

Printing machines



Equipment (systems)

Equipment monitoring systems



Note) To build a T-link system, a T-link communication module is required.

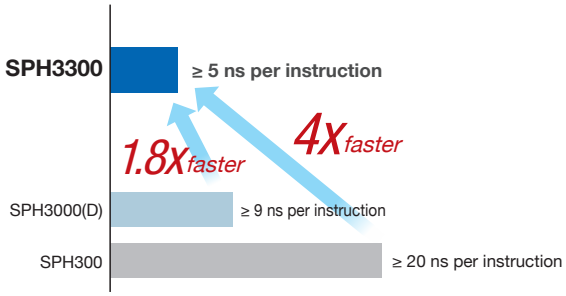
Improves processing performance by increasing basic performance

Instruction execution speed

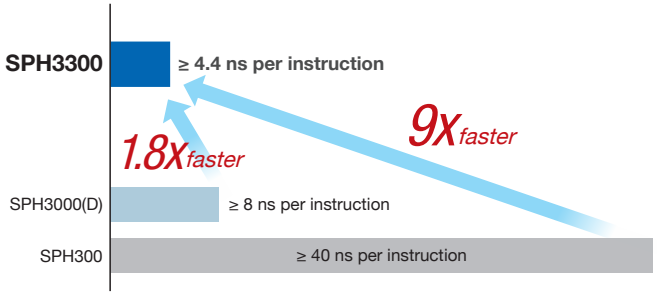
Significantly reduces various instruction execution times compared to existing models (SPH3000/2000/300).

SPH3300

Sequence instruction

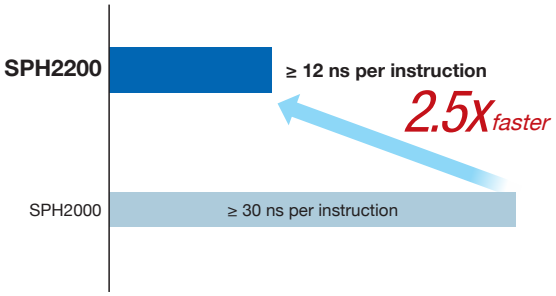


Applied instruction

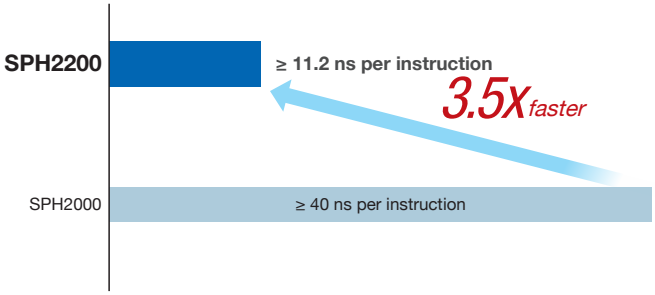


SPH2200

Sequence instruction



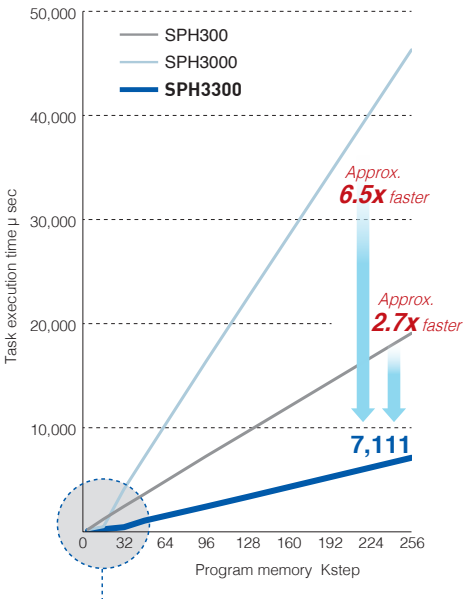
Applied instruction



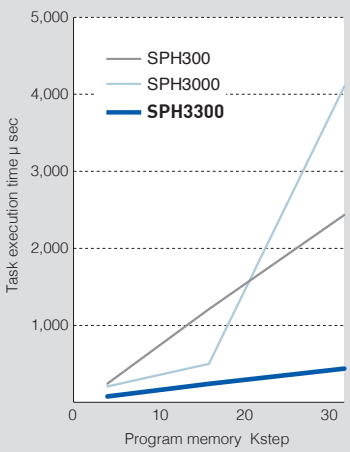
Application execution performance

Significantly reduces application execution time by speeding up the CPU.

Sequence control applications



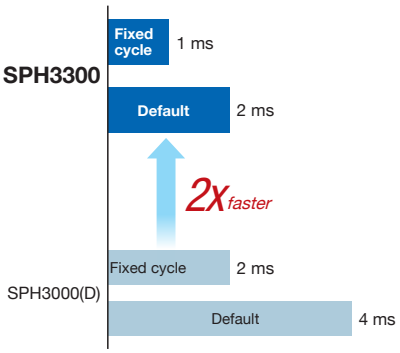
SPH3300 is faster in all areas of the program



Motion control applications

- Task execution cycle

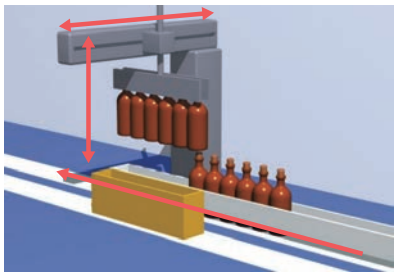
Program memory: 40 Ksteps
10 axes with synchronization control



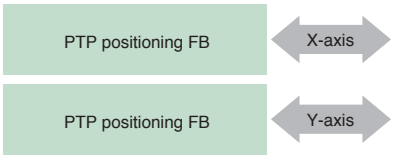
Note: The performance values indicated in this catalog are representative values that were measured using sample applications prepared by Fuji Electric and are not guaranteed values. Since performance may vary depending on the user's application, memory usage, etc., please be sure to confirm the performance on actual equipment prior to use.

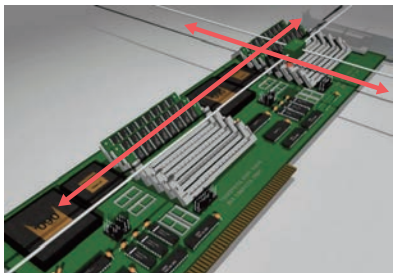
Full motion instruction support

Supports as standard built-in motion function blocks (FB) and 64-bit operation instructions, which were supported by the SPH3000D. Makes it easy to create high-speed, high-precision motion control applications.

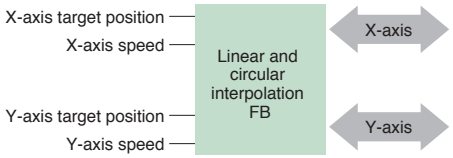


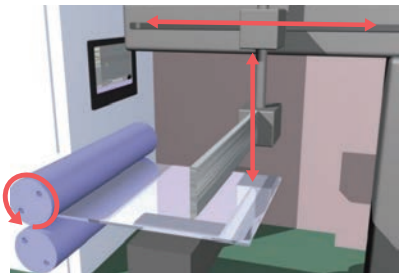
PTP positioning



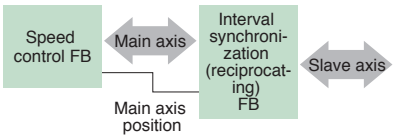


2-axes linear interpolation

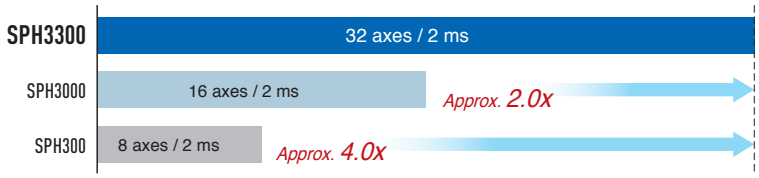




Flying shear control
Main axis control (speed control)

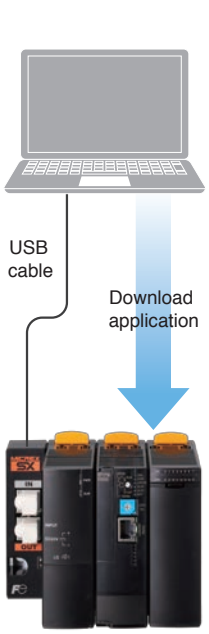


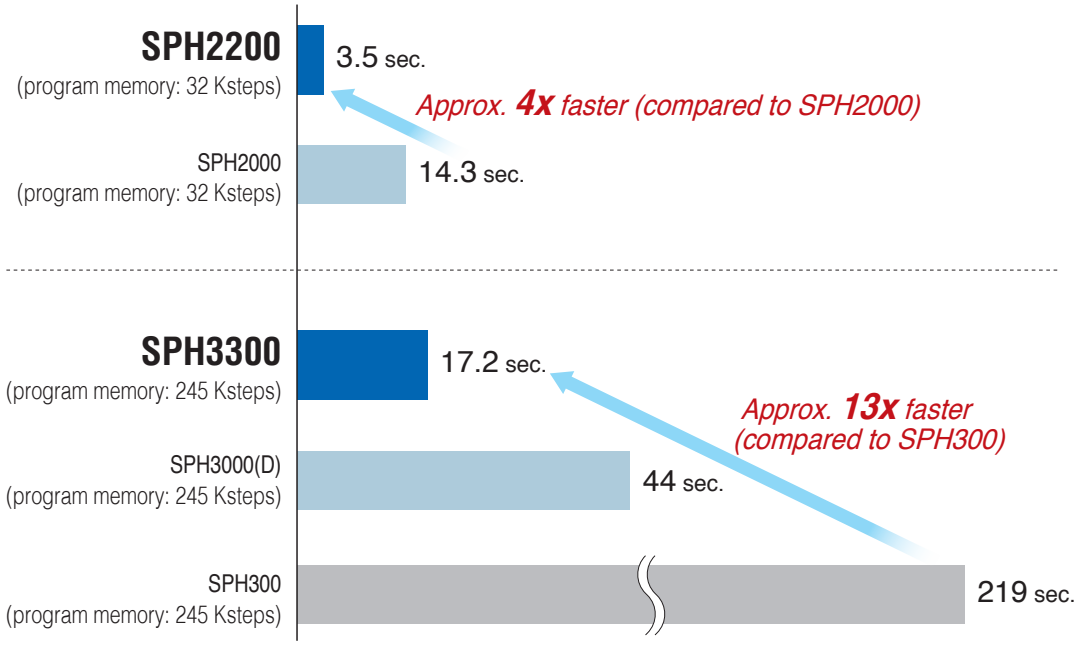
No. of controlled axes



Application download performance

Compared to existing models, the SPH3300 and SPH2200 have greatly improved communication performance. Significantly reduces application download speeds.



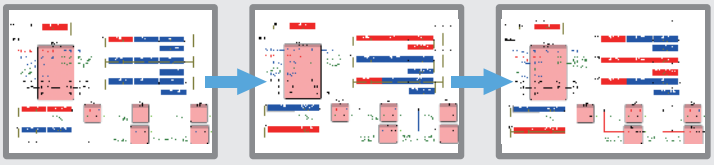


Contributes to improving productivity

Logging function

It saves CPU module data at any desired timing without affecting the scan time.
Since the saved CPU module status can be checked as data in chronological order on the waveform display, it can be used in trouble-shooting analysis, something that has been difficult to do after the trouble.
The logging function does not change the application execution cycle and does not affect the operation of machines and equipment.

It can display and playback stored data on a PC, helping to speed up investigation of the cause of errors.



Playback

Operation analysis
Data analysis

Loader software
Excel, data analysis software

Machinery and equipment data can be

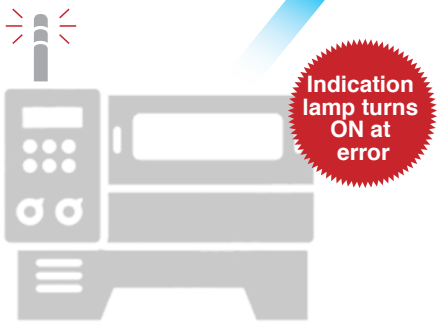
Collected
Saved
Played back

Save

SPH3300 / SPH2200

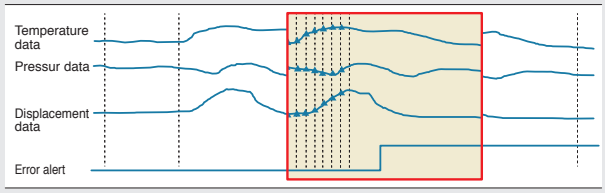
Collect

- Temperature / pressure
- Distance / displacement
- Servo speed / torque
- Work ID / equipment ID
- Error alert, etc.



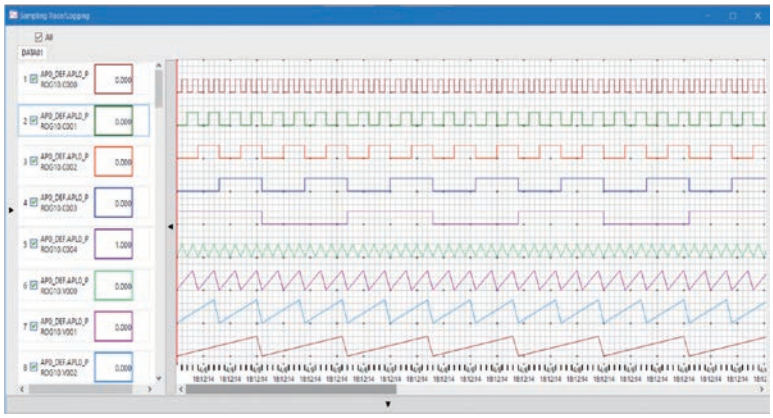
Machinery and equipment

Save and store collected data to SD card in chronological order



Waveform monitor

This function displays waveforms with time axis and variable values using the data collected during logging operations.



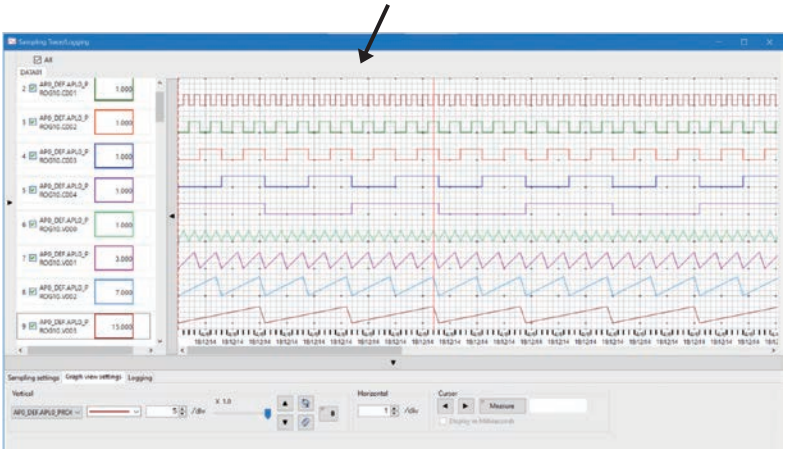
Waveform monitor screen

SX monitor

This function monitors and displays user programs using the data collected during logging operations.
It links with the waveform monitor to playback pre- and post-trigger timings on the monitor display.
It helps improve start-up efficiency during debugging and is useful for quickly resolving errors.

SX monitor screen

Trigger timing - 1 cycle　　Trigger timing　　Trigger timing + 1 cycle



Waveform monitor screen

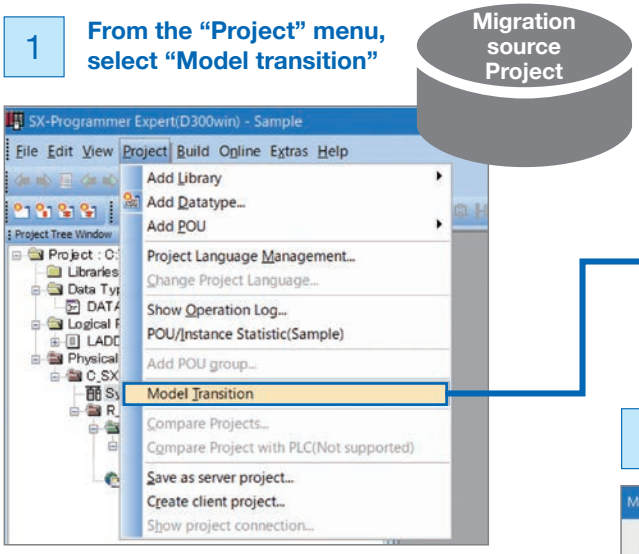
Note: The SX monitor is available only for Expert (D300win).

Reduces the time and effort of PLC migration

Model transition function

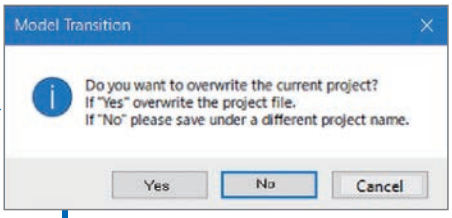
This is a tool for migrating existing PLC project to the SPH2200 and 3300.
User can easily migrate PLC project without changing system definition or resource settings.

1 From the "Project" menu, select "Model transition"



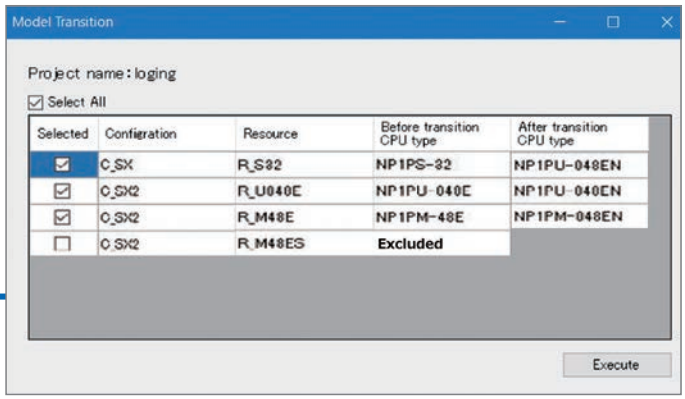
2 Check the project name

Select whether to overwrite the migration source project or save it with another name



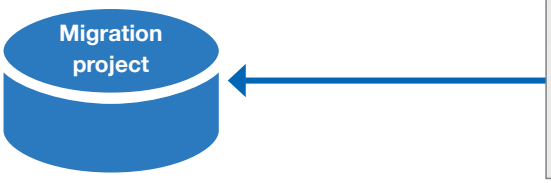
3 Check the migration CPU

(Select the resources to be migrated)



4 Execute migration

Execute the migration of the opened project



SPH2200 and 3300 series lineup (recommended types for replacing SPH2000 and 3000 series)

Existing models (SPH2000 · 3000(D) · 3000 Series)

Recommended replacement models (SPH2200 · 3300 Series)

Series	Program memory	ROM card	Ethernet	Built-in motion FB	Model	Series	Program memory	ROM card	Ethernet	Built-in motion FB	Model
SPH2000	48 Ksteps	CF	–	–	NP1PM-48R	SPH2200	48 Ksteps	SD	–	✓	NP1PM-048RN
SPH2000	48 Ksteps	CF	✓	–	NP1PM-48E	SPH2200	48 Ksteps	SD	✓	✓	NP1PM-048EN
SPH3000	48 Ksteps	SD	✓	–	NP1PU-048E	SPH3300	48 Ksteps	SD	✓	✓	NP1PU-048EN
SPH3000D	48 Ksteps	SD	✓	✓	NP1PU-048EZM						
SPH300	32 Ksteps	CF	–	–	NP1PS-32/32R						
SPH3000D	96 Ksteps	SD	✓	✓	NP1PU-096EZM	SPH3300	96 Ksteps	SD	✓	✓	NP1PU-096EN
SPH300	74 Ksteps	CF	–	–	NP1PS-74/74R						
SPH3000	128 Ksteps	SD	✓	–	NP1PU-128E	SPH3300	128 Ksteps	SD	✓	✓	NP1PU-128EN
SPH3000D	128 Ksteps	SD	✓	✓	NP1PU-128EZM						
SPH300	117 Ksteps	CF	–	–	NP1PS-117/117R						
SPH2000	256 Ksteps	CF	✓	–	NP1PM-256E	SPH3300	256 Ksteps	SD	✓	✓	NP1PU-256EN
SPH3000	256 Ksteps	SD	✓	–	NP1PU-256E						
SPH3000D	256 Ksteps	SD	✓	✓	NP1PU-256EZM						
SPH300	245 Ksteps	CF	–	–	NP1PS-245R						

Item		Specifications					
		SPH3300				SPH2200	
Type		NP1PU-048EN	NP1PU-096EN	NP1PU-128EN	NP1PU-256EN	NP1PM-048EN	NP1PM-048RN
Control system		Stored program Cyclic scanning system (default task), fixed-cycle task, event task					
I/O connection method		Direct connection I/O (SX bus), remote I/O (T-link, OPCN-1, etc.)					
I/O control system		SX bus: Tact synchronization refresh Note: Refer to the respective remote I/O manuals for the input/output control methods of remote I/Os.					
CPU		32-bit RISC processor					
Programming language		IEC 61131-3 conformed IL language, ST language, LD language, FBD language, SFC element					
Instruction execution speed	Sequence instruction	LD BOOL ≥ 5 ns per instruction				LD BOOL ≥ 12 ns per instruction	
	Applied instruction	LD WORD ≥ 1 ns per instruction, MOVE WORD ≥ 4.4 ns per instruction, ADD UDINT ≥ 5 ns per instruction,				LD WORDWord ≥ 3 ns per instruction, MOVE WORD ≥ 11.2 ns per instruction, ADD UDINT ≥ 12 ns per instruction	
No. of I/O points		8,192 points					
User memory		545 [Kwords]	1,409 [Kwords]	1,473 [Kwords]	2,753 [Kwords]	193 [Kwords]	
	Program memory	96 Kwords	192 Kwords	256 Kwords	512 Kwords	96 Kwords	
		48 Ksteps	96 Ksteps	128 Ksteps	256 Ksteps	48 Ksteps	
	Data memory	449 Kwords	1,217 Kwords	1,217 Kwords	2,241 Kwords	97 Kwords	
Available basic data types		Basic data types: BOOL, INT, UINT, DINT, UDINT, REAL, TIME, DATE, TOD, DT, STRING, WORD, DWORD Note: Available data types differ depending on the instruction.					
Number of tasks		Default tasks (Cyclic scanning) : 1 Fixed-cycle tasks: 4 Event tasks: 4 ┐ Up to 4 in total					
Interface	User ROM card	SD memory card, SDHC memory card					
	USB	miniB connector x 1 port (For connecting programming tools)					
	Ethernet	10BASE-T, 100BASE-TX					None
Logging function		User memory data can be collected at any desired timing, user ROM (sold separately) Capable of playing back data stored on a PC with waveform display and user program display					
Multi-CPU function		Max. of 8 units per configuration Supplemental) Allows mixing with other CPU modules that support multi-CPU functionality					
Redundant system		Not supported					
Diagnostic function		Self-diagnosis (memory check, ROM sum check), system configuration monitoring, module fault monitoring					
Security function		Via password (set by the loader)					
Calendar		Up to 31 Dec. 2069 23:59:59 Precision: 27 sec/month (25°C, when active) When a multi-CPU system is used, time is synchronized.					
Battery backup		Backup range: Data memory (retainable attributes), calendar IC memory, RAS area Battery used: Lithium primary battery Replacement time: (at 25°C) within 5 minutes Backup time: (at 25°C) 5 years					
Memory backup by flash memory		Backup range: Application programs, system definitions, and zip files					
Memory backup by user ROM card (optional)		Application programs, system definitions, zip files, and compressed projects can be saved in user ROM card					

Model list

New product name		Type (ordering code)	Outline specifications			Applicable standards			
						CE, UKCA*1	UL	LR*2	NK*2
CPU Module	SPH2200	NP1PM-048RN	Program memory 48 Ksteps	・Sequence instruction: ≥ 12 ns ・No. of I/O control points: Max. of 8,192 points ・USB 2.0 (loader connection)	・Applied instruction: ≥ 3 ns ・User ROM card (SD card)	✓	✓		
		NP1PM-048EN	Program memory 48 Ksteps	・Sequence instruction: ≥ 12 ns ・No. of I/O control points: Max. of 8,192 points ・USB 2.0 (loader connection)	・Applied instruction: ≥ 3 ns ・User ROM card (SD card) ・Ethernet (100BASE-TX/10BASE-T)	✓	✓		
	SPH3300	NP1PU-048EN	Program memory 48 Ksteps	・Sequence instruction: ≥ 5 ns ・No. of I/O control points: Max. of 8,192 points ・USB 2.0 (loader connection)	・Applied instruction: ≥ 1 ns ・User ROM card (SD card) ・Ethernet (100BASE-TX/10BASE-T)	✓	✓		
		NP1PU-096EN	Program memory 96 Ksteps	・Sequence instruction: ≥ 5 ns ・No. of I/O control points: Max. of 8,192 points ・USB 2.0 (loader connection)	・Applied instruction: ≥ 1 ns ・User ROM card (SD card) ・Ethernet (100BASE-TX/10BASE-T)	✓	✓		
		NP1PU-128EN	Program memory 128 Ksteps	・Sequence instruction: ≥ 5 ns ・No. of I/O control points: Max. of 8,192 points ・USB 2.0 (loader connection)	・Applied instruction: ≥ 1 ns ・User ROM card (SD card) ・Ethernet (100BASE-TX/10BASE-T)	✓	✓		
		NP1PU-256EN	Program memory 256 Ksteps	・Sequence instruction: ≥ 5 ns ・No. of I/O control points: Max. of 8,192 points ・USB 2.0 (loader connection)	・Applied instruction: ≥ 1 ns ・User ROM card (SD card) ・Ethernet (100BASE-TX/10BASE-T)	✓	✓		

*1: SX Series has been certified for the CE Marking with the product alone. Be sure to confirm the certification of the final product with the SX Series integrated.
*2: Support for maritime standards (LR, NK, etc.) is scheduled from May 2025.

⚠ Safety Precautions

- Before using this product, read the "Instruction Manual" and "User manual" carefully or consult with the retailer you purchased this product from and use this product correctly.
- The product described in this catalog has not been designed and produced to be used for equipment or systems which could endanger human life.
- Contact your dealer if you are considering using the product described in this catalog for any applications which have a large impact on life, the human body, community, important assets or rights (e.g., for power stations, radiation-related facilities, railways, space/airline facilities, lifeline facilities, or medical equipment).
- Please make sure that the use of the products does not lead to a serious accident in the event that a failure or malfunction occurs in the products described in this catalog. And in cases of failure or malfunction, safety measures should be prepared using external devices in a systematic manner as standard operating conditions for the products.
- For safe use, this product must be connected by those with specialized skills (in electric work, wiring work, etc.).
- Use a power supply which is reinforced and isolated from an AC power supply for an external power supply to connect to DC I/O (such as 24 V DC power supply). (You are recommended to use a power supply that conforms to EN60950.) Otherwise, an accident or breakdown may result.

Before purchasing this product

- For the details, price, and installation fee of the products included in this catalog, contact the retailer or Fuji Electric Co., Ltd.
- Please note that for product improvement, the appearance and specifications may be subject to change without prior notice.
- Please note that the color and appearance of the printed image of the product may differ slightly from those of the actual product.

● Appearance and specifications are subject to change without prior notice for the purpose of product improvement.

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