

General Specifications

GS 34P02D01-01E

Models NT105□J
NT110□J, NT120□J
NT130□J, NT140□J
ASTMAC Base Type



■ GENERAL

The ASTMAC (*1) is software that provides environments for configuring and running a production line control system combined with controllers and I/O devices such as programmable logic controllers (PLCs).

There are five ASTMAC Base Types that differ in data server capacity (i.e., the maximum number of implementable objects): SS, S, M, L, and LL. In addition, each type is available in two versions:

Full-time version: Has both development and runtime environments and can be used for all purposes from configuring a system, developing and debugging applications, to running the developed applications.

Run-time version: Offers only the runtime environment. The full-time version is required for development such as configuring a system, and developing and debugging applications.

*1: ASTMAC is Japanese domestic market only (Not sale for overseas).

■ SYSTEM REQUIREMENTS

Personal computer: PC/AT-compatible computer

CPU: At least Pentium II 400 MHz (Pentium III 700 MHz recommended)

Memory: At least 128 MB (256 MB recommended)

Hard disk: At least 2 GB

Parallel (Centronics) or USB port :

Required to install an ID module.

CD-ROM drive: A CD-ROM drive that is supported by the operating system specified at the bottom is required.

Ethernet adapter: A 10BASE-5, 10BASE-T, or 100BASE-TX adapter that is supported by the operating system specified at the bottom is required.

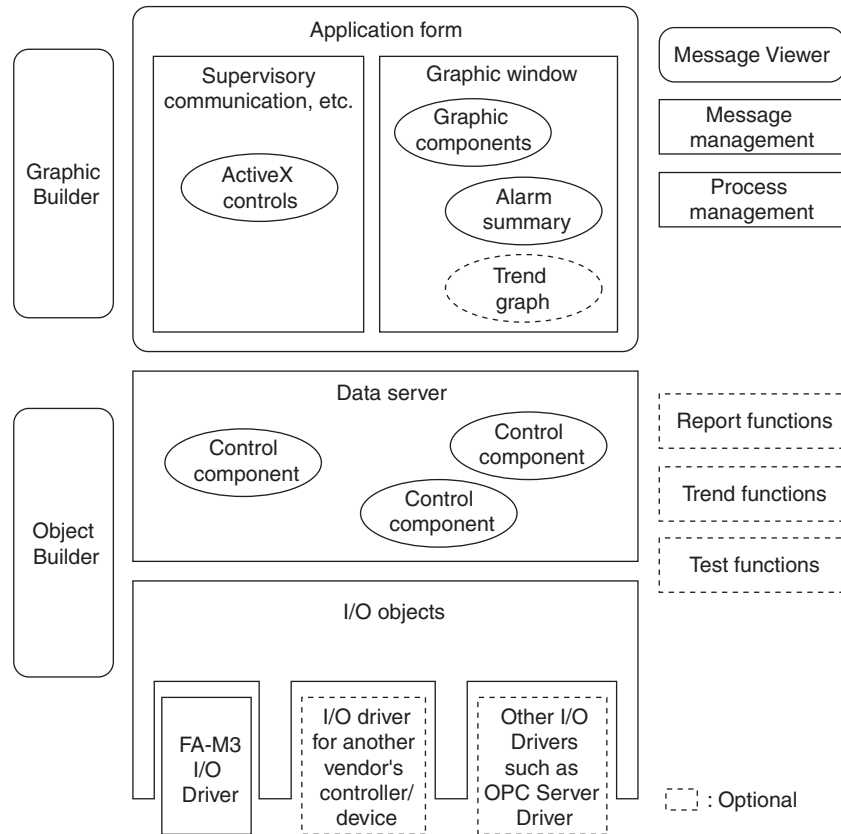
Backup storage: An MO, digital audio tape, CD-RW or other removable storage drive supported by the operating system specified at the bottom is required for backup.

Display: At least 1024 x 768 pixels, at least 256 colors (A display with a resolution of 800 x 600 pixels can be used for maintenance, but the said specification is recommended for runtime operation.)

Printer: A laser printer or color printer for A4-size paper (that is supported by the operating system specified at the bottom) is required. An ESC/P code-enabled serial printer is required for alarm printing.

Operating system: Windows 2000 Professional Service Pack 2

■ SOFTWARE CONFIGURATION



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● Data Server

Using I/O objects, the data server exchanges data with field devices and performs various processes for field data. In particular, control objects in the data server perform data acquisition and processing. The acquired data and processing results can be read via an OLE automation interface.

The data server implements Visual Basic Application Edition (VBA), allowing functions provided with each control object to be enhanced and multiple control objects to interlink with each other.

The user can group two or more control objects comprising a particular unit of functions into one and can make a copy of each group.

General Specifications of Data Server

- Implementable objects (*1):
 - SS: Up to 100
 - S: Up to 200
 - M: Up to 1000
 - L: Up to 2000
 - LL: Up to 5000 (*2)
- Connectable clients (*3): Up to 16
- Connectable I/O devices (*4): Up to 32
- I/O data update interval:
 - Ethernet: 1.0 to 3600.0 seconds
 - RS-232C: 1.0 to 3600.0 seconds
- Master stations per control LAN: Up to 4

- *1: An implementable object controls a set of data such as inputs and outputs. An object that can control data exceeding 128 bytes in size, such as an extended text object, is not counted as one object but is counted as the number incremented by 1 for each 128 bytes when assessing the capacity. For example, a single object handling 32768 bytes is counted as 256 objects because 32768 divided by 128 is 256. Furthermore, all objects in the group are counted when grouping objects into one.
- *2: VBA scripts can be coded in up to 2000 objects in the data server from among these 5000. Each application form can access all of the 5000 objects.
- *3: The number of connectable clients indicates the number of application programs that can concurrently connect to the data server. Application programs include application forms created using Graphic Builder and other application programs created in Visual Basic, or the like, regardless of whether they are running in the local or a remote PC.
- *4: The number of connectable I/O devices indicates the controllers and devices connected to the data server via I/O objects.

Guideline of I/O Data Acquisition Capability

The maximum number of I/O data that can be acquired by ASTMAC depends on various factors including the types of field devices connected, connection method, types of data read/written, network load, and operation status. In particular, this number greatly varies depending on whether a heavy-load program such as a window application is running. As a guideline, a PC that meets the minimum specifications of the system requirements can update the following I/O data at one-second intervals:

- Digital data: 1024 bits (1024 DI tags)
- Analog data: 256 words (256 AI tags)

These figures are not guaranteed values but are based on the performance measured under the following premises:

- Ethernet connection
- Historical data acquisition is performed for 256 analog tags at 30-second intervals.
- Values of contiguous elements in an FA-M3 controller are acquired.

Control Objects

There are two kinds of standard control objects provided individually as independent components with diverse functions: device tag objects and application support objects.

Device tag objects: Reads and writes data from/to controllers and I/O devices using an I/O driver, and carries out I/O processing including various data conversions and alarm detection.

Model	Description	Function
DI	Digital input object	Inputting 1-bit data
DO	Digital output object	Outputting 1-bit data
DR	Digital register object	Inputting/outputting 1-bit data array (having up to 256 array elements)
AI	Analog input object	Inputting 1-word data
AO	Analog output object	Outputting 1-word data
AR	Analog register object	Inputting/outputting 1-word data array (having up to 64 array elements)
TXT	Text object	Inputting/outputting character data of up to 128 bytes
XAI	Extended analog input object	Inputting 2-word data
XAO	Extended analog output object	Outputting 2-word data
XAR	Extended analog register object	Inputting/outputting 2-word data array (having up to 32 array elements)
XTX	Extended text object	Inputting/outputting character data of up to 4096 bytes

T01E.EPS

Application support objects: Features functions for supporting actions by an application, such as generating a time trigger.

Model	Description	Function
TMR	Timer object	Starting a VBA program at a specified time or at specified intervals
EVT	Event object	Receiving an event
BUF	Buffer object	Buffer for storing specified data values

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In addition to the aforementioned standard objects, there are optional objects referred to as multitasking support objects. See the respective documentation.

Multi-tasking support objects: GS 34P02H04-01E

● **I/O Objects and I/O Drivers**

An I/O object is a program to connect a field device or controller such as a programmable logic controller to the data server, and carries out communication with a field device in response to a read/write request from a device tag object inside the data server. I/O drivers encapsulate the unique interface required for each field device and allow the data server and an application program to access the various field devices via a common interface. An I/O driver provides the following functions:

- Data input/output
- Reception of asynchronous events from a controller
- Control of controller's inherent functions

The I/O driver for FA-M3 Series controllers comes as standard.

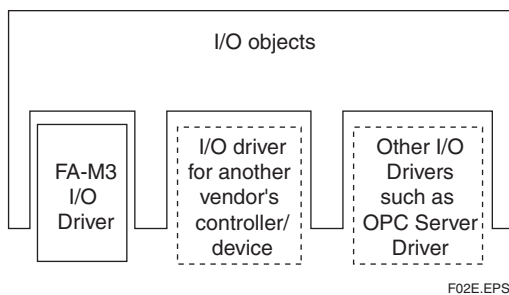


Figure Concept of I/O Objects and I/O Drivers

Specifications of I/O Driver for Yokogawa FA-M3 Series Controllers (Provided As Standard)

Connection Interface:

- Ethernet: UDP/IP (F3LE01-5T Rev. 3 or later)
- RS-232C: Asynchronous, half-duplex, 300 to 19200 bps

Connectable controllers: Up to 32 main units

Functions: Reading and writing of sequence elements, reception of asynchronous data, time setting

● **Object Builder**

Object Builder presents an integrated environment in which the user can make settings for the data server and perform debugging, and provides intuitive interfaces for the user to:

- Define I/O objects.
- Define control objects.
- Define alarms.
- Develop and debug VBA programs.
- Run Security Builder.
- Run Historical Data Acquisition Builder and Report Builder that are available as optional packages.
- Run optional simulation functions that are available as an optional package.

● **Graphic Builder and Application Forms**

Graphic Builder presents an environment in which the user can create a file containing embedded ActiveX controls. Using Graphic Builder, the user can simply develop application programs such as graphic windows by pasting sophisticated ActiveX controls provided with ASTMAC and other ActiveX controls available in the market (*1) to forms.

*1: To use a commercially available ActiveX control, it needs to be installed in all computers that run it.

An application form is almost the same as a form in Graphic Builder, but when a form is implemented after being developed, it is called an application form. It has the following functions:

- Graphics drawing
- Animation
- Implementation of sophisticated graphical ActiveX controls
- Browsing of and link with objects in data server
- VBA implementation
- Concurrent running of multiple application forms

Controls Provided As Standard

ActiveX controls:

- RSData: Basic data presentation; displays a data value as a number or characters.
- RSWheel: Panel-mounted thumb wheel emulator; displays an increment/decrement switch.
- RSVessel: Displays a desired, enclosed graphic shape and allows color fill control.
- RSGauge: Graphical data presentation; displays a data value in various gauge-like forms.
- RSSlider: Presentation of a graphical data setting element; displays a potentiometer-like slider for data setting.
- RSCmpare: Compares multi-status data; displays desired graphics depending on the comparison result.
- RSButton: Displays a switch in various forms including a pushbutton and toggle switch.
- AlarmFsX2: Alarm summary display
- MsgHistX: Displays message log file contents.
- YfsClock: Interval timer or specific-time timer
- PDemand: Displays power demand graph.
- RunAsDialog: Dialog box for logging on as a different user when accessing security
- FacePlateX2: Displays an instrument faceplate.
- YfslsamMt: Allows an indexed sequential access method (ISAM) file to be imported, exported, and restored.

VBA controls: Frame, Label, CommandButton, TextBox, ListBox, ComboBox, CheckBox, OptionButton, ToggleButton, ScrollBar, TabStrip, SpinButton, Image

● **System Support Functions**

Message Management

Message management performs integrated management of error and alarm messages occurring in the ASTM MAC system programs and application programs as well as user operation records and process event message. Message management is intended to help operation and maintenance of the entire system covering not merely the system programs but also application programs.

Message Types Handled by Message Management

Message Type	Generation Source	Description
System messages	System program	Messages generated by an ASTM MAC system program
User messages	Application program	Messages of general information detected by an application program, such as user operation records
User alarms		Messages of an alarm detected by an application message
Process messages	Control object	Messages of an event detected by a device tag object in the data server, such as process events
Process alarms		Messages of an alarm detected by a device tag object

T03E.EPS

These messages generated in the data server or by an application program are stored to a rotary file referred to as the message log file, which can contain up to 5000 messages. The output destinations of messages can be selected from:

- Alarm summary (alarm messages only)
- Logging to the message log file
- Logging to a text file
- Display in a dialog box
- Voice output
- Serial printer
- Notification to an application program

Process Management

Process management performs integrated management of the ASTM MAC system programs and application programs, allowing automatic start and shutdown of these programs. In particular, process management can:

- Start and shut down the ASTM MAC system.
- Manage and control ASTM MAC's operation mode.
- Automatically shut down previously specified application programs.

■ MODEL AND SUFFIX CODES

Software Media

		Description
Model	NT201AJ	VDS/ASTMAC software media
Suffix Codes	-P	Programs (including electronic documentation)
	C	CD-ROM
	1	Always 1
	1	Always 1
	E	English version

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License

		Description
Models	NT105FJ	SS-size Base Type, full-time version
	NT105RJ	SS-size Base Type, run-time version
	NT110FJ	S-size Base Type, full-time version
	NT110RJ	S-size Base Type, run-time version
	NT120FJ	M-size Base Type, full-time version
	NT120RJ	M-size Base Type, run-time version
	NT130FJ	L-size Base Type, full-time version
	NT130RJ	L-size Base Type, run-time version
	NT140FJ	LL-size Base Type, full-time version
	NT140RJ	LL-size Base Type, run-time version
Suffix Codes	-L	License
	U	ID module for USB port
	P	ID module for printer (Centronics) port
	1	Always 1
	1	Always 1
	E	English version

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■ RELATED DOCUMENTS

- ASTMAC Overview, GS 34P02A03-01E
- Report Package, GS 34P02H01-01E
- Trend Package, GS 34P02H02-01E
- Test Package, GS 34P02M01-01E
- Multi-task Package, GS 34P02H04-01E
- Power Monitor Driver, GS 34P02H06-01E
- MELSEC Driver, GS 34P02G01-01E
- SYSMAC Driver, GS 34P02G06-01E
- OPC Server Driver, GS 34P02G08-01E
- Custom Driver, GS 34P02H41-01E

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■ ORDERING INSTRUCTIONS

Specify the model and suffix codes.