General Specifications

FA-M3
Software Packages

GS 34M06N01-01E

Contents

* SF6□□-MCW software applications are released as unified multi-lingual products.
* SF51□, SF560, SF610, SF620, SF661-ECW and SF662-ECW are transferred to GS 34M06N01-99E.

Blank Page

General Specifications

SF630-MCW
FA-M3 Programming Tool WideField3 R4

FA-M3

General

The SF630-MCW FA-M3 Programming Tool WideField3 for the FA-M3 sequence CPU modules allows a user to create and debug programs, as well as manage applications.

With even better support for program reuse and the new script language, it dramatically increases programming efficiency.

Also, the use of the Live Logic Analyzer function for high-speed applications debugging**1 and FA-M3 Simulation Software Virtual-M3**2 can slash the debugging time.

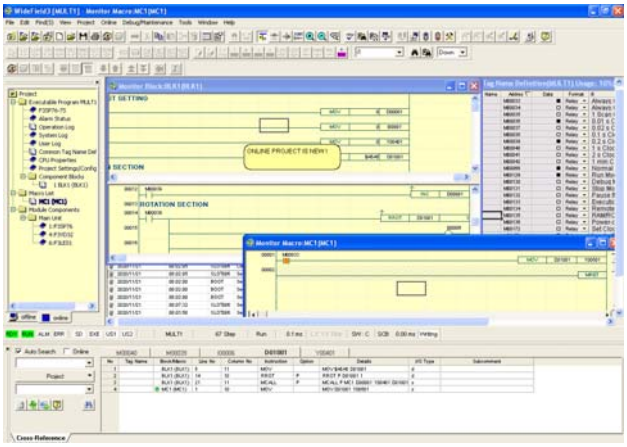
Features

General

- WideField3 is downward compatible with WideField (SF610) and WideField2 (SF620).
- Multiple copies of WideFIeld3 can run concurrently.
- Windows 10 (x86/x64 version)**2, Windows 8/8.1 (x86/x64 version)**1, and Windows 7 (x86/x64 version) are supported.
- WideField3 can be toggled between English and Japanese language modes.

Operation

- Screen display, current folder and other settings can be restored, removing the need to re-configure after startup.
- All tag name definition data can be edited in one window.
- Menus support customizable shortcut keys.

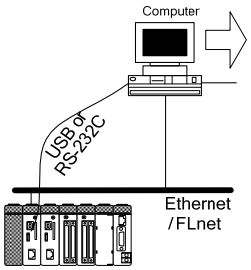


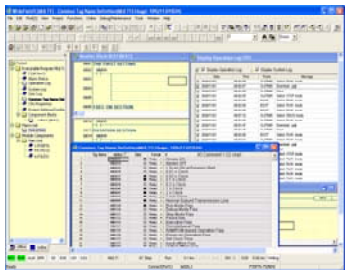
- All instructions and connection lines can be entered using the keyboard or function keys.
- A user can search devices, instructions and comments of an entire project using varied conditions and jump from the search results window directly to the appropriate location in a program edit or monitor window.
- Cross references are displayed so a user can check device usage during programming. In the program edit screen, a cross reference for the device that the mouse cursor is over is highlighted.**1
- Any part of a circuit can be copied and pasted between programs.
- Find/replace function permits the use of the wildcard character.

- Functions are easily accessible from the project window.
- Instructions and I/O comments can be entered at the same time.**1
- Columns can be inserted anywhere in the entire circuit, resulting in an instruction being added easily.**1
- I/O comments can be added and modified in online mode.
- Automatic input completion speeds up data entry of tag names, addresses and structures.
- Allows searching for hidden devices that are not displayed on the screen but are actually used in long word and double long word instructions and other instructions involving multiple words.
- Line ranges can be selected by specifying start and end lines, without dragging a mouse.
- The device list screen can be displayed in the output window. Also, device usage in the program edit screen can be immediately viewed.
- Cross reference printing can be selected when a device list is printed.

Communication Functions

- Online connection between a PC and FA-M3 can be established via USB*, RS-232C, Ethernet or FL-net (OPCN-2).
- Online connection can be made with multiple FA-M3 units using multiple transmission paths.





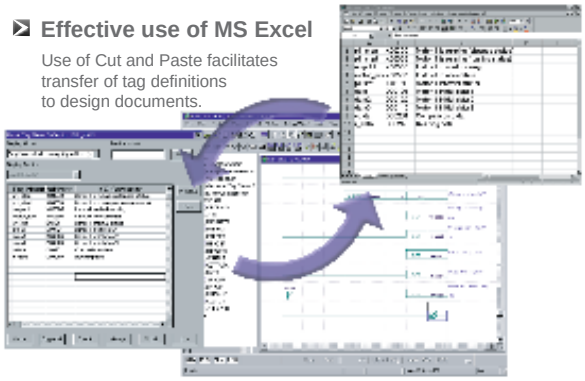
*1: USB connection is only supported by F3SP66-4S, F3SP67-6S, F3SP71-4N, F3SP76-7N, F3SP71-4S and F3SP76-7S.

**1: New function of version 3 (R3)

**2: New function of version 4 (R4)

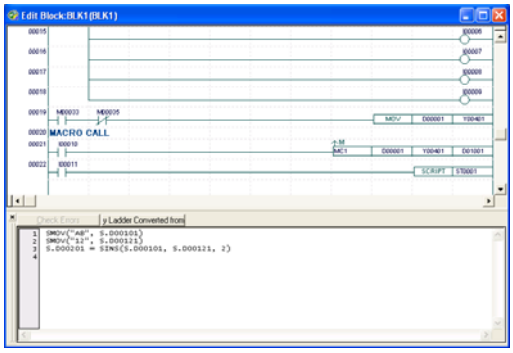
Data Exchange with Other Applications

- Circuits can be pasted to other Windows applications.
- Tag names and I/O comments can be copied and pasted between Microsoft Excel and WideField3.
- Tag name definitions, I/O comments, circuits in programs and subcomments can be exported to and imported from files.
- Results of sampling trace can be generated in Microsoft Excel format for conversion to graphs.
- Device data edited in WideField3 can be exported in Microsoft Excel format.

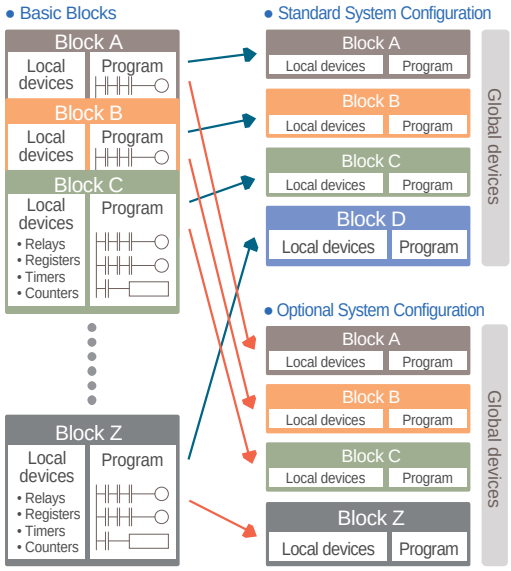


Program Reuse and Advanced Programming

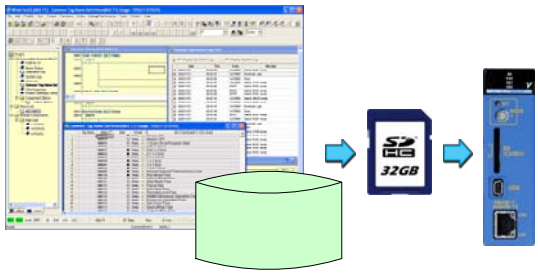
- Supports programming using BASIC-like script language.
- Script code and mnemonic instructions can be combined in programs.
- Branching and looping using control statements, complex computations and text processing can be implemented easily using script language.



- Ladder program edit windows can be customized to display more information for efficient programming.
- A large-scale circuit with up to 130 lines can be created. **1
  The number of columns in a circuit can be set up in the range of 11 to 19 columns. **1
- Supports modular programming using function blocks. Blocks can be shared and reused as a library.
- Frequently used circuits can be registered as macros and shared with other developers in a library. Macros can be used as input conditions.
- Local devices can be used in blocks and component macros. Blocks coded using local devices can be reused in other projects without modification.
- Structure data format is supported. Structure data can be used to interface with macros and be used in arrays.
- Programs can be compared in ladder view for much easier management.



- Both index modification by a constant and indirect designation are supported.
- Supports program design by tag names. Programs can be created before terminals are allocated. Up to 70,000 tag names and I/O comments in multiple blocks and component macros can be collectively managed.
- Individual blocks can be configured to refer to block tag name definitions, instead of common tag name definitions.
- Tag name definitions can be included in cut, copy and paste operations.
- All tag names used in circuits can be collectively read; all tag names not used in circuits can be collectively deleted.
- Changes in installed positions of I/O modules can be implemented over all blocks of a project with a single operation.
- Definition of constant values using constant names*
- Editing, downloading and uploading of CPU properties*
- Use of M3 escape sequence codes in constant values*
- Programs in CADM3 (SF510) format can be opened.
- Saving and opening of data files of SD card format containing project data*
- Up to 80 characters are available in file name. **1
- When an instruction is entered, a warning is produced if there is duplicate use of coils, sets/resets, or timers/counters. **1



Installation

- Environment settings of the previous version can be inherited when a new version is first installed.

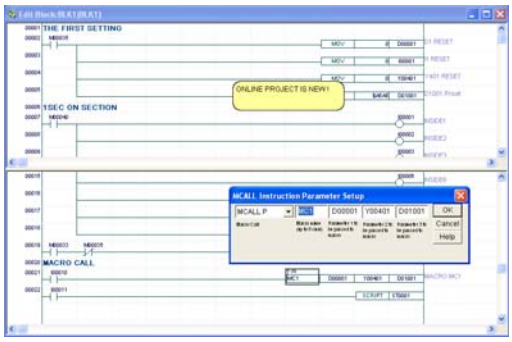
*: Only supported by CPU modules F3SP66-4S, F3SP67-6S, F3SP71-4N, F3SP76-7N, F3SP71-4S and F3SP76-7S.

**1: New function of version 3 (R3)

**2: New function of version 4 (R4)

Visibility

- The project window gives a clear view of the program structure and allows any block to be directly opened from the window.
- The Index View can be configured to display only the required circuits. Displaying only circuit comments provides an overall view of the program flow. Circuits can also be printed in index view.
- Up to 16 characters are allowed for tag names. Allows switching between tag name and address display.
- Circuits can be enlarged or reduced in the display. Their scale factor can be customized, and they can be automatically enlarged or reduced to suit the size of the screen. **1
- Color of circuits, window background, devices (local or global), comments, undefined tag names, constant names, as well as font size and type are customizable.
- Errors in tag name definitions and constant definitions are highlighted in the display.
- TIP help function can be used to view the I/O comment and address allocated to a tag name in a circuit.
- Syntax checking checks detailed program data.
- Individual parameter information is displayed in the instruction parameter input dialog.
- Free-format balloon comments can be pasted freely on circuits. Devices can be specified within balloon comments for monitoring anywhere. You can store balloon comments in the CPU. *3
- Edit windows can be split to view and edit two distant parts of the same program.
- Ranges of IL-ILC, FOR-NEXT and other paired instructions are easily visible.
- Return numbers in continuation lines are shown. The continuation lines are automatically added as necessary. **1



Program Management

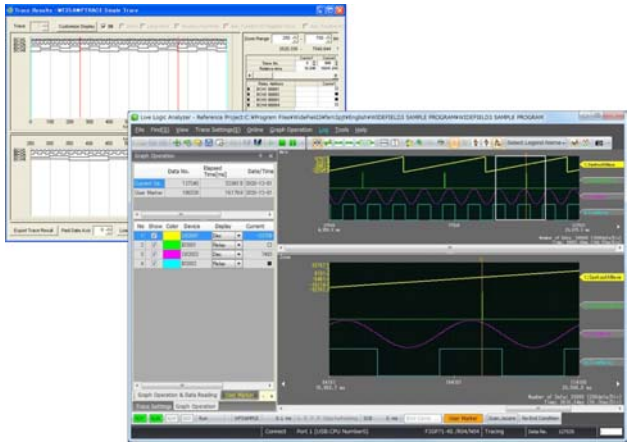
- Project edit history displays recently used files and allow a project to be started.
- A rich set of program management functions are provided to compress and save a project, split and save a project in multiple files, and restore a compressed project.
- An edited project can be saved with a different name.
- When a project is closed, project settings, blocks, and other configurations can be saved at the same time.

Help

- Easy retrieval of context-sensitive help
- Help on instructions including usage and operation
- Help on functions including overview and usage
- Help on errors including causes and troubleshooting
- Selection of instruction from an instruction list
- Instruction manuals in PDF file format

Debugging and Maintenance

- Programs can be monitored and edited online.
- Circuits can be commented out and disabled. Commented out parts can be searched collectively.
- Operation status of the system can be managed in user logs. Various types of comments and tag name definitions can be stored in the CPU. *1
- Supports downloading and uploading of selected blocks and macros. *1
- Devices can be monitored on tag name definition window images.
- Register values of advanced function modules can be monitored and modified. Display formats and comments can be created and displayed for individual registers.
- Devices can be registered for monitoring, up to 256 devices for each project.
- Powerful sampling trace facilitates analysis of CPU operation.
- Real-time tracing in High-speed applications by Live Logic Analyzer function. **1
- FA-M3 Simulation Software Virtual-M3 is available. **2



- Watch monitoring can be used.Devices are automatically displayed in accordance with the visible area of the program monitor, allowing such devices to be monitored.
- Circuit comments and subcomments can be added during online editing. *4
- Tag name definitions can be downloaded during RUN. *4

*1: Only supported on F3SP□□-□S CPU modules.
*3: Only supported on F3SP7□-□□ CPU modules.
*4: Only supported on F3SP7□-□S R3 or later CPU modules.
**1: New function of version 3 (R3)
**2: New function of version 4 (R4)

Operating Environment

Item	Specification
	SF630-MCW
PC	PC/AT compatible
Operating System	Microsoft Windows 10 (x86/x64) Microsoft Windows 8/8.1 (x86/x64) Microsoft Windows 7 (x86/x64) (English or Japanese OS version)
Required Software	.NET Framework 2.0, .DirectX 9.0c or later
Software Media	CD-ROM
CPU	Pentium 1GHz or higher, or compatible processor, adequate for the OS to run properly.
Memory	1GB or more, adequate for the OS to run properly.
Hard Disk Capacity	400MB or more available
Display	1024×768 dots or more recommended
Communications *1*2	USB, RS-232-C, Ethernet, FL-net (For F3LX02-1N Rev. 01:00 or later)
Printer	A printer that supports A4 size printing and the operating systems above.
CPU Modules	F3SP05-0P, F3SP08-0P, F3SP08-SP, F3SP21-0N, F3SP22-0S, F3SP25-2N, F3SP28-3N, F3SP35-5N, F3SP28-3S, F3SP38-6N, F3SP38-6S, F3SP53-4H, F3SP53-4S, F3SP58-6H, F3SP58-6S, F3SP59-7S, F3SP66-4S, F3SP67-6S, F3SP71-4N, F3SP71-4S, F3SP76-7N, F3SP76-7S, F3FP36-3N

*1: For Ethernet or FL-net communications, the network card must support TCP/IP protocol. Allowable communications conditions vary with CPU type.

*2: USB connection is not guaranteed to work with all PC chipsets and may be unstable when used with some PC chipsets.

Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
SF630	—	—	—	FA-M3 Programming Tool WideField3
	-MCW	—	—	Multi-lingual version R4

Cable for PC Connection

A cable is required to connect a personal computer to the programming tool connector (PROGRAMMER port or USB port) on an FA-M3 CPU module. Select the appropriate cable for the PC to be used as follows.

USB Connection

Procure a commercially available USB cable.

- For F3SP66-4S, F3SP67-6S:
  CPU port uses USB Series B connector.
- For F3SP71-4N, F3SP76-7N, F3SP71-4S, F3SP76-7S:
  CPU port uses USB Series mini B connector.

RS-232C Connection

Model and Name:

KM-11-2T, -3T, -4T	Programming Tool Cable (for PC/AT-compatible computer)
KM13-1N, -1S	USB-serial converter

Note 1: For details on cables for connecting personal computers, see GS34M06C91-01E.

Note 2: RS-232C connection is not available for F3SP66-4S, F3SP67-6S, F3SP71-4N, F3SP71-4S, F3SP76-7N and F3SP76-7S.

General Specifications

SF661-MCW
FA-M3 ToolBox for Temperature Control and Monitoring Modules R7

FA-M3

General

The FA-M3 ToolBox for Temperature Control and Monitoring Modules is a configuration tool for the Temperature Control and PID Module (F3CU04-0☐, F3CU04-1☐) and the Temperature Monitoring Module (F3CX04-0☐). It allows a user to configure parameters and test module operation. By supporting graphical configuration and monitoring, it simplifies and speeds up the often tedious and time-consuming parameter setup and tuning necessary for successful production operation.

* The FA-M3 ToolBox for Temperature Control and Monitoring Modules software is released as a unified multi-lingual product starting from revision R6.01. For details on older versions, refer to the general specification (GS) for SF661–ECW.

Features

- **Reuse of setup information**
  - Parameter setup information can be utilized among different modules.
- **Powerful debugging and data logging**
  - Action monitoring, error information display, and parameter checking are available even during action test.
  - Module data is automatically logged and stored to a PC.
  - Logged data can be exported for documentation, analysis or processing.
- **Interaction with other applications**
  - The FA-M3 Programming Tool WideField2 or WideField3 and the ToolBox can run concurrently on the same PC for program and parameter editing.
  - Parameter values and log data can be saved as csv-format data.
- **Easy to edit**
  - Parameter editing screens show help information for easier setting of module parameters.
  - Parameter editing screens can be customized so that only necessary parameters are displayed for easier monitoring and editing.
- **Functions added in R3**
  - New communication means via FL-net added to allow connection via FL-net V2.00 using FL-net Interface Modules .(For F3LX02-1N Rev . 01:00 or later)
- **Functions added in R4**
  - USB connection between ToolBox and FA-M3, which supports all functionalities available with other communications media;
    Note: Only supported by CPU modules F3SP66-4S, F3SP67-6S, F3SP71-4N and F3SP76-7N.
  - Upper and lower limits can be defined for logged data.
  - Values of data registers and file registers of a destination CPU module can be selected for logging.
  - Action monitor screens can be enlarged or reduced.
  - Support for Temperature Control and PID Modules F3CU04-0S and F3CU04-1S is added.
  - Module type of a parameter data file can be changed.
  - Support for Windows Vista (x86 version) is added.
- **Functions added in R5** (Japanese release only)
  - USB connection between ToolBox and FA-M3, which supports all functionalities available with other communications media;
  - Online connection can be made with multiple FA-M3 units using multiple transmission paths
- **Functions added in R6**
  - Connection to F3SP71-4S and F3SP76-7S.
  - Multilingual support
  - Support for Windows 7 and Vista (x64 version) is added.
- **Functions added in R7**
  - Support for Windows 10 and Windows 8/8.1 is added.

Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
SF661	—	—	—	ToolBox for Temperature Control and Monitoring Modules
	-MCW	—	—	Multi-lingual version R7

Operating Environment

Item	Specification
PC	PC/AT compatible
Operating System	Microsoft Windows 10 (x86/x64) Microsoft Windows 8/8.1 (x86/x64) Microsoft Windows 7 (x86/x64) (English or Japanese OS version)
Media	CD-ROM
CPU	1 GHz or faster, adequate for the OS to run properly.
Memory	1 GB or more, adequate for the OS to run properly.
Hard Disk Capacity	200MB or larger
Display	1024 x 768 dots or higher resolution recommended
Communications *1*2	USB, RS-232-C, Ethernet, FL-net (For F3LX02-1N Rev. 01:00 or later)
Compatible Printer	A printer that supports A4 size paper and the operating systems above
Compatible Modules	F3CU04-0N, F3CU04-1N , F3CU04-0S, F3CU04-1S, F3CU04-0G, F3CU04-1G; F3CX04-0N, F3CX04-0G
CPU Modules *3	F3SP05-0P, F3SP08-0P, F3SP21-0N, F3SP22-0S, F3SP25-2N, F3SP28-3N, F3SP28-3S, F3SP35-5N, F3SP38-6N, F3SP38-6S, F3SP53-4H, F3SP53-4S, F3SP58-6H, F3SP58-6S, F3SP59-7S, F3SP66-4S, F3SP67-6S, F3SP71-4N, F3SP71-4S, F3SP76-7N, F3SP76-7S, F3FP36-3N
Compatibility with Other Applications	ToolBox R4 is compatible with WideField2 R2.01 or higher versions. ToolBox R6 or later supports concurrent communications with WideField3

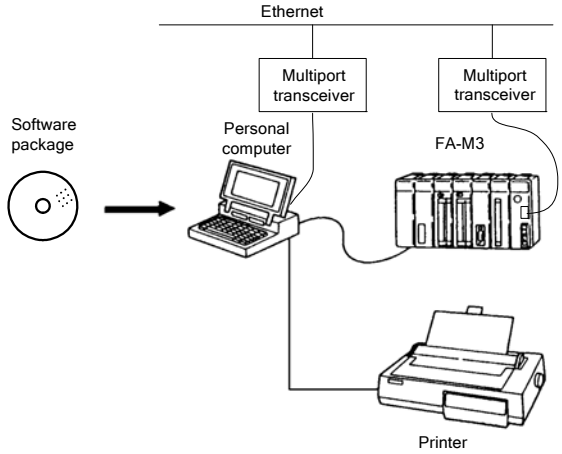
*1: For Ethernet or FL-net communications, the network card must support TCP/IP protocol. Allowable communications conditions vary with CPU type.
*2: USB connection is not guaranteed to work with all PC chipsets and may be unstable when used with some PC chipsets.
*3: F3SP71-4S and F3SP76-7S are compatible only with ToolBoxR6 or later.

Menu Layout

FA-M3 ToolBox
for Temperature Control and Monitoring Modules

- File
  - Project related
  - Select module
  - Setup file related
  - Print related
  - List of recently opened files
  - Exit
- Edit
  - Undo
  - Redo
  - Parameter editing related
- View
  - Project window
  - Debugger window
  - Toolbar view related
- Online
  - Connect/disconnect
  - Start/stop operation
  - Download/upload
  - Compare
- Debug
  - Action monitor (logging)
  - Log data output
  - Error information
  - Setup data display
  - Device monitor
  - Teach
- Tools
  - Communications setup
  - Environment setup
- Help
  - Help
  - About ToolBox

System Configuration



Cable for PC Connection

A cable is required to connect a personal computer to the programming tool connector (PROGRAMMER port or USB port) on an FA-M3 CPU module. Select the appropriate cable for the PC to be used as follows.

USB Connection
Procure a commercially available USB cable.

- For F3SP66-4S, F3SP67-6S:
  CPU port uses USB Series B connector.
- For F3SP71-4N, F3SP76-7N, F3SP71-4S, F3SP76-7S:
  CPU port uses USB Series mini B connector.

RS-232C Connection

Model and Name:

KM-11-2T, -3T, -4T	Programming Tool Cable (for PC/AT-compatible computer)
KM13-1N, -1S	USB-serial converter

Note 1: For details on cables for connecting personal computers, see GS34M06C91-01E.

Note 2: RS-232C connection is not available for F3SP66-4S, F3SP67-6S, F3SP71-4N, F3SP71-4S, F3SP76-7N, and F3SP76-7S.

General Specifications

SF662-MCW
ToolBox for Positioning Modules R5
(for F3NC32/34)

FA-M3

General

ToolBox for Positioning Module is a Window-based software tool for configuring positioning modules (F3NC32-0N and F3NC34-0N) to perform positioning operations. It can be used to set up registered parameters, action pattern data and position data for positioning modules, as well as perform action test and monitoring.

By providing an integrated development environment that features ease of use, reusability and visibility, it simplifies module setup and debugging, and thus dramatically improves development efficiency.

* The FA-M3 ToolBox for Positioning Modules software is released as a unified multi-lingual product starting from revision R4.01. For details on older versions, refer to the general specification (GS) for SF662–ECW.

Features

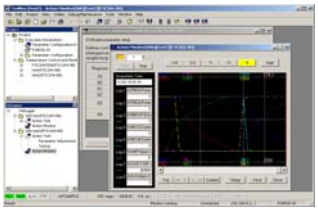
ToolBox for Positioning Modules offers the following features.

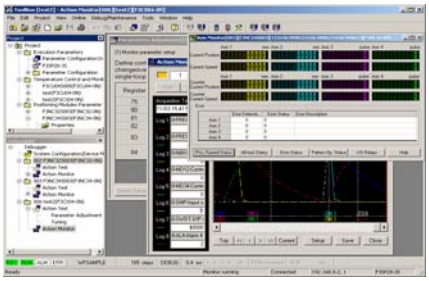
- **Integrated Development Environment**

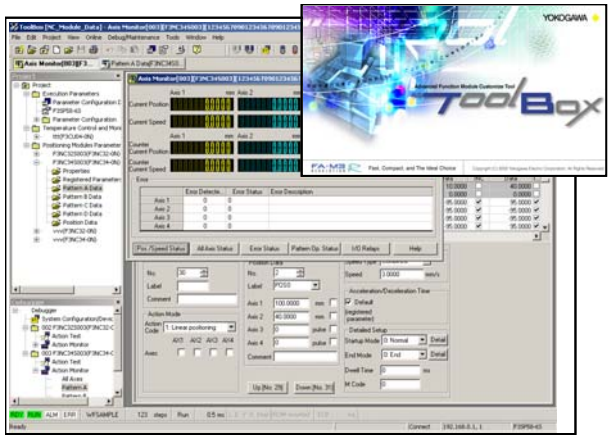
- By installing ToolBox for Positioning Modules (SF662-MCW) and ToolBox for Temperature Control and Monitoring Modules (SF661-MCW) on the same PC, temperature control and PID modules, temperate monitoring modules and positioning modules (with positioning pulse output) can be conveniently managed within the same project.
  What's more, ToolBox support for other FA-M3 advanced I/O modules can be added when available.

ToolBox
for Temperature Control
And Monitoring Modules

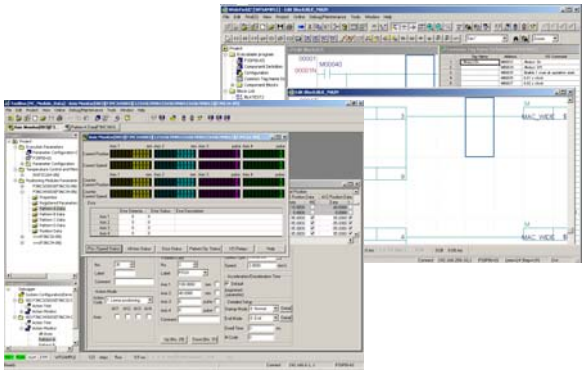
ToolBox
for Positioning
Modules





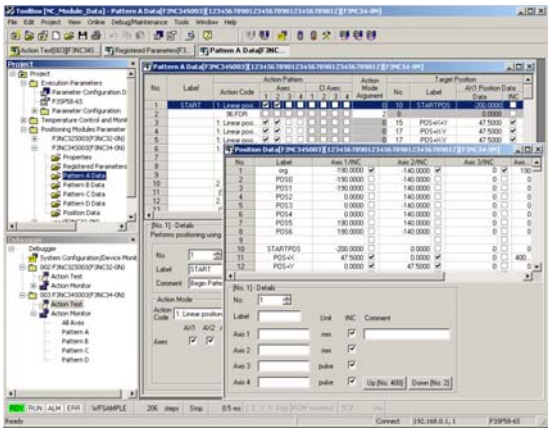


- ToolBox and the Ladder Programming Tool WideField2 or WideField3 can be run concurrently to edit data. With WideField2 R2 or later version, concurrent communication with FA-M3 is also supported.

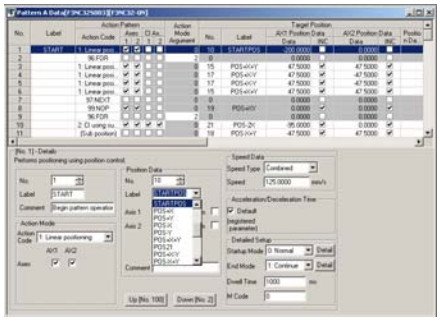


- **Ease of Use and Reusability**

- Action pattern data and position data are created and managed separately. A user can therefore create action pattern during design, and add position data in the field using the teach function, or even reuse pattern data for different units of the same equipment, thus dramatically improving development efficiency.



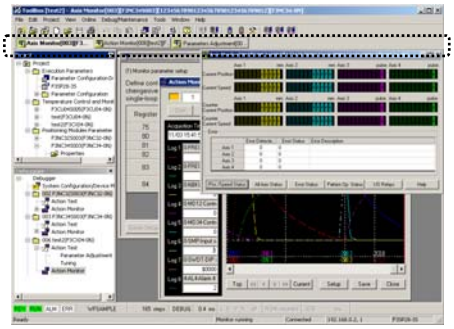
- Action pattern table and position data table can be created separately and customized for two-axes operation (F3NC32-0N) and four-axes operation (F3NC34-0N).
- Labels and comments can be added to individual action pattern data or position data records.
- The input completion function speeds up data input by presenting candidates for selection based on existing data during input of action pattern data or position data. This allows a user to create action pattern data or perform action test without prior knowledge of existing action pattern data or position data.



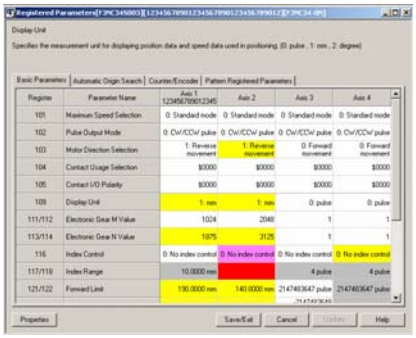
- Action pattern data and position data can be created at the same time or separately to suit your preference.
- Position data can be simply dragged and dropped from the position data table to the action pattern data table.

- **Visibility**

- The Window List bar displays a list of open windows to allow quick access to hidden windows.

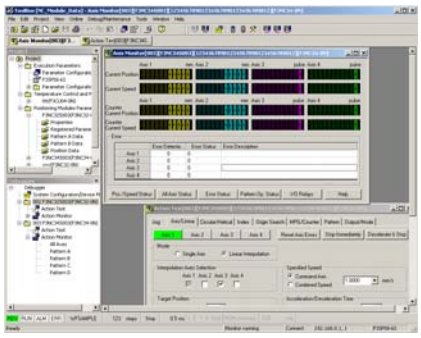


- Cells of setup data are appropriately color-coded on edit windows of registered parameters, action pattern data and position data – red for error data, pink for modified but unconfirmed data, yellow for modified and confirmed value and gray for cells that do not require input.

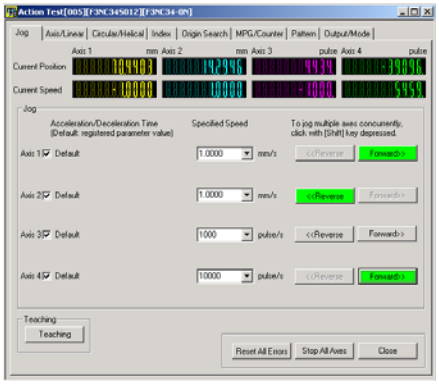


- **Debugging and Maintenance**

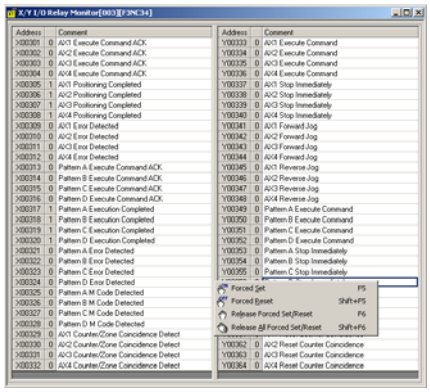
- All statuses are monitored during an action test to facilitate debugging of registered parameters, action pattern data and position data.



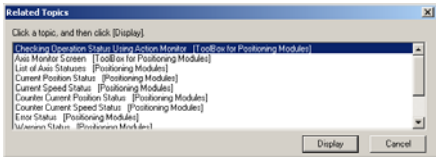
- When performing an action test using jog operations, pressing and holding the SHIFT key moves multiple axes concurrently. Releasing the SHIFT key stops all axes.



- Input/output relays of FA-M3 advanced function I/O modules can be displayed with help information, monitored and even turned on or turned off.



- The Help function in ToolBox for Positioning Module can be used to call up relevant help information in the user manual for positioning modules.



● Functions added in R2

- USB connection between ToolBox and FA-M3, which supports all functionalities available with other communications media.
- Support for Windows Vista (x86) version.

● Functions added in R3 (Japanese release only)

- Online connection can be made with multiple FA-M3 units using multiple transmission paths.
- Support for Windows 7 (x86) version.

● Functions added in R4

- Connection to F3SP71-4S and F3SP76-7S.
- Multilingual support
- Support for Windows 7 and Vista (x64 version) is added.

● Functions added in R5

- Support for Windows 10 and Windows 8/8.1 is added.

Operating Environment

Item	Specification
	SF662-MCW
PC	PC/AT compatible
Operating System	Microsoft Windows 10 (x86/x64 Microsoft Windows 8/8.1 (x86/x64) Microsoft Windows 7 (x86/x64) (English or Japanese OS version)
Media	CD-ROM
CPU	1 GHz or faster, adequate for the OS to run properly.
Memory	1 GB or more, adequate for the OS to run properly.
Hark Disk Capacity	200MB or more available
Display	1024×768 dots or higher resolution recommended
Communications*1*2	USB, RS-232C, Ethernet, FL-net (For F3LX02-1N Rev 01.00 or later)
Printer	Any printer compatible with the OS listed above and supports A4 printing
Supported Modules	F3NC32-0N, F3NC34-0N
Compatible CPU Modules*3	F3SP05-0P, F3SP08-0P, F3SP08-SP, F3SP21-0N, F3SP25-2N, F3SP35-5N, F3SP28-3N, F3SP38-6N, F3SP53-4H, F3SP58-6H, F3SP22-0S, F3SP28-3S, F3SP38-6S, F3SP53-4S, F3SP58-6S, F3SP59-7S, F3SP66-4S, F3SP67-6S, F3SP71-4N, F3SP71-4S, F3SP76-7N, F3SP76-7S, F3FP36-3N
Compatibility with Other Applications	ToolBox R2 is compatible with WideField2 R2.01 or higher versions. ToolBox R4 or later supports concurrent communications with WideField3.

*1: For Ethernet and FL-net communications, network card must support TCP/IP protocol. Allowable communications conditions vary with CPU type.

*2: USB connection is not guaranteed to work with all PC chipsets and may be unstable when used with some PC chipsets.

*3: F3SP71-4S and F3SP76-7S are compatible only with ToolBox R4 or later.

Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
SF662	—	—	—	ToolBox for Positioning Modules (for F3NC3☐)
	-MCW	—	—	Multi-lingual version R5

Cable for PC Connection

A cable is required to connect a personal computer to the programming tool connector (USB port or PROGRAMMER port) on an FA-M3 CPU module. Select the appropriate cable for the PC to be used as follows.

USB Connection

Procure a commercially available USB cable.

- For F3SP66-4S, F3SP67-6S:
  CPU port uses USB Series B connector.
- For F3SP71-4N, F3SP76-7N, F3SP71-4S, F3SP76-7S:
  CPU port uses USB Series mini B connector.

RS-232C Connection

Model and Name:

KM-11-2T, -3T, -4T	Programming Tool Cable (for PC/AT-compatible computer)
KM13-1N, KM13-1S	USB-serial converter

Note 1: For details on cables for connecting PCs, see GS34M06C91-01E.

Note 2: RS-232C connection is not available for F3SP66-4S, F3SP67-6S, F3SP71-4N, F3SP71-4S, F3SP76-7N, and F3SP76-7S.

Menu Layout

FA-M3
ToolBox for Positioning Modules

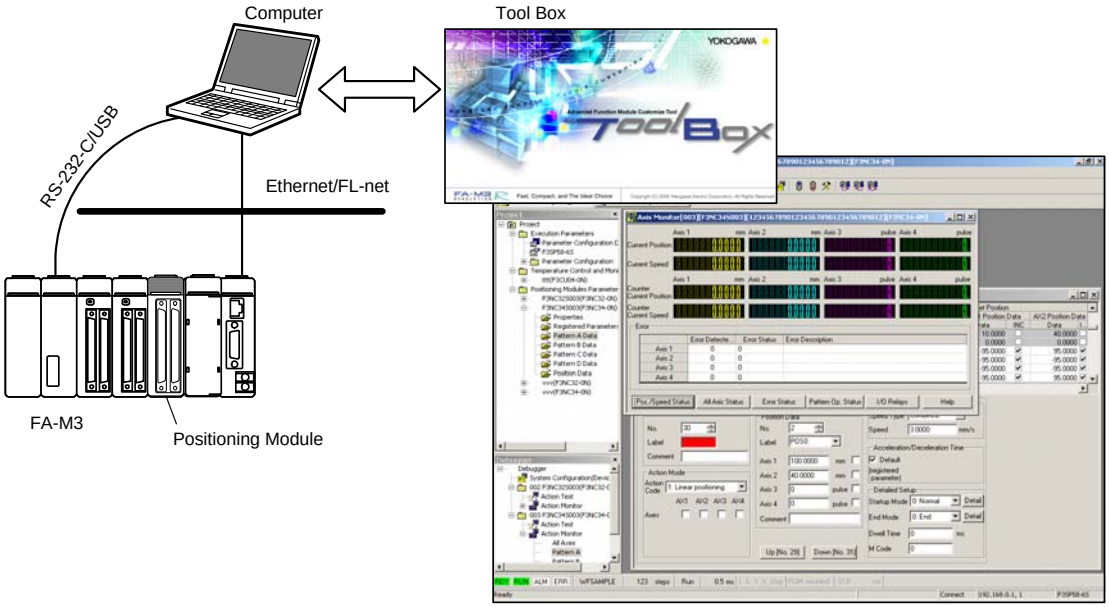
- File
  - Project related
  - Select module
  - Setup file related
  - Print related
  - List of recently opened files
  - Exit
- Edit
  - Undo
  - Redo
  - Parameter editing related
- View
  - Project window
  - Debugger window
  - Toolbar view related
  - Window list bar
- Online
  - Connect/disconnect
  - Operating mode(Run/Stop/Debug)
  - Download
  - Upload
  - Compare file and module
  - Module ROM management
- Debug/Maintenance
  - Action test
  - Action monitor (Logging)
  - Module monitor
  - Error information
  - Action pattern monitor
  - Device monitor
  - Teach
- Tools
  - Communications setup
  - Environment setup
- Window
  - Cascade
  - Tile
- Help
  - Help
  - About ToolBox

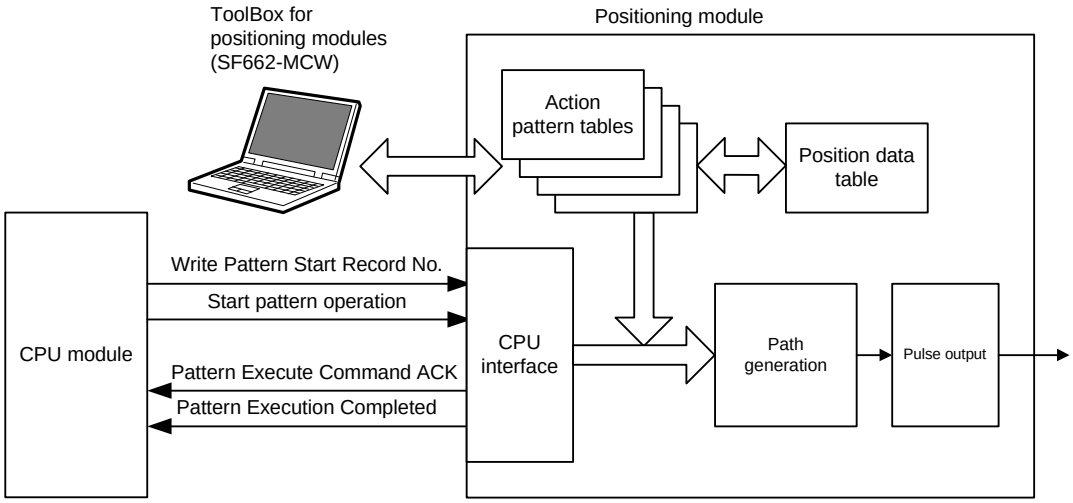
Function Overview

ToolBox for Positioning Modules (SF662-MCW) is a Windows software tool for configuring positioning modules (F3NC32-0N, F3NC34-0N). It provides an environment for a user to set up registered parameters, action pattern data and position data of positioning modules, as well as perform action test and monitoring. The PC and the FA-M3 can be connected using USB, RS-232C, Ethernet or FL-net.

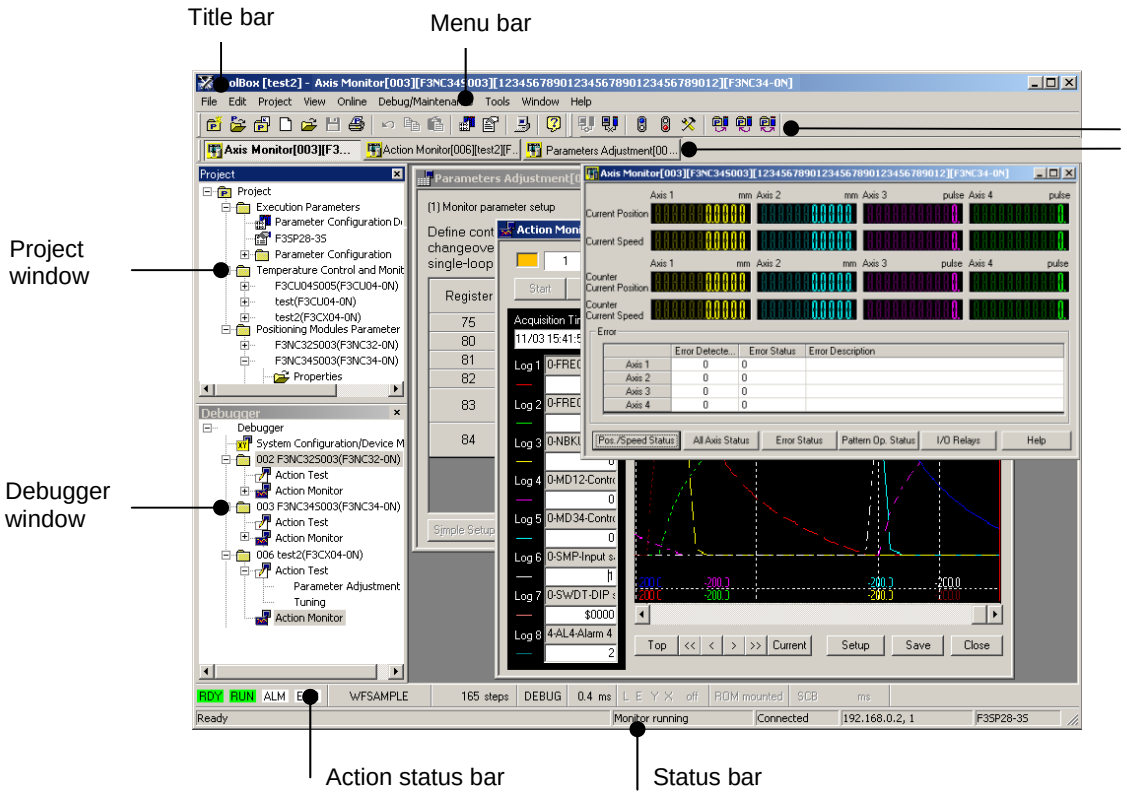
A user can set up action pattern data and position data for a positioning module using the ToolBox for Positioning Modules software and then executes positioning movements using the pre-stored data.

Positioning can be initiated simply by specifying an action pattern number from the CPU module. Up to four action patterns can be executed concurrently.





1. Screen Layout



(1) Title bar

The title bar shows the name of an open project, an active window, or a file being edited

(2) Menu bar

The menu bar shows ToolBox standard menu. Clicking a menu item displays a pull down menu showing a list of commands for selection. Available commands depend on the current CPU operating mode and action mode. Unavailable commands are displayed in gray.

(3) Project window

The project window shows a list of execution parameters of an open project and parameters of advanced function modules.

(4) Debugger window

The debugger window shows debug and maintenance information for each registered parameter file.

(5) Toolbar

The toolbar shows icons of frequently used commands for easier access.

(6) Window list bar

The Window List Bar shows icons of open windows in ToolBox.

(7) Action status bar

The action status bar shows the operating status of the FA-M3 system (primarily the CPU module).

(8) Status bar

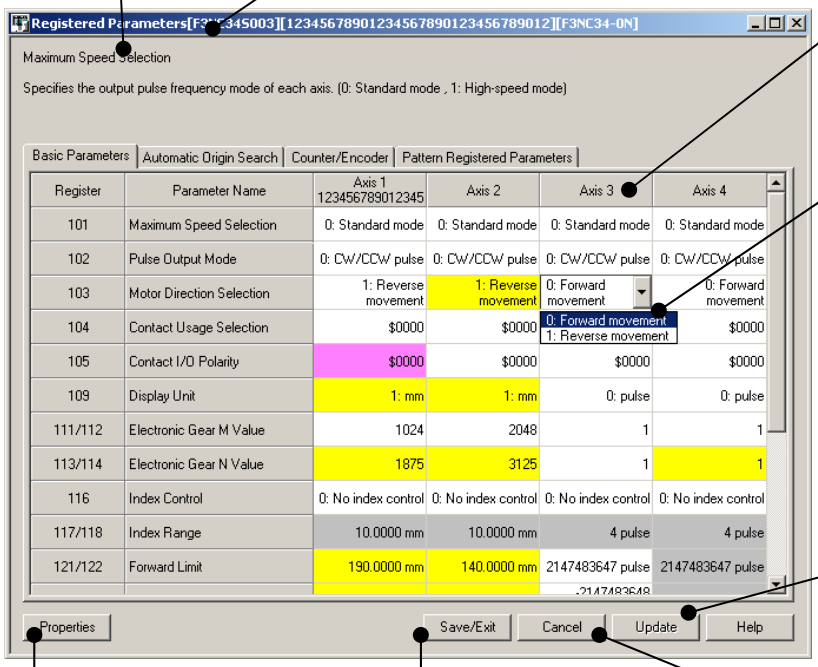
The status bar indicates the operation status of ToolBox.

2. Screen for Editing Parameters

2.1 Registered Parameters

Clicking the cell of a parameter displays its description.

Displays file name, title and module type.



Displays number and name of axes. Name of axes can be changed from the Properties screen.

Clicking a cell displays a list box or an input helper screen. The cell containing the cursor is displayed with blue background. A cell is displayed with different background colors to indicate different statuses as follows:

- White : Default value
- Yellow: Modified and confirmed value
- Pink: Modified but unconfirmed value
- Red: Invalid value
- Gray: Disregarded value

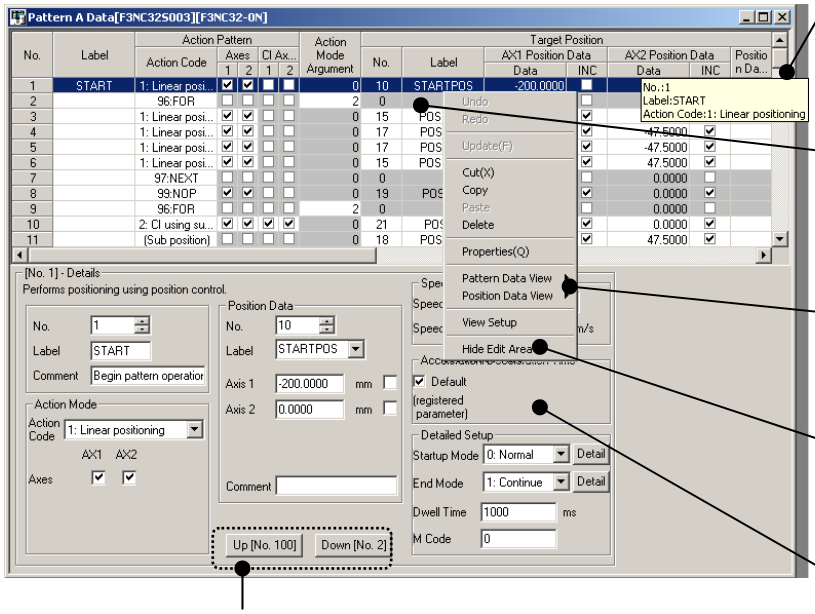
Saves edited data to file.

Allows changing of title or names of axes.

Saves edited changes and closes the screen.

Cancels editing and closes the screen

2.2 Action Pattern Data



Tool Tip for Data List
Displays pattern record no., label and action code.

Data List area
Displays pattern data.
You can edit one line at a time.

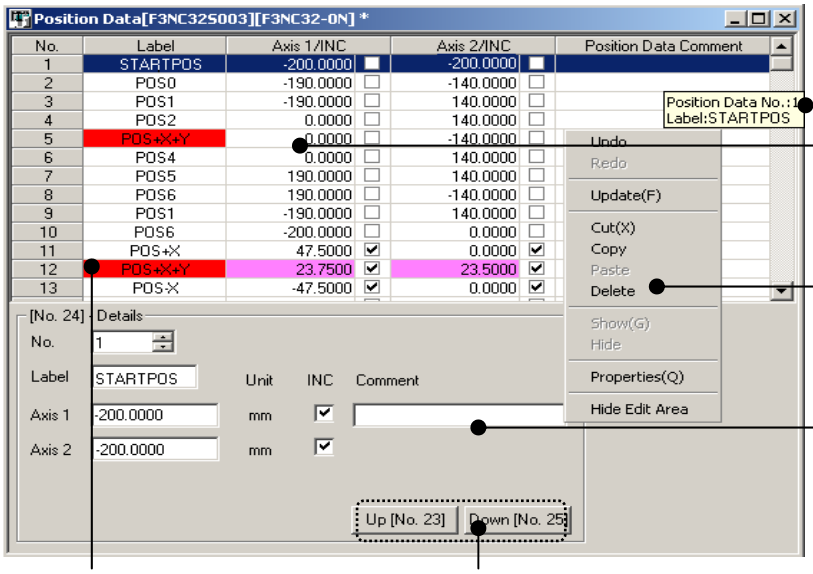
Data View
Selects data view.

Right mouse click
Click the right mouse button to display this menu.

Edit area
Edit action pattern data.
The screen display of this area depends on the action code selected for a record.

Up/Down
Moves to the next or previous record.

2.3 Position Data



Tool Tip for Data List
Displays position data no. and label.

Data List area
Displays position data.
You can edit one line at a time.

Right mouse click
Click the right mouse button to display this menu.

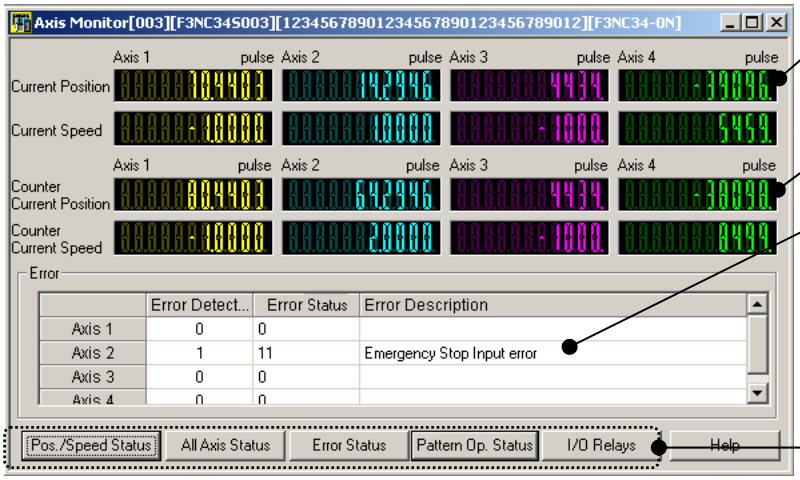
Edit area
Edits position data

Error data are displayed with red background.

Up/Down
Moves to the next or previous record.

3. Monitor Screen

3.1 Axis Monitor



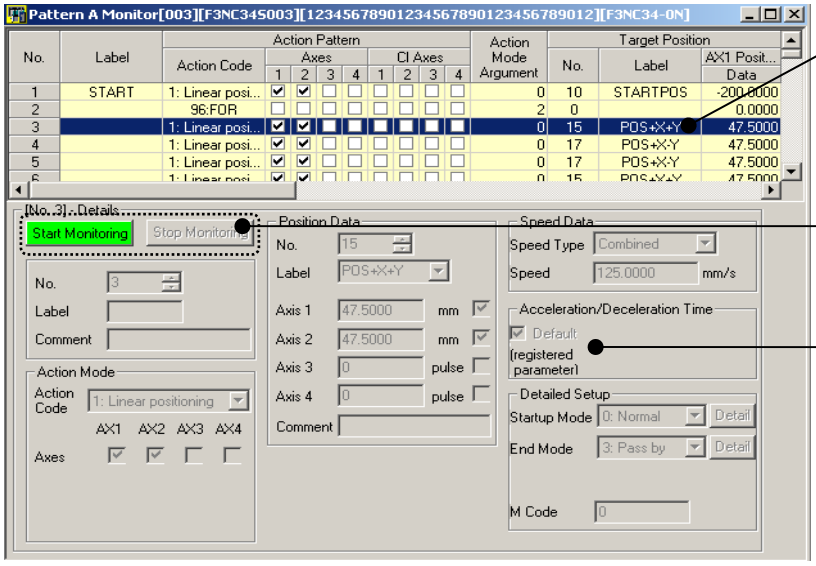
Current position and current speed

Counter current position and counter current speed

Error information

Monitors
- Position/speed status
- All axis status
- Error status
- Pattern operation status
- I/O relays

3.2 Pattern Monitor



The pattern being executed is displayed in blue.

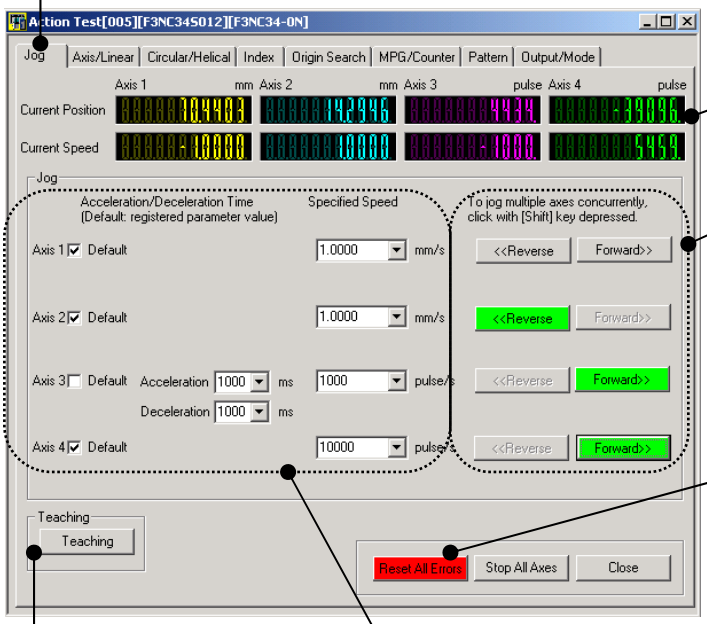
Start/stop monitoring

Displays action pattern data currently being executed.

4. Action Test Screens

4.1 Jog

Select different tabs to switch between action test screens.



Current position and current speed

Performs forward or reverse jogging. Performs jogging when the mouse button is clicked or while the space key is depressed. Releasing the space key stops jogging.
To jog multiple axes concurrently, click the mouse button with the [Shift] key depressed. Releasing the [Shift] key stops all axes.

This button changes to red if any axis error is detected. Clicking the button clears all axis errors.

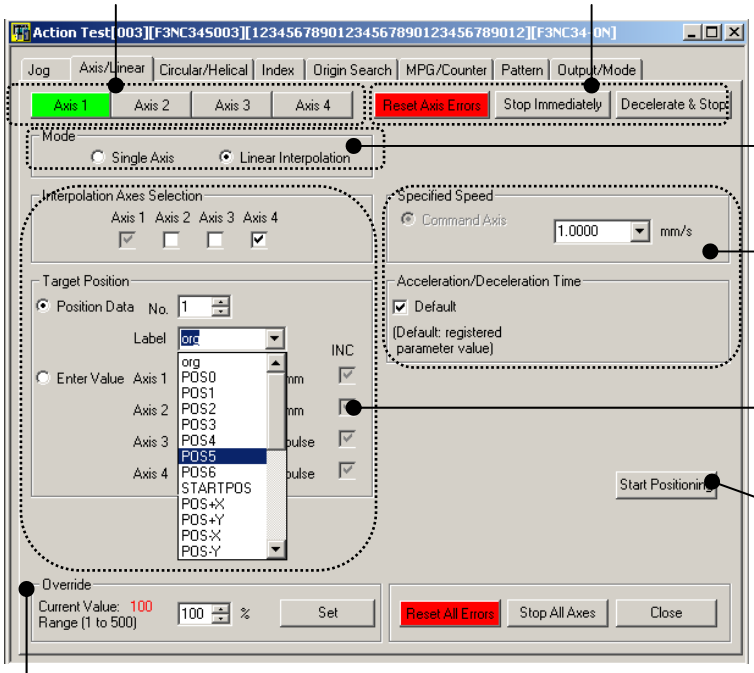
Opens the Teach screen.

Specifies the acceleration and deceleration time.

4.2 Single-axis/Linear Interpolation

Resets all axis errors; stops positioning movement immediately or after deceleration.

Select the test axis.



Select the test mode.

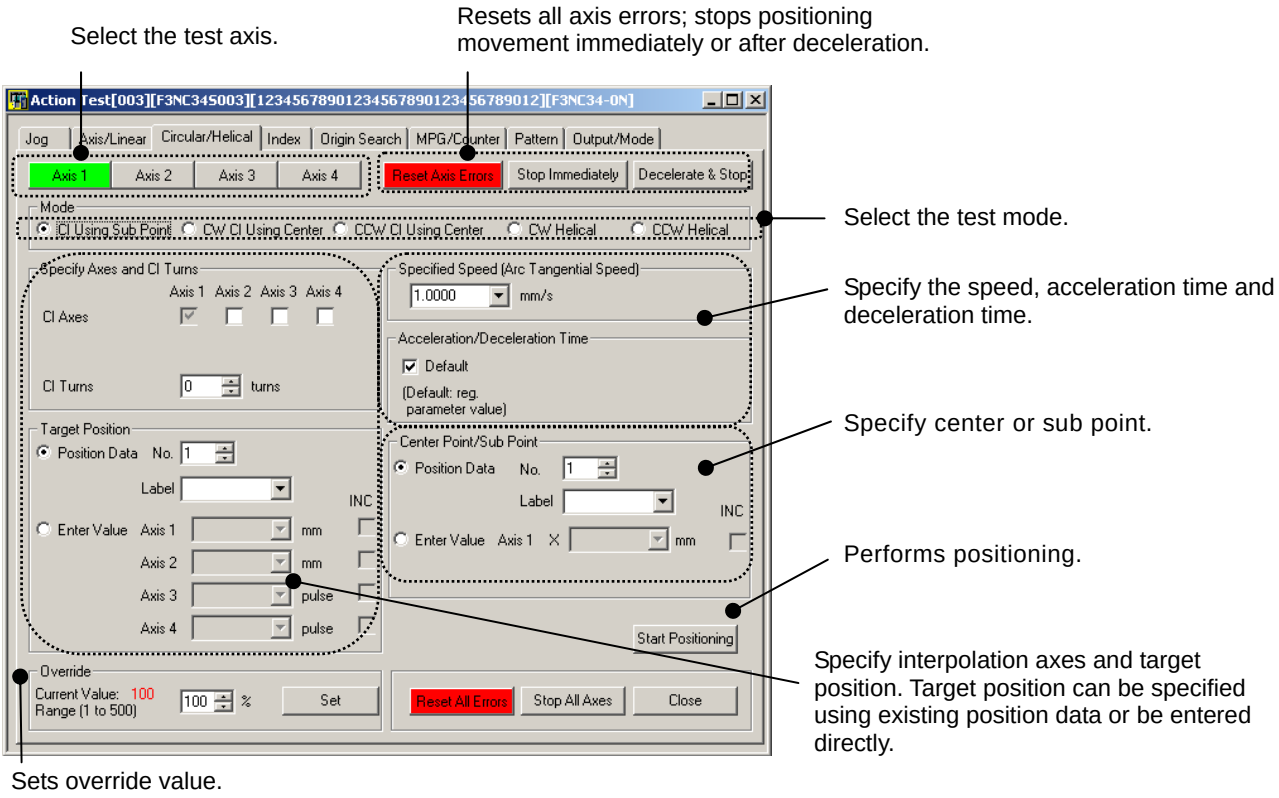
Specify the speed, acceleration time and deceleration time.

Specify interpolation axes and target position. Target position can be specified using existing position data or be entered directly.

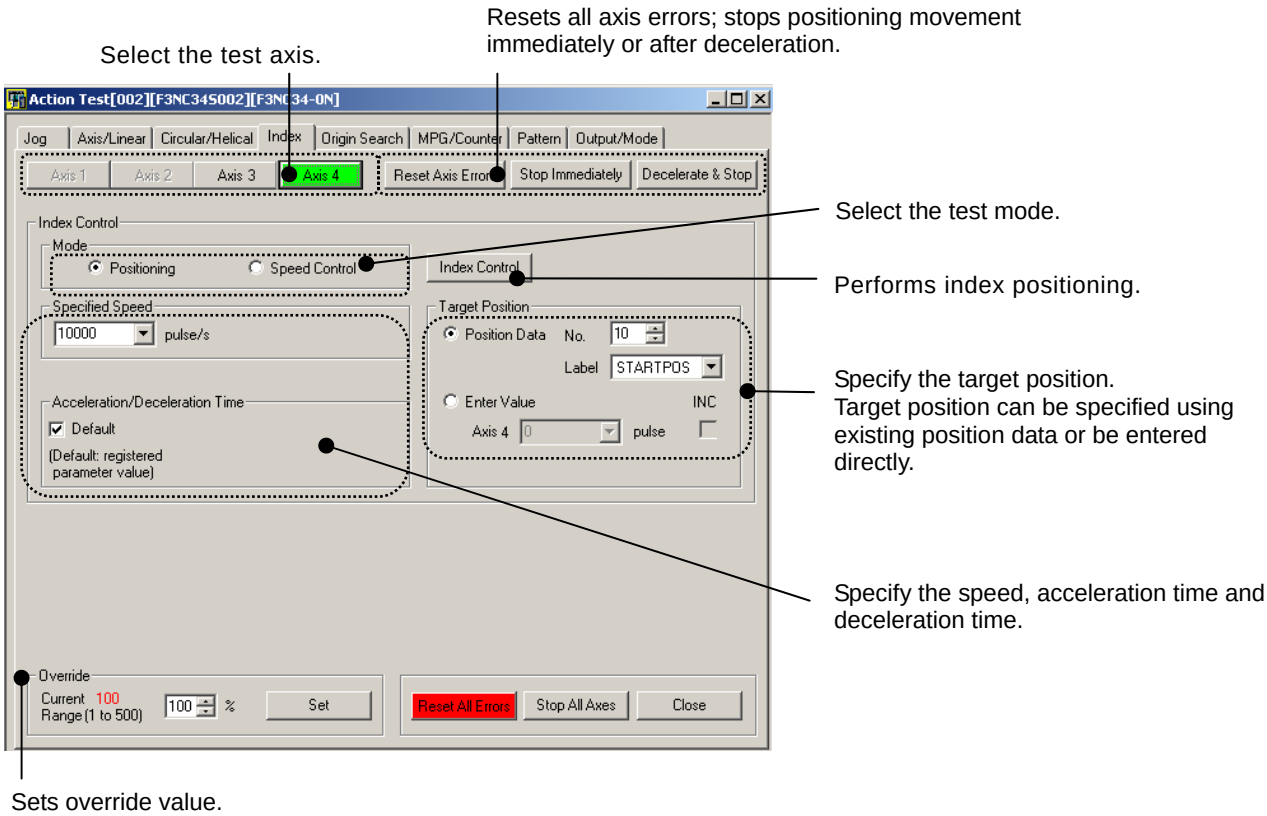
Performs positioning.

Sets override value.

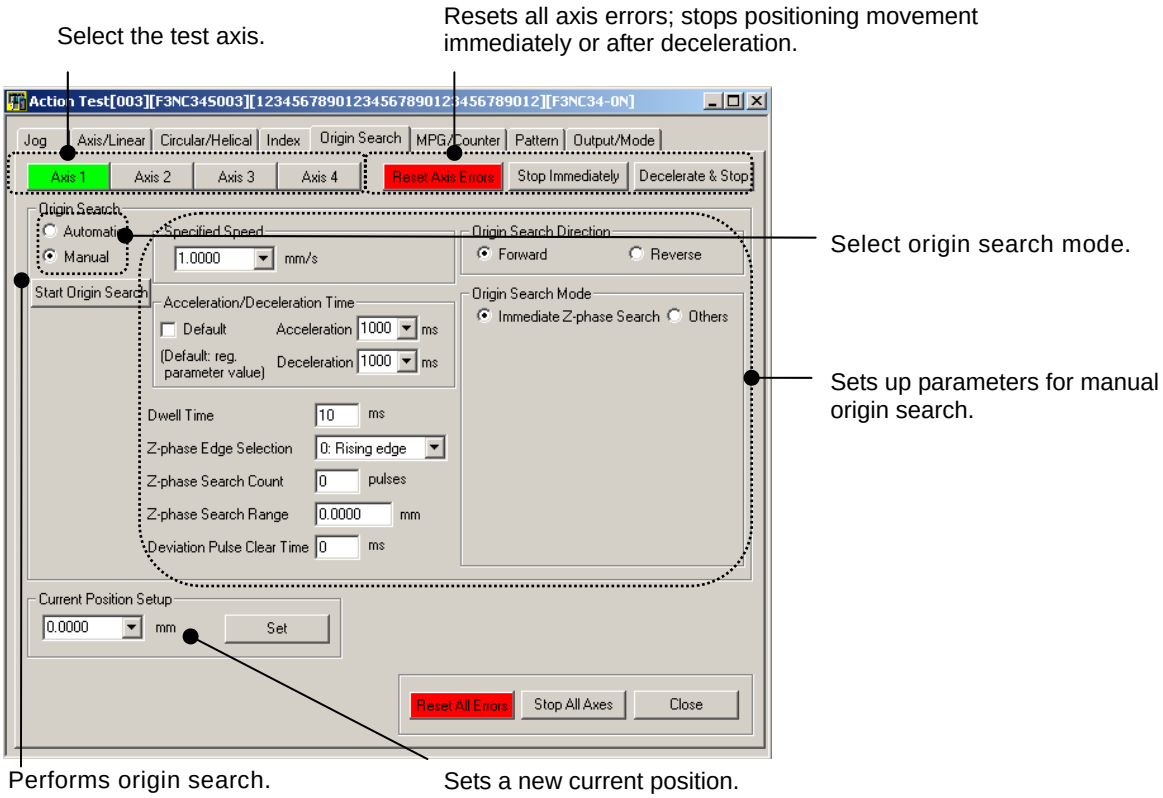
4.3 Circular or Helical Interpolation



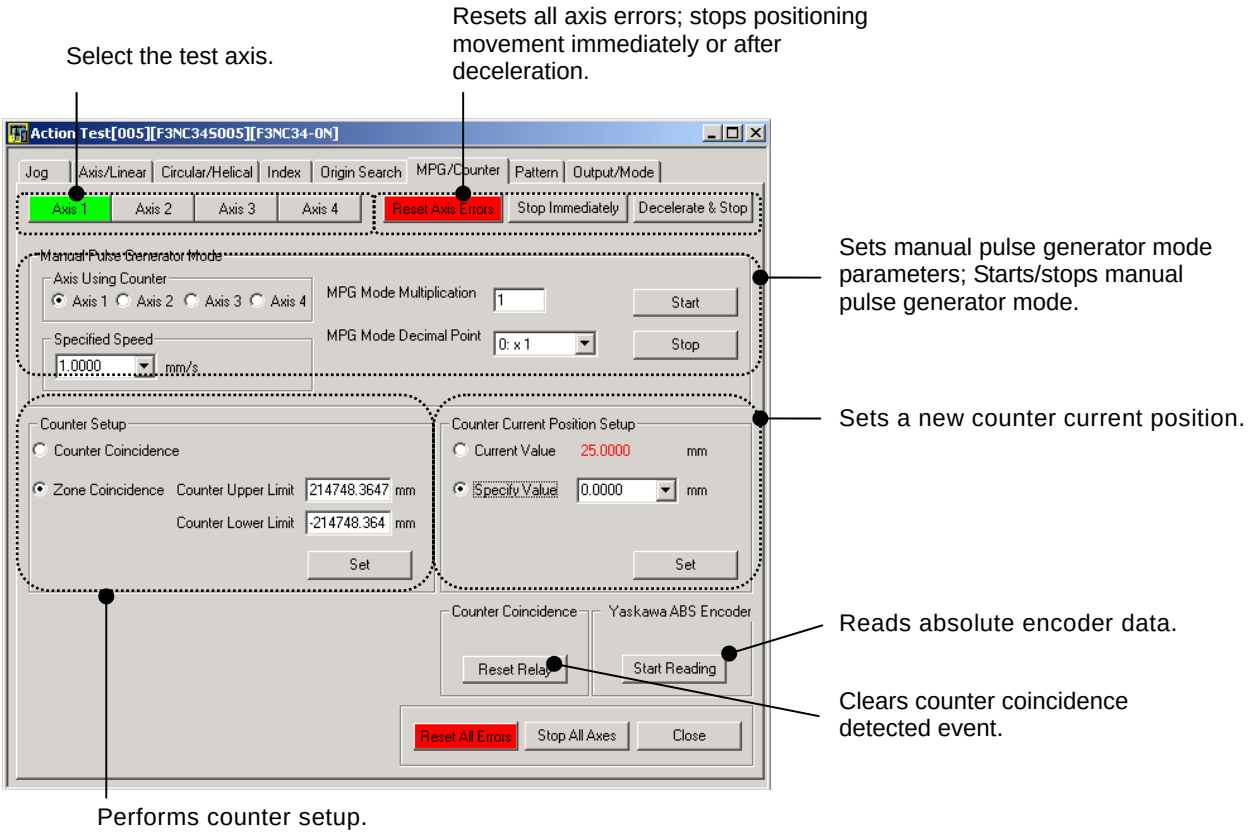
4.4 Index Positioning



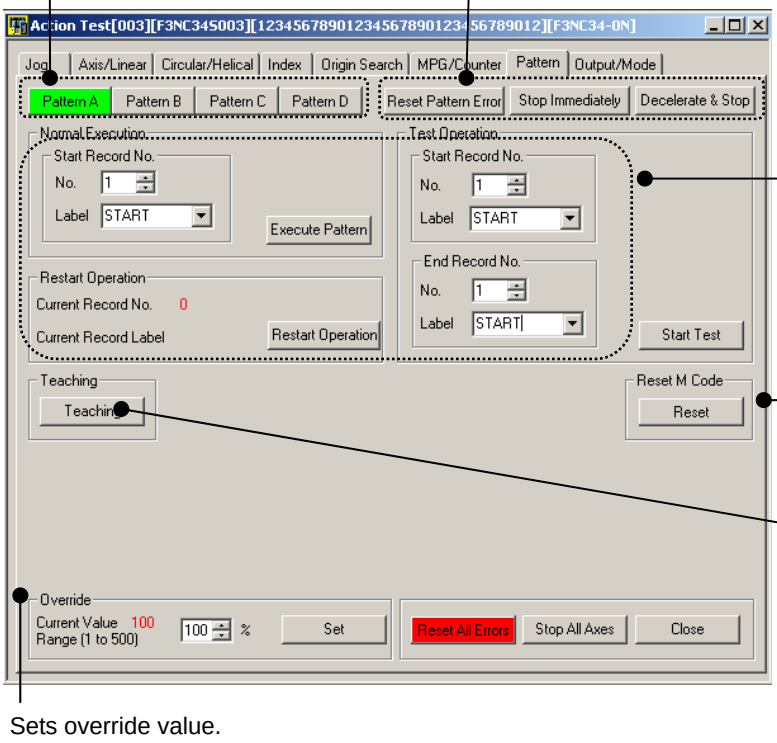
4.5 Origin Search



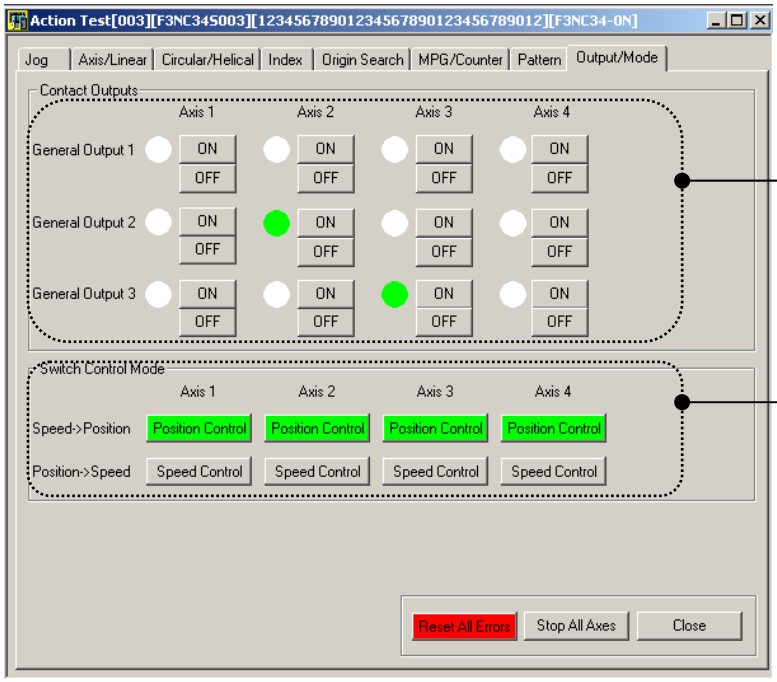
4.6 Manual Pulse Generator/Counter



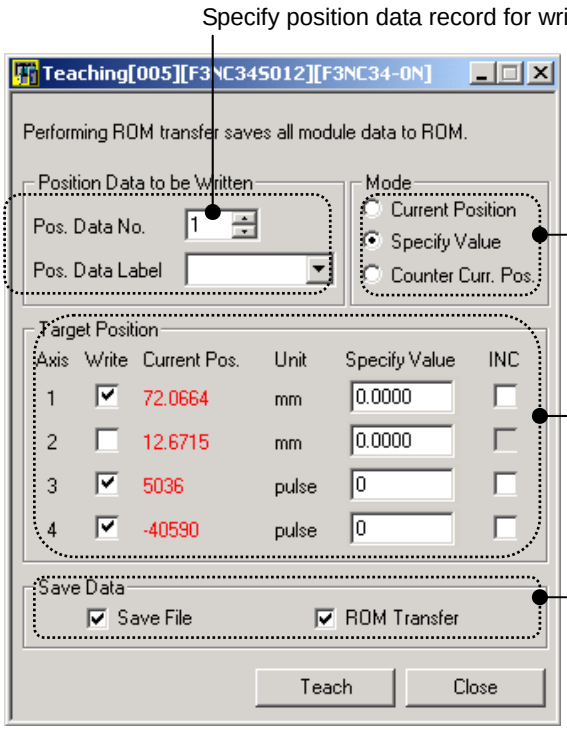
4.7 Pattern Test



4.8 Output/Mode



5. Teach Screen



Select data to be written:
- current position
- specify value
- counter current position

Displays target position to be written.
Enter numeric data if [Specify Value] is selected.

Specify whether to reflect position data to project and module ROM after writing to module.

General Specifications

SF663-MCW
ToolBox for Positioning Modules R2
(for F3YP22/24/28)

FA-M3

General

ToolBox for Positioning Module (for F3YP22/24/28) is a Window-based software tool for configuring positioning modules (F3YP22-0P, F3YP24-0P and F3YP28-0P) to perform positioning operations. It can be used to set up registered parameters, position data record and counter for positioning modules, as well as perform action test and monitoring.

By providing an integrated development environment that features ease of use, reusability and visibility, it simplifies module setup and debugging, and thus dramatically improves development efficiency.

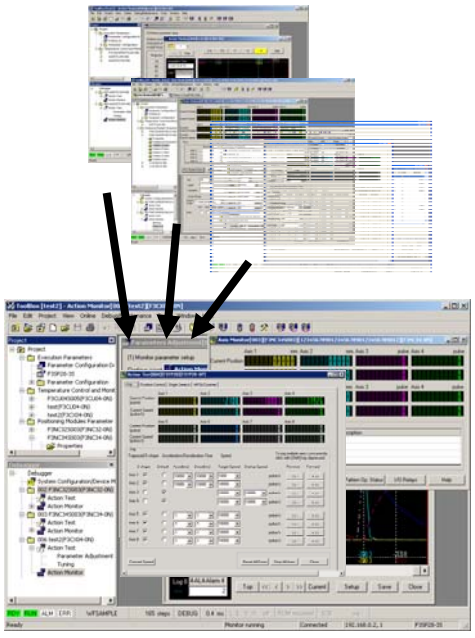
* The FA-M3 ToolBox for Positioning Modules software is released as a unified multi-lingual product starting from revision R4.01. For details on older versions, refer to the general specification (GS) for SF662–ECW.

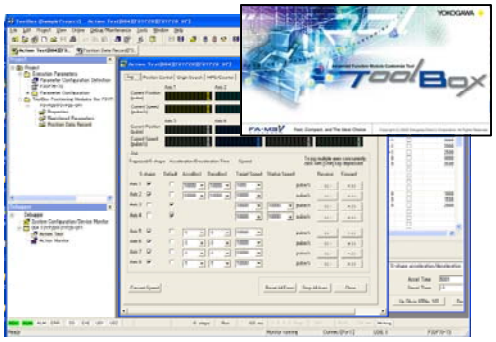
Features

ToolBox for Positioning Modules (for F3YP22/24/28) offers the following features.

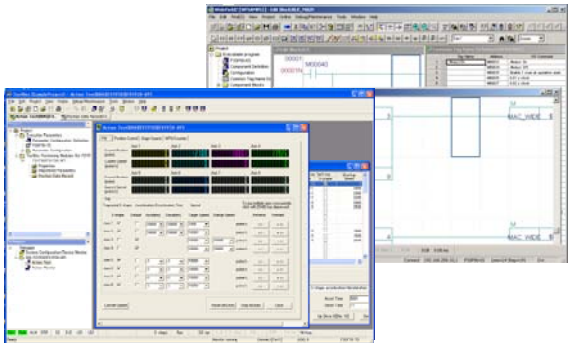
- **Integrated Development Environment**

- By installing ToolBox for Positioning Modules (SF662/663-MCW) and ToolBox for Temperature Control and Monitoring Modules (SF661-MCW) on the same PC, temperature control and PID modules, temperate monitoring modules and positioning modules (with positioning pulse output, with Multi-channel Pulse Output) can be conveniently managed within the same project.
  What's more, ToolBox support for other FA-M3 advanced I/O modules can be added when available.
  ToolBox for Temperature Control, for Positioning And Monitoring Modules



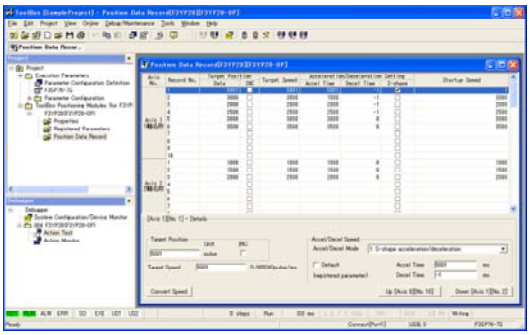


- ToolBox and the Ladder Programming Tool WideField2 or WideField3 can be run concurrently to edit data. With WideField2 R2 or later version, concurrent communication with FA-M3 is also supported.

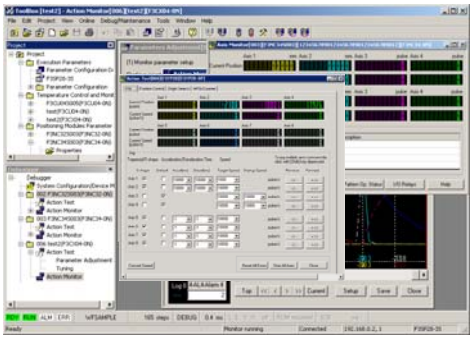


- **Ease of Use and Reusability**

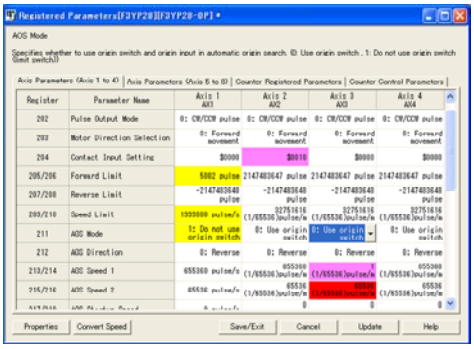
- Position data are created and managed. A user can reuse position data for different units of the same equipment, thus dramatically improving development efficiency.



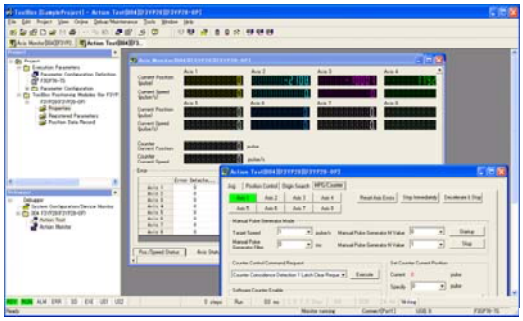
- **Visibility**
- The Window List bar displays a list of open windows to allow quick access to hidden windows.



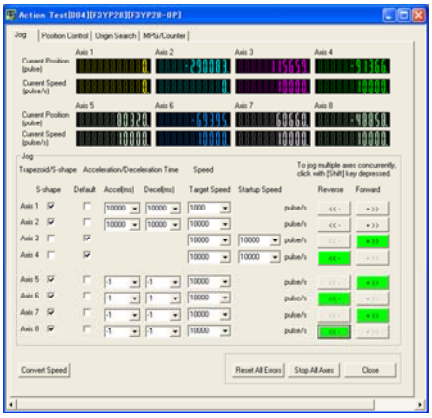
- Cells of setup data are appropriately color-coded on edit windows of registered parameters and position data – red for error data, pink for modified but unconfirmed data, yellow for modified and confirmed value and gray for cells that do not require input.



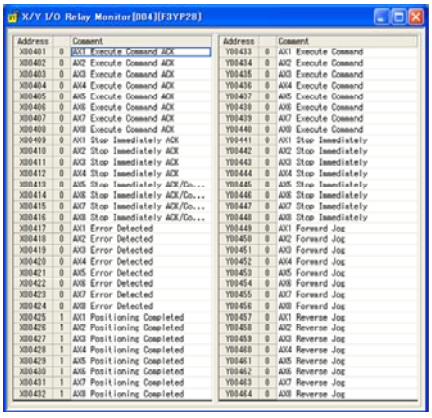
- **Debugging and Maintenance**
- All statuses are monitored during an action test to facilitate debugging of registered parameters and position data.



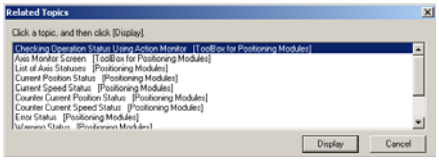
- When performing an action test using jog operations, pressing and holding the SHIFT key moves multiple axes concurrently. Releasing the SHIFT key stops all axes.



- Input/output relays of FA-M3 advanced function I/O modules can be displayed with help information, monitored and even turned on or turned off.



- The Help function in ToolBox for Positioning Module can be used to call up relevant help information in the user manual for positioning modules.



- Functions added in R2

- Support for Windows 10 and Windows 8/8.1 is added.

Operating Environment

Item	Specification
	SF663-MCW
PC	PC/AT compatible
Operating System	Microsoft Windows 10 (x86/x64) Microsoft Windows 8/8.1 (x86/x64) Microsoft Windows 7 (x86/x64) (English or Japanese OS version)
Media	CD-ROM
CPU	1 GHz or faster, adequate for the OS to run properly.
Memory	1 GB or more, adequate for the OS to run properly.
Hark Disk Capacity	200MB or more available
Display	1024×768 dots or higher resolution recommended
Communications*1*2	USB, RS-232C, Ethernet, FL-net (For F3LX02-1N Rev 01.00 or later)
Printer	Any printer compatible with the OS listed above and supports A4 printing
Supported Modules	F3NC32-0N, F3NC34-0N
Compatible CPU Modules	F3SP05-0P, F3SP08-0P, F3SP08-SP, F3SP21-0N, F3SP25-2N, F3SP35-5N, F3SP28-3N, F3SP38-6N, F3SP53-4H, F3SP58-6H, F3SP22-0S, F3SP28-3S, F3SP38-6S, F3SP53-4S, F3SP58-6S, F3SP59-7S, F3SP66-4S, F3SP67-6S, F3SP71-4N, F3SP71-4S, F3SP76-7N, F3SP76-7S, F3FP36-3N
Compatibility with Other Applications	ToolBox R1 supports concurrent communications with WideField3.

*1: For Ethernet and FL-net communications, network card must support TCP/IP protocol. Allowable communications conditions vary with CPU type.

*2: USB connection is not guaranteed to work with all PC chipsets and may be unstable when used with some PC chipsets.

Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
SF663	—	—	—	ToolBox for Positioning Modules (for F3YP2☐)
	-MCW	—	—	Multi-lingual version R2

Cable for PC Connection

A cable is required to connect a personal computer to the programming tool connector (USB port or PROGRAMMER port) on an FA-M3 CPU module. Select the appropriate cable for the PC to be used as follows.

USB Connection

Procure a commercially available USB cable.

- For F3SP66-4S, F3SP67-6S:
  CPU port uses USB Series B connector.
- For F3SP71-4N, F3SP76-7N, F3SP71-4S, F3SP76-7S:
  CPU port uses USB Series mini B connector.

RS-232C Connection

Model and Name:

KM-11-2T, -3T, -4T	Programming Tool Cable (for PC/AT-compatible computer)
KM13-1N, KM13-1S	USB-serial converter

Note 1: For details on cables for connecting PCs, see GS34M06C91-01E.

Note 2: RS-232C connection is not available for F3SP66-4S, F3SP67-6S, F3SP71-4N, F3SP71-4S, F3SP76-7N, and F3SP76-7S.

Menu Layout

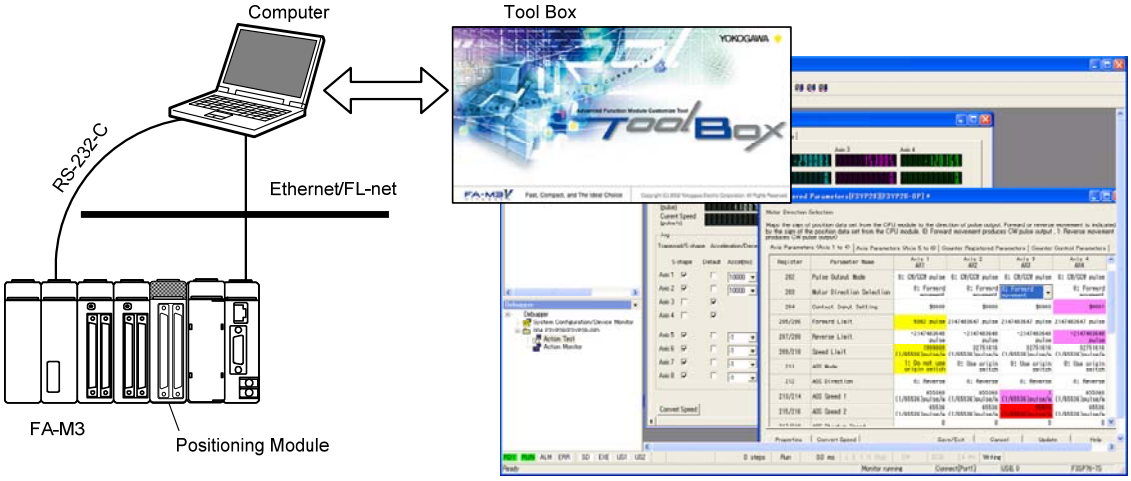
FA-M3
ToolBox for Positioning Modules

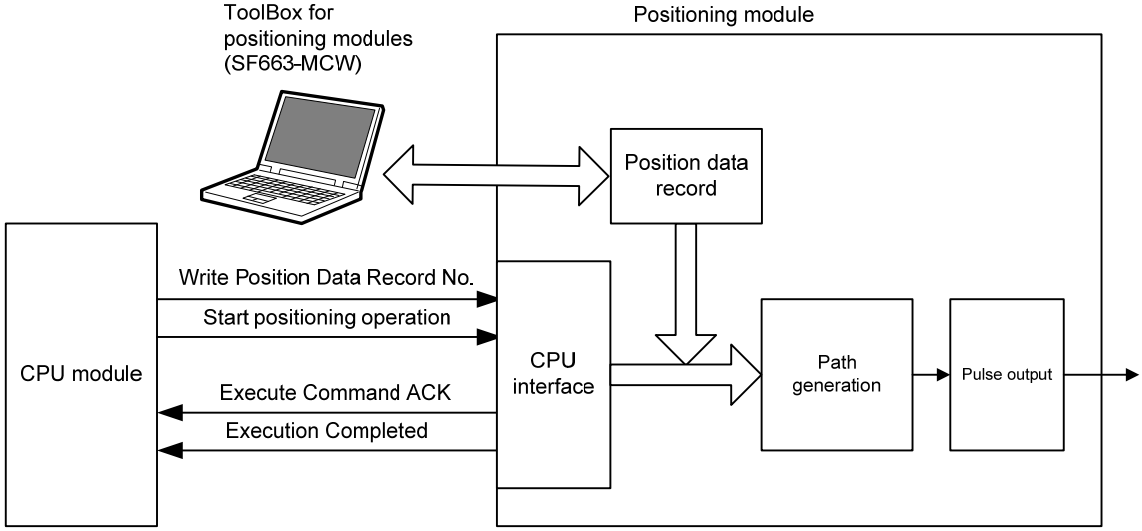
- File
  - Project related
  - Select module
  - Setup file related
  - Print related
  - List of recently opened files
  - Exit
- Edit
  - Undo
  - Redo
  - Parameter editing related
- View
  - Project window
  - Debugger window
  - Toolbar view related
  - Window list bar
- Online
  - Connect/disconnect
  - Operating mode(Run/Stop/Debug)
  - Download
  - Upload
  - Compare file and module
  - Module ROM management
- Debug/Maintenance
  - Action test
  - Action monitor (Logging)
  - Module monitor
  - Error information
  - Action pattern monitor
  - Device monitor
  - Teach
- Tools
  - Communications setup
  - Environment setup
- Window
  - Cascade
  - Tile
- Help
  - Help
  - About ToolBox

Function Overview

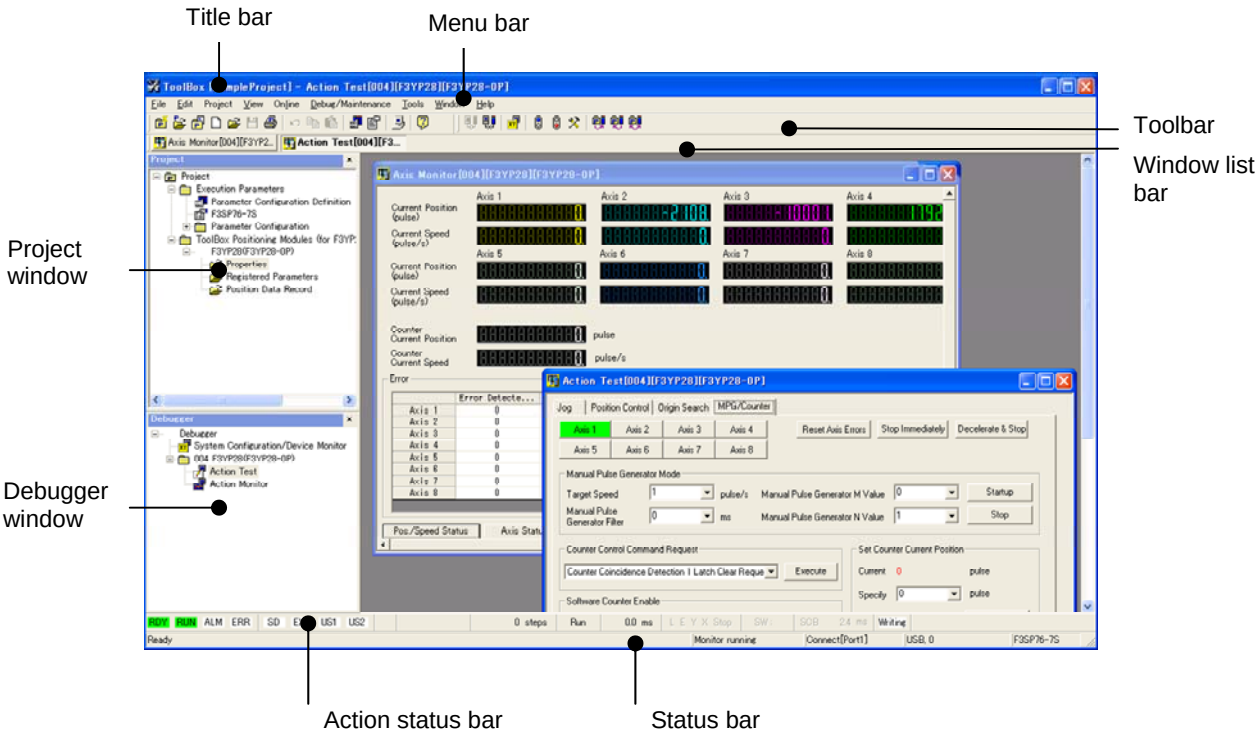
ToolBox for Positioning Modules (SF663-MCW) is a Windows software tool for configuring positioning modules (F3YP22-0P, F3YP24-0P, F3YP28-0P). It provides an environment for a user to set up registered parameters and position data record and counter of positioning modules, as well as perform action test and monitoring. The PC and the FA-M3 can be connected using USB, RS-232C, Ethernet or FL-net.

A user can set up position data record for a positioning module using the ToolBox for Positioning Modules software and then executes positioning movements using the pre-stored data.





1. Screen Layout



(1) Title bar

The title bar shows the name of an open project, an active window, or a file being edited

(2) Menu bar

The menu bar shows ToolBox standard menu. Clicking a menu item displays a pull down menu showing a list of commands for selection. Available commands depend on the current CPU operating mode and action mode. Unavailable commands are displayed in gray.

(3) Project window

The project window shows a list of execution parameters of an open project and parameters of advanced function modules.

(4) Debugger window

The debugger window shows debug and maintenance information for each registered parameter file.

(5) Toolbar

The toolbar shows icons of frequently used commands for easier access.

(6) Window list bar

The Window List Bar shows icons of open windows in ToolBox.

(7) Action status bar

The action status bar shows the operating status of the FA-M3 system (primarily the CPU module).

(8) Status bar

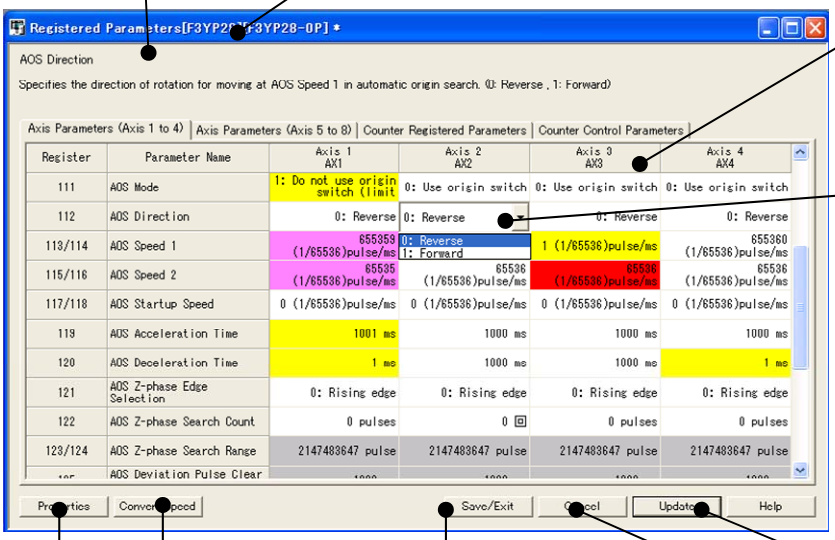
The status bar indicates the operation status of ToolBox.

2. Screen for Editing Parameters

2.1 Registered Parameters

Clicking the cell of a parameter displays its description.

Displays file name, title and module type.



Displays number and name of axes. Name of axes can be changed from the Properties screen.

Clicking a cell displays a list box or an input helper screen. The cell containing the cursor is displayed with blue background. A cell is displayed with different background colors to indicate different statuses as follows:

- White : Default value
- Yellow: Modified and confirmed value
- Pink: Modified but unconfirmed value
- Red: Invalid value
- Gray: Disregarded value

Saves edited data to file.

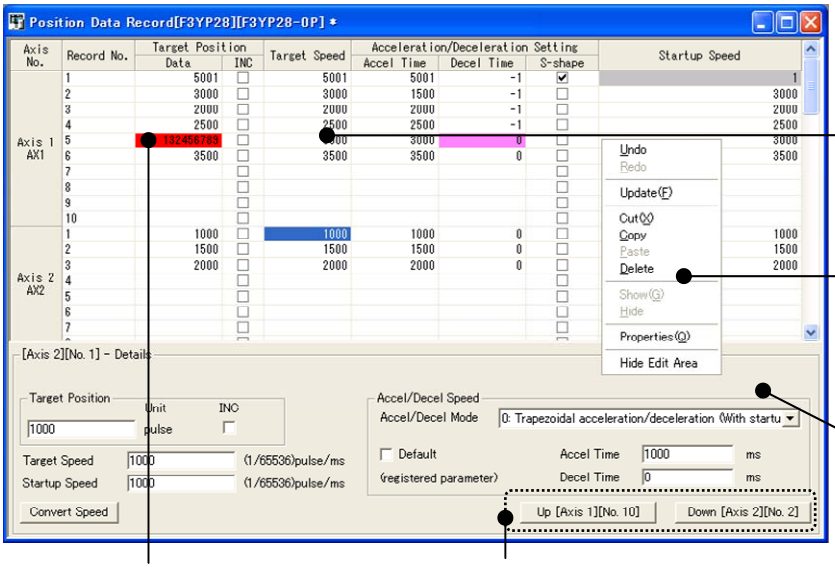
Opens Convert Speed screen

Saves edited changes and closes the screen.

Cancels editing and closes the screen

Allows changing of title or names of axes.

2.2 Position Data



Data List area
Displays position data.
You can edit one line at a time.

Right mouse click
Click the right mouse button to display this menu.

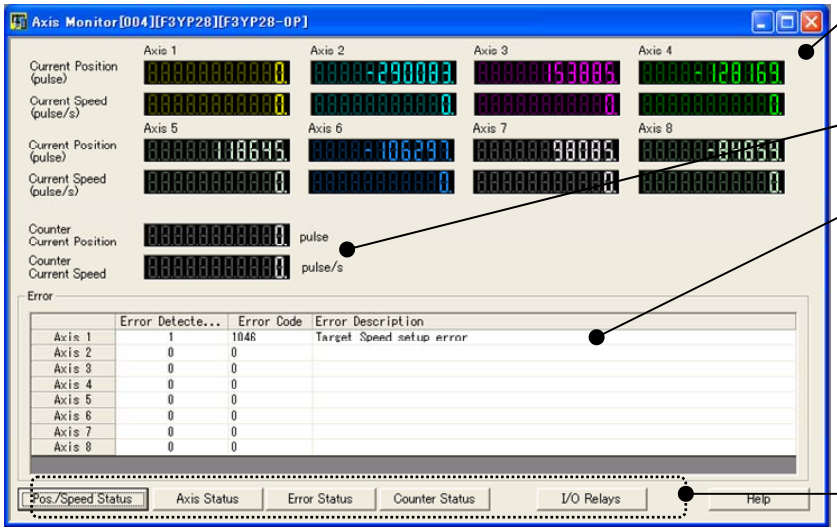
Edit area
Edits position data

Error data are displayed with red background.

Up/Down
Moves to the next or previous record.

3. Monitor Screen

3.1 Axis Monitor



Current position and current speed

Counter current position and counter current speed

Error information

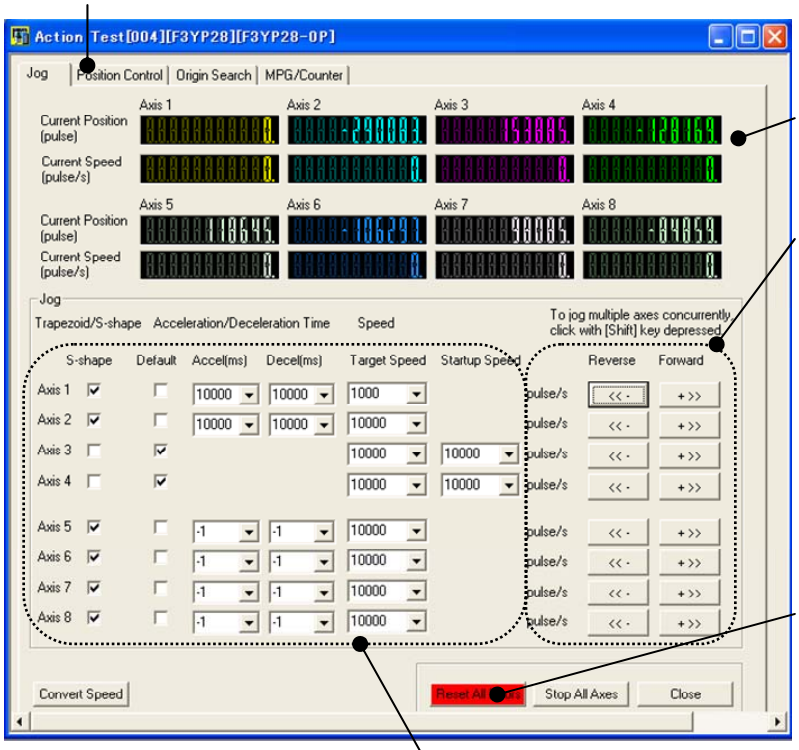
Monitors

- Position/speed status
- All axis status
- Error status
- Pattern operation status
- I/O relays

4. Action Test Screens

4.1 Jog

Select different tabs to switch between action test screens.



Current position and current speed

Performs forward or reverse jogging. Performs jogging when the mouse button is clicked or while the space key is depressed. Releasing the space key stops jogging.
To jog multiple axes concurrently, click the mouse button with the [Shift] key depressed. Releasing the [Shift] key stops all axes.

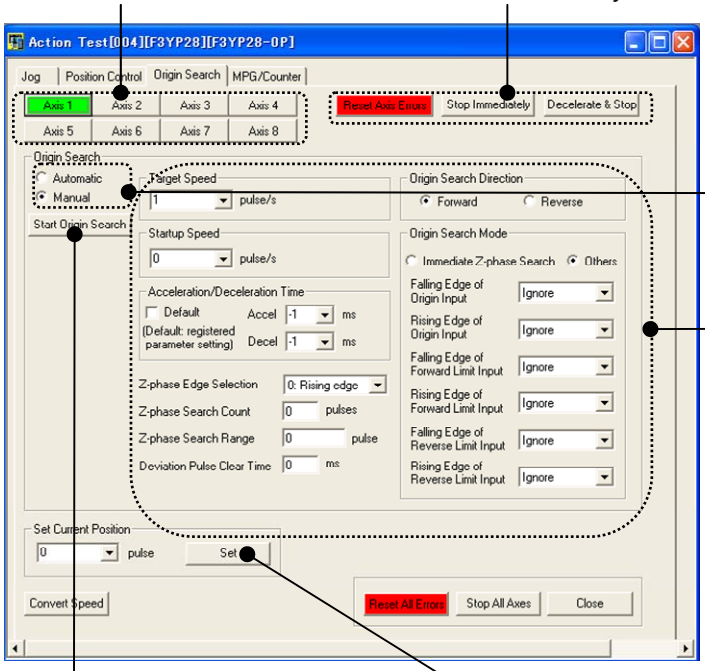
This button changes to red if any axis error is detected. Clicking the button clears all axis errors.

Specifies the acceleration and deceleration time.

4.2 Origin Search

Select the test axis.

Resets all axis errors; stops positioning movement immediately or after deceleration.



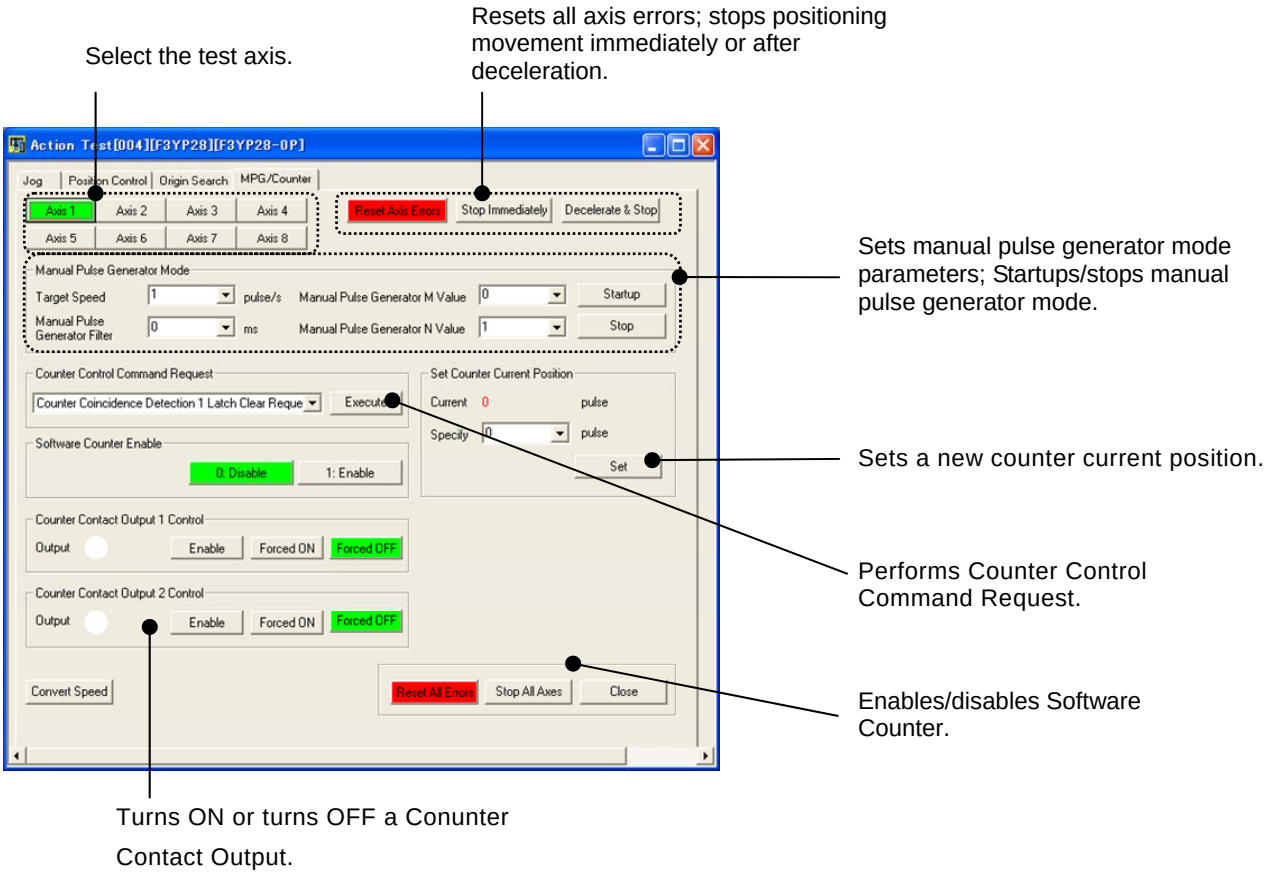
Select origin search mode.

Sets up parameters for manual origin search.

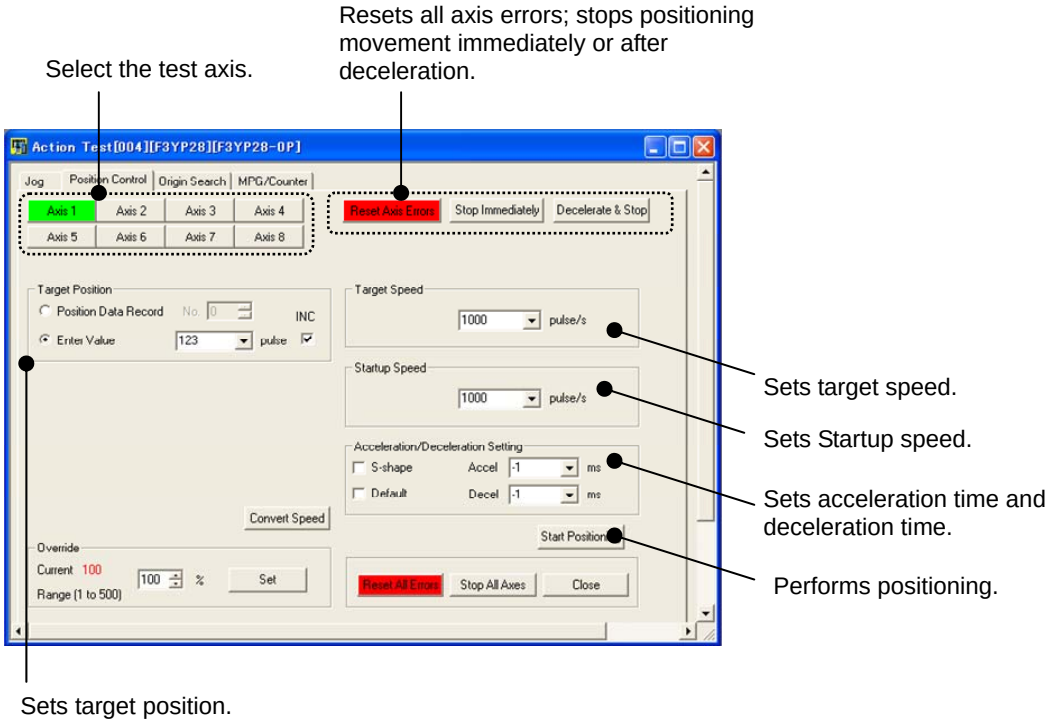
Performs origin search.

Sets a new current position.

4.3 Manual Pulse Generator/Counter



4.4 Position Control



General Specifications

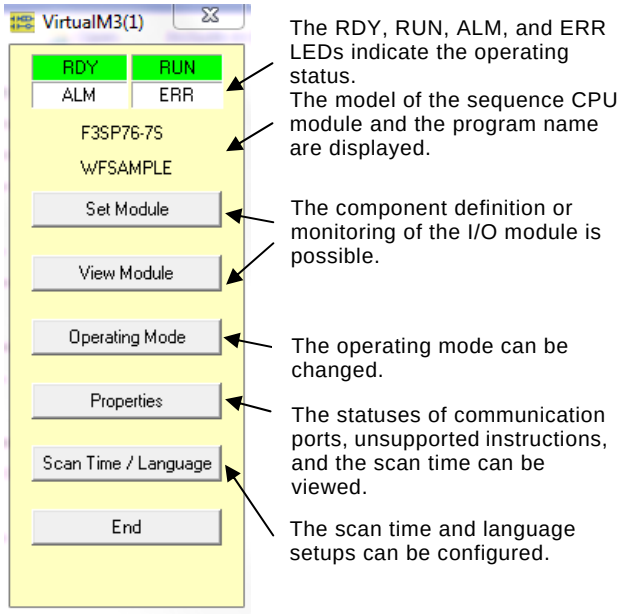
SF681-MDW
FA-M3 Simulation Software Virtual-M3 R1

General

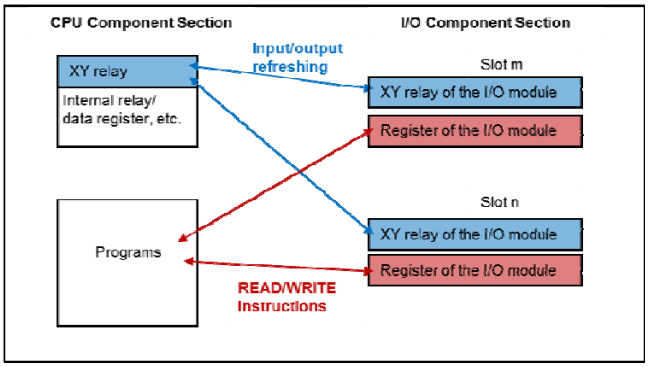
FA-M3 Simulation Software Virtual-M3 allows you to simulate how an FA-M3 sequence CPU module operates on a PC to debug programs without any physical machine.
This software provides four primary functions that can significantly reduce the debugging time: the step operation function, Live Logic Analyzer, I/O module simulation function, and link function with a display.

Features

● Appearance



Virtual-M3 Appearance



Virtual-M3 Internal Configuration

● System Configuration
- You can build a system with one main unit and up to seven subunits.
- You can perform component definitions of I/O modules provided by FA-M3.
- You can download, upload, and monitor programs, as well as edit them online, with Virtual-M3 connected to FA-M3 Programming Tool WideField3*.

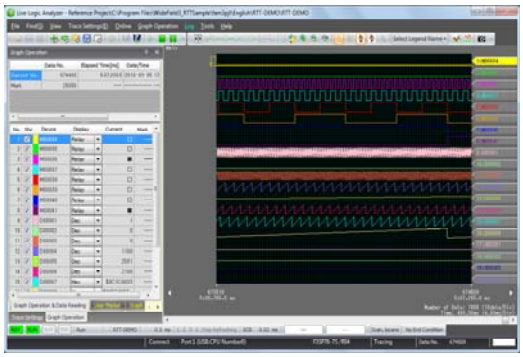
● Basic Operations
- Virtual-M3 provides functions such as program execution, input/output refreshing, the PC link service, and the tool service, which are basic operations that a sequence CPU module can perform.
- It has the same types and numbers of devices as the sequence CPU modules.
- It also has input/output relays and registers of I/O modules, in addition to devices of the sequence CPU modules.
- It supports all the instructions, excluding the special ones.
- It supports READ/WRITE instructions that access the I/O modules and direct refresh instructions.
- As with the sequence CPU modules, it can handle bits; word, long-word, and double-long-word integers; single-precision and double-precision floating point numbers; and strings.
- It allows you to change the settings for the constant scan and scan time.
- It can display the statuses of communication ports, the list of unsupported instructions, and the current scan time.
- Up to two windows of Virtual-M3 can be open at the same time.

● Step Operation
- You can specify the starting position of a step operation by using a combination of a line number of a block and a device status.
- You can skip some steps in the middle during step operation.
- You can choose to use either step-through execution per circuit or step-through execution per instruction, to suit your situations.
- You can go back to a given step position to perform step-through execution again. The device status also returns to the pre-execution value.
- Step-through execution is available even in subroutines, macros, and the sensor control block.

- Step-through execution gives you the details easily, which are not easy to get with scan-based operations, such as the FOR-NEXT instruction and index modification.

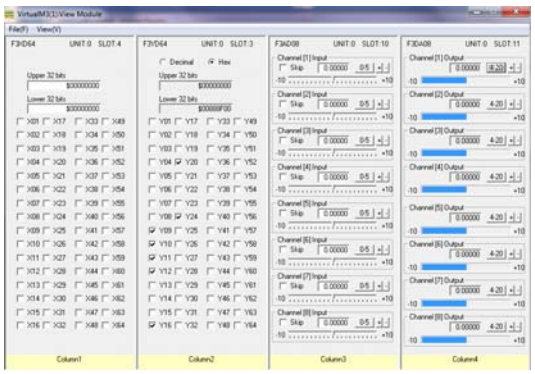
*: It is supported by WideField3 version 4 (R4) or later.

● Live Logic Analyzer
- It allows you to check operations in real-time.
- The operating status can be saved to a file, which makes it possible to document the status and distribute the file to other relevant parties.
- It allows Virtual-M3 to perform operations equivalent to the ones a sequence CPU modules can do.



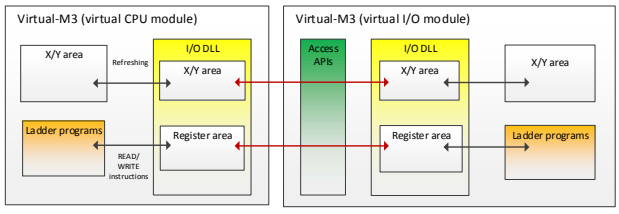
Live Logic Analyzer

● I/O Module Simulation
- You can monitor the input/output relays of I/O modules. The monitor screen allows you to provide simulated input.
- On the analog input module screen, you can enter analog data. You can also set up scaling and change display formats.
- The analog output module screen displays analog data output. You can also set up scaling and change display formats.



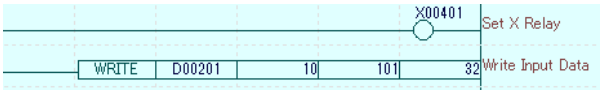
Monitor Screen for an I/O Module

- You can simulate an I/O module. You can open two windows of Virtual-M3, making one window serve as a virtual CPU module and another as a virtual I/O module. In this way, you can debug the virtual CPU module while running the I/O module.



Virtual CPU Module and Virtual I/O Module

- Programs for the virtual I/O module can also be created with FA-M3 Programming Tool WideField3. These programs can provide the capability of writing to an input relay or register of the I/O module.



Programming Example of the Virtual I/O Module

- The virtual CPU module has a different appearance and project background color from the virtual I/O module, which allows you to identify both modules easily.

● Linking with a Display
- You can use the PC link function of Virtual-M3 to link it with a display or SCADA system.
- You can debug your programs together with the display and programs on the SCADA system.

Operating Environment

Item	Specification
	SF681-MDW
PC	PC/AT compatible
OS	Microsoft Windows 10 (32bit/64bit) Microsoft Windows 8/8.1 (32bit/64bit) Microsoft Windows 7 (32bit/64bit) English or Japanese OS version
Software Supply Method	Web Download
CPU	Pentium 1 GHz or faster (or a compatible equivalent), adequate for the OS to run properly.
Memory	1 GB or more, adequate for the OS to run properly.
Hard Disk Capacity	100 MB or more available
Display	1024 x 768 dots or higher
Compatible CPU Modules	F3SP22-0S, F3SP71-4S, F3SP76-7S, F3SP28-3S, F3SP38-6S, F3SP53-4S, F3SP58-6S, F3SP59-7S, F3SP66-4S, F3SP67-6S
Unsupported Instructions	INTP/IRET, DI/EI, STRCT/STMOV/SCALL, TPARA, WDT, SIG, DISP, PWRITE/PREAD, ULOG/ULOGR/UCLR, and all of the continuous type application instructions
Unsupported Functions	- Multi CPU/Multi PLC system - Part of the LEDs - Part of the RAS function - Part of the PC link commands - Logging function (system log, operation log, user log, and FTP server log) - I/O interrupts - Security function - Rotary switch - SD memory card - FTP transfer and serial communications - System reset - Sampling trace - Connection with and configuration of the FA link or FL-net

Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
SF681	—	—	—	FA-M3 Simulation Software VirtualM3
	-MDW	—	—	Multi-lingual version R1

Model and Suffix Codes of Software Packages

Name	Model and Suffix Code (PC/AT compatible)	Applicable CPU Module					
		F3SP05 F3SP08 F3SP21 F3SP25 F3SP35 F3FP36	F3SP28-3N F3SP38-6N F3SP53-4H F3SP58-6N	F3SP28-3S F3SP38-6S F3SP53-4S F3SP58-6S F3SP59-7S F3SP66-4S F3SP67-6S	F3SP71-4N F3SP76-7N	F3SP22-0S F3SP71-4S F3SP76-7S	F3BP20 F3BP30
FA-M3 Programming Tool WideField3	SF630-MCW	Yes	Yes	Yes	Yes	Yes	—
FA-M3 Tool Box for Temperature Control and Monitoring Modules	SF661-MCW	Yes	Yes	Yes	Yes	Yes	—
FA-M3 Tool Box for Positioning Modules (for F3NC32/34)	SF662-MCW	Yes	Yes	Yes	Yes	Yes	—
FA-M3 Tool Box for Positioning Modules (for F3YP22/24/28)	SF663-MCW	Yes	Yes	Yes	Yes	Yes	—
FA-M3 Simulation Software Virtual-M3	SF681-MDW	—	—	Yes	—	Yes	—

Note: Some personal computers or printers may not be supported depending on the CPU type, clock frequency, or number of printed digits, regardless of its manufacturer or name of series. Contact Yokogawa before use.

Trademarks

- Windows, Windows 7, Windows 8, Windows 8 .1 and Windows 10 are registered trademarks of Microsoft Corporation.
- Ethernet is a registered trademark of Xerox Corporation.
- Other product or company names appearing in this document are trademarks or registered trademarks of their respective holders.

Items to Specify When Ordering

1. Model and suffix codes