General Specifications

GS 34M6C01-01E

FA-M3
Basic Modules
(Base, Power Supply, CPU Modules and ROM Packs)

FA-M3

Contents

YOKOGAWA
Yokogawa Electric Corporation

GS 34M6C01-01E

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General Specifications

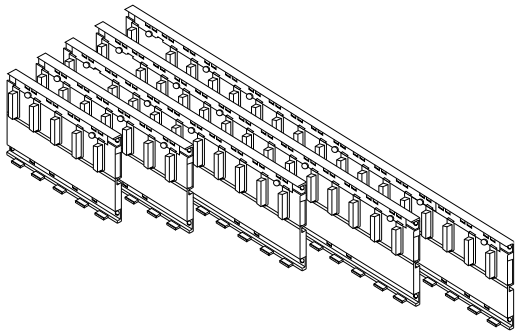
F3BU04, F3BU06, F3BU09-0N, F3BU13-0N and F3BU16-0N Base Modules

FA-M3

■ General

FA-M3 base modules serve as the base for accommodating various modules. FA-M3 base modules are available in 4-, 6-, 9-, 13- and 16-slot versions. Choose an appropriate base module according to the target system requirements.

There are no differences between main units and sub-units.



■ Specifications

	F3BU04-0N	F3BU06-0N	F3BU09-0N	F3BU13-0N	F3BU16-0N
Number of slots	4	6	9	13	16
Number of I/O slots*	3	5	8	12	15
Current consumption	50mA (5V DC)				
Weight (g)	140g	200g	310g	420g	550g

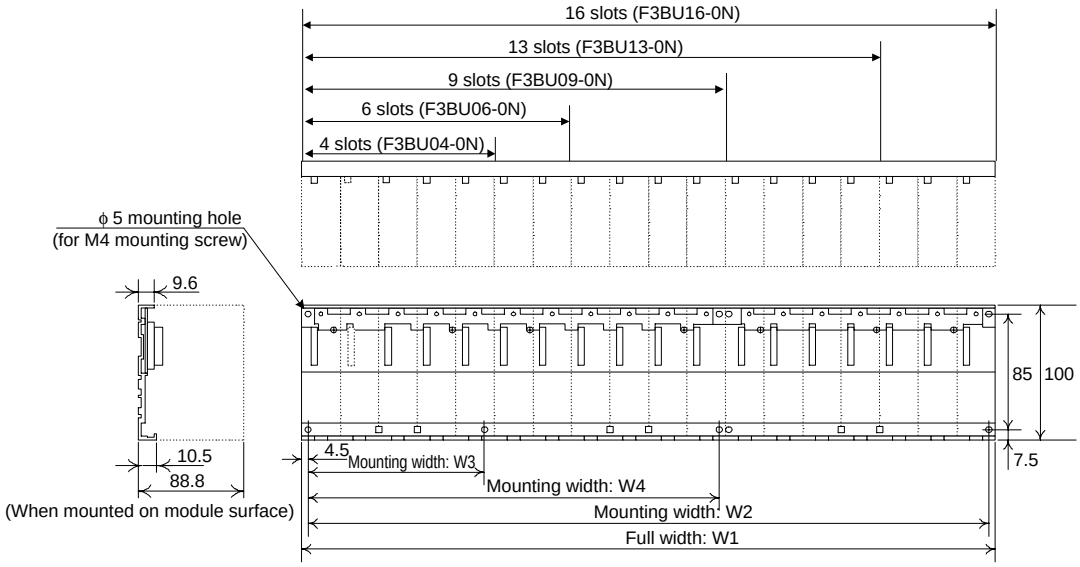
*: Number of I/O slots that can be used with a single CPU module.

■ Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3BU04	-0N	.....	.....	4 slots (excluding slots for power supply)
F3BU06	-0N	.....	.....	6 slots (excluding slots for power supply)
F3BU09	-0N	.....	.....	9 slots (excluding slots for power supply)
F3BU13	-0N	.....	.....	13 slots (excluding slots for power supply)
F3BU16	-0N	.....	.....	16 slots (excluding slots for power supply)

■ External Dimensions

Unit: mm



Base Modules	Full width W1	Mounting width W2	W3	W4
F3BU04-0N	147	138	—	—
F3BU06-0N	205	196	—	—
F3BU09-0N	322	313	138	—
F3BU13-0N	439	430	196	—
F3BU16-0N	527	517	138	313

Note:

- Make sure that the total current consumption of the modules to be installed does not exceed the current capacity of the power supply module.
- The F3BU16-0N module cannot be mounted on a DIN rail.
- The signal ground of the main unit is attached to the metal chassis of the base modules.

General Specifications

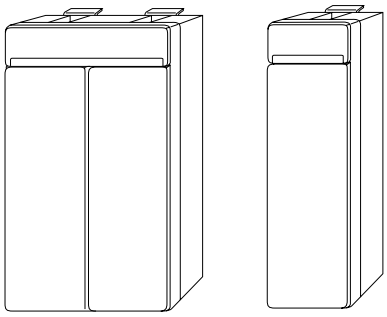
F3PU10, F3PU20, F3PU16 and F3PU26
Power Supply Modules

FA-M3

■ General

FA-M3 power supply modules supply power to the FA-M3 Range-free Multi-controllers. One power supply module is required for each FA-M3 base module.

The F3PU10-0N is used for the F3BU04-0N and F3BU06-0N base modules. The F3PU20-0N and F3PU26-0N are used for the F3BU09-0N, F3BU13-0N and F3BU16-0N base modules.

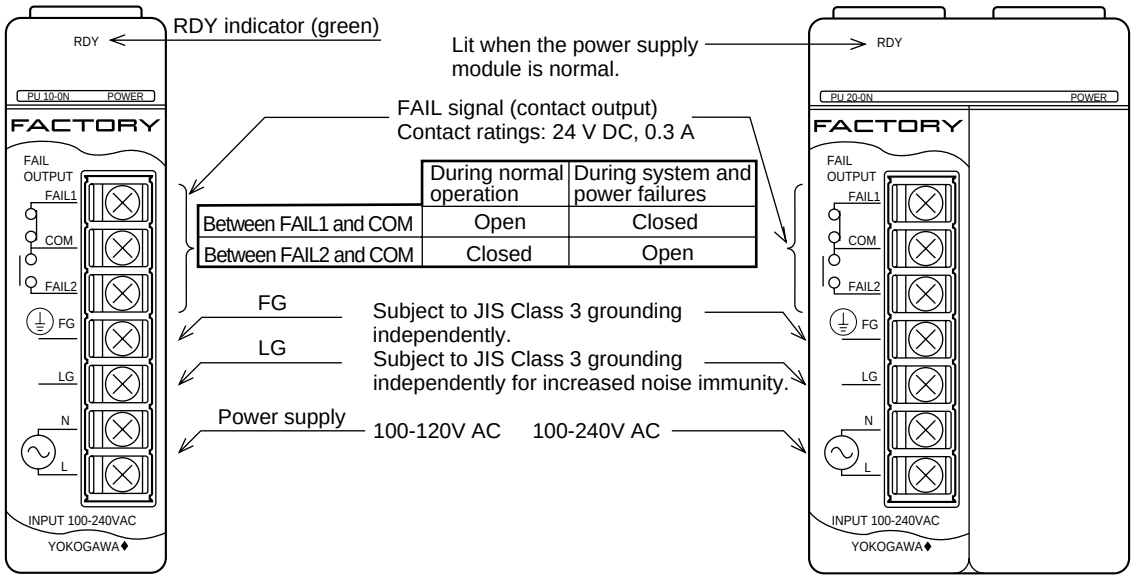


■ Specifications

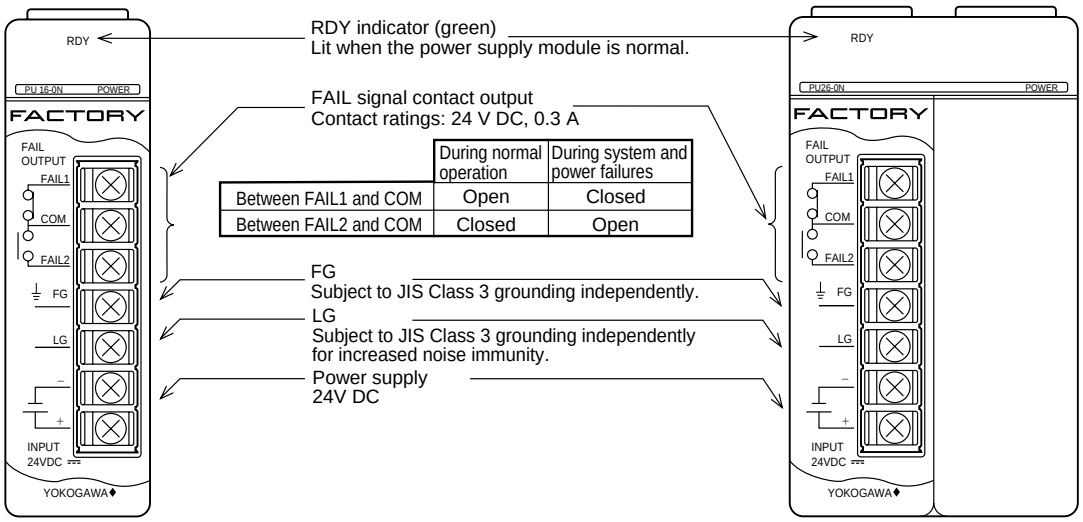
Item	Specification			
	F3PU10-0N	F3PU20-0N	F3PU16-0N	F3PU26-0N
Supply voltage	100-240 V AC, single phase, 50/60 Hz		24 V DC	
Supply voltage fluctuation range	85-264 V AC, 50/60 Hz ±3 Hz		15.6-31.2 V DC	
Power consumption	35 VA	85 VA	15.4 W	33.1 W
Inrush current	20 A max.(120 V AC,Ta=25°C) 45 A max.(240 V AC,Ta=25°C)		20 A max.(31.2 V DC,Ta=25°C)	
Rated output voltage	5 V DC			
Rated output current	2.0 A	4.3 A	2.0 A	4.3 A
Insulation resistance	500 V DC 5 MΩ or more between external AC terminals and FG terminal		5 MΩ or greater between external DC terminals and FG terminal at 500 V DC	
Dielectric strength	1500 V AC for 1 minute between external AC terminals and FG terminal		1500 V AC for 1 minute between external DC terminals and FG terminal	
Allowable momentary power failure time	20 ms			
Noise immunity	Noise level: 1500 Vp-p when measured by a noise simulator having a 1 µs of noise pulse width, 1 ns of rise time, and 25 Hz to 60 Hz of repetition frequency.			
External dimensions	28.9 (W) × 100 (H) × 83.2 (D) mm*	58 (W) × 100 (H) × 83.2 (D) mm*	28.9 (W) × 100 (H) × 83.2 (D) mm*	58 (W) × 100 (H) × 83.2 (D) mm*
Weight	190 g	320 g	190 g	320 g

*: Excluding protrusions (see external dimensions for details).

■ Components and Functions

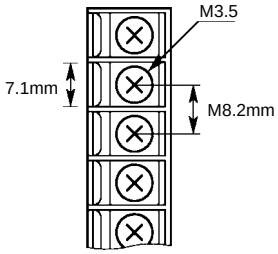


F3PU10 F3PU20



F3PU16 F3PU26

■ Terminal Dimensions



■ Examples of Applicable Solderless Terminals (Common to F3PU10, F3PU20, F3PU16 and F3PU26)

Vender	Model	Applicable Conductor	Crimping Torque
Japan Solderless Terminal Mfg. Co., Ltd.	V1.25-M3	0.33-0.82 mm² (Copper wire)	0.8N•m
Nippon Tanshi Co., Ltd.	RAV1.25-3.5		

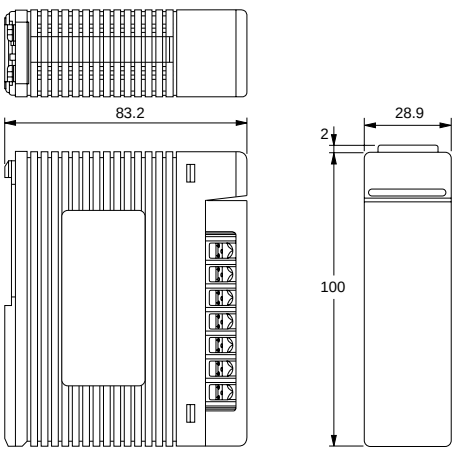
■ Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3PU10	-0N	.....	.....	100-240 V AC, for 4- and 6-slot base modules
F3PU20	-0N	.....	.....	100-240 V AC, for 9-, 13-, and 16-slot base modules
F3PU16	-0N	.....	.....	24 V DC, for 4- and 6-slot base modules
F3PU26	-0N	.....	.....	24 V DC, for 9-, 13-, and 16-slot base modules

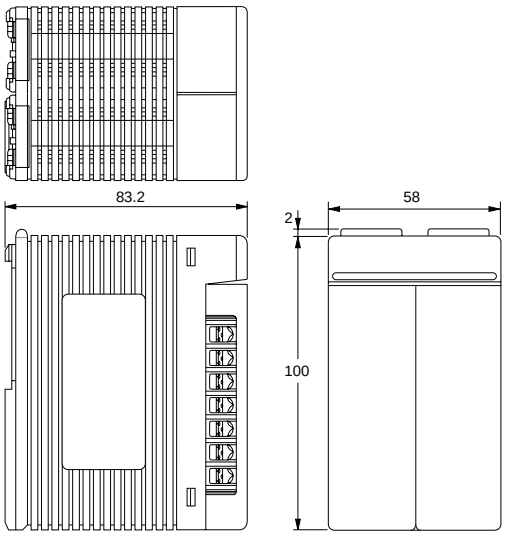
■ External Dimensions

Unit: mm

F3PU10, F3PU16



F3PU20, F3PU26



General Specifications

F3SP21
Sequence CPU Module

FA-M3

■ General

The F3SP21 is a CPU module for the FA-M3 Range-free Multi-controllers.

It is dedicated to process ladder sequences.

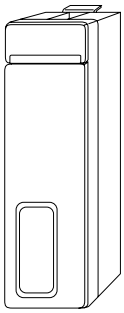
■ Features

- The high-speed instruction processing capability of the F3SP21 makes it ideal for applications that require high speed and quick response.
- The use of an index qualification and structured ladder language facilitates programming and program maintenance.
- The module permits reconfiguration in device size and operating mode according to the application in use.
- Program debugging and maintenance are easy to perform owing to many features such as forced set/reset that is put into effect regardless of the result of program execution.
- The programming tool link port is provided with a personal computer link feature, which allows the F3SP21 to connect to a higher-level computer or display without a personal link module.
- High-reliability design and powerful self-diagnostics are provided. Errors detected during program execution can be logged with predefined messages.
- Programs and data can be saved on an optional ROM pack.
- Programs can be protected by a protection feature.
- When installed in any of slots 2 to 4, the F3SP21 can function as an add-on sequence CPU module.

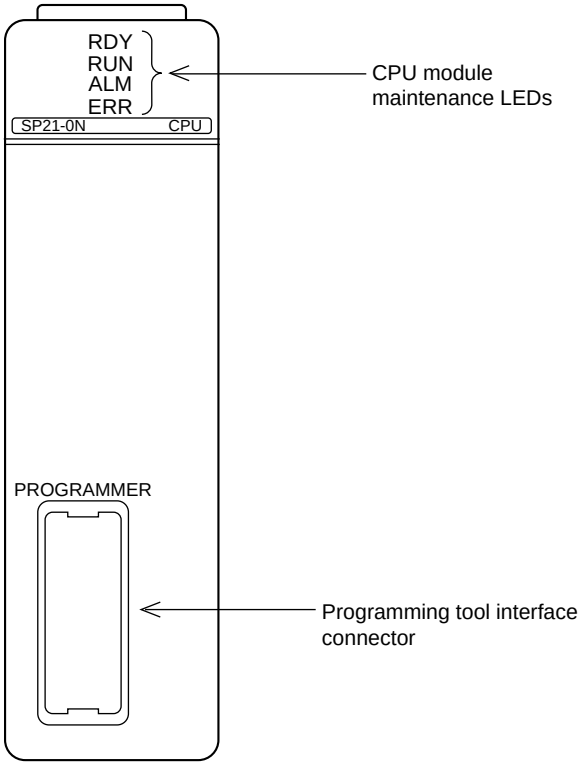
■ Specifications

Item		Specification
Control mode		Stored program, repetitive operation
I/O control mode		Refreshing method/direct I/O instruction
Programming language		Structured ladder language, mnemonic language
Number of instructions	**Basic instruction**	25 types
	Application instruction	227 types
Processing speed	**Basic instruction**	0.18-0.36 µs/instruction
	Application instruction	From 0.36 µs/instruction
Program size		10 K steps (Can be written to ROM)
Maximum number of I/O		2048 points
Device size	**Internal relay**	4096 points
	Data register	5120 points
Self-diagnostics		Memory error, CPU error, I/O error, syntax check, etc.
Other features		Configuration functions (setting device size and output in error occurrence as well as data lock-up range at power failure) Constant scan function (1 ms to 190 ms) Debugging functions (forced SET/RESET, online edit, scan operation, etc.) Error history function (64 records) Date/clock function (year/month/day/hour/minute/second/day of week) Program protect functions ROM programming and data storage Personal computer link function
Current consumption		350mA (5V DC)
External dimensions		28.9 (W) × 100 (H) × 83.2 (D) mm*
Weight		130g

*: Excluding protrusions (see external dimensions for details).



■ Components and Functions



■ Error Processing

Different levels of errors are identified by different LEDs on the front panel of the CPU module.

LED	Meaning
RDY (READY) Green	★Fatal (when off): The hardware cannot run. Examples: CPU error Memory error
RUN (RUN) Green	When lit: The user program is running.
ALM (ALARM) Yellow	★Non-fatal (when lit): The user program can run but an error occurs. Example: Power failure Communication error
ERR (ERROR) Red	★Error (when lit): The user program cannot start or continue execution. Examples: Program error* I/O comparison error* I/O module error* Memory error Sequence processor error Instruction processing error* Scan timeout*

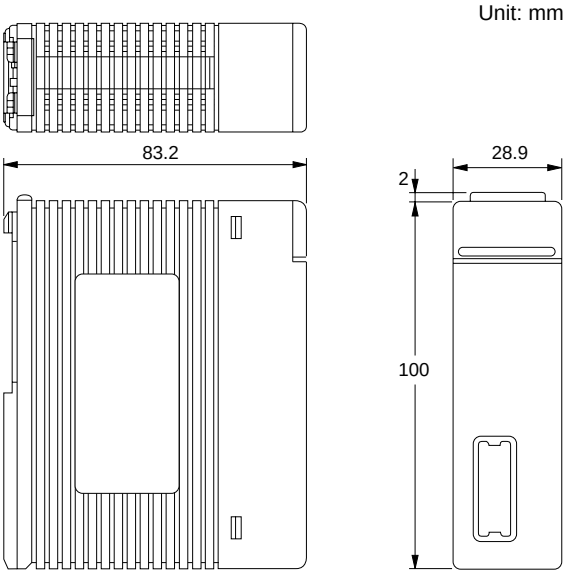
*: Error or non-fatal error can be selected in the configuration settings.

■ Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3SP21	-0N	·····	·····	Memory: 10 K steps

■ External Dimensions

Unit: mm



■ Operating Environment

There is no restriction on the type of main CPU modules that can be used with this module when this module is to be used as an add-on sequence CPU.

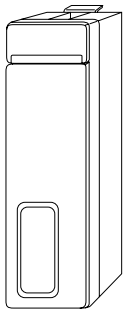
General Specifications

F3SP25
Sequence CPU Module

FA-M3

■ General

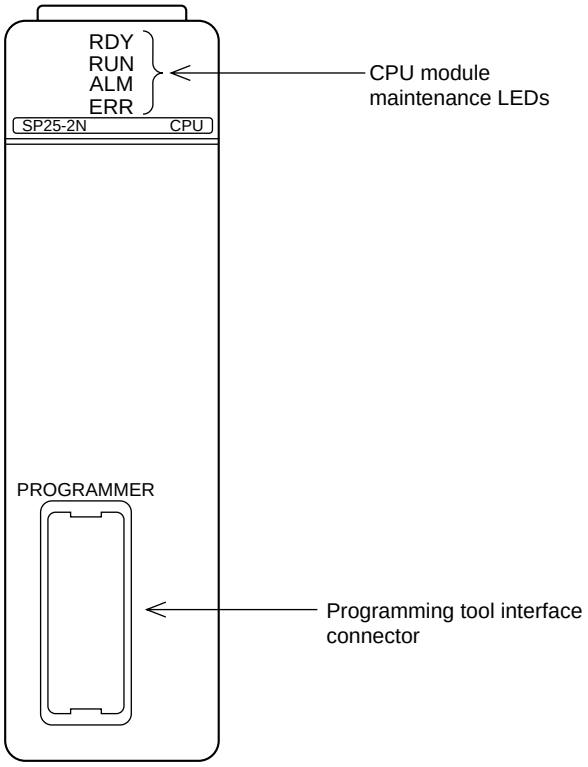
The F3SP25 is a CPU module for the FA-M3 Range-free Multi-controllers.
It is dedicated to process ladder sequences.



■ Features

- The high-speed instruction processing capability of the F3SP25 makes it ideal for applications that require high speed and quick response.
- The use of an index qualification and structured ladder language facilitates programming and program maintenance.
- The module permits reconfiguration in device size and operating mode according to the application in use.
- The user can define and register new instructions.
- Program debugging and maintenance are easy to perform owing to many features such as forced set/reset that is put into effect regardless of the result of program execution and scan operation.
- Sampling trace features are provided that can collect and display the status of multiple devices with a maximum of 1024 scans.
- The programming tool link port is provided with a personal computer link feature, which allows the F3SP25 to connect to a higher-level computer or display without a personal link module.
- High-reliability design and powerful self-diagnostics are provided. Errors detected during program execution can be logged with predefined messages.
- Programs and data can be saved on an optional ROM pack.
- Programs can be protected by a protection feature.
- When installed in any of slots 2 to 4, the F3SP25 can function as an add-on sequence CPU module.

■ Components and Functions



■ Specifications

Item		Specification
Control mode		Stored program, repetitive operation
I/O control mode		Refreshing method/direct I/O instruction
Programming language		Structured ladder language, mnemonic language
Number of instructions	Basic instruction	25 types
	Application instruction	307 types
Processing speed	Basic instruction	0.12-0.24 μs/instruction
	Application instruction	From 0.24 μs/instruction
Program size		20 K steps (Can be written to ROM)
Maximum number of I/O		4096 points
Device size	**Internal relay**	8192 points
	Data register	8192 points
Self-diagnostics		Memory error, CPU error, I/O error, syntax check, etc.
Other features		Configuration functions (setting device size and output in error occurrence as well as data lock-up range at power failure) Constant scan function (1 ms to 190 ms) Debugging functions (forced SET/RESET, online edit, scan operation, etc.) Error history function (64 records) Date/clock function (year/month/day/hour/minute/second/day of week) Program protect functions ROM programming and data storage Sampling trace function Personal computer link function
Current consumption		420mA (5V DC)
External dimensions		28.9 (W) × 100 (H) × 83.2 (D) mm*
Weight		130g

*: Excluding protrusions (see external dimensions for details).

■ Error Processing

Different levels of errors are identified by different LEDs on the front panel of the CPU module.

LED	Meaning
RDY (READY) Green	★Fatal (when off): The hardware cannot run. Examples: CPU error Memory error
RUN (RUN) Green	When lit: The user program is running.
ALM (ALARM) Yellow	★Non-fatal (when lit): The user program can run but an error occurs. Example: Power failure Communication error
ERR (ERROR) Red	★Error (when lit): The user program cannot start or continue execution. Examples: Program error* I/O comparison error* I/O module error* Memory error Sequence processor error Instruction processing error* Scan timeout*

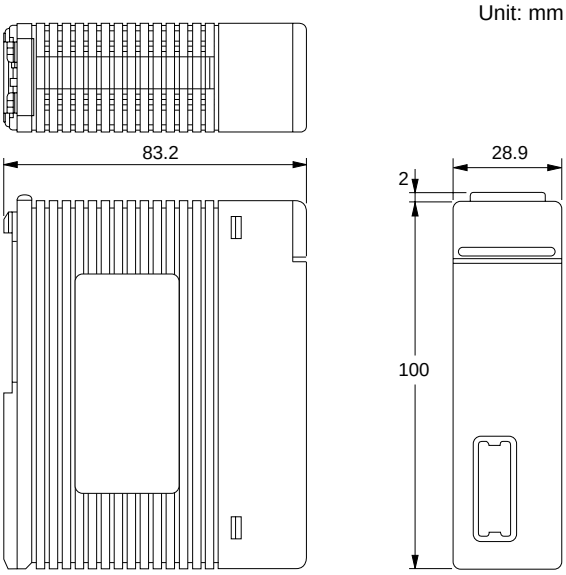
*: Error or non-fatal error can be selected in the configuration settings.

■ Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3SP25	-2N	·····	·····	Memory: 20 K steps

■ External Dimensions

Unit: mm



■ Operating Environment

There is no restriction on the type of main CPU modules that can be used with this module when this module is to be used as an add-on CPU.

General Specifications

F3SP28
Sequence CPU Module

FA-M3

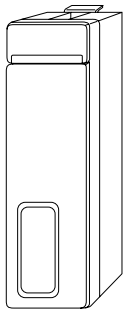
■ General

The F3SP28 is a CPU module for the FA-M3 Range - free Multi-controllers.

It is dedicated to process ladder sequences.

■ Features

- The basic instructions achieve a processing speed as high as 0.045 μs.
- The high-speed instruction processing capability of the F3SP28 makes it ideal for applications that require high speed and quick response. (Scan time is 1 ms for 6 K steps of program. The application instructions, such as analog I/O, that read from and write to advanced modules can achieve a maximum speed of 40 μs.)
- The sensor control function allows one CPU to perform another scan (input, program execution, and then output) besides the main scan simultaneously, realizing a steady I/O response of 400 μs.
- The use of an index qualification and object ladder language facilitates programming and program maintenance.
- The module permits configuration in device size and operating mode according to the application in use.
- The user can define and register new instructions.
- Program debugging and maintenance are easy to perform owing to many features such as forced set/reset that is put into effect regardless of the result of program execution and scan operation.
- Sampling trace features are provided that can collect and display the status of multiple devices with a maximum of 1024 scans.
- The programming tool link port is provided with a personal computer link feature, which allows the F3SP28 to connect to a higher-level computer or display without a personal link module (the maximum communication speed is 115 Kbps).
- High-reliability design and powerful self-diagnostics are provided. Errors detected during program execution can be logged with predefined messages.
- Program data are saved to memory, which is backed up with a battery that has a long service life and does not require maintenance.
- Programs and data can be saved on an optional ROM pack, which facilitates dividing a program into components.
- Programs can be protected by a protection feature. This can prevent a third party from viewing, modifying or the illegally copying a program.
- When installed in any of slots 2 to 4, the F3SP28 can function as an add-on sequence CPU module.

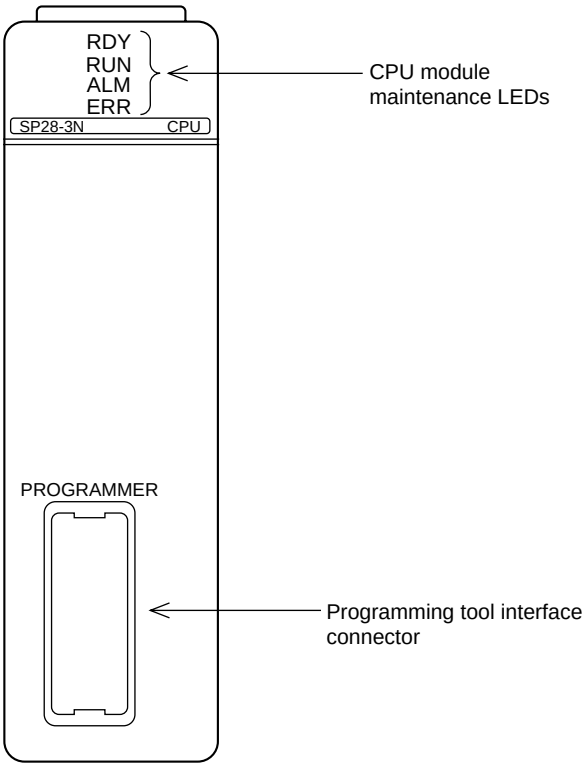


■ Specifications

Item		Specification
Control mode		Stored program, repetitive operation
I/O control mode		Refreshing method/direct I/O instruction
Programming language		Object ladder language, mnemonic language
Number of instructions	**Basic instructions**	33 types
	Application instructions	312 types
Processing speed	**Basic instructions**	0.045-0.18 μs/instruction
	Application instructions	From 0.18 μs/instruction
Program size		30 K steps (Can be written to ROM)
Maximum number of I/O		4096 points
Device size	**Internal relay**	16,384 (16 K) points
	Data register	16,384 (16 K) points
	File register	32,768 (32 K) points
Self-diagnostics		Memory error, CPU error, I/O error, syntax check, etc.
Other features		Sensor control function (scan time: 200 μs to 25 ms) Configuration functions (setting device size and output in error occurrence as well as data lock-up range at power failure) Constant scan function (1 ms to 190 ms) Debugging functions (forced SET/RESET, online edit, etc.) Error history function (64 records) Date/clock function (year/month/day/hour/minute/second/day of week) Program protect functions ROM programming and data storage
Current consumption		450mA (5V DC)
External dimensions		28.9 (W) × 100 (H) × 83.2 (D) mm*
Weight		125g

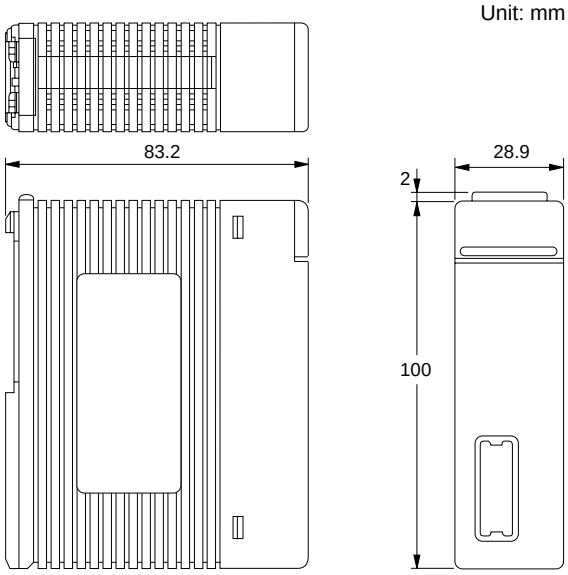
*: Excluding protrusions (see external dimensions for details).

■ Components and Functions



■ External Dimensions

Unit: mm



■ Operating Environment

There is no restriction on the type of main CPU modules that can be used with this module when this module is to be used as an add-on CPU.

■ Error Processing

LED	Meaning
RDY (READY) Green	★Fatal (when off): The hardware cannot run. Examples: CPU error Memory error
RUN (RUN) Green	When lit: The user program is running.
ALM (ALARM) Yellow	★Non-fatal (when lit): The user program can run but an error occurs. Example: Power failure Communication error
ERR (ERROR) Red	★Error (when lit): The user program cannot start or continue execution. Examples: Program error* I/O comparison error* I/O module error* Memory error Sequence processor error Instruction processing error* Scan timeout*

*: Error or non-fatal error can be selected in the configuration settings.

■ Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3SP28	-3N	·····	·····	Memory: 30 K steps

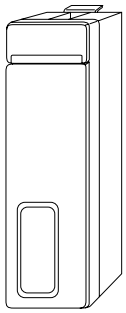
General Specifications

F3SP35
Sequence CPU Module

FA-M3

General

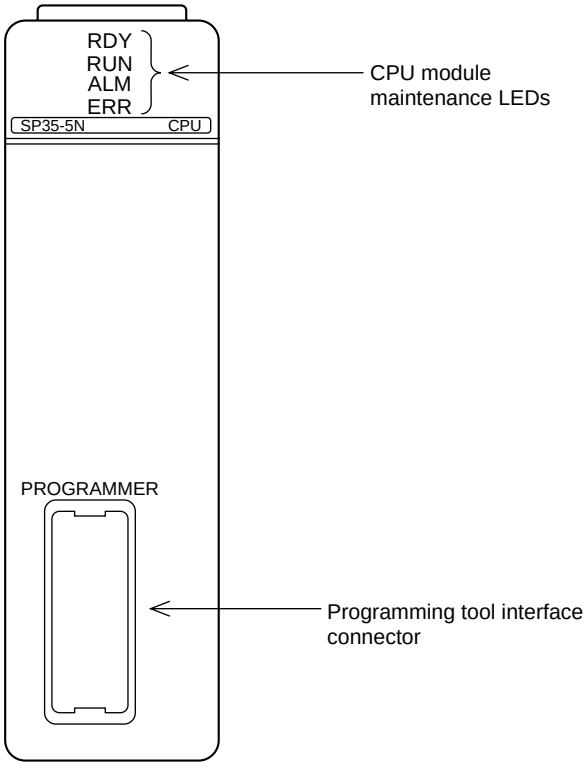
The F3SP35 is a CPU module for the FA-M3 Range-free Multi-controllers.
It is dedicated to process ladder sequences.



Features

- The basic instructions achieve a processing speed as high as 0.09 µs.
- The high-speed instruction processing capability of the F3SP35 makes it ideal for applications that require high speed and quick response. (Scan time is 0.95 ms for 5 K steps of program)
- The use of an index qualification and structured ladder language facilitates programming and program maintenance.
- The module permits configuration in device size and operating mode according to the application in use.
- The user can define and register new instructions.
- Program debugging and maintenance are easy to perform owing to many features such as forced set/reset that is put into effect regardless of the result of program execution and scan operation.
- Sampling trace features are provided that can collect and display the status of multiple devices with a maximum of 1024 scans.
- The programming tool link port is provided with a personal computer link feature, which allows the F3SP35 to connect to a higher-level computer or display without a personal link module.
- High-reliability design and powerful self-diagnostics are provided. Errors detected during program execution can be logged with predefined messages.
- Programs and data can be saved on an optional ROM pack.
- Programs can be protected by a protection feature.
- When installed in any of slots 2 to 4, the F3SP35 can function as an add-on sequence CPU module.

Components and Functions



Specifications

Item		Specification
Control mode		Stored program, repetitive operation
I/O control mode		Refreshing method/direct I/O instruction
Programming language		Structured ladder language, mnemonic language
Number of instructions	Basic instruction	25 types
	Application instruction	307 types
Processing speed	Basic instruction	0.09-0.18 µs/instruction
	Application instruction	From 0.18 µs/instruction
Program size		100 K steps (Can be written to ROM)
Maximum number of I/O		8192 points
Device size	**Internal relay**	16384 points
	Data register	8192 points
Self-diagnostics		Memory error, CPU error, I/O error, syntax check, etc.
Other features		Configuration functions (setting device size and output in error occurrence as well as data lock-up range at power failure) Constant scan function (1 ms to 190 ms) Debugging functions (forced SET/RESET, online edit, scan operation, etc.) Error history function (64 records) Date/clock function (year/month/day/hour/minute/second/day of week) Program protect functions ROM programming and data storage Sampling trace function Personal computer link function
Current consumption		560mA (5V DC)
External dimensions		28.9 (W) × 100 (H) × 83.2 (D) mm*
Weight		130g

*: Excluding protrusions (see external dimensions for details).

■ Error Processing

Different levels of errors are identified by different LEDs on the front panel of the CPU module.

LED	Meaning
RDY (READY) Green	★Fatal (when off): The hardware cannot run. Examples: CPU error Memory error
RUN (RUN) Green	When lit: The user program is running.
ALM (ALARM) Yellow	★Non-fatal (when lit): The user program can run but an error occurs. Example: Power failure Communication error
ERR (ERROR) Red	★Error (when lit): The user program cannot start or continue execution. Examples: Program error* I/O comparison error* I/O module error* Memory error Sequence processor error Instruction processing error* Scan timeout*

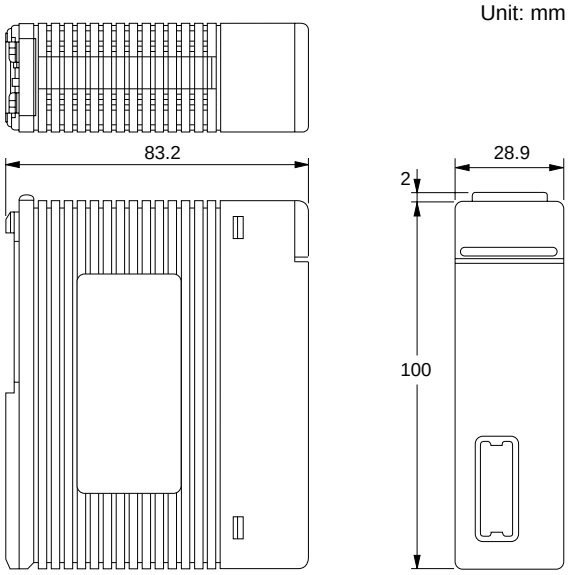
*: Error or non-fatal error can be selected in the configuration settings.

■ Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3SP35	-5N	·····	·····	Memory: 100 K steps

■ External Dimensions

Unit: mm



■ Operating Environment

There is no restriction on the type of main CPU modules that can be used with this module when this module is to be used as an add-on sequence CPU.

General Specifications

F3SP38
Sequence CPU Module

FA-M3

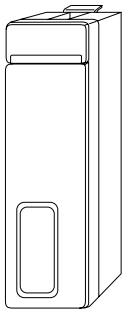
■ General

The F3SP38 is a CPU module for the FA-M3 Range-free Multi-controllers.

It is dedicated to process ladder sequences.

■ Features

- The basic instructions achieve a processing speed as high as 0.045 μs.
- The high-speed instruction processing capability of the F3SP38 makes it ideal for applications that require high speed and quick response. (Scan time is 1 ms for 6 K steps of program. The application instructions, such as analog I/O, that read from and write to advanced modules can achieve a maximum speed of 40 μs.)
- The sensor control function allows one CPU to perform another scan (input, program execution, and then output) besides the main scan simultaneously, realizing a steady I/O response of 400 μs.
- The use of an index qualification and object ladder language facilitates programming and program maintenance.
- The module permits reconfiguration in device size and operating mode according to the application in use.
- The user can define and register new instructions.
- Program debugging and maintenance are easy to perform owing to many features such as forced set/reset that is put into effect regardless of the result of program execution and scan operation.
- Sampling trace features are provided that can collect and display the status of multiple devices with a maximum of 1024 scans.
- The programming tool link port is provided with a personal computer link feature, which allows the F3SP38 to connect to a higher-level computer or display without a personal link module (the maximum communication speed is 115 Kbps).
- High-reliability design and powerful self-diagnostics are provided. Errors detected during program execution can be logged with predefined messages.
- Program data are saved to memory, which is backed up with a battery that has a long service life and does not require maintenance.
- Programs and data can be saved on an optional ROM pack, which facilitates dividing a program into components.
- Programs can be protected by a protection feature. This can prevent a third party from viewing, modifying or copying programs.
- When installed in any of slots 2 to 4, the F3SP38 can function as an add-on sequence CPU module.

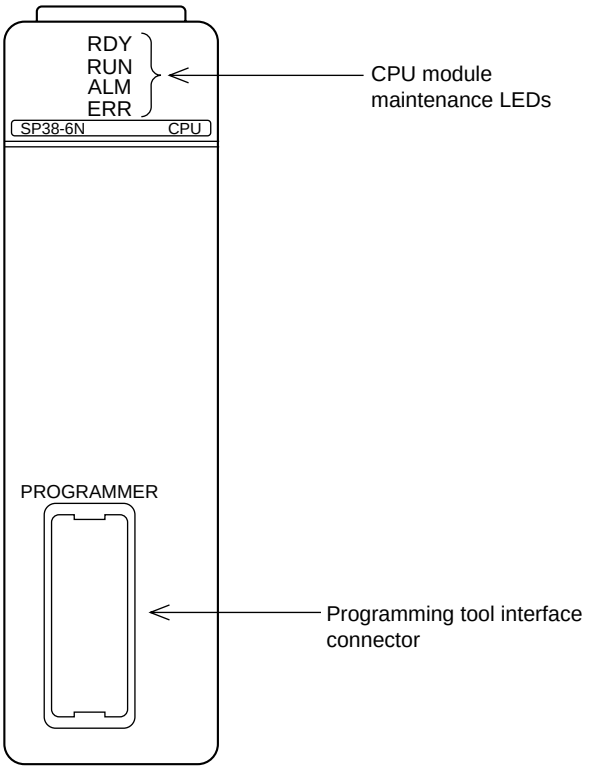


■ Specifications

Item		Specification
Control mode		Stored program, repetitive operation
I/O control mode		Refreshing method/direct I/O instruction
Programming language		Object ladder language, mnemonic language
Number of instructions	**Basic instructions**	33 types
	Application instructions	312 types
Processing speed	**Basic instructions**	0.045-0.18 μs/instruction
	Application instructions	From 0.18 μs/instruction
Program size		120 K steps (Can be written to ROM)
Maximum number of I/O		8192 points
Device size	**Internal relay**	32768 (32 K) points
	Data register	32768 (32 K) points
	File register	262144 (256 K) points
Self-diagnostics		Memory error, CPU error, I/O error, syntax check, etc.
Other features		Sensor control function (scan time: 200 μs to 25 ms) Configuration functions (setting device size and output in error occurrence as well as data lock-up range at power failure) Constant scan function (1 ms to 190 ms) Debugging functions (forced SET/RESET, online edit, etc.) Error history function (64 records) Date/clock function (year/month/day/hour/minute/second/day of week) Program protect functions ROM programming and data storage
Current consumption		450mA (5V DC)
External dimensions		28.9 (W) × 100 (H) × 83.2 (D) mm*
Weight		125g

*: Excluding protrusions (see external dimensions for details).

■ Components and Functions



■ Error Processing

Different levels of errors are identified by different LEDs on the front panel of the CPU module.

LED	Meaning
RDY (READY) Green	★Fatal (when off): The hardware cannot run. Examples: CPU error Memory error
RUN (RUN) Green	When lit: The user program is running.
ALM (ALARM) Yellow	★Non-fatal (when lit): The user program can run but an error occurs. Example: Power failure Communication error
ERR (ERROR) Red	★Error (when lit): The user program cannot start or continue execution. Examples: Program error* I/O comparison error* I/O module error* Memory error Sequence processor error Instruction processing error* Scan timeout*

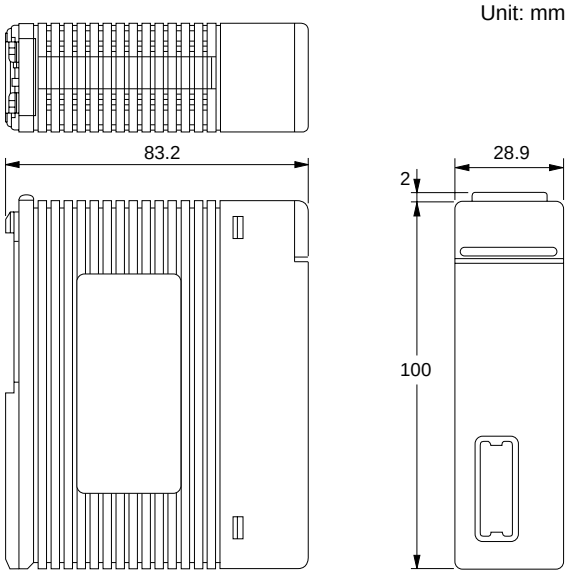
*: Error or non-fatal error can be selected in the configuration settings.

■ Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3SP38	-6N	·····	·····	Memory: 120 K steps

■ External Dimensions

Unit: mm



■ Operating Environment

There is no restriction on the type of main CPU modules that can be used with this module when this module is to be used as an add-on CPU.

General Specifications

F3SP53
Sequence CPU Module

FA-M3

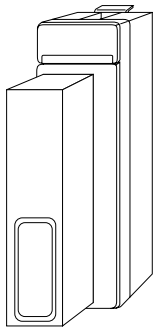
■ General

The F3SP53 is a CPU module for the FA-M3 Range-free Multi-controllers.

It is dedicated to process ladder sequences.

■ Features

- The basic instructions achieve a processing speed as high as 0.0175 µs.
- The high-speed instruction processing capability of the F3SP53 makes it ideal for applications that require high speed and quick response. (Scan time is 1 ms for 20 K steps of program. The application instructions, such as analog I/O, that read from and write to advanced modules can achieve a maximum speed of 25 µs.)
- The sensor control function allows one CPU to perform another scan (input, program execution, and then output) besides the main scan simultaneously, realizing a steady I/O response of 400 µs.
- The use of an index qualification and object ladder language facilitates programming and program maintenance.
- The module permits configuration in device size and operating mode according to the application in use.
- The user can define and register new instructions.
- Program debugging and maintenance are easy to perform owing to many features such as forced set/reset that is put into effect regardless of the result of program execution and scan operation.
- Sampling trace features are provided that can collect and display the status of multiple devices with a maximum of 1024 scans.
- The programming tool link port is provided with a personal computer link feature, which allows the F3SP53 to connect to a higher-level computer or display without a personal link module (the maximum communication speed is 115 Kbps).
- High-reliability design and powerful self-diagnostics are provided. Errors detected during program execution can be logged with predefined messages.
- Program data are saved to memory, which is backed up with a battery that has a long service life and does not require maintenance.
- Programs and data can be saved on an optional ROM pack, which facilitates dividing a program into components.
- Programs can be protected by a protection feature. This can prevent a third party from viewing, modifying or copying programs.
- When installed in any of slots 2 to 4, the F3SP53 can function as an add-on sequence CPU module.

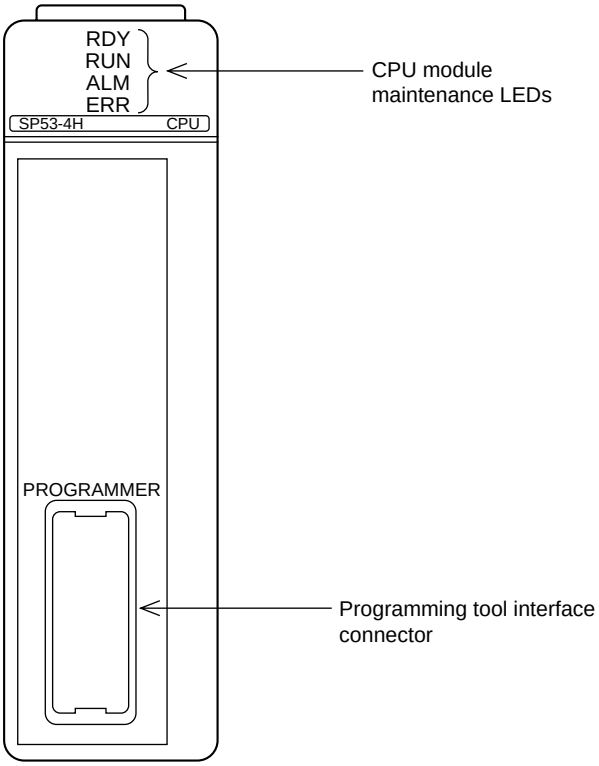


■ Specifications

Item		Specification
Control mode		Stored program, repetitive operation
I/O control mode		Refreshing method/direct I/O instruction
Programming language		Object ladder language, mnemonic language
Number of instructions	**Basic instructions**	33 types
	Application instructions	312 types
Processing speed	**Basic instructions**	0.0175-0.07 µs/instruction
	Application instructions	From 0.07 µs/instruction
Program size		56 K steps (Can be written to ROM)
Maximum number of I/O		4096 points
Device size	**Internal relay**	16384 (16 K) points
	Data register	16384 (16 K) points
	File register	32768 (32 K) points
Self-diagnostics		Memory error, CPU error, I/O error, syntax check, etc.
Other features		Sensor control function (scan time: 200 µs to 25 ms) Configuration functions (setting device size and output in error occurrence as well as data lock-up range at power failure) Constant scan function (1 ms to 190 ms) Debugging functions (forced SET/RESET, online edit, etc.) Error history function (64 records) Date/clock function (year/month/day/hour/minute/second/day of week) Program protect functions ROM programming and data storage
Current consumption		890mA (5V DC)
External dimensions		28.9 (W) × 100 (H) × 113.2 (D) mm*
Weight		210g

*: Excluding protrusions (see external dimensions for details).

■ Components and Functions



■ Error Processing

Different levels of errors are identified by different LEDs on the front panel of the CPU module.

LED	Meaning
RDY (READY) Green	★Fatal (when off): The hardware cannot run. Examples: CPU error Memory error
RUN (RUN) Green	When lit: The user program is running.
ALM (ALARM) Yellow	★Non-fatal (when lit): The user program can run but an error occurs. Example: Power failure Communication error
ERR (ERROR) Red	★Error (when lit): The user program cannot start or continue execution. Examples: Program error* I/O comparison error* I/O module error* Memory error Sequence processor error Instruction processing error* Scan timeout*

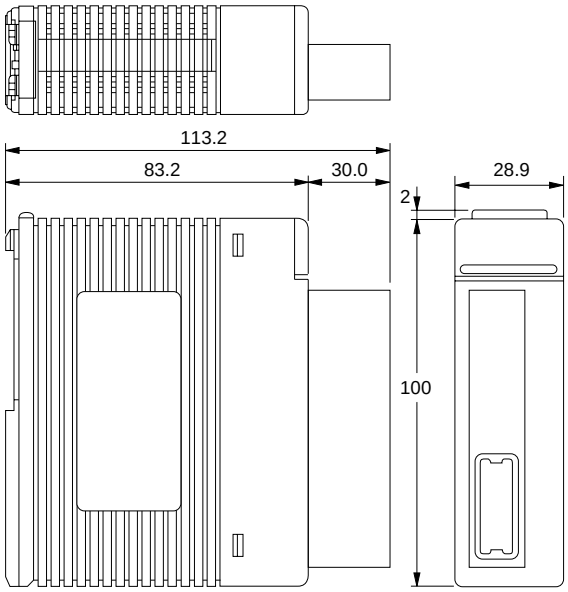
*: Error or non-fatal error can be selected in the configuration settings.

■ Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3SP53	-4H	·····	·····	Memory: 56 K steps

■ External Dimensions

Unit: mm



■ Operating Environment

There is no restriction on the type of main CPU modules that can be used with this module when this module is to be used as an add-on CPU.

General Specifications

F3SP58
Sequence CPU Module

FA-M3

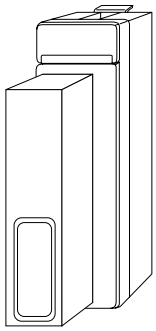
■ General

The F3SP58 is a CPU module for the FA-M3 Range-free Multi-controllers.

It is dedicated to process ladder sequences.

■ Features

- The basic instructions achieve a processing speed as high as 0.0175 µs.
- The high-speed instruction processing capability of the F3SP58 makes it ideal for applications that require high speed and quick response. (Scan time is 1 ms for 20 K steps of program. The application instructions, such as analog I/O, that read from and write to advanced modules can achieve a maximum speed of 25 µs.)
- The sensor control function allows one CPU to perform another scan (input, program execution, and then output) besides the main scan simultaneously, realizing a steady I/O response of 400 µs.
- The use of an index qualification/object ladder language facilitates programming and program maintenance.
- The module permits configuration in device size and operating mode according to the application in use.
- The user can define and register new instructions.
- Program debugging and maintenance are easy to perform owing to many features such as forced set/reset that is put into effect regardless of the result of program execution.
- Sampling trace features are provided that can collect and display the status of multiple devices with a maximum of 1024 scans.
- The programming tool link port is provided with a personal computer link feature, which allows the F3SP58 to connect to a higher-level computer or display without a personal link module (the maximum communication speed is 115 Kbps).
- High-reliability design and powerful self-diagnostics are provided. Errors detected during program execution can be logged with predefined messages.
- Program data are saved to memory, which is backed up with a battery that has a long service life and does not require maintenance.
- Programs and data can be saved on an optional ROM pack, which facilitates dividing a program into components.
- Programs can be protected by a protection feature. This can prevent a third party from viewing, modifying or copying programs.
- When installed in any of the slots 2 to 4, the F3SP58 can function as an add-on sequence CPU module.

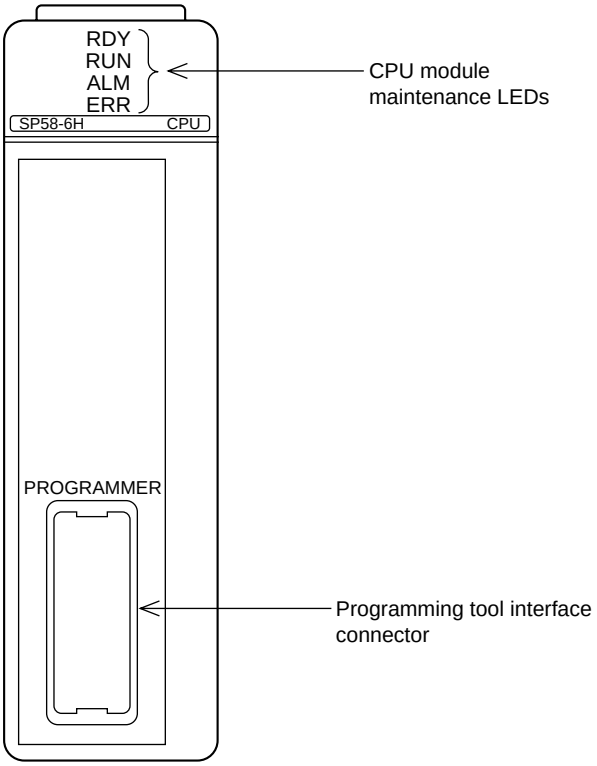


■ Specifications

Item		Specification
Control mode		Stored program, repetitive operation
I/O control mode		Refreshing method/direct I/O instruction
Programming language		Object ladder language, mnemonic language
Number of instructions	**Basic instructions**	33 types
	Application instructions	312 types
Processing speed	**Basic instructions**	0.0175-0.07 µs/instruction
	Application instructions	From 0.07 µs/instruction
Program size		120 K steps (Can be written to ROM)
Maximum number of I/O		8192 points
Device size	**Internal relay**	32768 (32 K) points
	Data register	32768 (32 K) points
	File register	262144 (256 K) points
Self-diagnostics		Memory error, CPU error, I/O error, syntax check, etc.
Other features		Sensor control function (scan time: 200 µs to 25 ms) Configuration functions (setting device size and output in error occurrence as well as data lock-up range at power failure) Constant scan function (1 ms to 190 ms) Debugging functions (forced SET/RESET, online edit, etc.) Error history function (64 records) Date/clock function (year/month/day/hour/minute/second/day of week) Program protect functions ROM programming and data storage
Current consumption		890mA (5V DC)
External dimensions		28.9 (W) × 100 (H) × 113.2 (D) mm*
Weight		210g

*: Excluding protrusions (see external dimensions for details).

■ Components and Functions



■ Error Processing

Different levels of errors are identified by different LEDs on the front panel of the CPU module.

LED	Meaning
RDY (READY) Green	★Fatal (when off): The hardware cannot run. Examples: CPU error Memory error
RUN (RUN) Green	When lit: The user program is running.
ALM (ALARM) Yellow	★Non-fatal (when lit): The user program can run but an error occurs. Example: Power failure Communication error
ERR (ERROR) Red	★Error (when lit): The user program cannot start or continue execution. Examples: Program error* I/O comparison error* I/O module error* Memory error Sequence processor error Instruction processing error* Scan timeout*

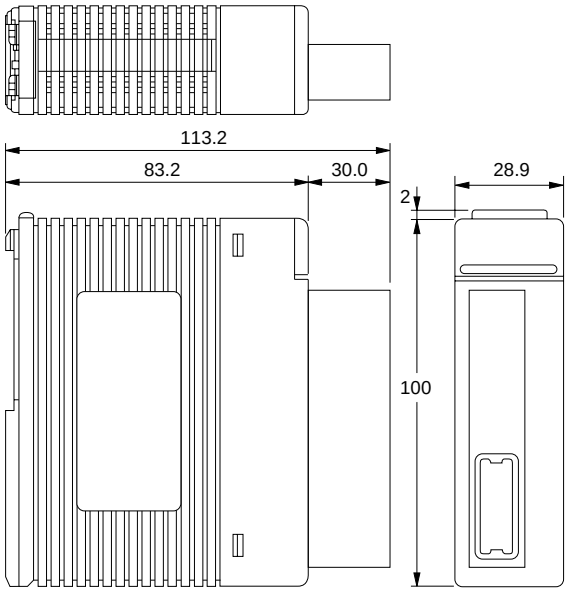
*: Error or non-fatal error can be selected in the configuration settings.

■ Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3SP58	-6H	·····	·····	Memory: 120 K steps

■ External Dimensions

Unit: mm



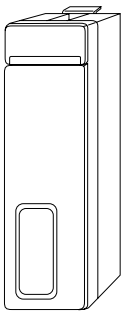
■ Operating Environment

There is no restriction on the type of main CPU modules that can be used with this module when this module is to be used as an add-on CPU.

General Specifications

F3BP20
BASIC CPU Module

FA-M3



■ General

The F3BP20 BASIC CPU Module adopts high-speed real-time BASIC (YM-BASIC/FA) established for the FA500 and YEWMAC series, and is used in a wide range of communications and information processing applications.

■ Features

The F3BP20 is ideal for applications where communications modules that cannot be controlled with ladder sequence programs or sophisticated computations are required.

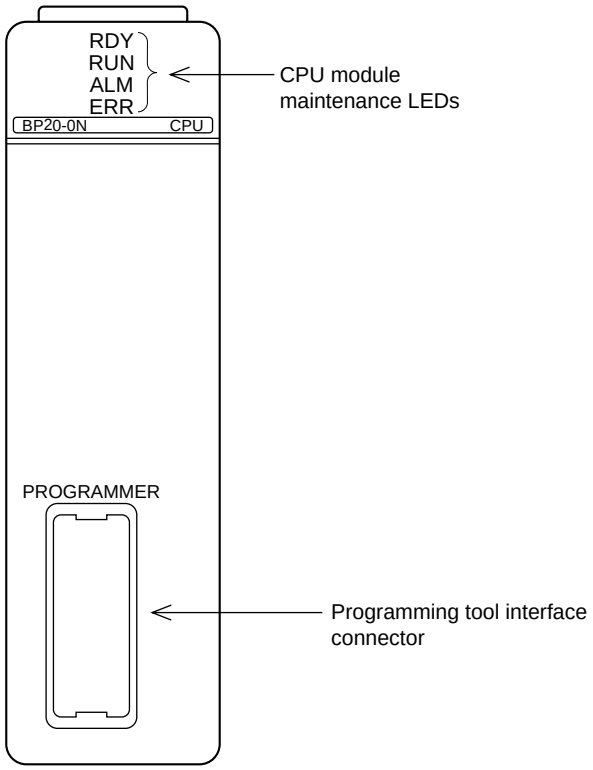
- The F3BP20 can be installed in any one of slots 1 to 4 of the main unit. It can run without a sequence CPU module, thereby configuring a BASIC controller.
- It can access I/O modules directly.
- Exchanging data with ladder sequence programs is available. The operation can be synchronized with ladder sequence programs via events.
- It allows structured programming using subprograms.
- It can access common data via a personal computer link module.
- It can store programs and common data, as well as perform ROM-based operation using an optional ROM pack.
- It allows programming and debugging on a general-purpose personal computer.

■ Specifications

Item	Specification
Programming language	YM-BASIC/FA
Type	Interpreter (with pre-run feature)
Number of tasks	1
Program size	120 K bytes
Shared device	Shared register (R): 1024 points max. (Shared relays and extended shared relays or registers cannot be used.)
Self-diagnostics	Memory error, CPU error, power failure, etc.
Other features	Configuration functions (setting size of user and common areas, etc.) Program residency function Error history function Program development and debugging functions Date/clock function (year/month/day/hour/minute/second/day of week) Accessing (read/write) common data via a personal computer link module ROM programming and data storage
Maximum number of modules	1 module/unit
Current consumption	200mA (5V DC)
External dimensions	28.9 (W) × 100 (H) × 83.2 (D) mm*
Weight	105g

*: Excluding protrusions (see external dimensions for details).

■ Components and Functions



■ Error Processing

Different levels of errors are identified by different LEDs on the front panel of the CPU module.

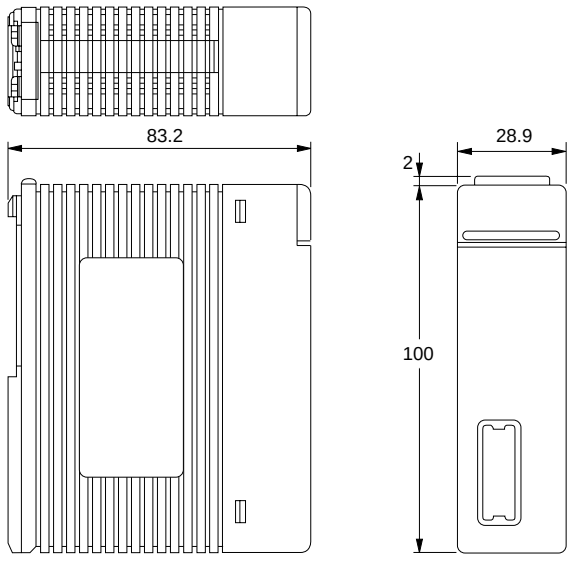
LED	Meaning
RDY (READY) Green	★Fatal (when off): The hardware cannot run. Examples: CPU error Memory error
RUN (RUN) Green	When lit: The user program is running.
ALM (ALARM) Yellow	★Non-fatal (when lit): The user program can run but an error occurs. Examples: Power failure I/O module error Communication error ★Debugging mode: The CPU module is in the debugging mode (lit when it is connected to a personal computer and program development and debugging are in progress).
ERR (ERROR) Red	★Error (when lit): The user program cannot start or continue execution. Examples: Program error I/O module error Instruction processing error

■ Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3BP20	-0N	·····	·····	Memory: 120 K bytes

■ External Dimensions

Unit: mm



■ Operating Environment

• The table below summarizes the type of CPU modules that can be used with this module.

CPU Module	Applicable Rev. Number
F3SP21, F3SP25, F3SP35	No restriction on Rev. number
F3FP36	No restriction on Rev. number

Note: The F3SP05-0P sequence CPU module to be used for the FA-M3 Value (See GS 34M6C81-01E) cannot use this module as an add-on BASIC CPU module.

• The table below summarizes the type of ROM packs that can be used with this module.

Item	RK10-0N	RK30-0N	RK50-0N
F3BP20-0N	Cannot be used.	120 K bytes	Cannot be used.

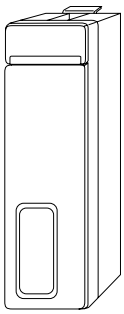
General Specifications

F3BP30
BASIC CPU Module

FA-M3

■ General

The F3BP30 BASIC CPU Module adopts high-speed real-time BASIC (YM-BASIC/FA) established for the FA500 and YEWMAC series, and is used in a wide range of communications and information processing applications.

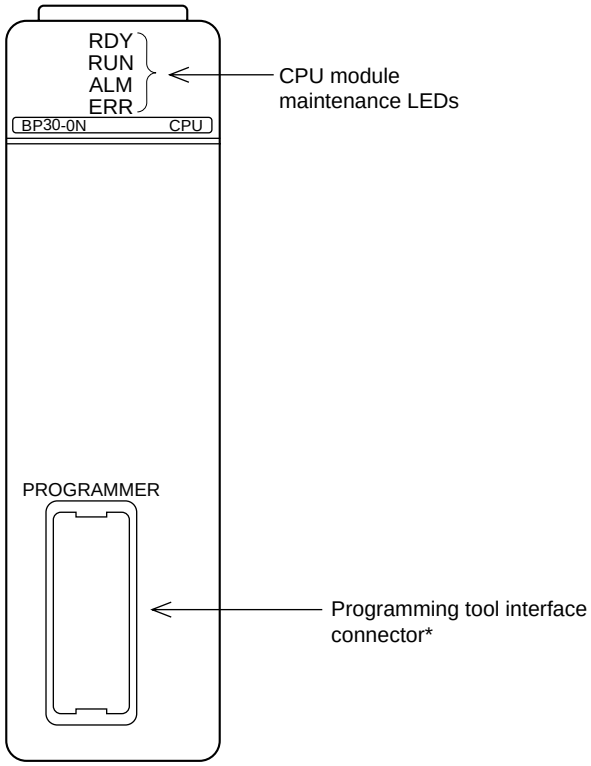


■ Features

The F3BP30 is ideal for applications where communications modules that cannot be controlled with ladder sequence programs or sophisticated computations are required.

- The F3BP30 can be installed in any one of slots 1 to 4 of the main unit. It can run without a sequence CPU module, thereby configuring a BASIC controller.
- It can access I/O modules directly.
- Exchanging data with ladder sequence programs is available. The operation can be synchronized with ladder sequence programs via events.
- It allows structured programming using subprograms.
- It can access common data via a personal computer link module.
- It can store programs and common data, as well as perform ROM-based operation using an optional ROM pack.
- It allows programming and debugging on a general-purpose personal computer.

■ Components and Functions



■ Specifications

Item	Specification
Programming language	YM-BASIC/FA
Type	Interpreter (with pre-run feature)
Number of tasks	1
Program size	510 K bytes
Shared device	Shared register (R): 1024 points max. (Shared relays and extended shared relays or registers cannot be used.)
Self-diagnostics	Memory error, CPU error, power failure, etc.
Other features	Configuration functions (setting size of user and common areas, etc.) Program residency function Error history function Program development and debugging functions Date/clock function (year/month/day/hour/minute/second/day of week) Accessing (read/write) common data via a personal computer link module ROM programming and data storage
Maximum number of modules	1 module/unit
Current consumption	200mA (5V DC)
External dimensions	28.9 (W) × 100 (H) × 83.2 (D) mm*
Weight	105g

*: Excluding protrusions (see external dimensions for details).

■ Error Processing

Different levels of errors are identified by different LEDs on the front panel of the CPU module.

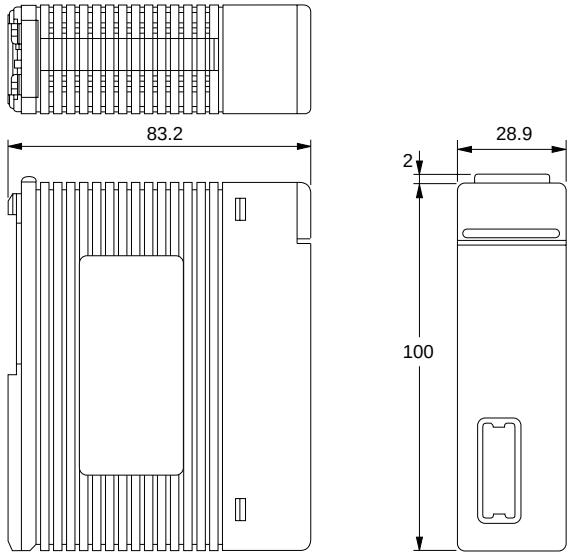
LED	Meaning
RDY (READY) Green	★Fatal (when off): The hardware cannot run. Examples: CPU error Memory error
RUN (RUN) Green	When lit: The user program is running.
ALM (ALARM) Yellow	★Non-fatal (when lit): The user program can run but an error occurs. Examples: Power failure I/O module error Communication error; or ★Debugging mode: The CPU module is in the debugging mode (lit when it is connected to a personal computer and program development and debugging are in progress).
ERR (ERROR) Red	★Error (when lit): The user program cannot start or continue execution. Examples: Program error I/O module error Instruction processing error

■ Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3BP30	-0N	·····	·····	Memory: 510 K bytes

■ External Dimensions

Unit: mm



■ Operating Environment

• The table below summarizes the type of CPU modules that can be used with this module.

CPU Module	Applicable Rev. Number
F3SP21, F3SP25, F3SP35	No restriction on Rev. number
F3FP36	No restriction on Rev. number

Note: The F3SP05-0P sequence CPU module to be used for the FA-M3 Value (See GS 34M6C81-01E) cannot use this module as an add-on BASIC CPU module.

• The table below summarizes the type of ROM packs that can be used with this module.

Item	RK10-0N	RK30-0N	RK50-0N
F3BP30-0N	Cannot be used.	Cannot be used.	510 K bytes

• The table below gives the BASIC Programming Tool M3 that can be used with the F3BP30-0N.

BASIC Programming Tool M3	Applicable Rev. Number
SF560-□CW	*

*: Contact YOKOGAWA sales representatives.
Note: The SF550-J3□ cannot be used.

General Specifications

RK10, RK30 and RK50
ROM Packs

FA-M3

■ General

The RK10, RK30, and RK50 ROM Packs are used with the F3SP05, F3SP21, F3SP25, and F3SP35 Sequence CPU Modules, and the F3BP20 and F3BP30 BASIC CPU Modules for the FA-M3 Range-free Multi-controller.

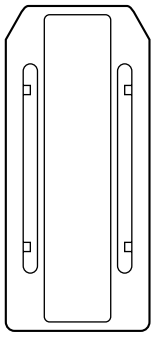
■ Features

- Programs and data can be stored in ROM packs.
- The programming tool enables programs and data to be written on the ROM packs (program-control information, programs, configurations, various control tables, tables of timer/counter settings, and comment management information).
- The RK30 and RK50 ROM packs can store 1024 words of data registers (for the F3SP05, F3SP21, F3SP25, and F3SP35 only).

■ Specifications

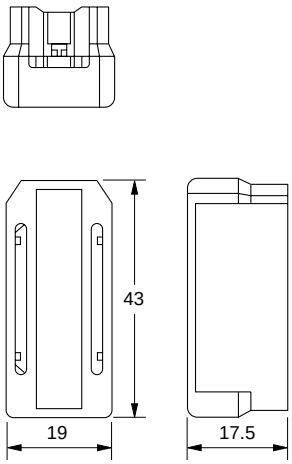
Item	RK33-0N	RK53-0N	RK73-0N
With F3SP05	5 K steps*1	5 K steps	5 K steps
With F3SP21	5 K steps*1	10 K steps	10 K steps
With F3SP25	Not available	20 K steps	20 K steps
With F3SP35	Not available	20 K steps*2 *3	100 K steps*4
With F3BP20	Not available	120 K bytes*5	Not available
With F3BP30	Not available	Not available	510 K bytes*6

*1: Can store up to 400 lines including circuit comments and sub comments.
*2: Can store up to 2048 data points including timers and counters.
*3: Up to 128 program blocks can be used.
*4: Up to 80 K steps of program code can be made resident when the number of program blocks is 33 or more.
*5: Can store up to 120 K bytes of code and data including user programs and common area data.
*6: Can store up to 510 K bytes of code and data including user programs and common area data.



■ External Dimensions

Unit: mm



■ Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
RK10	-0N	···	···	5 K steps when a sequence CPU module is used.
RK30	-0N	···	···	20 K steps when a sequence CPU module is used. 120 K bytes of user program code and common area data when a BASIC CPU module is used.
RK50	-0N	···	···	100 K steps when a sequence CPU module is used. 510 K bytes of user program code and common area data when a BASIC CPU module is used.

General Specifications

RK33, RK53 and RK73
ROM Packs

FA-M3

■ General

The RK33, RK53 and RK73 ROM Packs are used with the F3SP05, F3SP21, F3SP25, F3SP35, F3SP28, F3SP38, F3SP53 and F3SP58 Sequence CPU Modules, and the F3BP30 BASIC CPU Module for the FA-M3 Range-free Multi-controller.

■ Features

- Programs and data can be stored in ROM packs.
- The programming tool enables programs and data to be written on the ROM packs (program-control information, programs, configurations, various control tables, tables of timer/counter settings, and comment management information).
- The ROM packs can store 1024 words of data registers.

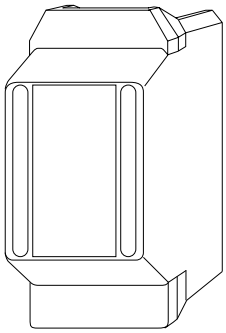
■ Specifications

Item	RK33-0N	RK53-0N	RK73-0N
With F3SP05	5 K steps	5 K steps	Not available
With F3SP21	10 K steps	10 K steps	Not available
With F3SP25	20 K steps	20 K steps	Not available
With F3SP35	20 K steps*1	100 K steps*2	Not available
With F3SP28	30 K steps	Not available	30 K steps
With F3SP38	56 K steps	Not available	120 K steps
With F3SP53	56 K steps	Not available	56 K steps
With F3SP58	56 K steps	Not available	120 K steps
With F3BP20*4	Not available	Not available	Not available
With F3BP30	Not available	510 K bytes*3	Not available

*1: Can store up to 2048 data points including timers and counters and up to 128 program blocks.
*2: Up to 80 K steps of program code can be saved when the number of program blocks is 33 or more.
*3: Can store up to 510 K bytes of code and data including user programs and common area data.
*4: Use the RK30-0N ROM pack for the F3BP20 module.

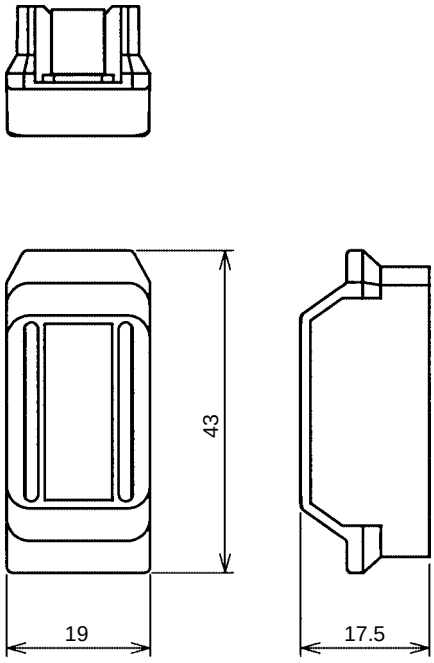
■ Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
RK33	-0N	…	…	56 K steps when a sequence CPU module is used.
RK53	-0N	…	…	100 K steps when a sequence CPU module is used. 510 K bytes of user program code and common area data when a BASIC CPU module is used.
RK73	-0N	…	…	120 K steps when a sequence CPU module is used.



■ External Dimensions

Unit: mm



Item to Specify When ordering

1. Model and suffix codes