

General  
Specifications

GS 34M06C01-07EN

FA-M3  
Sequence CPU Module  
(with network functions)

FA-M3

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For F3SP71-4S and F3SP76-7S, please refer to 'FA-M3 Basic Modules (Base, Power Supply, CPU Modules and ROM Packs) (GS 34M06C01-01E).



# General Specifications

## F3SP71-4S/CS Sequence CPU Module (with network functions)

FA-M3

### ■ General

The F3SP71-4S/CS is a sequence CPU module with built-in network functions for use with the FA-M3 Range-free Multi-controllers. The F3SP71-4S/CS is based on the F3SP71-4S, with enhanced security features. In addition to a rich set of functions, which support high-speed large-data sequence processing with improved development and maintenance efficiency, the F3SP71-4S/CS also incorporates a RAM disk, an SD memory card slot, and a 10BASE-T/100BASE-TX connector for large-volume data handling and networking.

### ■ Features

- The basic instructions achieve a processing speed as high as 0.00375  $\mu$ s.
- The high-speed instruction processing capability makes it ideal for applications that require high speed and quick response. (Scan time is 1 ms for 100 K steps of program.) (Analog I/O and other application instructions that access advanced function modules can achieve processing speed of 15  $\mu$ s.)
- Double-word (64-bit) integer and double-precision floating point instructions enable high-precision computations and control.
- The sensor control function allows one CPU to perform another scan (input, program execution and output) besides the main scan simultaneously, realizing a steady I/O response of 200  $\mu$ s.
- The use of index modification and an object ladder language simplifies program design and maintenance.
- The scripting function of the Ladder Programming Tool WideField3 can be used to simplify coding of text and computational processing for greater programming efficiency and visibility.
- Volatile cache registers simplify large data access.
- The built-in 100BASE-TX Ethernet communication capability ensures high-throughput communication processing.
- A variety of network protocols are provided to support TCP/IP and UDP/IP socket communication, FTP client, FTP server, high-level link service, Modbus/TCP slave (server), remote programming (encrypted communication using TLS 1.3), etc.
- An SD memory card can be used for storing programs and data (32GB max.). It adopts the standard PC FAT16/32 format so its data can be accessed from a PC without special software.
- A 4MB RAM disk is built-in for faster file processing.
- New functions using the rotary switch located on the front panel of the module enable loading and saving of programs and other maintenance operations without using a PC.
- Card batch file functions enable program loading or device data retrieval by simply inserting an SD memory card.
- Constant definition and M3 escape sequence can be used with the FA-M3 Programming Tool WideField3 to simplify definition of string and contiguous byte data, as well as reuse of constants.
- Socket communication, FTP client, file edit, file operation and many other types of new instructions are added to improve visibility, reduce code size and increase programming efficiency over the conventional relay-register interface.
- With advanced sampling trace, up to 1 MB device status data can be collected for debugging purposes.
- User authentication (including password expiration date and session disconnection time), user permissions and CPU operation restrictions prevent misoperation and improve system security.
- Operation log records when and what operations have been performed on the CPU to facilitate maintenance.
- Automatically synchronizes the CPU time with an external SNTP

server.

- Firmware can be updated using WideField3.
- The F3SP71-4S/CS complies with the GB40050-2021 under the Cybersecurity Law of the People's Republic of China.



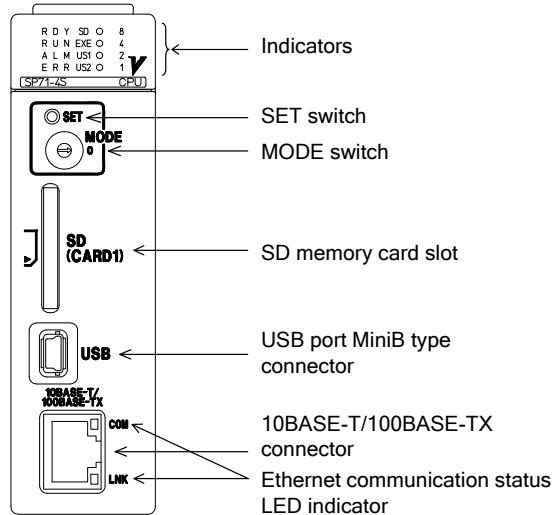
### ■ Specifications

| Item                   |                          | Specifications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Control Mode           |                          | Stored program, repetitive operation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| I/O Control Mode       |                          | Refreshing method/direct I/O instructions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Programming Language   |                          | Object ladder language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Number of Instructions | Basic Instructions       | 40 types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                        | Application Instructions | 445 types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Processing speed       | Basic Instructions       | 0.00375 $\mu$ s per instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                        | Application Instructions | 0.0075 $\mu$ s per instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Program Size           |                          | 60K steps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Project Size           |                          | 120K steps max.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Maximum Number of I/Os |                          | 4096 points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Device Size            | Internal Relay           | 16384 points (16K)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                        | Data Register            | 16384 points (16K)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                        | File Register            | 32768 points (32K)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                        | Cache Register           | 131072 points (128K)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Communication Ports    |                          | USB2.0 (12 Mbps), Ethernet                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Memory Card Slot       |                          | SD memory card (SDHC compatible)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Self Diagnostics       |                          | Memory error, CPU error, I/O error detection, syntax checking, etc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Other Features         |                          | Sensor control, configuration (device sizes, error-time output, etc.), constant scan (1.0-190 ms), debugging (Forced set/reset, online edit, etc.), error log, user log, operation log, clock (year/month/date/hour/minute/second/day), time synchronization function, high-level (personal computer) link service, Modbus/TCP slave (server), program protection, CPU properties (for communication setup, etc.), constant definition, smart access, card batch file, card boot, RAM disk, built-in Ethernet, TCP/IP and UDP/IP socket communication, FTP client/server, network filter, user LED, advanced sampling trace, user authentication (including password expiration date and session disconnection time), user permissions and CPU operation restrictions, firmware update function. |
| Current Consumption    |                          | 460 mA (at 5 V DC)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| External Dimensions    |                          | 28.9 (W) x 100 (H) x 83.2 (D) mm*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Weight                 |                          | 120 g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|                                   |                                                                                      |
|-----------------------------------|--------------------------------------------------------------------------------------|
| Surrounding air temperature range | Operating : 0 to 55°C<br>Storage : -20°C to 75°C                                     |
| Surrounding humidity range        | Operating : 10 to 90% RH (non-condensing)<br>Storage : 10 to 90% RH (non-condensing) |
| Surrounding atmosphere            | Must be free of corrosive gases, flammable gases or heavy dust.                      |

\* 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)<br>Green  | ★ Major (When off): The hardware cannot run.<br>Examples: CPU error<br>Memory error<br>Firmware error                                                                                                                                             |
| RUN (RUN)<br>Green    | When lit: A user program is running.<br>When blinking: Shutdown is in progress                                                                                                                                                                    |
| ALM (ALARM)<br>Yellow | ★ Minor (When lit): An error has occurred but the user program can still run.<br>Examples: Power problem<br>Communications error                                                                                                                  |
| ERR (ERROR)<br>Red    | ★ Moderate (when lit): The user program cannot start or continue execution<br>Examples: Program error<br>I/O comparison error*<br>I/O module error*<br>Memory error<br>Sequence processor error<br>Instruction processing error*<br>Scan timeout* |

\* You can define the severity of these events as "moderate" or "minor" (alarm) in the configuration setup.

## ■ SD Memory Card Status

This LED indicates the SD memory card status.

| LED | Color | Meaning                           |
|-----|-------|-----------------------------------|
| SD  | Green | Lit: Card is mounted.             |
|     |       | Blinking: Card is being accessed. |
|     |       | Not lit: No card is mounted.      |

## ■ Smart Access Status

This LED indicates the status of smart access functions.

| LED | Color | Meaning                                   |
|-----|-------|-------------------------------------------|
| EXE | Green | Lit: Smart access function is running.    |
|     |       | Blinking: Smart access detected an error. |
|     |       | Not lit: Smart access is not running.     |

## ■ User LEDs

These LEDs are controlled by a user program.

| LED | Color | Meaning                                |
|-----|-------|----------------------------------------|
| US1 | Green | Lit: As defined by a user program.     |
|     |       | Not lit: As defined by a user program. |
| US2 | Green | Lit: As defined by a user program.     |
|     |       | Not lit: As defined by a user program. |

## ■ MODE Switch Status

These LEDs indicate the current position (value) of the MODE switch (rotary switch).

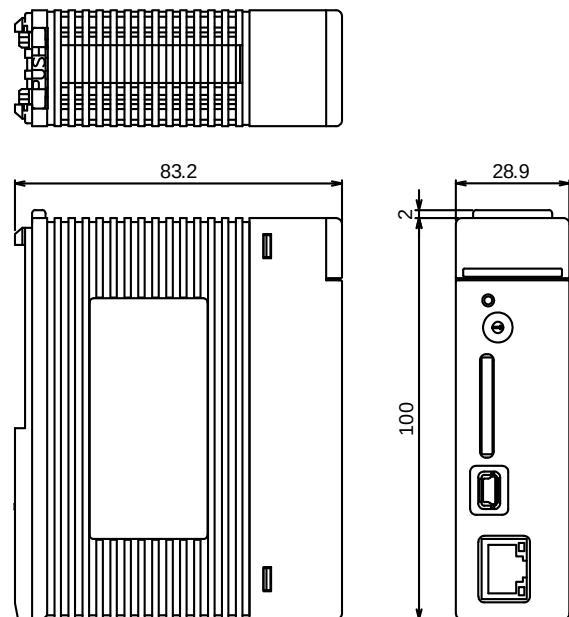
| LED | Color | Meaning                                                                                                                                                                |
|-----|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8   | Green | These individual LEDs mean a value of 8, 4, 2, or 1 when they are lit. The position or value (hexadecimal) of the MODE switch is indicated by the sum of these values. |
| 4   |       |                                                                                                                                                                        |
| 2   |       |                                                                                                                                                                        |
| 1   |       |                                                                                                                                                                        |

## ■ Model and Suffix Codes

| Model  | Suffix Code | Style Code | Option Code | Description                                                                       |
|--------|-------------|------------|-------------|-----------------------------------------------------------------------------------|
| F3SP71 | -4S         | —          | /CS         | Memory: 60K steps<br>With network functions<br>Modbus/TCP slave (server) function |

## ■ External Dimensions

Unit: mm



## ■ Operating Environment

If this module is used as the main CPU, the add-on CPU modules that can be used are F3SP7□-□S/CS, F3RP6□-2□, F3RP7□-□□, and F3NP5□-□□.

If this module is used as the add-on CPU, the main CPU modules that can be used are F3SP7□-□S/CS and F3RP7□-□□.

This module is compatible with the following versions of the FA-M3 Programming Tool WideField3.

| FA-M3 Programming Tool WideField3 | Compatible Versions |
|-----------------------------------|---------------------|
| SF630-MCW                         | R4.08 or later      |

# General Specifications

## F3SP76-7S/CS Sequence CPU Module (with network functions)

FA-M3

### ■ General

The F3SP76-7S/CS is a sequence CPU module with built-in network functions for use with the FA-M3 Range-free Multi-controllers. The F3SP76-7S/CS is based on the F3SP76-7S, with enhanced security features. In addition to a rich set of functions, which support high-speed large-data sequence processing with improved development and maintenance efficiency, the F3SP76-7S/CS also incorporates a RAM disk, an SD memory card slot, and a 10BASE-T/100BASE-TX connector for large-volume data handling and networking.

### ■ Features

- The basic instructions achieve a processing speed as high as 0.00375  $\mu$ s.
- The high-speed instruction processing capability makes it ideal for applications that require high speed and quick response. (Scan time is 1 ms for 100 K steps of program.) (Analog I/O and other application instructions that access advanced function modules can achieve processing speed of 15  $\mu$ s.)
- Double-word (64-bit) integer and double-precision floating point instructions enable high-precision computations and control.
- The sensor control function allows one CPU to perform another scan (input, program execution and output) besides the main scan simultaneously, realizing a steady I/O response of 200  $\mu$ s.
- The use of index modification and an object ladder language simplifies program design and maintenance.
- The scripting function of the Ladder Programming Tool WideField3 can be used to simplify coding of text and computational processing for greater programming efficiency and visibility.
- Volatile cache registers simplify large data access.
- The built-in 100BASE-TX Ethernet communication capability ensures high-throughput communication processing.
- A variety of network protocols are provided to support TCP/IP and UDP/IP socket communication, FTP client, FTP server, high-level link service, Modbus/TCP slave (server), remote programming (encrypted communication using TLS 1.3), etc.
- An SD memory card can be used for storing programs and data (32GB max.). It adopts the standard PC FAT16/32 format so its data can be accessed from a PC without special software.
- A 4MB RAM disk is built-in for faster file processing.
- New functions using the rotary switch located on the front panel of the module enable loading and saving of programs and other maintenance operations without using a PC.
- Card batch file functions enable program loading or device data retrieval by simply inserting an SD memory card.
- Constant definition and M3 escape sequence can be used with the FA-M3 Programming Tool WideField3 to simplify definition of string and contiguous byte data, as well as reuse of constants.
- Socket communication, FTP client, file edit, file operation and many other types of new instructions are added to improve visibility, reduce code size and increase programming efficiency over the conventional relay-register interface.
- With advanced sampling trace, up to 1 MB device status data can be collected for debugging purposes.
- User authentication (including password expiration date and session disconnection time), user permissions and CPU operation restrictions prevent misoperation and improve system security.
- Operation log records when and what operations have been performed on the CPU to facilitate maintenance.
- Automatically synchronizes the CPU time with an external SNTP

server.

- Firmware can be updated using WideField3.
- The F3SP76-7S/CS complies with the GB40050-2021 under the Cybersecurity Law of the People's Republic of China.



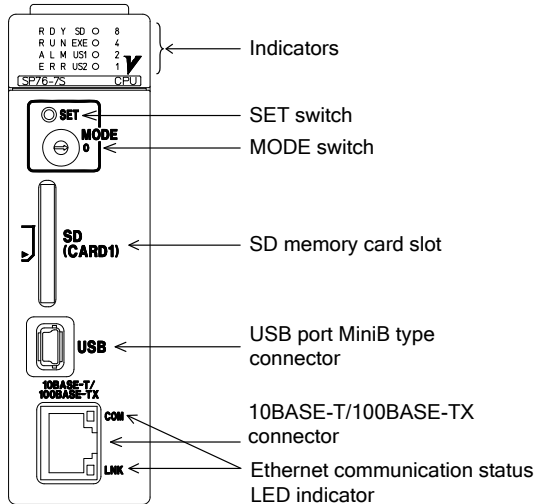
### ■ Specifications

| Item                   |                          | Specifications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Control Mode           |                          | Stored program, repetitive operation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| I/O Control Mode       |                          | Refreshing method/direct I/O instructions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Programming Language   |                          | Object ladder language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Number of Instructions | Basic Instructions       | 40 types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                        | Application Instructions | 445 types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Processing speed       | Basic Instructions       | 0.00375 $\mu$ s per instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                        | Application Instructions | 0.0075 $\mu$ s per instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Program Size           |                          | 260K steps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Project Size           |                          | 520K steps max.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Maximum Number of I/Os |                          | 8192 points (including remote I/O)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Device Size            | Internal Relay           | 65535 points (64K)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                        | Data Register            | 65535 points (64K)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                        | File Register            | 262144 points (256K)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                        | Cache Register           | 524288 points (512K)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Communication Ports    |                          | USB2.0 (12 Mbps), Ethernet                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Memory Card Slot       |                          | SD memory card (SDHC compatible)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Self Diagnostics       |                          | Memory error, CPU error, I/O error detection, syntax checking, etc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Other Features         |                          | Sensor control, configuration (device sizes, error-time output, etc.), constant scan (1.0-190 ms), debugging (Forced set/reset, online edit, etc.), error log, user log, operation log, clock (year/month/date/hour/minute/second/day), time synchronization function, high-level (personal computer) link service, Modbus/TCP slave (server), program protection, CPU properties (for communication setup, etc.), constant definition, smart access, card batch file, card boot, RAM disk, built-in Ethernet, TCP/IP and UDP/IP socket communication, FTP client/server, network filter, user LED, advanced sampling trace, user authentication (including password expiration date and session disconnection time), user permissions and CPU operation restrictions, firmware update function. |
| Current Consumption    |                          | 460 mA (at 5 V DC)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| External Dimensions    |                          | 28.9 (W) x 100 (H) x 83.2 (D) mm*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Weight                 |                          | 120 g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|                                   |                                                                                      |
|-----------------------------------|--------------------------------------------------------------------------------------|
| Surrounding air temperature range | Operating : 0 to 55°C<br>Storage : -20°C to 75°C                                     |
| Surrounding humidity range        | Operating : 10 to 90% RH (non-condensing)<br>Storage : 10 to 90% RH (non-condensing) |
| Surrounding atmosphere            | Must be free of corrosive gases, flammable gases or heavy dust.                      |

\* 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)<br>Green  | ★ Major (When off): The hardware cannot run.<br>Examples: CPU error<br>Memory error<br>Firmware error                                                                                                                                              |
| RUN (RUN)<br>Green    | When lit: A user program is running.<br>When blinking: Shutdown is in progress                                                                                                                                                                     |
| ALM (ALARM)<br>Yellow | ★ Minor (When lit): An error has occurred but the user program can still run.<br>Examples: Power problem<br>Communications error                                                                                                                   |
| ERR (ERROR)<br>Red    | ★ Moderate (when lit): The user program cannot start or continue execution.<br>Examples: Program error<br>I/O comparison error*<br>I/O module error*<br>Memory error<br>Sequence processor error<br>Instruction processing error*<br>Scan timeout* |

\* You can define the severity of these events as "moderate" or "minor" (alarm) in the configuration setup.

## ■ SD Memory Card Status

This LED indicates the SD memory card status.

| LED | Color | Meaning                 |
|-----|-------|-------------------------|
| SD  | Green | Lit                     |
|     |       | Card is mounted.        |
|     |       | Blinking                |
|     |       | Card is being accessed. |
|     |       | Not lit                 |
|     |       | No card is mounted.     |

## ■ Smart Access Status

This LED indicates the status of smart access functions.

| LED | Color | Meaning                           |
|-----|-------|-----------------------------------|
| EXE | Green | Lit                               |
|     |       | Smart access function is running. |
|     |       | Blinking                          |
|     |       | Smart access detected an error.   |
|     |       | Not lit                           |
|     |       | Smart access is not running.      |

## ■ User LEDs

These LEDs are controlled by a user program.

| LED | Color | Meaning                       |
|-----|-------|-------------------------------|
| US1 | Green | Lit                           |
|     |       | As defined by a user program. |
| US2 | Green | Lit                           |
|     |       | As defined by a user program. |
|     |       | Not lit                       |

## ■ MODE Switch Status

These LEDs indicate the current position (value) of the MODE switch (rotary switch).

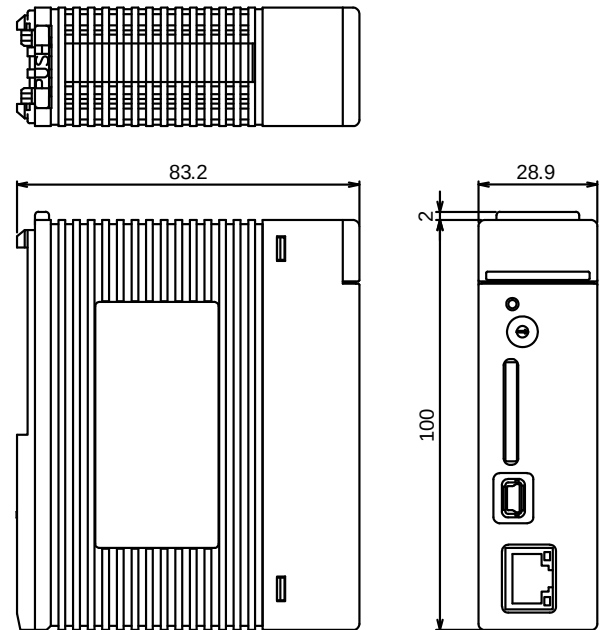
| LED | Color | Meaning                                                                                                                                                                |
|-----|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8   | Green | These individual LEDs mean a value of 8, 4, 2, or 1 when they are lit. The position or value (hexadecimal) of the MODE switch is indicated by the sum of these values. |
| 4   |       |                                                                                                                                                                        |
| 2   |       |                                                                                                                                                                        |
| 1   |       |                                                                                                                                                                        |

## ■ Model and Suffix Codes

| Model  | Suffix Code | Style Code | Option Code | Description                                                                        |
|--------|-------------|------------|-------------|------------------------------------------------------------------------------------|
| F3SP76 | -7S         | —          | /CS         | Memory: 260K steps<br>With network functions<br>Modbus/TCP slave (server) function |

## ■ External Dimensions

Unit: mm



## ■ Operating Environment

If this module is used as the main CPU, the add-on CPU modules that can be used are F3SP7□-□S/CS, F3RP6□-2□, F3RP7□-□□, and F3NP5□-□□.

If this module is used as the add-on CPU, the main CPU modules that can be used are F3SP7□-□S/CS and F3RP7□-□□.

This module is compatible with the following versions of the FA-M3 Programming Tool WideField3.

| FA-M3 Programming Tool WideField3 | Compatible Versions |
|-----------------------------------|---------------------|
| SF630-MCW                         | R4.08 or later      |