General Specifications

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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6th Edition: April, 2004

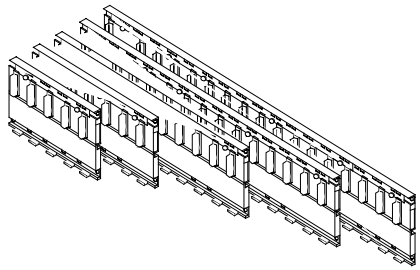
General Specifications

F3BU04-0N, F3BU06-0N, F3BU09-0N, F3BU13-0N, 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

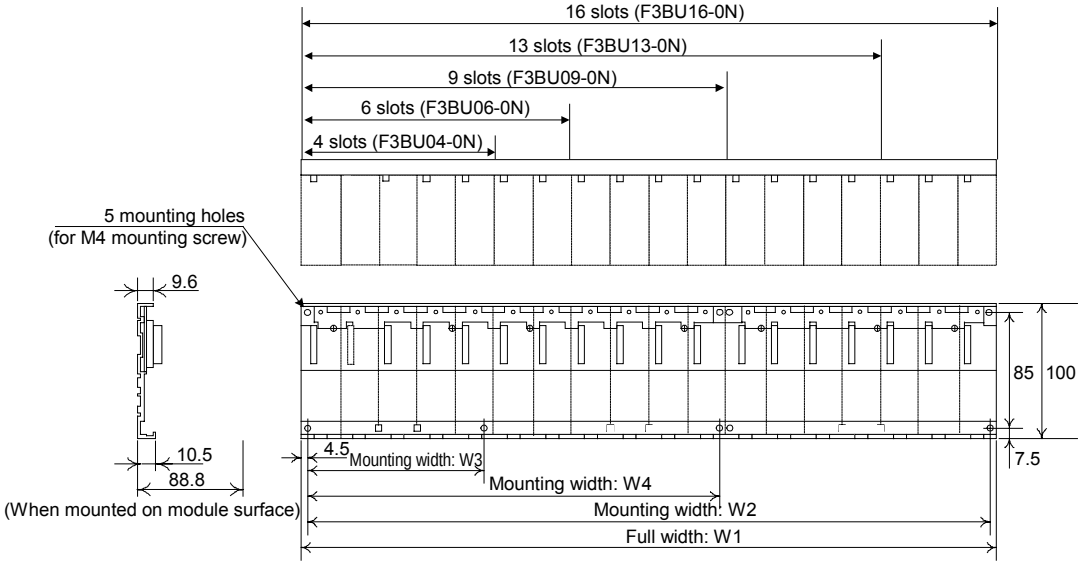
*: Number of I/O slots that can be used with a single CPU module.

■ 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:

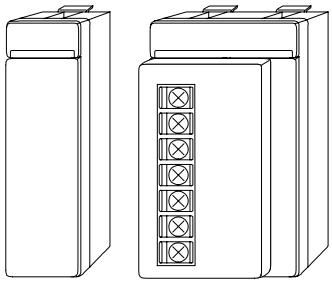
- Make sure that the total current consumption of the modules to be installed does not exceed the current capacity of the power supply module.
- The F3BU16-0N module cannot be mounted on a DIN rail.
- The signal ground of the main unit is attached to the metal chassis of the base modules.

General Specifications

F3PU10-0N, F3PU10-0S, F3PU20-0N, F3PU20-0S, F3PU30-0N, F3PU16-0N, F3PU26-0N and F3PU36-0N Power Supply Modules

FA-M3

Note: F3PU30-0N and F3PU36-0N are not UL certified.



■ 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

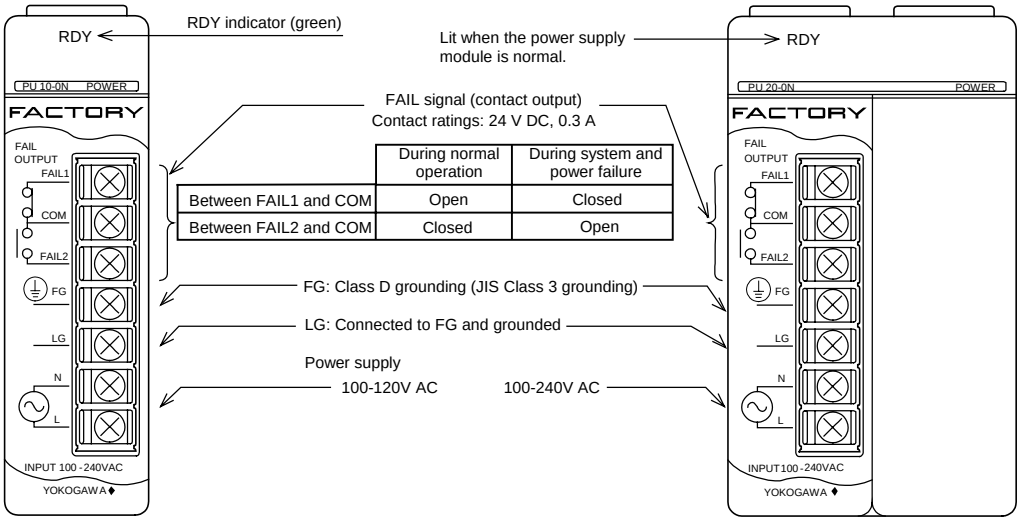
Item	Specification					
	F3PU10-0N / F3PU10-0S*1	F3PU20-0N / F3PU20-0S*1	F3PU30-0N	F3PU16-0N	F3PU26-0N	F3PU36-0N
Supply voltage	100-240 V AC, single phase, 50/60 Hz			24 V DC		
Supply voltage fluctuation range	85-264 V AC, 50/60 Hz ±3 Hz			15.6-31.2 V DC		
Power consumption	35 VA	85 VA	100 VA	15.4 W	33.1 W	46.2 W
Inrush current	20 A max.(120 V AC,Ta=25°C) 45 A max.(240 V AC,Ta=25°C)			20A max. 31.2 V DC, Ta=25°C		
Rated output voltage	5 V DC					
Rated output current	2.0 A	4.3 A	6.0 A	2.0 A	4.3 A	6.0 A
Insulation resistance	500 V DC 5 MΩ or more between external AC terminals and FG terminal			500 V DC 5 MΩ or more between external DC terminals and FG terminal		
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 *2	28.9(W) × 100(H) × 83.2(D) mm	58(W) × 100(H) × 83.2(D) mm	58(W) × 100(H) × 126.1(D) mm	28.9(W) × 100(H) × 83.2(D) mm	58(W) × 100(H) × 83.2(D) mm	58(W) × 100(H) × 126.1(D) mm
Weight	190g	320g	380g	190g	320g	380g

*1: F3PU10-0N (respectively F3PU20-0N) and F3PU10-0S (respectively F3PU20-0S) have the same dimensions, internal circuitry and other characteristics, except that F3PU10-0N (respectively F3PU20-0N) uses M3.5-screw terminals while F3PU10-0S (respectively F3PU20-0S) uses M4-screw terminals.

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

■ Components and Functions

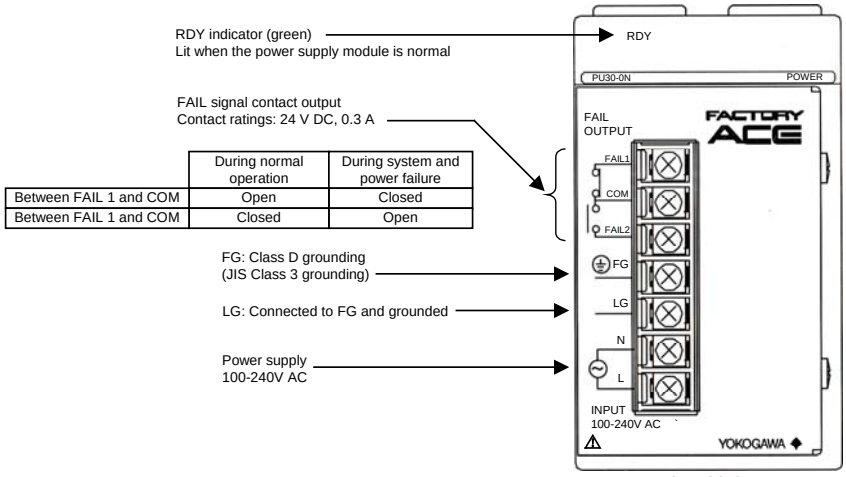
PU10-0N / PU10-0S



	During normal operation	During system and power failure
Between FAIL1 and COM	Open	Closed
Between FAIL2 and COM	Closed	Open

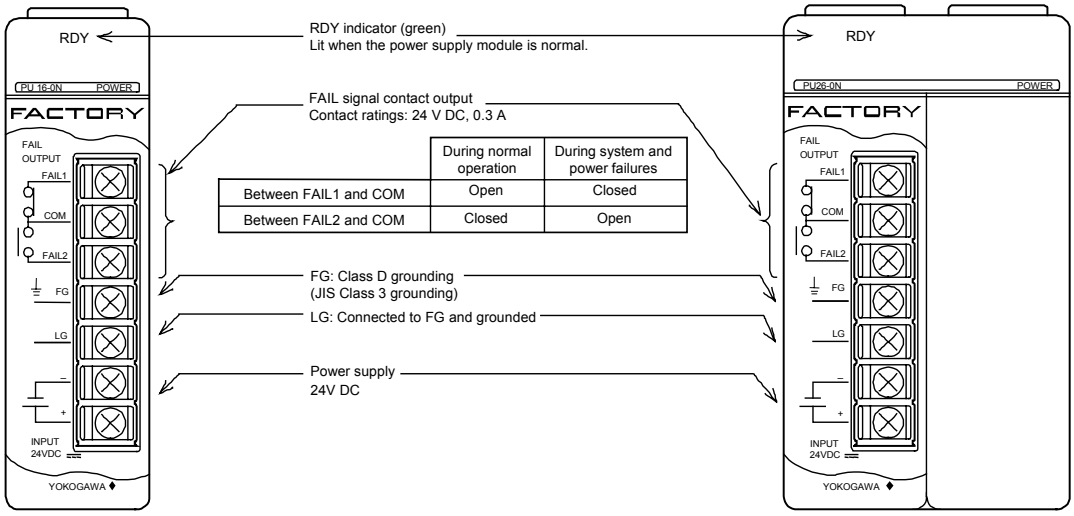
F3PU10-0N

F3PU20-0N

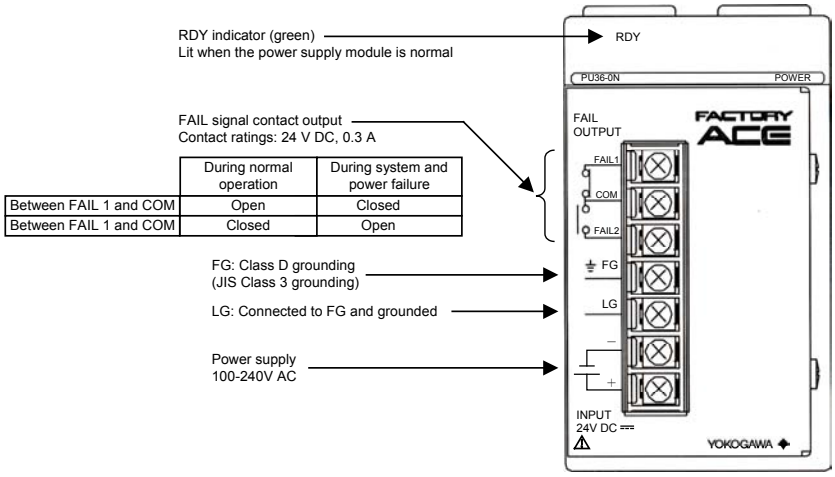


	During normal operation	During system and power failure
Between FAIL 1 and COM	Open	Closed
Between FAIL 1 and COM	Closed	Open

F3PU30-0N



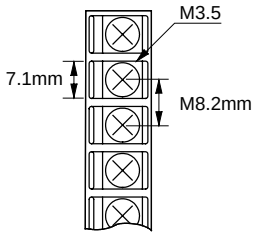
F3PU16-0N F3PU26-0N



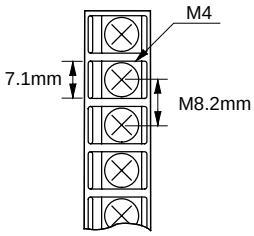
F3PU36-0N

Terminal Dimensions

F3PU10-0N / F3PU20-0N



F3PU10-0S / F3PU20-0S



Examples of Applicable Solderless Terminals

Vender	Model	Applicable Conductor	Applicable Modules and Crimping Torque	
			F3PU10-0N F3PU20-0N F3PU30-0N F3PU36-0N	F3PU10-0S F3PU20-0S
Japan Solderless Terminal Mfg. Co., Ltd.	V1.25-M3	AWG22 to 18 (0.33 to 0.82 mm^2) (Copper wire)	0.8N • m	May not be used
Nippon Tanshi Co., Ltd.	RAV1.25-3.5			
Japan Solderless Terminal Mfg. Co., Ltd.	V1.25-M4			1.2N • m
Japan Solderless Terminal Mfg. Co., Ltd.	V2-M4	AWG16 to 14 (1.25 to 2.0 mm^2) (Copper wire)		

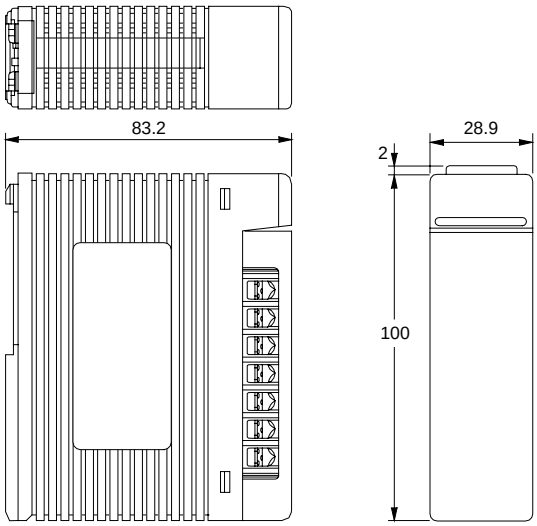
Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3PU10	-0N	–	–	100-240 V AC, for 4- and 6-slot base modules (M3.5 screws)
	-0S	–	–	100-240 V AC, for 4- and 6-slot base modules (M4 screws)
F3PU20	-0N	–	–	100-240 V AC, for 9-, 13-, and 16-slot base modules (M3.5 screws)
	-0S	–	–	100-240 V AC, for 9-, 13-, and 16-slot base modules (M4 screws)
F3PU30	-0N	–	–	100-120 V AC, for 9-, 13-, and 16-slot base modules
F3PU16	-0N	–	–	24 V DC, for 4- and 16-slot base modules
F3PU26	-0N	–	–	24 V DC, for 9-, 13-, and 16-slot base modules
F3PU36	-0N	–	–	24 V DC, for 9-, 13-, and 16-slot base modules

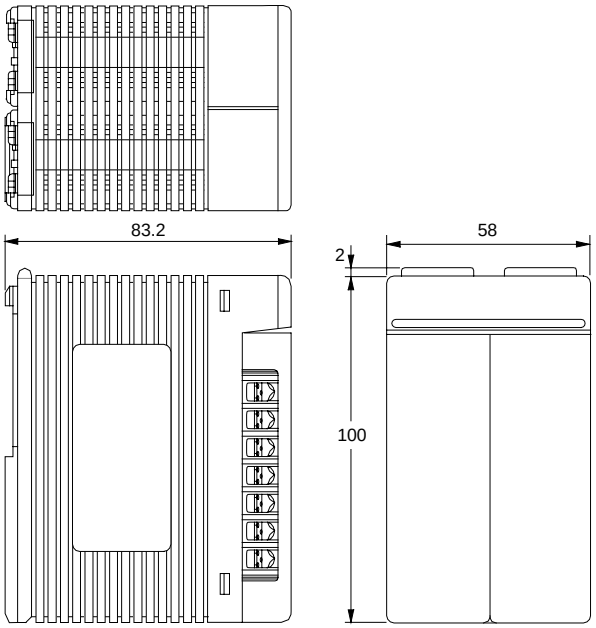
External Dimensions

Unit: mm

F3PU10-0N, F3PU10-0S, F3PU16-0N



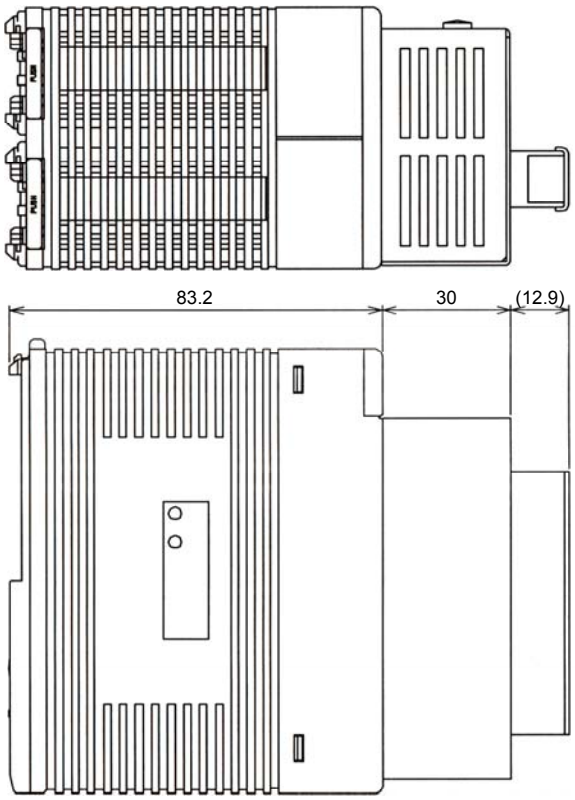
F3PU20-0N, F3PU20-0S, F3PU26-0N

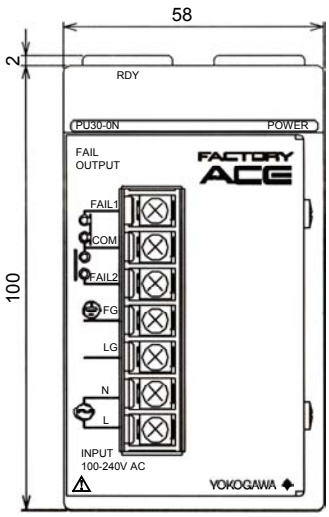


External Dimensions (2/2)

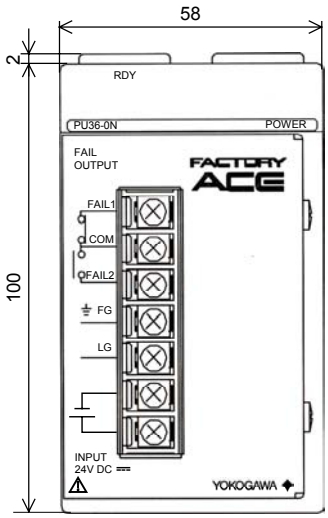
Unit: mm

F3PU30-0N





F3PU30-0N



F3PU36-0N

General Specifications

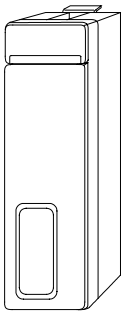
F3SP21-0N
Sequence CPU Module

FA-M3

■ General

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

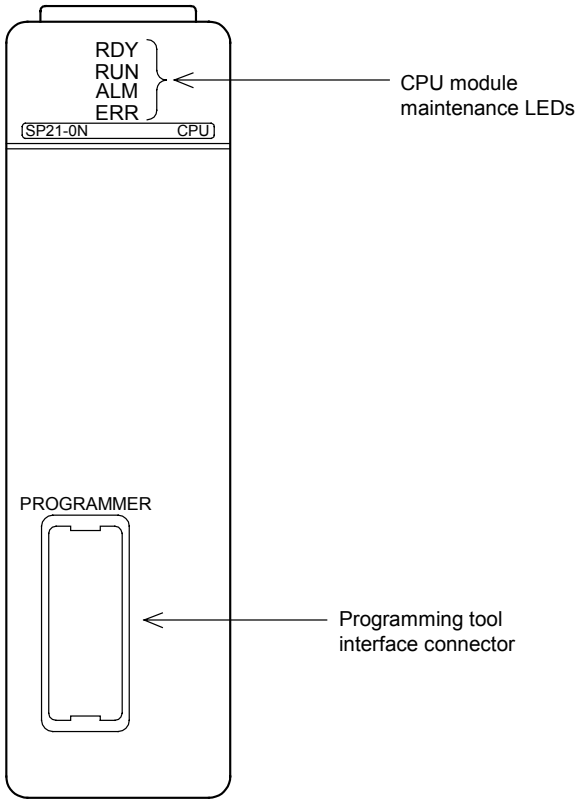
It is a CPU module dedicated to process ladder sequences.



■ 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 index qualification and an object ladder language simplifies program design and program maintenance.
- The module permits reconfiguration of device size and operating mode according to the application in use.
- Program debugging and maintenance can be easily performed using a rich set of functions such as forced set/reset that takes 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 computer 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 using a protection feature.
- When installed in slot 2, 3 or 4, the F3SP21 functions 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	227 types
Processing Speed	Basic Instruction	0.18-0.36 µs per instruction
	Application Instruction	From 0.36 µs per 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, output on error, 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 protection functions Writing programs and data to ROM 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).

■ Error Processing

Errors of different severity levels are indicated by individual LEDs located 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: A user program is running.
ALM (ALARM) Yellow	★ **Non-fatal** (When lit): An error has occurred but the user program can still run. Examples: Power failure Communications 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*

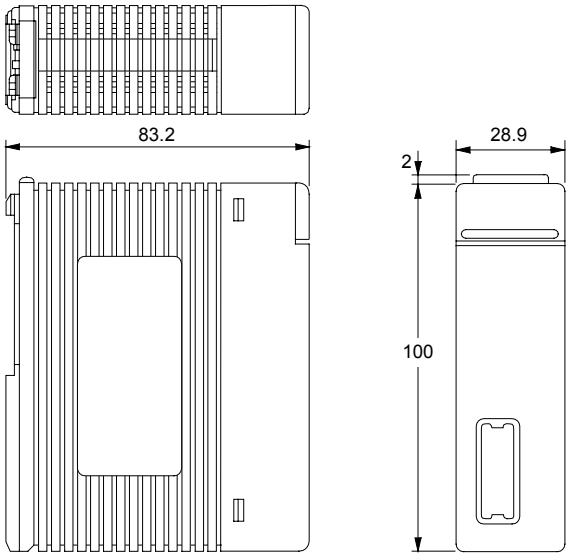
*: You can define the severity of these events as “Non-fatal” or “Error” in the configuration setup.

■ Model and Suffix Codes

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

■ External Dimensions

Unit: mm



■ Operating Environment

This module is compatible with all main CPU module types when used as an add-on CPU.

General Specifications

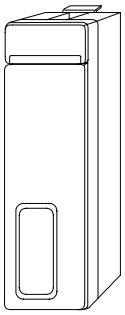
F3SP25-2N
Sequence CPU Module

FA-M3

■ General

The F3SP25-2N is a CPU module for the FA-M3 Range-free Multi-controllers.

It is dedicated to process ladder sequences.



■ Features

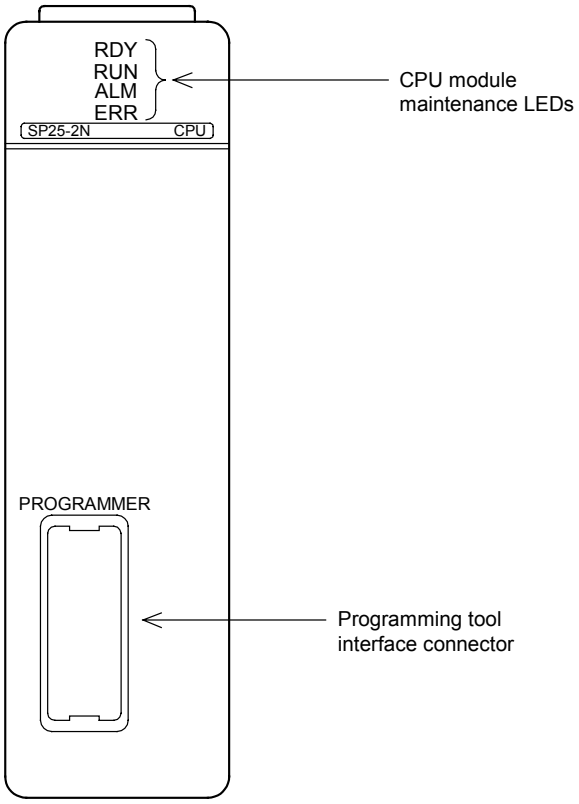
- The high-speed instruction processing capability of theF3SP25 makes it ideal for applications that require high speed and quick response.
- The use of index qualification and an object ladder language facilitates programming and program maintenance.
- The module permits reconfiguration of device size and operating mode according to the application in use.
- The user can define and register new instructions.
- Program debugging and maintenance can be easily performed using a rich set of functions such as forced set/reset that takes 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 F3SP25 to connect to a higher-level computer or display without a personal computer 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 using a protection feature.
- When installed in slot 2, 3 or 4, the F3SP25 functions 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	307 types
Processing Speed	Basic Instruction	0.12-0.24 μs per instruction
	Application Instruction	From 0.24 μs per 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 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).

■ Components and Functions



■ Error Processing

Errors of different severity levels are indicated by individual LEDs located 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: A user program is running.
ALM (ALARM) Yellow	★ **Non-fatal** (When lit): An error has occurred but the user program can still run. Examples: Power failure Communications 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*

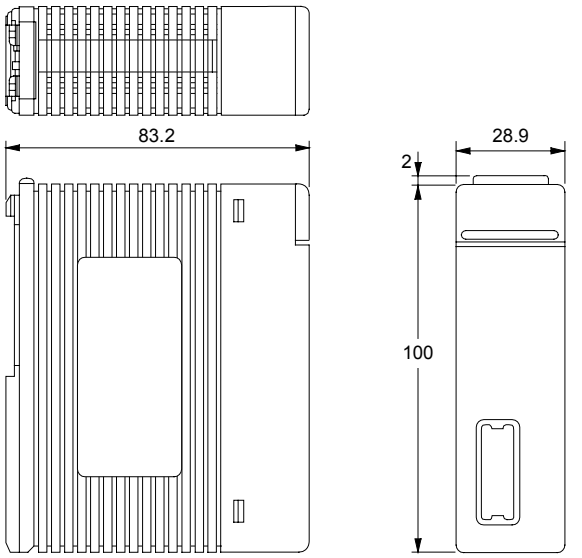
*: You can define the severity of these events as “Non-fatal” or “Error” in the configuration setup.

■ Model and Suffix Codes

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

■ External Dimensions

Unit: mm



■ Operating Environment

This module is compatible with all main CPU module types when used as an add-on CPU.

General Specifications

F3SP28-3N Sequence CPU Module

FA-M3

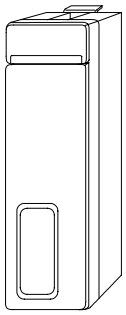
■ General

The F3SP28-3N is a CPU module for the FA-M3 Range-free Multi-controllers.

It is a CPU module dedicated to process ladder sequences.

■ Features

- The basic instructions achieve a processing speed of 0.045 µs and beyond.
- 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. Application instructions, such as analog I/O, that read from and write to advanced modules can achieve a speed of 40 µs and beyond.)
- 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 index modification and an object ladder language simplifies program design and maintenance.
- The module permits configuration of device size and operating mode according to the application in use.
- The user can define and register new instructions.
- Program debugging and maintenance can be easily performed using a rich set of functions such as forced set/reset that takes 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 F3SP28 to connect to a higher-level computer or display without a personal computer 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 is 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 program modularization.
- Programs can be protected using a protection feature. This can prevent a third party from viewing, modifying or copying programs.
- When installed in slot 2, 3 or 4, the F3SP28 functions as an add-on sequence CPU module.

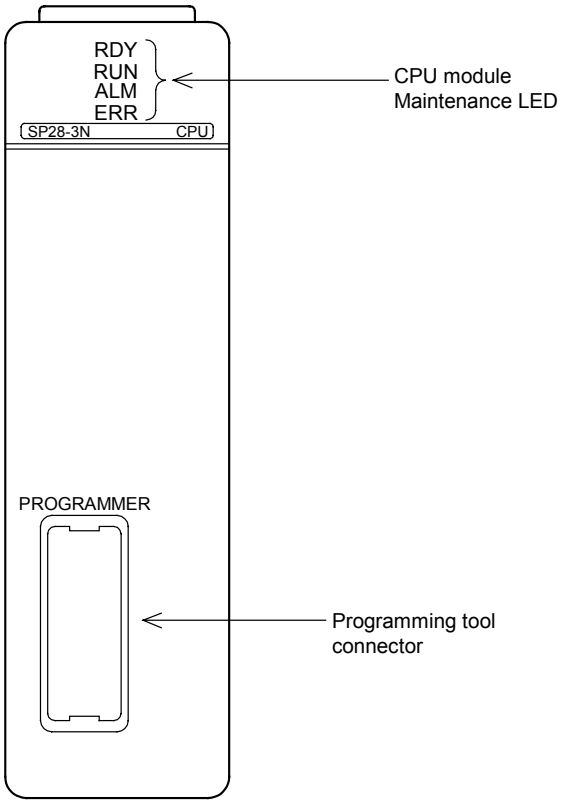


■ Specifications

Item		Specifications
Control Mode		Stored program, repetitive operation
I/O Control Mode		Refreshing method/direct I/O instructions
Programming Language		Object ladder language, mnemonic language
Number of Instructions	Basic Instructions	33 types
	Application Instructions	312 types
Processing Speed	Basic Instructions	0.045 µs to 0.18 µs per instruction
	Application Instructions	0.18 µs min. per instruction
Program Size		30K steps (Can be written to ROM) (including tag name definitions)
Maximum Number of I/O		4096 points
Device Size	Internal Relay	16384 points (16 K)
	Data Register	16384 points (16 K)
	File Register	32768 points (32 K)
Self Diagnostics		Memory error, CPU error and I/O error detection; syntax checking, etc.
Other Features		Sensor Control Function (Scan time: 200 µs to 25 ms) Configuration Functions (setting device sizes, output on error as well as data lock-up range at power failure) Constant scan function (1 ms to 190 ms) Debugging functions (Forced Set/Reset, online editing, etc.) Error history function (64 records) Date and clock function (year/month/day/hour/minute/second/day of week) Program protection functions Write programs and data to ROM
Current Consumption		450 mA (5 V DC)
External Dimensions		28.9 (W) × 100 (H) × 83.2 (D) mm*
Weight		125 g

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

■ Components and Functions



■ Error Processing

Errors of different severity levels are indicated by individual LEDs located 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: A user program is running.
ALM (ALARM) Yellow	★ **Non-fatal** (When lit): An error has occurred but the user program can still run. Examples: Power failure Communications 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*

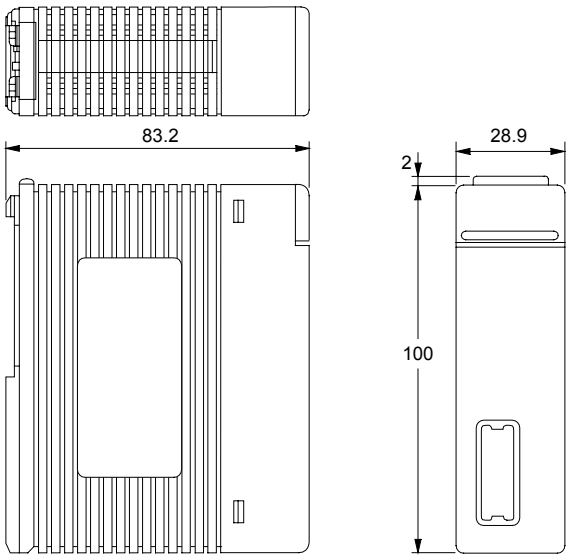
*: You can define the severity of these incidents as "Non-fatal" or "Error" in the configuration setup.

■ Model and Suffix Codes

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

■ External Dimensions

Unit: mm



■ Operating Environment

This module is compatible with all main CPU module types when used as an add-on CPU.

General Specifications

F3SP28-3S
Sequence CPU Module

FA-M3

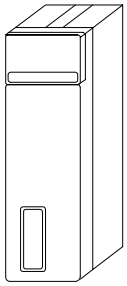
General

The F3SP28-3S is a CPU module for the FA-M3 Range-free Multi-controllers.

It is a CPU module dedicated to process ladder sequences.

Features

- The basic instructions achieve a processing speed of 0.045 µs and beyond.
- The high-speed instruction processing capability of the F3SP28-3S makes it ideal for applications that require high speed and quick response. (Scan time is 1ms for 6 K steps of program.) (Application instructions, such as analog I/O that read from and write to advanced modules can achieve a speed of 40 µs and beyond.)
- 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 index modification and an object ladder language simplifies program design and maintenance.
- The module permits reconfiguration of device size and operating mode according to the application in use.
- A user can create and register new instructions.
- Program debugging and maintenance can be easily performed using a rich set of functions such as forced set/reset that takes 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 F3SP28-3S to connect to a higher-level computer or display without a personal computer 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 is 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 made resident in an optional ROM pack, which facilitates program modularization.
- Programs can be protected using a protection feature.
  This can prevent a third party from viewing, modifying or copying programs.
- When installed in slot 2, 3 or 4, the F3SP28-3S functions as an add-on sequence CPU module.
- Structures allow a user to easily reuse data.
- Circuit comments, subcomments, tag name definitions (including I/O comment) can be saved in the CPU program area, improving maintenance efficiency.
- Indirect designation and input macro instructions facilitates standardization and modularization of programs.
- The partial download function improves debugging efficiency.

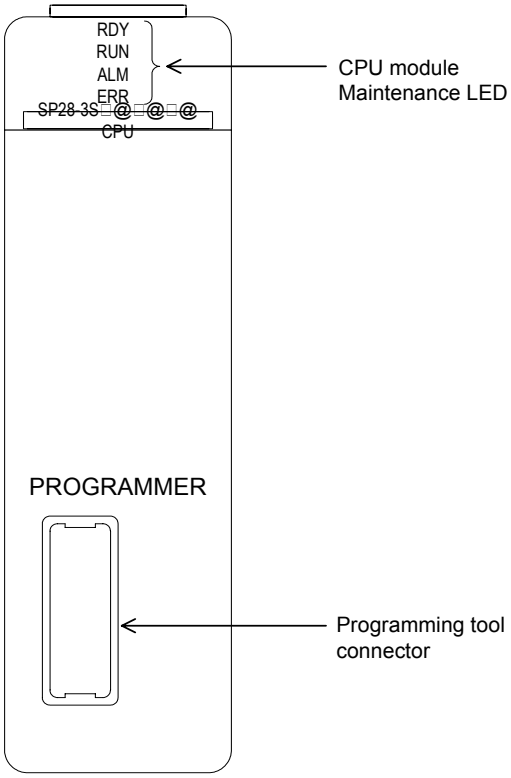


Specifications

Item		Specifications
Control Mode		Stored program, repetitive operation
I/O Control Mode		Refreshing method/direct I/O instructions
Programming Language		Object ladder language, mnemonic language
Number of Instructions	Basic Instructions	37 types
	Application Instructions	324 types
Processing Speed	Basic Instructions	0.045 µs to 0.18 µs per instruction
	Application Instructions	0.18 µs min. per instruction
Program Size		30K steps (Can be written to ROM) (including tag name definitions)
Maximum Number of I/O		4096 points
Device Size	Internal Relay	16384 points (16 K)
	Data Register	16384 points (16 K)
	File Register	32768 points (32 K)
Self Diagnostics		Memory error, CPU error and I/O error detection; syntax checking, etc.
Other Features		Sensor Control Function (Scan time: 200 µs to 25 ms) Configuration Functions (setting device sizes, output on error as well as data lock-up range at power failure Constant scan function (1 ms to 190 ms) Debugging functions (Forced Set/Reset, online editing, etc.) Error history function (64 records) Date and clock function (year/month/day/hour/minute/second/day of week) Program protection functions Write programs and data to ROM Save functions for circuit comments, subcomments and tag name definitions
Current Consumption		450 mA (5 V DC)
External Dimensions		28.9 (W) × 100 (H) × 83.2 (D) mm*
Weight		125 g

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

■ Components and Functions



■ Error Processing

Errors of different severity levels are indicated by individual LEDs located 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: A user program is running.
ALM (ALARM) Yellow	★ **Non-fatal** (When lit): An error has occurred but the user program can still run. Examples: Power failure Communications 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*

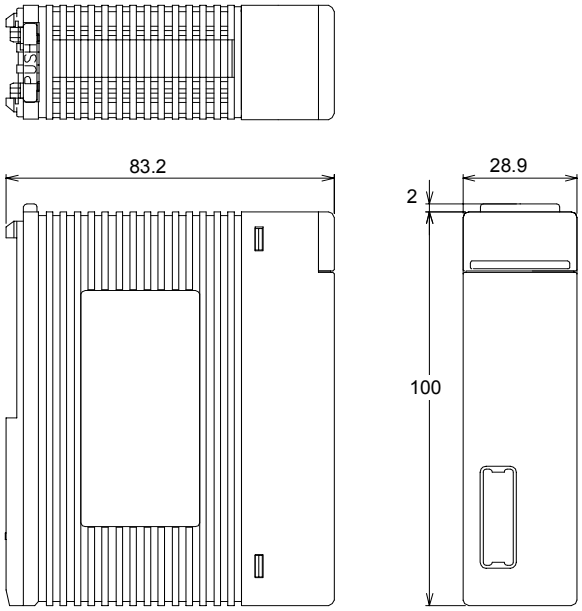
*: You can define the severity of these events as “Non-fatal” or “Error” in the configuration setup.

■ Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3SP28	-3S	—	—	Memory: 30K steps

■ External Dimensions

Unit: mm



■ Operating Environment

This module is compatible with all main CPU module types when used as an add-on CPU.

This module is compatible with the following versions of the FA-M3 Programming tool WideField2.

FA-M3 programming tool WideField2	Compatible Versions
SF-620ECW	R1.01 or later

General Specifications

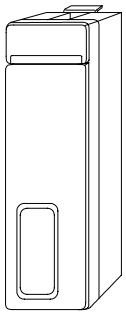
F3SP35-5N
Sequence CPU Module

FA-M3

■ General

The F3SP35-5N is a CPU module for the FA-M3 Range-free Multi-controllers.

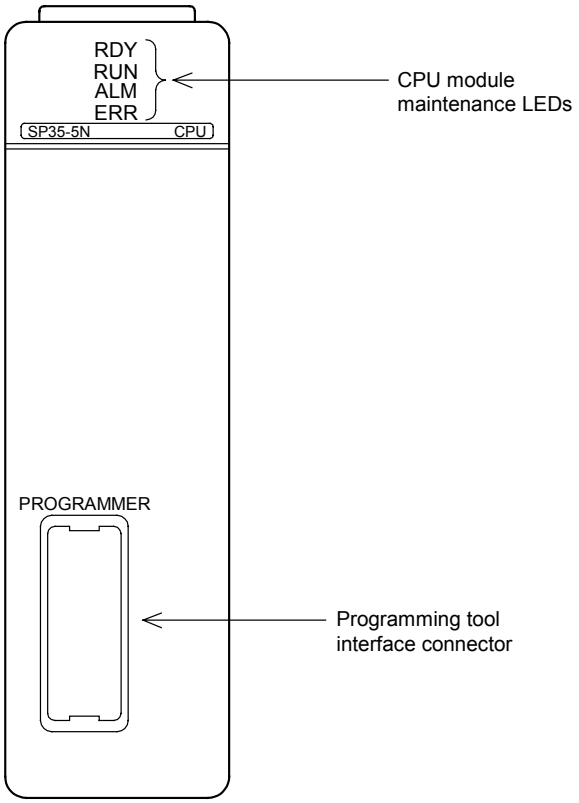
It is dedicated to process ladder sequences.



■ Features

- The basic instructions achieve a processing speed of 0.09 μs and beyond.
- 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 index modification and a structured ladder language simplifies program design and maintenance.
- The module permits configuration of device size and operating mode according to the application in use.
- The user can define and register new instructions.
- Program debugging and maintenance can be easily performed using a rich set of functions such as forced set/reset that takes 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 F3SP35 to connect to a higher-level computer or display without a personal computer 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 using a protection feature.
- When installed in slot 2, 3 or 4, the F3SP35 functions 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 per instruction
	Application Instruction	From 0.18 μs per 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, output on error, 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 protection functions Writing programs and data to ROM 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

Errors of different severity levels are indicated by individual LEDs located 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: A user program is running.
ALM (ALARM) Yellow	★ **Non-fatal** (When lit): An error has occurred but the user program can still run. Examples: Power failure Communications 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*

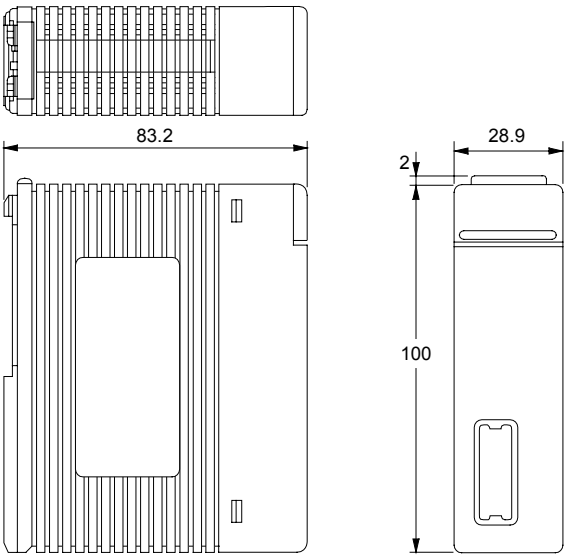
*: You can define the severity of these events as “Non-fatal” or “Error” in the configuration setup.

■ Model and Suffix Codes

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

■ External Dimensions

Unit: mm



■ Operating Environment

This module is compatible with all main CPU module types when used as an add-on CPU.

General Specifications

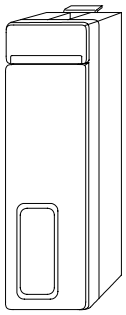
F3SP38-6N
Sequence CPU Module

FA-M3

■ General

The F3SP38-6N is a CPU module for the FA-M3 Range-free Multi-controllers.

It is dedicated to process ladder sequences.



■ Features

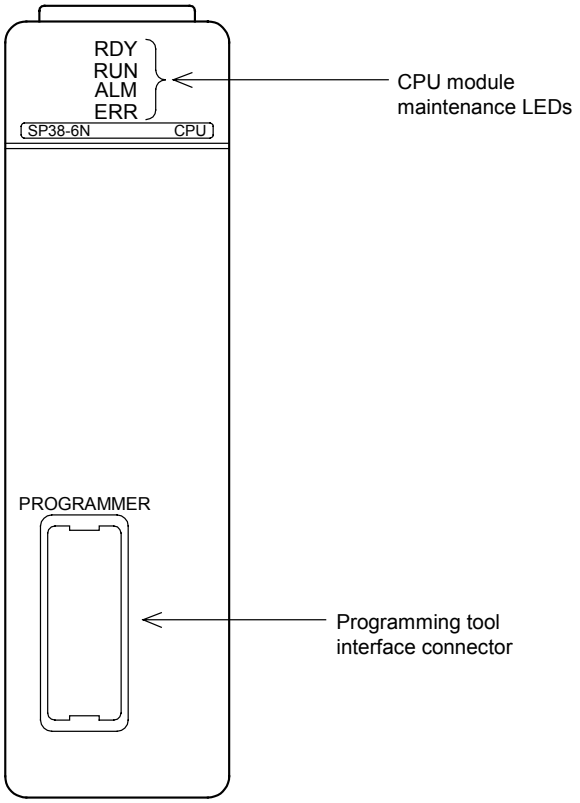
- The basic instructions achieve a processing speed of 0.045 µs and beyond.
- The high-speed instruction processing capability of the F3SP38 makes it ideal for applications that require high speed and quick response. (Scan time is 1 ms for 6 K steps of program. The application instructions, such as analog I/O, that read from and write to advanced modules can achieve a speed of 40 µs and beyond.)
- 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 index modification and an object ladder language simplifies program design and program maintenance.
- The module permits reconfiguration of device size and operating mode according to the application in use.
- The user can define and register new instructions.
- Program debugging and maintenance can be easily performed using a rich set of functions such as forced set/reset that takes 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 F3SP38 to connect to a higher-level computer or display without a personal computer 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 is 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 made resident in an optional ROM pack, which facilitates program modularization.
- Programs can be protected using a protection feature. This can prevent a third party from viewing, modifying or copying programs.
- When installed in slot 2, 3 or 4, the F3SP38-6N functions 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 Instruction	33 types
	Application Instruction	312 types
Processing Speed	Basic Instruction	0.045-0.18 µs per instruction
	Application Instruction	From 0.18 µs per instruction
Program Size		120 K steps (Can be written to ROM)
Maximum Number of I/O		8192 points
Device Size	Internal Relay	32768 points
	Data Register	32768 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) Configuration Functions (setting device sizes, output on error as well as data lock-up range at power failure Constant scan function (1 ms to 190 ms) Debugging functions (Forced set/Reset, online editing, etc.) Error history function (64 records) Date and clock function (year/month/day/hour/minute/second/day of week) Program protection functions Write programs and data to ROM
Current Consumption		450mA （5V DC）
External Dimensions		28.9(W)×100(H)×83.2(D) mm*
Weight		120g

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

■ Components and Functions



■ Error Processing

Errors of different severity levels are indicated by individual LEDs located 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: A user program is running.
ALM (ALARM) Yellow	★ **Non-fatal** (When lit): An error has occurred but the user program can still run. Examples: Power failure Communications 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*

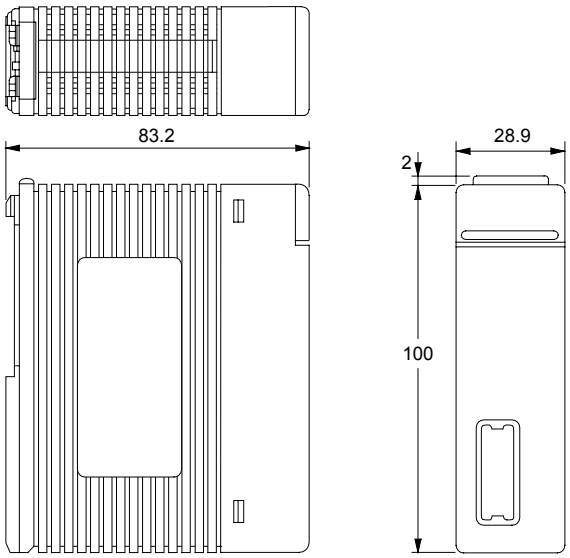
*: You can define the severity of these events as “Non-fatal” or “Error” in the configuration setup.

■ Model and Suffix Codes

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

■ External Dimensions

Unit: mm



■ Operating Environment

This module is compatible with all main CPU module types when used as an add-on CPU.

General Specifications

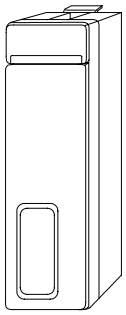
F3SP38-6S Sequence CPU Module

FA-M3

■ General

The F3SP38-6S is a CPU module for the FA-M3 Range-free Multi-controllers.

It is a CPU module dedicated to process ladder sequences.



■ Features

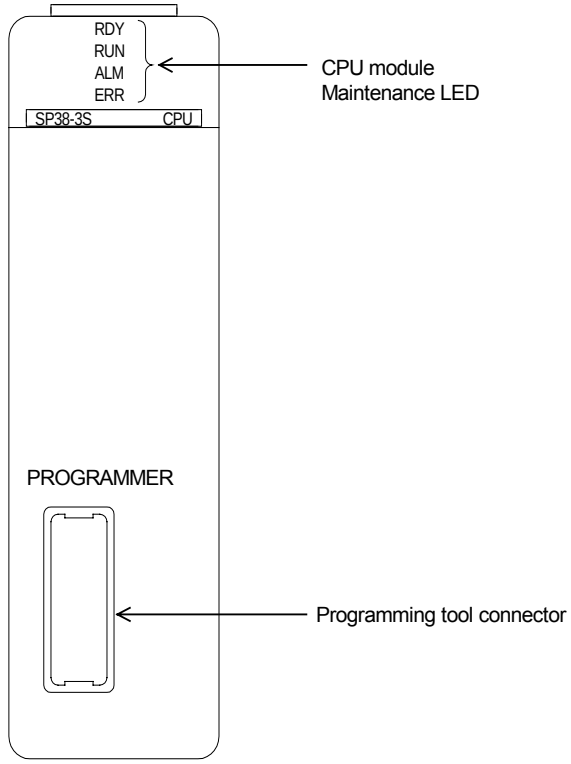
- The basic instructions achieve a processing speed of 0.045 µs and beyond.
- The high-speed instruction processing capability of the F3SP38-6S makes it ideal for applications that require high speed and quick response. (Scan time is 1ms for 6 K steps of program. Application instructions, such as analog I/O that read from and write to advanced modules can achieve a speed of 40 µs and beyond.)
- 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 index modification and an object ladder language simplifies program design and maintenance.
- The module permits reconfiguration of device size and operating mode according to the application in use.
- The user can define and register new instructions.
- Program debugging and maintenance can be easily performed using a rich set of functions such as forced set/reset that takes 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 F3SP38-6S to connect to a higher-level computer or display without a personal computer link module.
  (the maximum communication speed is 115Kbps)
- High-reliability design and powerful self-diagnostics are provided. Errors detected during program execution can be logged with predefined messages.
- Program data is 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 program modularization.
- Programs can be protected using a protection feature.
- This can prevent a third party from viewing, modifying or copying programs.
- When installed in slot 2, 3 or 4, the F3SP38-6S functions as an add-on sequence CPU module.
- Structures allow the user to reuse data easily.
- Circuit comments, subcomments, tag name definitions (including I/O comment) can be saved in the CPU program area, improving maintenance efficiency.
- Indirect designation and input macro instructions facilitates standardization and modularization of programs.
- Partial download function improves debugging efficiency.

■ Specifications

Item		Specifications
Control Mode		Stored program, repetitive operation
I/O Control Mode		Refreshing method/direct I/O instructions
Programming Language		Object ladder language, mnemonic language
Number of Instructions	Basic Instructions	37 types
	Application Instructions	324 types
Processing Speed	Basic Instructions	0.045 µs to 0.18 µs per instruction
	Application Instructions	0.18 µs min. per instruction
Program Size		120K steps (Can be written to ROM) (including tag name definitions)
Maximum Number of I/O		8192 points
Device Size	Internal Relay	32768 points (32 K)
	Data Register	32768 points (32 K)
	File Register	262144 points (256 K)
Self Diagnostics		Memory error, CPU error and I/O error detection, syntax checking, etc.
Other Features		Sensor Control Function (Scan time: 200 µs to 25 ms) Configuration Functions (setting device sizes, output on error as well as data lock-up range at power failure.) Constant scan function (1 ms to 190 ms) Debugging functions (Forced Set/Reset, online editing, etc.) Error history function (64 records) Date and clock function (year/month/day/hour/minute/second/day of week) Program protection functions Write programs and data to ROM Save functions for circuit comments, subcomments and tag name definitions
Current Consumption		450 mA (5 V DC)
External Dimensions		28.9 (W) × 100 (H) × 83.2 (D) mm*
Weight		125 g

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

■ Components and Functions



■ Error Processing

Errors of different severity levels are indicated by individual LEDs located 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: A user program is running.
ALM (ALARM) Yellow	★ **Non-fatal** (when lit): An error has occurred but the user program can still run. Examples: Power failure Communications 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*

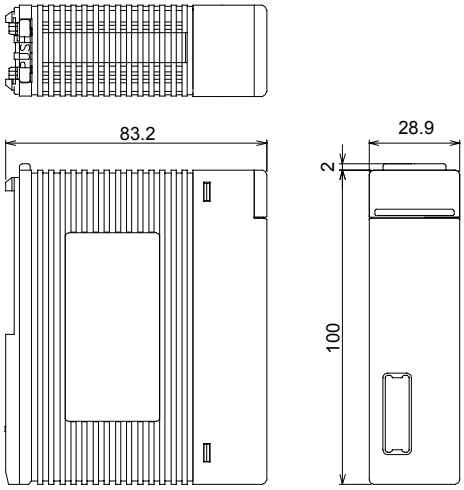
*: You can define the severity of these events as “Non-fatal” or “Error” in the configuration setup.

■ Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3SP38	-6S	—	—	Memory: 120K steps

■ External Dimensions

Unit: mm



■ Operating Environment

This module is compatible with all main CPU module types when used as an add-on CPU.

This module is compatible with the following versions of the FA-M3 Programming tool WideField2.

FA-M3 programming tool WideField2	Compatible Versions
SF620-ECW	R1.01 or later

General Specifications

F3SP53-4H Sequence CPU Module

FA-M3

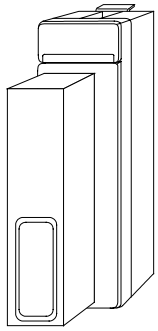
■ General

The F3SP53-4H 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 of 0.0175 µs and beyond.
- The high-speed instruction processing capability of the F3SP53-4H 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 speed of 25 µs and beyond.)
- 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 index modification and an object ladder language simplifies program design and maintenance.
- The module permits configuration of device size and operating mode according to the application in use.
- The user can define and register new instructions.
- Program debugging and maintenance can be easily performed using a rich set of functions such as forced set/reset that takes 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 F3SP53-4H to connect to a higher-level computer or display without a personal computer 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 is 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 program modularization.
- Programs can be protected using a protection feature. This can prevent a third party from viewing, modifying or copying programs.
- When installed in slot 2, 3 or 4, the F3SP53-4H functions as an add-on sequence CPU module.

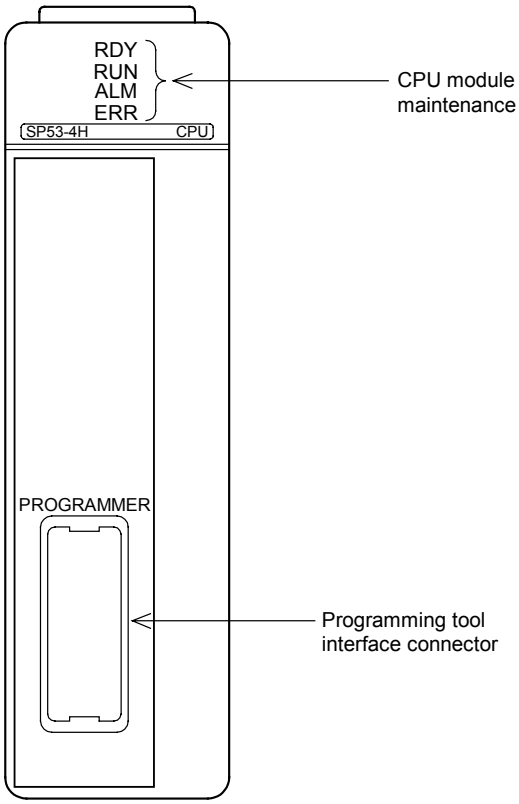


■ Specifications

Item		Specifications
Control Mode		Stored program, repetitive operation
I/O Control Mode		Refreshing method/direct I/O instructions
Programming Language		Object ladder language, mnemonic language
Number of Instructions	Basic Instructions	33 types
	Application Instructions	312 types
Processing Speed	Basic Instructions	0.00175 µs to 0.07 µs per instruction
	Application Instructions	0.07 µs min. per instruction
Program Size		56K steps (Can be written to ROM)
Maximum Number of I/O		4096 points
Device Size	Internal Relay	16384 points (16 K)
	Data Register	16384 points (16 K)
	File Register	32768 points (32 K)
Self Diagnostics		Memory error, CPU error and I/O error detection, syntax checking, etc.
Other Features		Sensor Control Function (Scan time: 200 µs to 25 ms) Configuration Functions (setting device sizes, output on error as well as data lock-up range at power failure.) Constant scan function (1 ms to 190 ms) Debugging functions (Forced Set/Reset, online editing, etc.) Error history function (64 records) Date and clock function (year/month/day/hour/minute/second/day of week) Program protection functions Write programs and data to ROM
Current Consumption		890 mA (5 V DC)
External Dimensions		28.9 (W) × 100 (H) × 113.2 (D) mm*
Weight		210 g

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

■ Components and Functions



■ Error Processing

Errors of different severity levels are indicated by individual LEDs located 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: A user program is running.
ALM (ALARM) Yellow	★ **Non-fatal** (When lit): An error has occurred but the user program can still run. Examples: Power failure Communications 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*

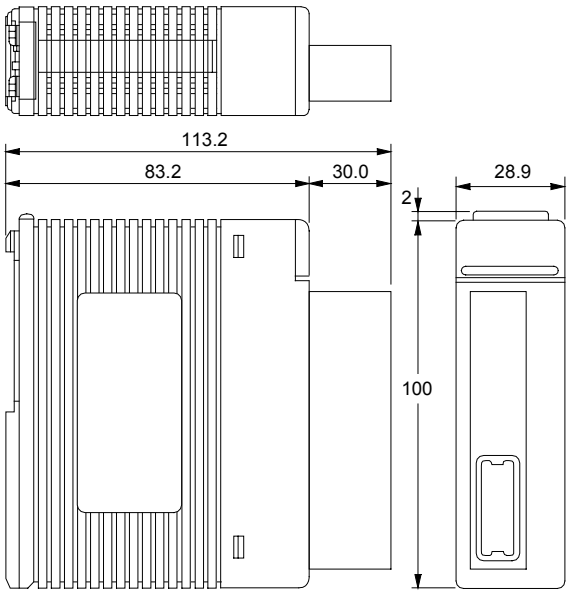
*: You can define the severity of these events as “Non-fatal” or “Error” in the configuration setup.

■ Model and Suffix Codes

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

■ External Dimensions

Unit: mm



■ Operating Environment

This module is compatible with all main CPU module types when used as an add-on CPU.

General Specifications

F3SP53-4S
Sequence CPU Module

FA-M3

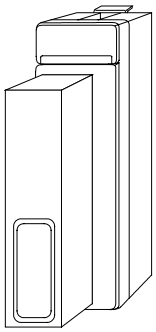
■ General

The F3SP53-4S is a CPU module for the FA-M3 Range-free Multi-controllers.

It is a CPU module dedicated to process ladder sequences.

■ Features

- The basic instructions achieve a processing speed of 0.0175 µs and beyond.
- The high-speed instruction processing capability of the F3SP53-4S makes it ideal for applications that require high speed and quick response. (Scan time is 1ms for 20 K steps of program. Application instructions, such as analog I/O that read from and write to advanced modules can achieve a speed of 25 µs and beyond.)
- 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 index modification and an object ladder language simplifies program design and maintenance.
- The module permits reconfiguration of device size and operating mode according to the application in use.
- The user can create and register new instructions.
- Program debugging and maintenance can be easily performed using a rich set of functions such as forced set/reset that takes 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 F3SP53-4S to connect to a higher-level computer or display without a personal computer 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 is 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 program modularization.
- Programs can be protected using a protection feature. This can prevent a third party from viewing, modifying or copying programs.
- When installed in slot 2, 3 or 4, the F3SP53-4S functions as an add-on sequence CPU module.
- Structures allow a user to easily reuse data.
- Circuit comments, subcomments, tag name definitions (including I/O comment) can be saved in the CPU program area, improving maintenance efficiency.
- Indirect designation and input macro instructions facilitate standardization and modularization of programs.
- The partial download function improves debugging efficiency.

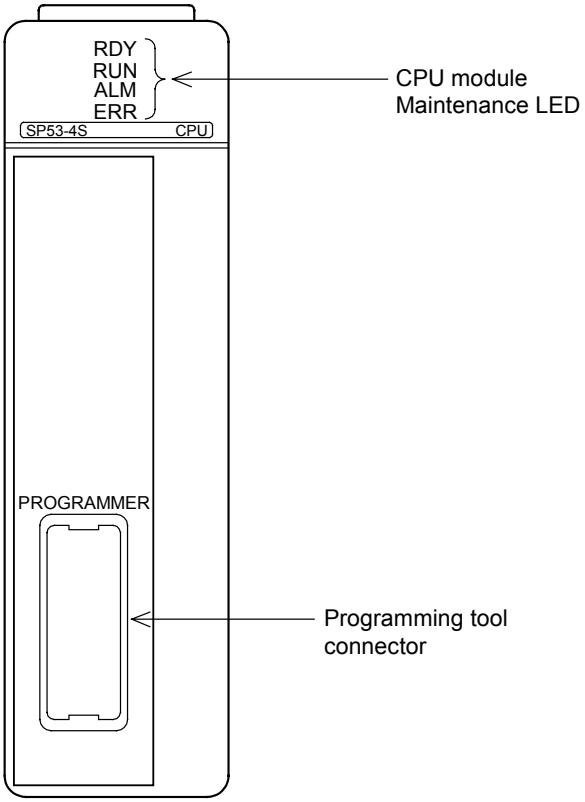


■ Specifications

Item		Specifications
Control Mode		Stored program, repetitive operation
I/O Control Mode		Refreshing method/direct I/O instructions
Programming Language		Object ladder language, mnemonic language
Number of Instructions	Basic Instructions	37 types
	Application Instructions	324 types
Processing Speed	Basic Instructions	0.0175 µs to 0.07 µs per instruction
	Application Instructions	0.07 µs per instruction
Program Size		56K steps (can be written to ROM) (including tag name definitions)
Maximum Number of I/O		4096 points
Device Size	Internal Relay	16384 points (16 K)
	Data Register	16384 points (16 K)
	File Register	32768 points (32 K)
Self Diagnostics		Memory error, CPU error and I/O error detection; syntax checking, etc.
Other Features		Sensor Control Function (Scan time: 200 µs to 25 ms) Configuration Functions (setting device sizes, output on error as well as data lock-up range at power failure). Constant Scan Function (1 ms to 190 ms) Debugging Functions (Forced Set/Reset, online editing, etc.) Error History Function (64 records) Date and Clock Function (year/month/day/hour/minute/second/day of week) Program Protection Functions Write programs and data to ROM Save functions for circuit comments, subcomments and tag name definitions
Current Consumption		890 mA (5 V 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

Errors of different severity levels are indicated by individual LEDs located 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: A user program is running.
ALM (ALARM) Yellow	★ **Non-fatal** (When lit): An error has occurred but the user program can still run. Examples: Power failure Communications 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*

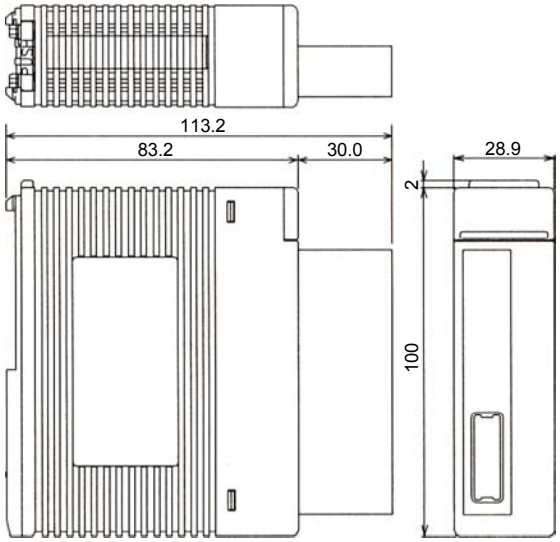
*: You can define the severity of these events as “Non-fatal” or “Error” in the configuration setup.

■ Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3SP53	-4S	—	—	Memory: 56K steps

■ External Dimensions

Unit: mm



■ Operating Environment

This module is compatible with all main CPU module types when used as an add-on CPU.

This module is compatible with the following versions of the FA-M3 Programming tool WideField2.

FA-M3 Programming Tool WideField2	Compatible Versions
SF620-ECW	R1.01 or later

General Specifications

F3SP58-6H Sequence CPU Module

FA-M3

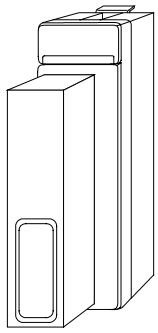
■ General

The F3SP58-6H is a CPU module for the FA-M3 Range-free Multi-controllers.

It is a CPU module dedicated to process ladder sequences.

■ Features

- The basic instructions achieve a processing speed beyond 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. Application instructions, such as analog I/O, that read from and write to advanced modules can achieve a speed beyond 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 index modification and an object ladder language simplifies program design and maintenance.
- The module permits configuration of device size and operating mode according to the application in use.
- The user can define and register new instructions.
- Program debugging and maintenance can be easily performed using a rich set of functions such as forced set/reset that takes 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 computer 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 is 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 program modularization.
- Programs can be protected using a protection feature. This can prevent a third party from viewing, modifying or copying programs.
- When installed in slot 2, 3 or 4, the F3SP58-6H functions as an add-on sequence CPU module.

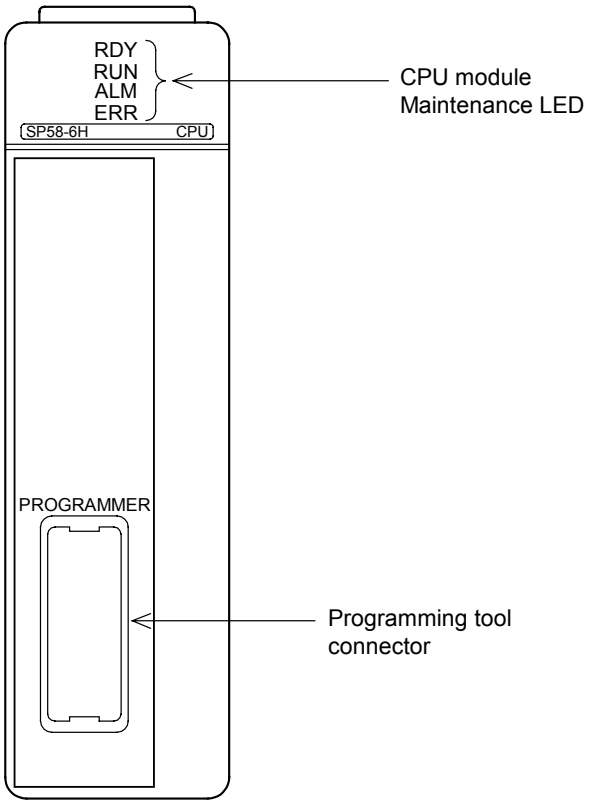


■ Specifications

Item		Specifications
Control Mode		Stored program, repetitive operation
I/O Control Mode		Refreshing method/direct I/O instructions
Programming Language		Object ladder language, mnemonic language
Number of Instructions	Basic Instructions	33 types
	Application Instructions	312 types
Processing Speed	Basic Instructions	0.0175 μs to 0.07 μs per instruction
	Application Instructions	0.07 μs per instruction
Program Size		120K steps (can be written to ROM)
Maximum Number of I/O		8192 points
Device Size	Internal Relay	32768 points (32 K)
	Data Register	32768 points (32 K)
	File Register	262144 points (256 K)
Self Diagnostics		Memory error, CPU error and I/O error detection; syntax checking, etc.
Other Features		Sensor Control Function (Scan time: 200 μs to 25 ms) Configuration Functions (setting device sizes, output on error as well as data lock-up range at power failure). Constant Scan Function (1 ms to 190 ms) Debugging Functions (Forced Ret/Reset, online editing, etc.) Error History Function (64 records) Date and Clock Function (year/month/day/hour/minute/second/day of week) Program Protection Functions Write programs and data to ROM
Current Consumption		890 mA (5 V 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

Errors of different severity levels are indicated by individual LEDs located 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: A user program is running.
ALM (ALARM) Yellow	★ **Non-fatal** (When lit): An error has occurred but the user program can still run. Examples: Power failure Communications 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*

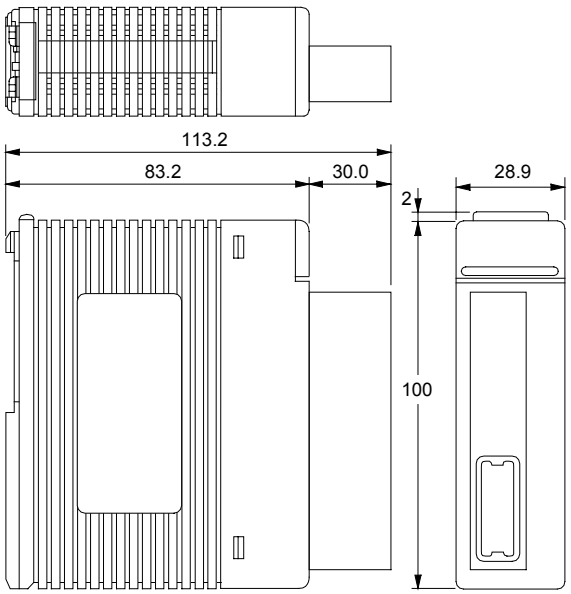
*: You can define the severity of these events as “Non-fatal” or “Error” in the configuration setup.

■ Model and Suffix Codes

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

■ External Dimensions

Unit: mm



■ Operating Environment

This module is compatible with all main CPU module types when used as an add-on CPU.

General Specifications

F3SP58-6S Sequence CPU Module

FA-M3

■ General

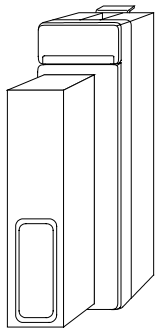
The F3SP58-6S is a CPU module for the FA-M3 Range-free Multi-controllers.

It is a CPU module dedicated to process ladder sequences.

■ Features

- The basic instructions achieve a processing speed of 0.0175 µs and beyond.
- The high-speed instruction processing capability of the F3SP58-6S makes it ideal for applications that require high speed and quick response. (Scan time is 1ms for 20 K steps of program. Application instructions, such as analog I/O that read from and write to advanced modules can achieve a speed of 25 µs and beyond.)
- 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 index modification and an object ladder language simplifies program design and maintenance.
- A user can create and register new instructions.
- The module permits reconfiguration of device size and operating mode according to the application in use.
- Program debugging and maintenance can be easily performed using a rich set of functions such as forced set/reset that takes 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 F3SP58-6S to connect to a higher-level computer or display without a personal computer 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 is 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 program modularization.
- Programs can be protected using a protection feature. This can prevent a third party from viewing, modifying or copying programs.
- When installed in slot 2, 3 or 4, the F3SP58-6S functions as an add-on sequence CPU module.
- Structures allow the user to reuse data easily.
- Circuit comments, subcomments, tag name definitions (including I/O comment) can be saved in the CPU program area, improving maintenance efficiency.
- Indirect designations and input macro instructions facilitates standardization and modularization of programs.
- The partial download function improves debugging efficiency.

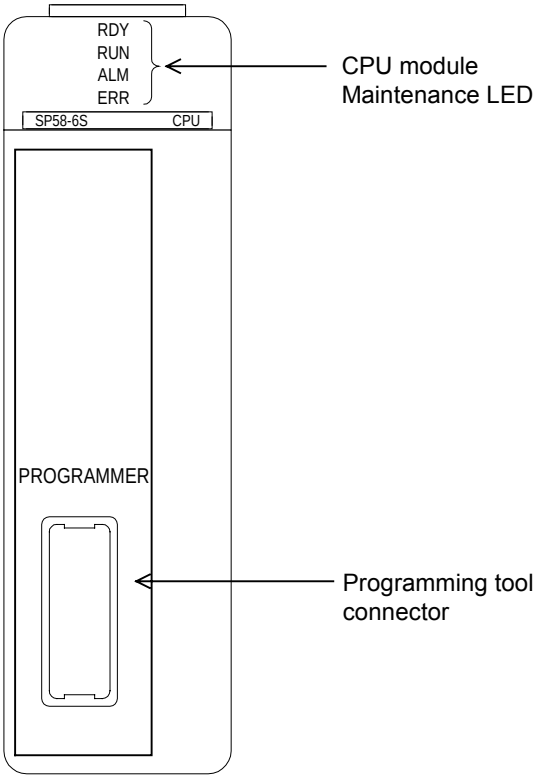


■ Specifications

Item		Specifications
Control Mode		Stored program, repetitive operation
I/O Control Mode		Refreshing method/direct I/O instructions
Programming Language		Object ladder language, mnemonic language
Number of Instructions	Basic Instructions	37 types
	Application Instructions	324 types
Processing Speed	Basic Instructions	0.0175 µs to 0.07 µs per instruction
	Application Instructions	0.07 µs per instruction
Program Size		120K steps (Can be written to ROM) (including tag name definitions)
Maximum Number of I/O		8192 points
Device Size	Internal Relay	32768 points (32 K)
	Data Register	32768 points (32 K)
	File Register	262144 points (256 K)
Self Diagnostics		Memory error, CPU error and I/O error detection, syntax checking, etc.
Other Features		Sensor Control Function (Scan time: 200 µs to 25 ms) Configuration Functions (setting device sizes, output on error as well as data lock-up range at power failure) Constant Scan function (1 ms to 190 ms) Debugging Functions (Forced set/Reset, online editing, etc) Error History Function (64 records) Date and clock function (year/month/day/hour/minute/second/day of week) Program Protection Functions Write programs and data to ROM Save functions for circuit comments, subcomments and tag name definitions
Current Consumption		890 mA (5 V DC)
External Dimensions		28.9 (W) × 100 (H) × 113.2 (D) mm*
Weight		210 g

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

■ Components and Functions



■ Error Processing

Errors of different severity levels are indicated by individual LEDs located 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: A user program is running.
ALM (ALARM) Yellow	★ **Non-fatal** (when lit): An error has occurred but the user program can still run. Examples: Power failure Communications 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*

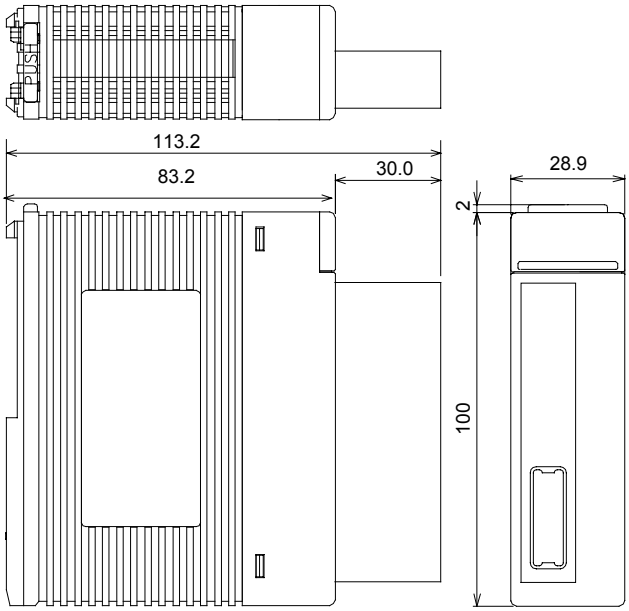
*: You can define the severity of these events as “Non-fatal” or “Error” in the configuration setup.

■ Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Descriptions
F3SP58	-6S	—	—	Memory: 120K steps

■ External Dimensions

Unit: mm



■ Operating Environment

This module is compatible with all main CPU module types when used as an add-on CPU.

This module is compatible with the following versions of the FA-M3 Programming tool WideField2.

FA-M3 Programming Tool WideField2	Compatible Versions
SF620-ECW	R1.01 or later

General Specifications

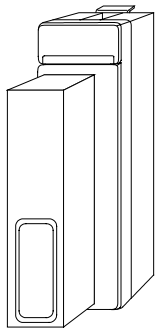
F3SP59-7S
Sequence CPU Module

FA-M3

■ General

The F3SP59-7S is a CPU module for the FA-M3 Range-free Multi-controllers.

It is a CPU module dedicated to process ladder sequences



■ Features

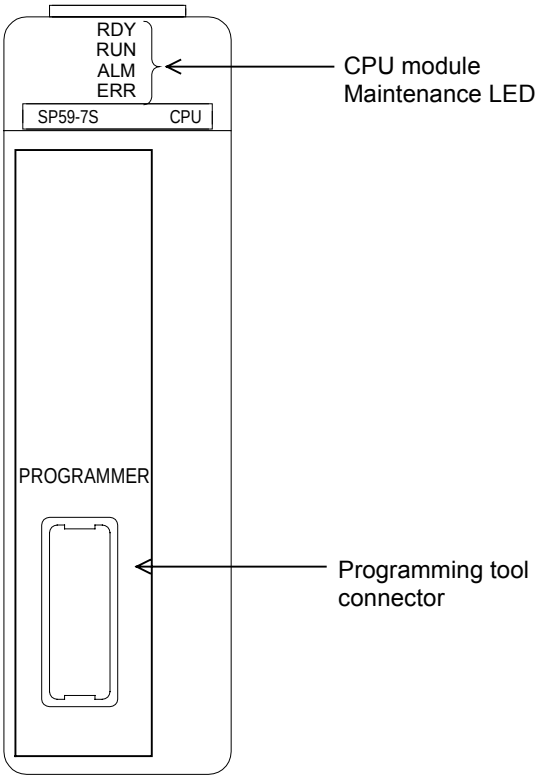
- The basic instructions achieve a processing speed of 0.0175 µs and beyond.
- The high-speed instruction processing capability of the F3SP59-7S makes it ideal for applications that require high speed and quick response. (Scan time is 1ms for 20 K steps of program.) (Application instructions, such as analog I/O that read from and write to advanced modules can achieve a speed of 25 µs and beyond.)
- 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 400µs.
- The use of index modification and an object ladder language simplifies program design and maintenance.
- The module permits reconfiguration of device size and operating mode according to the application in use.
- The user can create and register new instructions.
- Program debugging and maintenance can be easily performed using a rich set of functions such as forced set/reset that takes 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 F3SP59-7S to connect to a higher-level computer or display without a personal computer link module.
  (The maximum communication speed is 115Kbps)
- High-reliability design and powerful self-diagnostics are provided. Errors detected during program execution can be logged with predefined messages.
- Programs data are saved to memory, which is backed up with a battery that has a long service life and does not required maintenance.
- Programs and data can be saved on an optional ROM pack, which facilitates program modularization.
- Programs can be protected using a protection feature. This can prevent a third party from viewing, modifying or copying programs.
- When installed in slot 2, 3 or 4, the F3SP59-7S functions as an add-on sequence CPU module.
- Structures allow a user to reuse data easily.
- Circuit comments, subcomments, tag name definitions (including I/O comment) can be saved in the CPU program area, improving maintenance efficiency.
- Indirect designations and input macro instructions facilitates standardization and modularization of programs.
- The partial download function improves debugging efficiency.

■ Specifications

Item		Specifications
Control Mode		Stored program, repetitive operation
I/O Control Mode		Refreshing method/direct I/O instructions
Programming Language		Object ladder language, mnemonic language
Number of Instructions	Basic nstructions	37 types
	Application Instructions	324 types
Processing Speed	Basic nstructions	0.0175µs to 0.07 µs per instruction
	Application Instructions	0.07µs min. per instruction
Program Size		254K steps (Can be written to ROM) 360K steps max. (including tag name definitions)
Maximum Number of I/O		8192 points
Device size	Internal Relay	65535 points(64K)
	Data Register	65535 points (64K)
	File Register	262144 points (256 K)
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 sizes, output on error 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 and Clock Function (year/month/day/hour/minute/second/day of week) Program Protection Functions Write programs and data to ROM Save functions for circuit comments, subcomments and tag name definitions
Current Consumption		920 mA (5 V DC)
External Dimensions		28.9 (W) × 100 (H) × 113.2 (D) mm*
Weight		210 g

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

■ Components and Functions



■ Error Processing

Errors of different severity levels are indicated by individual LEDs located 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: A user program is running.
ALM (ALARM) Yellow	★ **Non-fatal** (When lit): An error has occurred but the user program can still run. Examples: Power failure Communications 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*

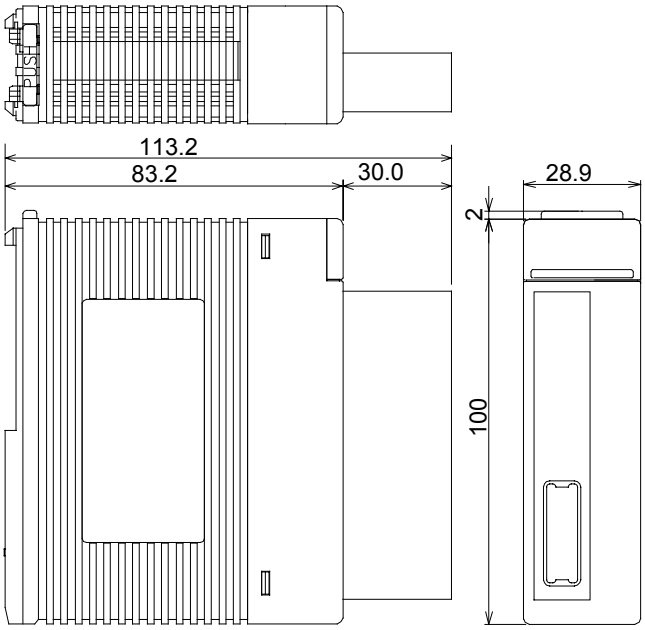
*: You can define the severity of these incidents as “Non-fatal” or “Error” in the configuration setup.

■ Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3SP59	-7S	—	—	Memory: 254K steps

■ External Dimensions

Unit: mm



■ Operating Environment

This module is compatible with all main CPU module types when used as an add-on CPU.

This module is compatible with the following versions of the FA-M3 Programming tool WideField2.

FA-M3 Programming Tool WideField2	Compatible Versions
SF620-ECW	R1.01 or later

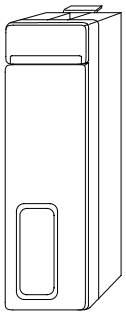
General Specifications

F3BP20-0N
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

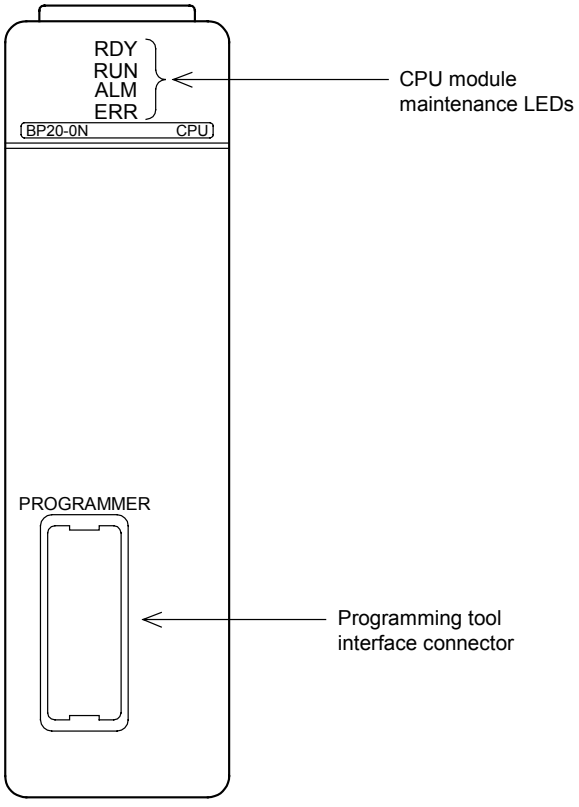
- The F3BP20 is ideal for applications where communications modules that cannot be controlled with ladder sequence programs or sophisticated computations are required.
- The F3BP20 can be installed in any one of slots 1 to 4 of the main unit. It can run without a sequence CPU module, thereby configuring 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 and 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	200 mA (5V DC)
External Dimensions	28.9 (W) × 100 (H) × 83.2 (D) mm*
Weight	105 g

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

■ Components and Functions



■ Error Processing

Errors of different severity levels are indicated by individual LEDs located on the front panel of the CPU module.

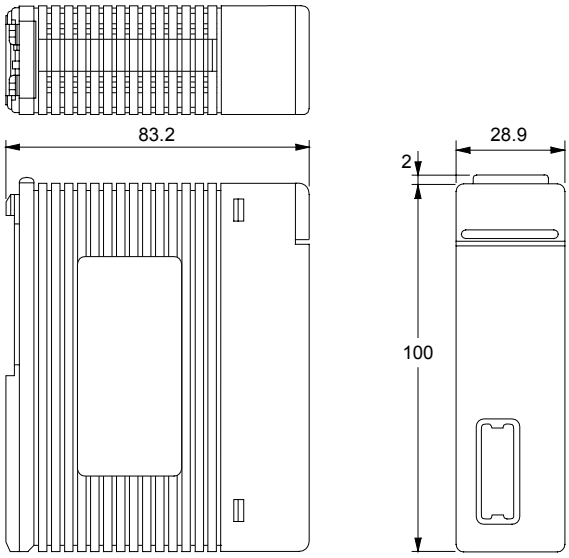
LED	Meaning
RDY (READY) Green	★ **Fatal** (When off): The hardware cannot run. Examples: CPU error Memory error
RUN (RUN) Green	When lit: A user program is running.
ALM (ALARM) Yellow	★ **Non-fatal** (When lit): An error has occurred but the user program can still run. Examples: Power failure I/O module error Communications 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
F3SP20	-0N	—	—	Memory: 120K steps

■ External Dimensions

Unit: mm



■ Operating Environment

- The table below lists the CPU modules that are compatible with this module.

CPU Module	Applicable Revision Number
F3SP21-0N, F3SP25-2N, F3SP28-3☐, F3SP35-5N, F3SP38-6☐, F3SP53-4☐, F3SP58-6☐, F3SP59-7S	No restriction on revision number
F3FP36-3N	No restriction on revision number

Note: This module cannot be used as an add-on BASIC CPU for the F3SP05-0P and F3SP08-0P sequence CPU module used for the FA-M3 Value and FA-M3 Value2 (See GS 34M6C81-01E) cannot use this module.

- The table below lists the types of ROM pack that are compatible with this module.

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

General Specifications

F3BP30-0N
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.

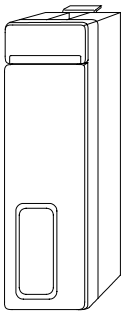
■ Features

- 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.

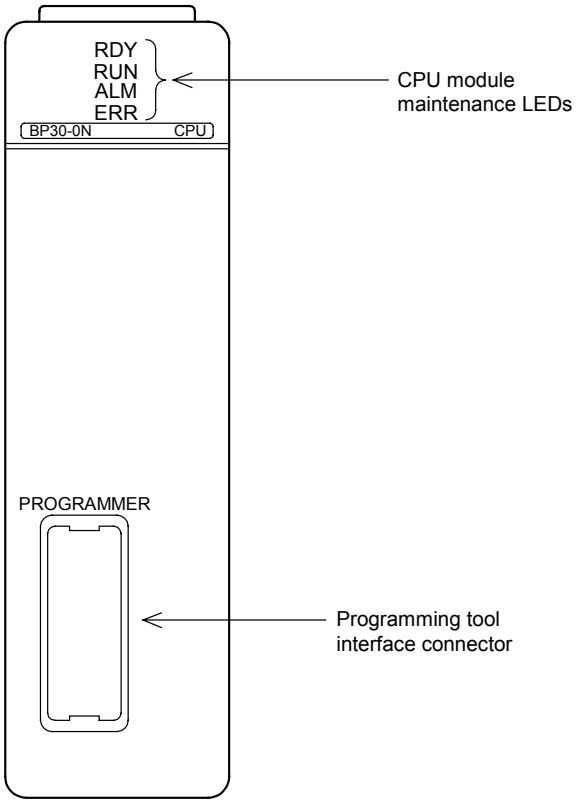
■ Specifications

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 and 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	105 g

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



■ Components and Functions



■ Error Processing

Errors of different severity levels are indicated by individual LEDs located on the front panel of the CPU module.

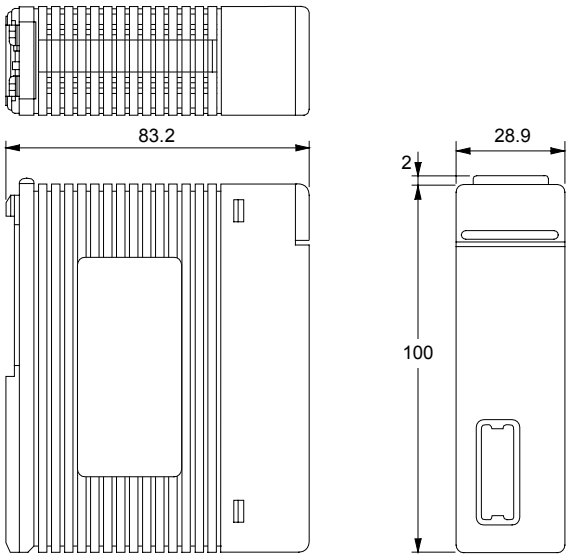
LED	Meaning
RDY (READY) Green	★ **Fatal** (When off): The hardware cannot run. Examples: CPU error Memory error
RUN (RUN) Green	When lit: A user program is running.
ALM (ALARM) Yellow	★ **Non-fatal** (When lit): An error has occurred but the user program can still run. Examples: Power failure I/O module error Communications 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
F3BP30	-0N	—	—	Memory: 510K steps

■ External Dimensions

Unit: mm



■ Operating Environment

- The table below lists the CPU modules that are compatible with this module.

CPU Module	Applicable Revision Number
F3SP21-0N, F3SP25-2N, F3SP28-3☐, F3SP35-5N, F3SP38-6☐, F3SP53-4☐, F3SP58-6☐, F3SP59-7S	No restriction on revision number
F3FP36-3N	No restriction on revision number

Note: This module cannot be used as an add-on BASIC CPU for the F3SP05-0P and F3SP08-0P sequence CPU module used for the FA-M3 Value and FA-M3 Value2 (See GS 34M6C81-01E) cannot use this module.

- The table below lists the types of ROM pack that are compatible with this module.

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

- The table below lists the BASIC Programming Tool M3 that is compatible with the F3BP30-0N.

BASIC Programming Tool M3	Applicable Revision Number
SF560-☐CW	*

*: Contact YOKOGAWA sales representatives.

Note: The SF550-J3☐ cannot be used.

General Specifications

RK10-0N, RK30-0N, RK50-0N
ROM Packs

FA-M3

■ General

The RK10, RK30, and RK50 ROM Packs are used with the F3SP05-0P, F3SP08-0P, F3SP20-0N, F3SP21-0N, F3SP25-2N, F3SP30-0N and F3SP35-5N Sequence CPU Modules, and the F3BP20-0N and F3BP30-0N BASIC CPU Modules for the FA-M3 Range-free Multi-controller.

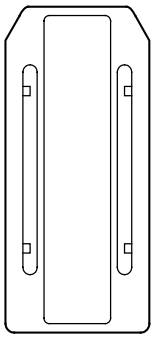
■ Features

- Programs and data can be stored in ROM packs.
- The programming tool enables programs and data to be written on the ROM packs.
- Data that can be written to the ROM pack include program-control information, programs, configurations, various control tables, tables of timer/counter preset values, and comment management information.
- The RK30-0N and RK50-0N ROM packs can store 1024 words of data registers (for the F3SP05-0P, F3SP08-0P, F3SP20-0N, F3SP21-0N, F3SP25-2N, F3SP30-0N, and F3SP35-5N only).

■ Specifications

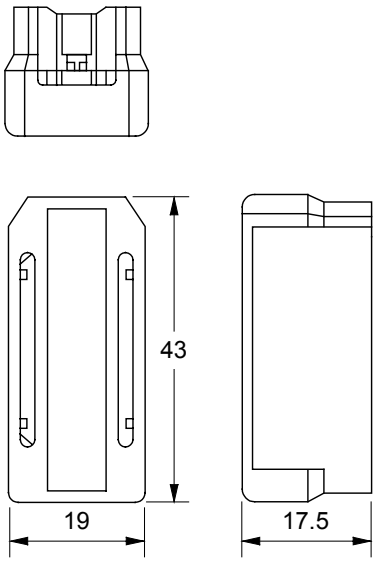
Item	RK10-0N	RK30-0N	RK50-0N
With F3SP05-0P	5 K steps*1	5 K steps	5K steps
With F3SP08-0P	5 K steps	10 K steps	10K steps
With F3SP20-0N	5 K steps*1	10 K steps	Not available
With F3SP21-0N	5 K steps*1	10 K steps	10K steps
With F3SP25-2N	Not available	20 K steps	20K steps
With F3SP30-0N	5 K steps *1 *2	20 K steps	Not available
With F3SP35-5N	Not available	20 K steps *3 *4	100K bytes *5
With F3BP20-0N	Not available	120 K bytes *6	Not available
With F3BP30-0N	Not available	Not available	510K bytes *7

*1: Can store up to 400 lines including circuit comments and sub comments.
*2: Can store up to 512 data points including timers and counters.
*3: Can store up to 2048 data points including timers and counters.
*4: Up to 128 program blocks can be used.
*5: Up to 80 K steps of program code can be made resident when the number of program blocks is 33 or more.
*6: Can store up to 120 K bytes of code and data including user programs and common area data.
*7: 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

RK33-0N, RK53-0N, RK73-0N, RK93-0N ROM Packs

FA-M3

■ General

These ROM Packs are used with the F3SP05-0N, F3SP08-0P, F3SP21-0N, F3SP25-2N, F3SP35-5N, F3SP28-3☐, F3SP38-6☐, F3SP53-4☐, F3SP58-6☐ and F3SP59-7S Sequence CPU Modules, and the F3BP30-0N BASIC CPU Module for the FA-M3 Range-free Multi-controller.

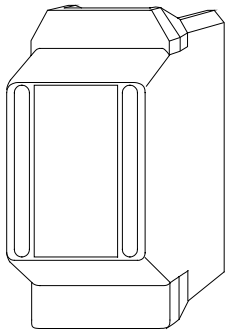
■ Features

- Programs and data can be stored in ROM packs.
- The programming tool enables programs and data to be written on the ROM packs.
- Data that can be written to the ROM pack include program-control information, programs, configurations, various control tables, tables of timer/counter preset values, and comment management information.
- The ROM packs can store 1024 words of data registers when a sequence CPU module is used.

■ Specifications

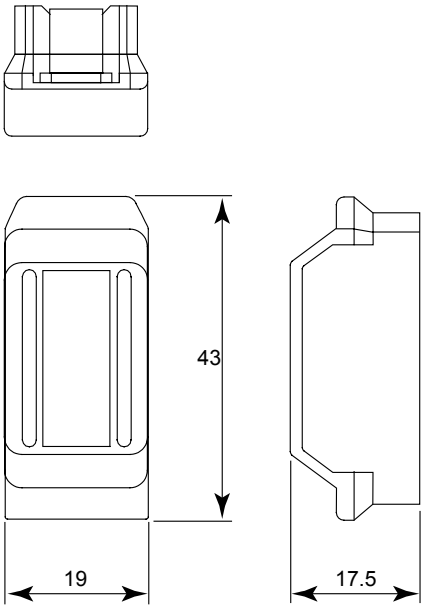
Item	RK33-0N	RK53-0N	RK73-0N	RK93-0N
With F3SP05-0P	5 K steps	5Ksteps	Not available	Not available
With F3SP08-0P	5K steps	10Ksteps	Not available	Not available
With F3SP21-0N	10Ksteps	10Ksteps	Not available	Not available
With F3SP25-2N	20Ksteps	20Ksteps	Not available	Not available
With F3SP35-5N	20Ksteps*1	100Ksteps*2	Not available	Not available
With F3SP28-3N	30Ksteps	Not available	30Ksteps	Not available
With F3SP38-6N	56Ksteps	Not available	120Ksteps	Not available
With F3SP53-4H	56Ksteps	Not available	56Ksteps	Not available
With F3SP58-6H	56Ksteps	Not available	120Ksteps	Not available
With F3SP28-3S	56Ksteps*5	Not available	120Ksteps*5	360Ksteps*5
With F3SP38-6S	56Ksteps	Not available	120Ksteps	360Ksteps*6
With F3SP53-4S	56Ksteps	Not available	120Ksteps*7	360Ksteps*7
With F3SP58-6S	56Ksteps	Not available	120Ksteps	360Ksteps*6
With F3SP59-7S	56Ksteps	Not available	120Ksteps	360Ksteps*8
With F3BP20-0N *4	Not available	Not available	Not available	Not available
With F3BP30-0N	Not available	510K steps*3	Not available	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 F3BP20-0P module.
*5 Can store up to 30 K steps of program.
*6 Can store up to 120 K steps of program.
*7 Can store up to 56 K steps of program.
*8 Can store up to 254K steps of program.



■ External Dimensions

Unit: mm



■ 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.
RK93	-0N	—	—	360 K steps when a sequence CPU module is used.