Caution

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Represented by:

*1: Supplied with a software package.
*2: “FA-M3 Programming Tool WideField (IM34M6Q14-01E) and FA-M3 Programming Tool WideField-Application (IM34M6Q14-02E) are supplied as a set, but not supplied with a software package.
Evolution to Revolution

The debut of the newly named “FA-M3 R”, evolved from the Range-free Multi-controller FA-M3 will help the user revolutionize his system with its drastically improved added value.

**Fast**
20,000 Steps within 1ms
FA-M3 R features a minimum scan time of 200µs, and is faster than microcomputer boards.

**Compact**
Post Card Size
So compact and light, FA-M3 R takes up a space of only 147 (W) x 100(H) x 88 (D), yet allows up to 192 points.

**Smart**
Max: 8192 Points, 310K Words
FA-M3 R is the result of a quest for high performance and advanced functions. It offers high cost performance, too.

New-Generation Controller FA-M3

As Small As a Post Card

Max. 8192 Points, 310K Words
FA-M3 R is the result of a quest for high performance and advanced functions. It offers high cost performance, too.
FA-M3 R is a range-free controller that allows the building of any size of system, from small to large. The system can consist of various modules of the same size, resulting in space saving and cost reduction.

FA-M3 R not only provides expansion capability, irrespective of system size, but also allows use of common spare parts. Expand the system by just adding desired modules of the same size. Installation takes up only a small space inside the control panel, allowing standardization and efficiency improvement of interior design. FA-M3 R is a PLC that helps the developer expand his imagination to build a system and realizes the control that suits individual needs of application.

**Main Unit and Sub Unit**

The main unit can accommodate up to seven sub units (i.e. input/output modules). This provides up to 8192 range-free I/O points.

**Multi CPU**

FA-M3 offers a variety of CPU modules such as sequence and BASIC modules. By configuring a unit with different CPU modules, the existing PLC concept will be improved and a versatile system can be built.

**Sequence CPU module**

FA-M3 can accommodate up to four sequence CPU modules. This is useful when you want to improve the operating ratio of certain system components, integrate the basic program data with data of other programs, divide processing control, or when you want to use certain CPUs for particular jobs according to the size of the system or program. Types, other than Sequence CPU modules can also be included in the four CPU modules.

**BASIC CPU module**

This module is useful when you want to write a program in BASIC language or when communication modules that cannot be controlled by a single module are required, or advanced processing is needed. It is also possible to use this module with a sequence CPU module to transfer data and ladder sequence.
Based on the High-speed IPRS Concept that Seeks High-speed Performance from Every Point of View.

The design of FA-M3 R is based on the “High-speed IPRS” design concept, to achieve high-speed performance that satisfies developers’ expectations. Analysis has been conducted from every angle to provide a controller featuring ultra-high-speed and stable control, link function and network. Increase in speed leads to higher operational stability.

FA-M3 R can improve not only the accuracy and productivity of the system but can be used as a controller for next generation systems.

**Ultra Fast Processing Speed**

Reduces tact time and improves quality

Fast scan time of 20,000 steps/ms* (four times as fast as the conventional model)

To make the best of the advanced functions and performance of the system, computation speed has to be improved. To improve productivity, operation ease and provide network and troubleshooting functions, the ladder program uses application instructions, especially advanced instructions, more than basic instructions. To response to such needs, FA-M3 R can improve the scan time to 20,000 steps per millisecond for conventional programs (ratio of application instructions used: approx. 50%). With actual advanced application programs, the scan time can be improved by 4 to 11 times.

* This scan time is taken under certain conditions. The scan time varies with the program content and system configuration.

![High-speed Scan](image)

**Reduced I/O Response Time**

Improves productivity and quality by increasing response

Digital filter: Min. 0 ms

Although FA-M3 R enables fast processing thanks to improved scan time, it increases the ratio of input/output time. As a solution, attention was paid to the total response time (input → program execution (processing) → output) and setting variable time constants to “0” was made possible. This has improved response time (circuit delay: Min. 100 μs). In addition, use of the high-speed contact output module (F3XD16-3H) will enable data input with a response time of 10 μs.

**Instantaneous Response to Interruption**

Response time for interruptions from DC input modules is as high as 100 μs. This means that the system can immediately respond to changes in inputs, enabling instantaneous high-speed control.

**Dual-purpose Sensor Control Function**

Requires no separate controller.

Constant scan time for sensor control function: Min. 200 μs

For instance, to respond at intervals of a few hundred microseconds, it is normal that a fast-response compact PLC or sensor control function is installed separately from a PLC. The sensor control function of FA-M3 R offers multi-scan processing that enables high-speed response. This allows constant scan to be performed with main scan simultaneously without being influenced by the scan time that increases due to advanced function/performance and troubleshooting function of the system. This is suitable for applications in which a high level of machining accuracy is required, since one block (program) can be run at high-speed constant intervals (200 μs or more) apart from the main scan.

**Sequence CPU module**

F3SP26 / F3SP38 / F3SP53 / F3SP58

The number of PLC units can be reduced since two ladder programs can be executed by one CPU module.

**Scan time**

Conventional: 1 ms

With FA-M3 R: 1 ms

**Processing speed of sequence CPU**

<table>
<thead>
<tr>
<th>Instruction</th>
<th>Current</th>
<th>F3SP53, F3SP58</th>
<th>F3SP26, F3SP38</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bit/word</td>
<td>Scan</td>
<td>17.5 to 3.5 ms</td>
<td>70 ms</td>
</tr>
<tr>
<td>Timer</td>
<td>Scan</td>
<td>70 ms</td>
<td>70 ms</td>
</tr>
<tr>
<td>Compare</td>
<td>Scan</td>
<td>70 ms</td>
<td>70 ms</td>
</tr>
<tr>
<td>Add/subtract</td>
<td>Scan</td>
<td>100 μs</td>
<td>100 μs</td>
</tr>
<tr>
<td>Data (register)</td>
<td>Scan</td>
<td>100 μs</td>
<td>100 μs</td>
</tr>
</tbody>
</table>

**Backup by ROM pack**

RK10-0N 5,000 ladder steps
RK30-0N 20,000 ladder steps
RK33-0N 56,000 ladder steps
RK33-ON 100,000 ladder steps
RK37-ON 120,000 ladder steps

The number of PLC units can be reduced since two ladder programs can be executed by one CPU module.

**High-speed Instruction**

- Increases the speed for both basic and application instructions.
- Adds the function for common processing
- Increases the response/interruption speed.
- Provides speed-up of total of computation and common processing/sensor control function.
Reuse of Programs

Improved Effectiveness of Total Design from Planning to Maintenance

Object Ladder with High Reusability

Increases reusability by setting independent blocks and macros.

Local devices, which are key elements of object ladder, are assigned as physically independent devices, even though they are registered under the same device names in multiple blocks. As a result, they are not considered as the same devices. In addition, since a ladder program and local devices can be treated collectively, blocks can also be treated independently. This increases flexibility of reuse and custom design of programs, allowing development of the programs to be shared by two or more engineers. Similarly, a component macro is a macro into which local devices are integrated, allowing programs to be handled as components.

Easy Debugging with Index View

Makes observation easy and improves efficiency of reuse.

Optimization of jobs is the fundamental of efficiency improvement. Use of an index view during debug, which is inevitably required when developing or reusing a program, gives the feeling of improvement in the efficient reuse of an existing program.

By leaving circuit comments of a ladder program as they are and hiding the remaining program sections, the program can be treated as a content, helping the user to view the main structure of the program at a glance. This lets the user see the flow of the whole work picture prior to debug work, resulting in increased effectiveness.

Working with Familiar Environment - Windows

Makes easy to transfer data with Windows application programs.

WideField provides functions such as OLE support to make the best use of Windows. For instance, device and comment data can be copied from MS Excel to WideField simply by dragging it with the mouse. WideField also allows use of various Windows functions, including the Drag and Drop function for dragging circuits and copying them from WideField to MS Word in the preparation of design documents etc.

Module and I/O Slot Move Function

Allows collective change of install positions of I/O modules.

WideField allows easy modification of the program required as result of change of install positions, such as addition/deletion of I/O modules. Addition and deletion of options from the standard system configuration can be made collectively by software.
Remote Operation Maintenance and Engineering Via Ethernet

The remote OME* (Remote Operation Maintenance & Engineering) utilizing Ethernet, which is the de facto standard open network, provides various functions offering high-speed performance. FA-M3 is the only controller that allows programming via Ethernet. Since information such as images and audio can be transferred using a camera or telephone, verification of the situation is effective. This will provide immediate relief to developers for such worries as extra man-hours required due to minor trouble, excessively frequent business trips and delay of problem information.

Carries out both measurement and control even if it is small.
Builds an advanced inspection system.
Allows simple and high-speed communication with GP-IB devices.
Requires BASIC language only to build a system.
Requires ladder language only to communicate with GP-IB devices.

Best solution for automation of inspection system.

Remote OME is a general term given to the mechanism that enables remote maintenance of equipment located at distant sites. It has been proposed by and is a registered trademark of Yokogawa.

Ethernet Interface Module
F3LE01-5T

Network with a variety of functions

The Ethernet interface module is not only the best choice for information communications network but also provides remote OME that utilizes Ethernet communication functions. It allows the user to run a ladder program on a personal computer and provides various functions suitable for remote maintenance of the system, such as monitoring of system operation status and instruction data.

DeviceNet Interface Module
F3LD01-0N

Improves productivity using multi-vendor network.

This interface module conforms to DeviceNet®, which is the world's standard open field network. It has also been introduced as the standardized sensor bus by SEMI (Semiconductor Equipment and Materials Institute). It transfers various data, such as ON/OFF data, analog data and data consisting of several tens of bytes, as well as setting/maintenance information, and allows connection of up to 63 compatible devices of world wide manufacturers at the maximum transfer rate of 500kbps for the maximum transmission distance of 500 meters (at 125kbps). It supports a variety of applications flexibly, resulting in drastically improved productivity and ease of maintenance.

Sequence Interface Module
F3GB01-0N

GP-IB Communications Module

Best solution for automation of inspection system.

- Carries out both measurement and control even if it is small.
- Builds an advanced inspection system.
- Allows simple and high-speed communication with GP-IB devices.
- Requires BASIC language only to build a system.
- Requires ladder language only to communicate with GP-IB devices.

A Wide Range of Modules

ODVA (Open DeviceNet Vendor Association, Inc.) is a non-profit organization established by equipment vendors, for the main purpose of maintaining and promoting the DeviceNet specifications. The number of members is 240 or more including Yokogawa.

FA-M3 Value

Excellent Purchase Value

This model comes complete with CPU, power supply and I/O modules as a set at a reasonable price. However, it still inherits the abundant functions and excellent performance of the Range-free Multi-controller FA-M3 and supports a wide range from small (30 points) to large. You can start the use of the minimum range and expand the system later. The same spare parts can be used for FA-M3 of any CPU type, and additionally the FA-M3 programming tool "WideField" can be used.

Image Viewing via Ethernet

Network Camera for Remote Maintenance

AXIS 200 + Camera Server
The AXIS 200 full-color, digital network camera and the Camera Server from AXIS Communications bring you a real-time view of the remote location.

FA-M3
F3GB01-0N

GP-IB
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By CPU module

Data backup

10M bps

External trigger, general-purpose input, emergency stop

External contact input

Limit switch, home position, emergency stop

Limit switch, driver alarm, home position,

Limit switch, near home position, external trigger, emergency stop

Max. total distance: 1.4 km (when 3 stations are connected)

Half-duplex

Total distance: 15 m

External contact output

Deviation pulse clear signal

Servo ON, driver reset, brake OFF

Search speed

EIA RS-232-C compliant

Daisy chain, loop

2-wire fiber-optic cable

User-settable

encoder (Z phase) can be used

F3LC11-2N

F3LC11-1N

proximity-to-home position or limit, encoder (Z phase) can be used

User-settable by inputting home position,

external trigger or limit

0.1 to 2M pulses/s

0.1 to 249,750 pulses/s

0.1 to 250,000 pulses/s

Acceleration/deceleration

deacceleration method

Trapezoid

Trapezoid, 2-step, S-shaped (3-step)

Transmission method

Transmission distance

Transmission rate

Item Specifcation

F3LC11-1F / F3LC12-1F / F3LC11-1N / F3LC11-2N

F3LP02-0N

F3LP12-0N

F3LP02-0N

F3LP12-0N

F3LY04-0N / F3LY08-0N

F3NC11-0N / F3NC12-0N

F3NC51-0N / F3NC52-0N

F3YF04-0N / F3YF08-0N

Personal Computer Link Module

F3LC11-1F / F3LC12-1F / F3LC11-1N / F3LC11-2N

Fiber-Optic FA Bus Type 2 Module

F3LR02-0N

Free Expansion and Distribution of PLC

FA Link H Module

F3LP02-0N

F3LP12-0N

Uses twisted-pair cables to achieve the maximum transmission rate.

Fiber-optic FA Link H Module

F3LP12-0N

Uses fiber-optic cables to prevent noise influence.

This module is designed to build a remote I/O system using a fiber-optic FA bus. In addition to ultra high-speed transmission (1024 points/ms), it features a maximum distance of 500m between slave stations, a maximum total distance of 1.4km and allows up to 32 slave stations to be connected. This makes the module best suited to a multi distributed system. Connection can be made by various methods including star and daisy chain.

Establishes instantaneous transmission remote I/O.

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The FA link H module is fast. It uses shielded twisted-pair cables to achieve the maximum transmission distance of 10km at the transmission rate of 1.25Mbps and is the best choice to connect machines. The fiber-optic FA link H module uses fiber-optic cables to support the maximum transmission distance of 10km at the transmission rate of 1.25Mbps.
Provides a wide range of variation according to the type of I/O devices

- Allows ON/OFF control, PID control and heating/cooling PID control.
- Allows 4-point thermo-coupler or voltage (mV) input adjustment, 4-point resistance temperature detector (RTD) adjustment and 4-point DC voltage input control. Monitoring can be performed at 4 points.
- Provides the SPH function as a standard feature to ensure accurate control. The SPH function is employed in Yokogawa's temperature controllers to perform not only auto tuning but also suppress overshooting using fuzzy theory.
- Provides a maximum sampling interval of 125ms (500ms for 4 channels).
- Allows various operation mode switching including A/M switching and RUN/STOP switching.
- Allows complex loop control, such as cascade control, by combining ladder or BASIC application programs.
- Provides a loop-back function to allow easy debug of the system.
- Allows two alarm points to be set for each channel. In addition to eight alarm types, standby/no standby can also be selected.

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
<td>F3CT04-0N</td>
</tr>
<tr>
<td>Number of loops</td>
<td>4</td>
</tr>
<tr>
<td>Insulation method</td>
<td>Between I/O terminals and internal circuit</td>
</tr>
<tr>
<td>Input section</td>
<td>Input type</td>
</tr>
<tr>
<td>Input sampling interval</td>
<td>DMT ≤ 14 ms, 20 ms or 40 ms (2 channels), 125 ms (4 channels)</td>
</tr>
<tr>
<td>Input impedance</td>
<td>250 Ω or less</td>
</tr>
<tr>
<td>Output section</td>
<td>Output type</td>
</tr>
<tr>
<td>Output setting</td>
<td>Current/impedance (1)</td>
</tr>
<tr>
<td>Power supply</td>
<td>AC 220V (1CH), 2 ms (fixed)</td>
</tr>
<tr>
<td>Conversion speed</td>
<td>5.7 mV (one line common, floating type)</td>
</tr>
<tr>
<td>Load resistance</td>
<td>1M Ω or more</td>
</tr>
<tr>
<td>Absolute signal range</td>
<td>4 to 20 mA DC (Max 2 ms fixed)</td>
</tr>
<tr>
<td>Input range</td>
<td>No (per channel)</td>
</tr>
<tr>
<td>Control function</td>
<td>PID control, heating/cooling control</td>
</tr>
</tbody>
</table>

Peripheral Devices

The Following Peripheral Devices are Available for Use with FA-M3.

**Terminal Block Unit**

- TA40-0N: Thin connector size.
- Reduces the size of distribution panel.

**Optic-fiber Cable**

- KM65 / KM66 / KM67 / KM86: Cables for fiber-optic FA-bus module and fiber-optic FA link module.

**Simulation Input Switch**

- HG3D7LP: Very useful for the development and debugging of programs.
- Simulation switch for 30-point input terminal

**Blank Module**

- F3BL00-0N: Can be installed in empty slots to create a neat appearance.
**Temperature Control and Monitoring Module**

*F3CT04-0N / F3CT04-1N, F3CR04-0N / F3CR04-1N*

Provides a wide range of variation according to the type of I/O devices

- Allows ON/OFF control, PID control and heating/cooling PID control.
- Allows 4-point thermo-couple or voltage (mV) input adjustment, 4-point resistance temperature detector (RTD) adjustment and 4-point DC voltage input control. Monitoring can be performed at 4 points.
- Provides the loop-back function as a standard feature to ensure accurate control. The loop-back function is employed in Yokogawa’s temperature controllers to perform not only auto tuning but also suppress overshooting using fuzzy theory.
- Provides a maximum sampling interval of 125ms (500ms for 4 channels).
- Allows various operation mode switching including A/M switching and RUN/STOP switching.
- Allows complex loop control, such as cascade control, by combining ladder or BASIC application programs.
- Provides a loop-back function to allow easy debug of the system.
- Allows two alarm points to be set for each channel. In addition to eight alarm types, standby/no standby can also be selected.

**Analog Input Module**

*F3AD04-0N / F3AD08-1N*

High-speed conversion, high accuracy and high level of noise proof

- The external input signal range can be selected from three ranges (0 to 5V/1 to 10V, and output signal range can be selected from two ranges (-10 to 10V/4 to 20mA DC).
- Four or eight inputs can be read and scanned as they are switched by multiplexer. One D/A converter output is distributed to 2 or 4 output points by multiplexer, and the output for each output point is retained.
- Introduction of input filter and scaling processing function allows the user to process data in a way that suits the user’s application.

**Analog Output Module**

*F3DA02-0N / F3DA04-1N / F3DA08-5N*

- High-speed conversion/high accuracy and high level of noise proof
- The external input signal range can be selected from three ranges (0 to 5V/1 to 10V, and output signal range can be selected from two ranges (-10 to 10V/4 to 20mA DC).
- Four or eight inputs can be read and scanned as they are switched by multiplexer. One D/A converter output is distributed to 2 or 4 output points by multiplexer, and the output for each output point is retained.
- Introduction of input filter and scaling processing function allows the user to process data in a way that suits the user’s application.

**Peripheral Devices**

The Following Peripheral Devices are Available for Use with FA-M3.

**Terminal Block Unit**

*TA40-ON / TA60-ON*

Thin connector size.

Reduces the size of distribution panel.

**Connector Terminal Block**

*TA50-CN / TA60-ON*

Various kinds of connector terminal block with various cable lengths.

**Optic-fiber Cable**

*KM60 / KM61 / KM62 / KM67*

Cables for fiber-optic FA-bus module and fiber-optic FA link module

**Simulation Input Switch**

*D9307LSP*

Very useful for the development and debugging of programs.

Simulation switch for 30-point input terminal

**Blank Module**

*F3BL00-0N*

Can be installed in empty slots to create a neat appearance.
**Performance Specifications/Ladder Sequence Devices**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control method</td>
<td>Repeating operation (by stored program)</td>
</tr>
<tr>
<td>J0 control method</td>
<td>Refresh method</td>
</tr>
<tr>
<td>Programming language</td>
<td>Structured-ladder language, object ladder language, mnemonic language</td>
</tr>
<tr>
<td>Number of I/O points</td>
<td>Max. 2048</td>
</tr>
<tr>
<td>Number of I/O points</td>
<td>Max. 10K steps</td>
</tr>
<tr>
<td>Number of instruction</td>
<td>Basic instruction: 25 types</td>
</tr>
<tr>
<td>Instruction execution time</td>
<td>Basic instruction: 0.18 to 0.36 µs/instruction</td>
</tr>
<tr>
<td>Scan time observation time</td>
<td>10 to 200ms variable (settable on 1ms basis)</td>
</tr>
</tbody>
</table>

**Performance**

- Power-on or restoration of power after power failure
- Auto start, auto restart (auto recording of power ON/OFF time and momentary power failure occurrence time)

**Other functions**

- Sensor control function (scan time 200 µs to 25 ms)
- Configuration function (device capacity, data lock-up range at power failure, designation of output at error)
- Constant scan function (1ms to 190 ms, selectable on 0.1 ms basis)
- Debug function (forced set/reset, online edit etc.)
- Error log save function (64 terms), user-definable log save function
- Data/clock function (year/month/day/hour/minute/second/day of the week)
- Program protect function
- Program data write to ROM
- Sampling trace function (*1)
- Personal computer link function (transmission rate 15Kbps (*2)

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input relay</td>
<td>X: 2048 points</td>
</tr>
<tr>
<td>Output relay</td>
<td>I: 4096 points</td>
</tr>
<tr>
<td>Shared relay</td>
<td>L: 2048 points</td>
</tr>
<tr>
<td>Extended relay</td>
<td>E: 2048 points</td>
</tr>
<tr>
<td>Special relay</td>
<td>M: 2048 points</td>
</tr>
<tr>
<td>Timer</td>
<td>100 µs timer: 512 points</td>
</tr>
<tr>
<td></td>
<td>100ms timer: 3072 points</td>
</tr>
<tr>
<td>Counter</td>
<td>C: 512 points</td>
</tr>
<tr>
<td>Data register</td>
<td>D: 512 points</td>
</tr>
<tr>
<td>File register (hold type)</td>
<td>32768 points</td>
</tr>
<tr>
<td>Link register</td>
<td>W: 2048 points</td>
</tr>
<tr>
<td>Special register</td>
<td>Z: 512 points</td>
</tr>
<tr>
<td>Index register</td>
<td>V: 32 points</td>
</tr>
<tr>
<td>Shared register</td>
<td>R: 1024 points</td>
</tr>
<tr>
<td>Extended shared register</td>
<td>1024 points</td>
</tr>
<tr>
<td>Label</td>
<td>164 points</td>
</tr>
</tbody>
</table>

**Ladder sequence device**

- 16 types (including remote I/O)

**General Specifications**

- Control method
  - Interpreter type (with pre-run function)
- Number of tasks
  - 1
- Program capacity
  - 12K bytes (ROM can be used)
- Shared register
  - Max. 1024 points

**Other functions**

- Configuration function (setting user/programmer area size etc.)
- Program development and debug function
- Common data access (write/read) by personal computer link module
- Program resident function
- Program data write to ROM

* Shared relays and extended shared relays/registers cannot be used.

**Software Packages**

- FA-M3 programming tool: WideField
- Sequence programming tool for Windows: POMPUSCAT

**Performance Specifications for BASIC CPU Modules**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programming language</td>
<td>YM-BASIC/FA</td>
</tr>
<tr>
<td>Control method</td>
<td>Interpreter type (with pre-run function)</td>
</tr>
<tr>
<td>Number of tasks</td>
<td>1</td>
</tr>
<tr>
<td>Program capacity</td>
<td>12K bytes (ROM can be used)</td>
</tr>
<tr>
<td>Shared register</td>
<td>Max. 1024 points</td>
</tr>
</tbody>
</table>

**Other functions**

- Configuration function (setting user/programmer area size etc.)
- Program development and debug function
- Common data access (write/read) by personal computer link module
- Program resident function
- Program data write to ROM

* Shared relays and extended shared relays/registers cannot be used.

**Development tool**

- Ladder diagram support program M3: FA-M3-WDG
- Sequence programming tool for Windows: POMPUSCAT
- BASIC programming tool M3 for Windows: SF3BP30
### Performance Specifications/Ladder Sequence Devices

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control method</td>
<td>F3SP26-0N</td>
</tr>
<tr>
<td>I/O control method</td>
<td>F3SP21-0N</td>
</tr>
<tr>
<td>Programming language</td>
<td>Structured-ladder language, object ladder language, mnemonic language</td>
</tr>
<tr>
<td>Number of I/O points</td>
<td>Max. 2048</td>
</tr>
<tr>
<td>Program capacity (ROM can be used)</td>
<td>Max. 10K steps</td>
</tr>
<tr>
<td>Number of instruction</td>
<td>25 types</td>
</tr>
<tr>
<td>Instruction execution time</td>
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</tr>
<tr>
<td>Scan time observation</td>
<td>10 to 200ms variable (settable on 1ms basis)</td>
</tr>
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</table>

**Other functions**
- Sensor control function *1* (scan time 200 µs to 25 ms)
- Configuration function (device capacity, data lock-up range at power failure, designation of output at error)
- Constant scan function (1ms to 190 ms, settable on 0.1 ms basis)
- Debug function (forced set/reset, online edit etc.)
- Error log save function (64 terms, user-definable log save function)
- Data/stock function (year/month/day/hour/minute/second/day of the week)
- Program protect function
- Program data write to ROM
- Sampling trace function *1*
- Personal computer link function (transmission rate 115K bps)

### General Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output relay</td>
<td>V</td>
</tr>
<tr>
<td>Internal relay</td>
<td>I</td>
</tr>
<tr>
<td>Special relay</td>
<td>M</td>
</tr>
<tr>
<td>Timer</td>
<td></td>
</tr>
<tr>
<td>Counter</td>
<td>C</td>
</tr>
<tr>
<td>Data register</td>
<td>D</td>
</tr>
<tr>
<td>Link register (solid type)</td>
<td>B</td>
</tr>
<tr>
<td>Link register (solid type)</td>
<td>W</td>
</tr>
<tr>
<td>Special register</td>
<td>Z</td>
</tr>
<tr>
<td>Index register</td>
<td>V</td>
</tr>
<tr>
<td>Shared register</td>
<td>R</td>
</tr>
<tr>
<td>Power-on or restoration of power after power failure</td>
<td>Auto start, auto restart (auto recording of power ON/OFF time and momentary power failure occurrence time)</td>
</tr>
</tbody>
</table>

### Software Packages

<table>
<thead>
<tr>
<th>Category</th>
<th>Name</th>
<th>Type Name</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development tool</td>
<td>FA-M3 programming tool WideField</td>
<td>SF610-ECW</td>
<td>Windows 95, 98, NT4.0 compatible, English version, CD-ROM</td>
</tr>
<tr>
<td></td>
<td>Ladder diagram support program M3</td>
<td>SF510-ECW</td>
<td>Windows 95, NT4.0 compatible, English version, CD-ROM</td>
</tr>
<tr>
<td></td>
<td>Sequence programming tool for Windows POPMUSCAT</td>
<td>SF850-ECW</td>
<td>Windows 95, NT compatible English version, CD-ROM</td>
</tr>
<tr>
<td></td>
<td>Programming tool M3 for Windows</td>
<td>SF560-ECW</td>
<td>Windows 95, NT4.0 compatible, English version, CD-ROM</td>
</tr>
</tbody>
</table>

*1: Not available with F3SP08 and F3SP21.
*2: The maximum number of settable points is 16 for F3SP20, F3SP30, F3SP52 and F3SP58.
*3: The maximum number of settable points is 16 for F3SP20 and F3SP21.
**Specification**

### Component List

<table>
<thead>
<tr>
<th>Category</th>
<th>Name</th>
<th>Type name</th>
<th>Style</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Base</strong></td>
<td>Module</td>
<td>F3BU04-0N</td>
<td>Power supply</td>
<td>4 slots (CPU+I/O) power supply</td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td>Power supply</td>
<td>F3BU09-0N</td>
<td>Power supply</td>
<td>F3BU10-0N, 10 slots (CPU+I/O) power supply</td>
</tr>
<tr>
<td><strong>CPU</strong></td>
<td>Sequence CPU module</td>
<td>F3PU10-0N</td>
<td>100 to 240 V AC (for 4 and 6 slots)</td>
<td>24 V DC (for 4 and 6 slots)</td>
</tr>
<tr>
<td><strong>Sequence CPU module</strong></td>
<td>F3PS21-0N</td>
<td>10 5% basic instruction</td>
<td>18 µs or longer, with memory</td>
<td></td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>ROM pack</td>
<td>F3VS21-0N</td>
<td>10 5% basic instruction</td>
<td>18 µs or longer, with memory</td>
</tr>
<tr>
<td><strong>Input module</strong></td>
<td>F3VS26-1N</td>
<td>12 V DC, positive common</td>
<td>16 points (high-speed input)</td>
<td></td>
</tr>
<tr>
<td><strong>Output module</strong></td>
<td>F3YO62-1N</td>
<td>2 RS-232-C ports, modem interface function F3LC12-1F</td>
<td>2 RS-232-C ports, advanced interface function</td>
<td></td>
</tr>
<tr>
<td><strong>Analog I/O module</strong></td>
<td>F3WV1-0F</td>
<td>-10-10 V DC, 36 points</td>
<td>4-20 mA AC output, 2 points</td>
<td></td>
</tr>
</tbody>
</table>

### Power supply

- **Output**: 240 V AC, 15 A, 3-phase output
- **Input**: 12 V DC, 8 points (4 slots)

### CPU

- **CPU module**: F3BU04-0N
- **Sequence CPU module**: F3PU10-0N
- **Input module**: F3VS26-1N
- **Output module**: F3YO62-1N
- **Analog I/O module**: F3WV1-0F

### Memory

- **ROM pack**: F3VS21-0N

### Input module

- **Input module**: F3VS26-1N

### Output module

- **Output module**: F3YO62-1N

### Analog I/O module

- **Analog I/O module**: F3WV1-0F

### External Dimensions

<table>
<thead>
<tr>
<th>Base module</th>
<th>F3BU04-0N</th>
<th>4</th>
<th>3</th>
<th>147</th>
</tr>
</thead>
<tbody>
<tr>
<td>F3BU09-0N</td>
<td>6</td>
<td>5</td>
<td>205</td>
<td></td>
</tr>
<tr>
<td>F3BU10-0N</td>
<td>9</td>
<td>8</td>
<td>322</td>
<td></td>
</tr>
<tr>
<td>F3BU13-0N</td>
<td>13</td>
<td>12</td>
<td>439</td>
<td></td>
</tr>
<tr>
<td>F3BU16-0N</td>
<td>16</td>
<td>15</td>
<td>527</td>
<td></td>
</tr>
</tbody>
</table>

*The number of available I/O slots is multiplied when one CPU module is installed.*
**Component List**

<table>
<thead>
<tr>
<th>Category</th>
<th>Name</th>
<th>Type name/Style</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base</td>
<td>Base module</td>
<td>F3BU04-0N, F3BU05-0N, F3BU06-0N, + 4 slots (CPU+I/O)</td>
</tr>
<tr>
<td>Power supply</td>
<td>Power supply module</td>
<td>F3BU05-0N, F3BU06-0N, + 4 slots (CPU+I/O)</td>
</tr>
<tr>
<td>CPU</td>
<td>Sequence CPU module</td>
<td>F3SP24-0N, F3SP25-0N, F3SP26-0N, + 3 slots (CPU+I/O)</td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td></td>
<td>F3PU00-0N, + 4 slots (CPU+I/O)</td>
</tr>
<tr>
<td><strong>Input module</strong></td>
<td></td>
<td>F3XI07-0N, DC input (sink/source), 0 V AC, 30 points</td>
</tr>
<tr>
<td>Memory</td>
<td>ROM pack</td>
<td>F3KR23-0N, F3KR24-0N, F3KR25-0N, + 4 slots (CPU+I/O)</td>
</tr>
<tr>
<td><strong>I/O module</strong></td>
<td></td>
<td>F3PD20-0N, DC input (sink/source), 0 V AC, 30 points</td>
</tr>
<tr>
<td><strong>Output module</strong></td>
<td></td>
<td>F3YB20-0N, F3YB21-0N, F3YB22-0N, + 4 slots (CPU+I/O)</td>
</tr>
<tr>
<td><strong>IO module</strong></td>
<td></td>
<td>F3ZS06-0N, F3ZS16-0N, F3ZS18-0N, + 4 slots (CPU+I/O)</td>
</tr>
<tr>
<td>Analog I/O/ temperature module</td>
<td>Analog input module</td>
<td>F3WD06-0N, F3WD07-0N, F3WD08-0N, + 4 slots (CPU+I/O)</td>
</tr>
<tr>
<td></td>
<td>Analog output module</td>
<td>F3DA05-0N, F3DA06-0N, F3DA07-0N, + 4 slots (CPU+I/O)</td>
</tr>
<tr>
<td></td>
<td>Temperature control and monitoring module</td>
<td>F3YD14-5A, F3YD15-5A, F3YD16-5A, + 4 slots (CPU+I/O)</td>
</tr>
<tr>
<td></td>
<td>CPU controller module</td>
<td>F3YD17-5A, F3YD18-5A, F3YD19-5A, + 4 slots (CPU+I/O)</td>
</tr>
</tbody>
</table>

*1: The rail mount kit must be purchased separately.
2: The connector for external connection and connector cover must be purchased separately.
(Rule) For coating treatment, contact Yokogawa's sales office.

**External Dimensions (when DIN rail is used)**

<table>
<thead>
<tr>
<th>Base module</th>
<th>F3BU04-0N</th>
<th>F3BU05-0N</th>
<th>F3BU06-0N</th>
<th>F3BU07-0N</th>
<th>F3BU08-0N</th>
<th>F3BU09-0N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>43 mm</td>
<td>58 mm</td>
<td>78 mm</td>
<td>105 mm</td>
<td>136 mm</td>
<td>167 mm</td>
</tr>
<tr>
<td>Width</td>
<td>73 mm</td>
<td>98 mm</td>
<td>130 mm</td>
<td>166 mm</td>
<td>196 mm</td>
<td>237 mm</td>
</tr>
<tr>
<td>Depth</td>
<td>140 mm</td>
<td>174 mm</td>
<td>214 mm</td>
<td>252 mm</td>
<td>293 mm</td>
<td>337 mm</td>
</tr>
</tbody>
</table>

**Category List**

<table>
<thead>
<tr>
<th>Category</th>
<th>Name</th>
<th>Type name/Style</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Communicators module</strong></td>
<td>F3SC22-1A</td>
<td>Ladder 120K steps, basic instruction 0.0175</td>
</tr>
<tr>
<td></td>
<td>F3XP02-0N</td>
<td>Ladder 120K steps, basic instruction 0.045</td>
</tr>
<tr>
<td></td>
<td>F3XP03-0N</td>
<td>Ladder 30K steps, basic instruction 0.045</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ladder 20K steps, basic instruction 0.005</td>
</tr>
<tr>
<td><strong>Counter/ positioning module</strong></td>
<td></td>
<td>Ladder 10K steps, basic instruction 0.005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ladder 5K steps, basic instruction 0.005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ladder 1K steps, basic instruction 0.005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ladder 50 steps, basic instruction 0.005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ladder 5 steps, basic instruction 0.005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ladder 2 steps, basic instruction 0.005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ladder 1 step, basic instruction 0.005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ladder 0 step, basic instruction 0.005</td>
</tr>
<tr>
<td><strong>Peripheral Devices</strong></td>
<td></td>
<td>F3SC22-1A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F3XP02-0N</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F3XP03-0N</td>
</tr>
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<td>F3XP04-0N</td>
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<td>F3XP05-0N</td>
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<td></td>
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<td>F3XP06-0N</td>
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<td>F3XP07-0N</td>
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<td>F3XP08-0N</td>
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<tr>
<td></td>
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<td>F3XP09-0N</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F3XP10-0N</td>
</tr>
<tr>
<td><strong>Peripheral device</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Spare</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Specification**

<table>
<thead>
<tr>
<th>Category</th>
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<th>Type name/Style</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CPU port / D-sub 9-pin contact</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cable for programming tool</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cable for terminal block</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cable for opti Fiber FA bus</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Spare parts</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*3: The connector for external connection and connector cover must be purchased separately.
(Rule) For coating treatment, contact Yokogawa's sales office.
## Manuals

<table>
<thead>
<tr>
<th>Name</th>
<th>Document No.</th>
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</thead>
<tbody>
<tr>
<td>Hardware Manual</td>
<td>IM34M6C11-01E</td>
</tr>
<tr>
<td>Analog Input/Output Modules</td>
<td>IM34M6H11-01E</td>
</tr>
<tr>
<td>Serial Communication Modules</td>
<td>IM34M6H21-01E</td>
</tr>
<tr>
<td>Ladder Communication Modules</td>
<td>IM34M6H22-01E</td>
</tr>
<tr>
<td>Ethernet Interface Module</td>
<td>IM34M6H24-01E</td>
</tr>
<tr>
<td>DeviceNet Interface Module</td>
<td>IM34M6H28-01E</td>
</tr>
<tr>
<td>Personal Computer Link Modules</td>
<td>IM34M6H41-02E</td>
</tr>
<tr>
<td>FA-LINK H Module and Fiber-optic FA-LINK H Module</td>
<td>IM34M6H43-01E</td>
</tr>
<tr>
<td>Fiber-optic FA-bus Module and Fiber-optic FA-bus Type 2 Module</td>
<td>IM34M6H45-01E</td>
</tr>
<tr>
<td>High-speed Counter Modules</td>
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*1: Supplied with a software package.*
*2: FA-M3 Programming Tool WideField (IM34M6Q14-01E) and FA-M3 Programming Tool WideField-Application (IM34M6Q14-02E) are supplied as a set, but not supplied with a software package.*