Panasonic

Motion Controller

GM1 Controller RTEX

User's Manual

Setup

WUME-GM1RTXSU-04

2022.4

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Introduction

Thank you for purchasing a Panasonic product. Before you use the product, please carefully read through the installation instructions and the manuals, and understand them in detail to use the product properly.

Types of Manual

- There are different types of manuals for the GM1 series. Refer to the appropriate manual according to your need.

  These manuals can be downloaded from our website: https://industrial.panasonic.com/ac/j/motor/motion-controller/mc/gm1/index.jsp.

Manuals for GM1 series

Manual name	Manual code	Description
GM1 Controller RTEX User's Manual (Setup)	WUME-GM1RTXSU	Explains wiring between the GM1 and its peripheral devices, installation method, and operation check method.
GM1 Controller RTEX User's Manual (Operation)	WUME-GM1RTXOP	Explains how to use GM Programmer and PANATERM Lite for GM, set up each function, create projects, and perform other operations.
GM1 Series Reference Manual (Hardware)	WUME-GM1H	Explains the functions and performance of each GM1 unit.
GM1 Series Reference Manual (Instruction)	WUME-GM1PGR	Explains the specifications of each instruction that can be used with the GM1 Series.
GM1 Series Reference Manual (Analog I/O Unit)	WUME-GM1AIO	Explains the functions and performance of the Analog Expansion Unit.
GM1 Series Reference Manual (Pulse Output Unit)	WUME-GM1PG	Explains the functions and performance of the GM1 Pulse Output Unit.

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Table of Contents

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1 Before Using This Product

1.1 Safety Precautions

This section explains important rules that must be observed to prevent personal injury and property damage.

- Injuries and damages that may occur as a result of incorrect use are classified into the following levels and safety precautions are explained according to the level.

⚠ **WARNING**	Indicates that there is a risk of death or serious injury
⚠ **CAUTION**	Indicates that there is a risk of minor injury or property damage

	Indicates an action that is prohibited
	Indicates an action that must be taken

⚠ **WARNING**	
	• Take safety measures outside this product to ensure the safety of the entire system even if this product fails or an error occurs due to external factors.
	• Do not use this product in atmospheres that contain flammable gases. Doing so may result in explosion.
	• Do not throw this product into the fire. Doing so may cause the batteries or other electronic parts to explode.

⚠ **CAUTION**	
	• To prevent abnormal heat generation or smoke generation, use this product with some leeway from the guaranteed characteristics and performance values of the product.
	• Do not disassemble or modify this product. Doing so may result in abnormal heat generation or smoke generation.
	• Do not touch any terminals while the power is on. Doing so may result in electrical shock.
	• Configure emergency stop and interlock circuits outside this product.
	• Connect wires and connectors properly. Failure to do so may result in abnormal heat generation or smoke generation.
	• Do not perform work (such as connection or removal) with the power turned on. Doing so may result in electrical shock.
	• If this product is used in any way that is not specified by Panasonic, its protection function may be impaired.
	• This product has been developed and manufactured for industrial use only.

1.2 Description of Icons Used in this Document

■ **In this manual, the following symbols are used to indicate safety information that must be observed.**

Stop	Indicates an action that is prohibited or a matter that requires caution.
!	Indicates an action that must be taken.
Info.	Indicates supplemental information.
Note	Indicates details about the subject in question or information useful to remember.
1 2 Procedure	Indicates operation procedures.

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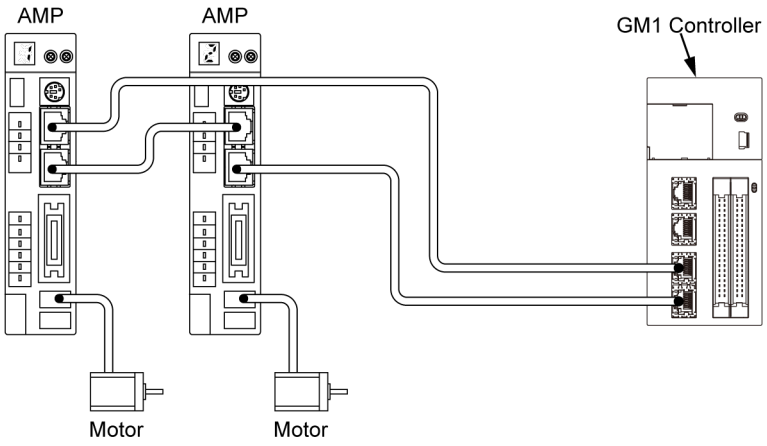
2 Basic System Configuration

2.1 Outline of the GM1 System

■ Network control

A MINAS series servomotor network system can be easily configured using the RTEX network dedicated to motion control.



■ System configuration including virtual axes

A motion system that combines real and virtual axes can be configured.

■ Two LAN ports

Other than the RTEX, there are two Ethernet connection ports.

Each port can have a unique IP address. They can be used for different purposes, such as for an in-device network or for a host system network.

■ Equipped with the high-speed counter input and PWM output

The GM1 Controller is equipped with a 2-ch high-speed counter input for 16 MHz (multiplied by 4) and a 4-ch PWM output that can output a maximum of 100 kHz. These functions can be used without adding expansion units.

2.2 Unit Types

■ Controller

Type	Function	Model number
RTEX-compatible GM1 Controller (sink type)	RTEX 16-axis motion controller Transistor NPN output type	AGM1CSRX16T

■ Expansion units

Type	Function	Model number
Digital input (64 points)	24 V DC, 64 input points	AGM1X64D2
Digital output (64 points) (sink type)	Output (64 points) Transistor NPN type	AGM1Y64T
Digital output (64 points) (source type)	Output (64 points) Transistor PNP type	AGM1Y64P
Digital I/O (64 points) (sink type)	24 V DC, 32 input points 32 output points Transistor NPN type	AGM1XY64D2T
Digital I/O (64 points) (source type)	24 V DC, 32 input points 32 output points Transistor PNP type	AGM1XY64D2P
Analog input (8 points)	8 input points	AGM1AD8
Analog output (4 points)	4 output points	AGM1DA4
Pulse output (transistor output type)	4-axis, pulse train, 500 kpps Open collector output	AGM1PG04T
Pulse output (line driver output type)	4-axis, pulse train, 4 Mpps Line driver output	AGM1PG04L

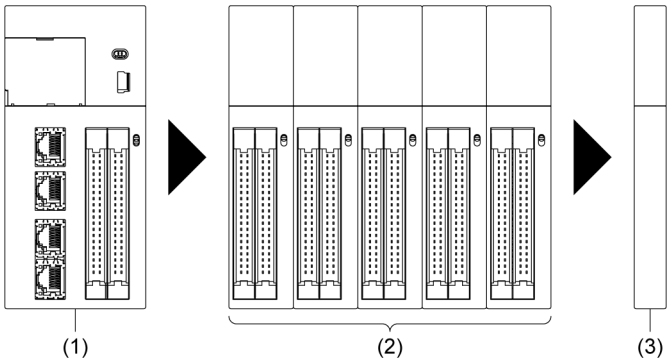
Info.

- For the RTEX-compatible GM1 Controller and expansion units to be used, compatible GM Programmer versions are as follows.

Type	Model number	Version of GM Programmer
RTEX-compatible GM1 Controller (sink type)	AGM1CSRX16T	Ver.1.0 or later
Digital input (64 points)	AGM1X64D2	Ver.1.0 or later
Digital output (64 points) (sink type)	AGM1Y64T	Ver.1.0 or later
Digital output (64 points) (source type)	AGM1Y64P	Ver.1.2 or later
Digital I/O (64 points) (sink type)	AGM1XY64D2T	Ver.1.0 or later
Digital I/O (64 points) (source type)	AGM1XY64D2P	Ver.1.2 or later
Analog input (8 points)	AGM1AD8	Ver.1.2 or later
Analog output (4 points)	AGM1DA4	Ver.1.2 or later
Pulse output (transistor output type)	AGM1PG04T	Ver.1.2 or later
Pulse output (line driver output type)	AGM1PG04L	Ver.1.2 or later

2.3 Restrictions on the Number of Expansion Units

Up to 15 expansion units can be mounted on the right side of the GM1 Controller.



(1)	Controller	(2)	Expansion units	(3)	End unit

- Make sure to connect an end unit to the end of the system.

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3 Restrictions on the GM1 Controller and Servo Amplifiers

3.1 Restrictions on the Combination of the GM1 Controller and Servo Amplifiers

As for the combination of the GM1 Controller and each MINAS series, confirm the following restrictions.

Combination of the GM1 Controller and servo amplifiers

Connectable servo amplifier		Description
A5N	A6N	
●	●	A5N and A6N can be connected to the same network.

Note

- When using servo amplifiers in combination with the GM1 Controller, use the ones with the latest software version.

■ Setting ranges of movement amount and speed

The input range of the movement amount or speed specified in the GM1 Controller may differ from the upper and lower setting limits of the servo amplifier.

Info.

- The input range of the movement amount or speed specified in the GM1 Controller may differ from the upper and lower setting limits of the servo amplifier.
  - RTEX-compatible GM1 Controller: Communication cycle: 500 µs to 2 ms, Command update cycle: 500 µs to 4ms
  - Servo amplifier A5N: Communication cycle: 500 µs to 1 ms, Command update cycle: 500 µs to 1 ms
  - Servo amplifier A6N: Communication cycle: 500 µs to 2 ms, Command update cycle: 500 µs to 4 ms

3.2 Restrictions on Servo Amplifier Parameters

Some parameters for servo amplifiers affect the behaviors of the GM1 Controller. Use the following parameters.

No.	Name	Description	Standard factory default setting
Pr5.04	Over-travel inhibit input setup	Use setting value “1 (Disable the over-travel inhibit input)”. (Mandatory)	1(Note 1)
Pr7.22	RTEX function extended setup 1	Use setting value “1 (32-byte mode)”. (Mandatory)	1(Note 2)
Pr7.23	RTEX function extended setup 2	Use setting value “18”. (Mandatory) This parameter sets each function in bits. **bit 0: Allow parameter values to be written via RTEX communication** 0: Allow, 1: Disallow **bit 1: Set a sub-number for alarm code** 0: Fixed at 0, 1: Enable sub-number **bit 2: Set RTEX status response conditions when "Over-travel inhibit input setup" is disabled (Pr5.04 = 1)** 0: Enable status, 1: Fixed at 0 **bit 3: Set RTEX status bit assignment for POT and NOT** 0: POT corresponds to bit 1 and NOT corresponds to bit 0, 1: NOT corresponds to bit 1 and POT corresponds to bit 0 0: POT corresponds to bit 1 and NOT corresponds to bit 0, 1: NOT corresponds to bit 1 and POT corresponds to bit 0 **bit 4: Set display mode for "COM" LED** 0: Mode 1, 1: Mode 2 **bit 5: Set non-cyclic command start mode** 0: When a change from base command occurs 1: When command code or command argument changes **bit 6: Set RTEX status logic for POT and NOT** 0: Do not reverse, 1: Reverse **bit 7: Set RTEX status logic for PSL and NSL** 0: Do not reverse, 1: Reverse **bit 8: Select RTEX status from In_Progress / AC_OFF** 0: In_Progress, 1: AC_OFF (It is linked to the setting in bit 15.) **bit 9: Select whether to return a command error when a command for motion toward the direction of over-travel prohibition is received after deceleration stop is executed by "Over-travel inhibit input setup"** 0: Do not return a command error 1: Return a command error	18(Note 2)

No.	Name	Description	Standard factory default setting
		(Bit 10 to bit 13 are not used.) Fix to "0". **bit 14: Set position deviation [command unit] output** 0: Internal commanded position (after filtering) [command unit] - Actual position [command unit] 1: Internal commanded position (before filtering) [command unit] - Actual position [command unit] **Bit 15: Select extended RTEX status from In_Progress / AC_OFF / Pr7.112 settings** 0: Follow the setting of Pr7.23 bit 8 (In_Progress / AC_OFF) 1: Follow the setting of Pr7.112.	
Pr7.25	RTEX speed unit setup	Use setting value “1 (command unit/s)”. (Mandatory)	1 (Note 2)

(Note 1) We recommend that the set value should not be changed judging from the characteristics of the GM1 and MINAS.

(Note 2) Do not change the set value. If the set value is changed, the GM1 Controller will make an error stop.

4 Basic Operations of the GM1 Controller

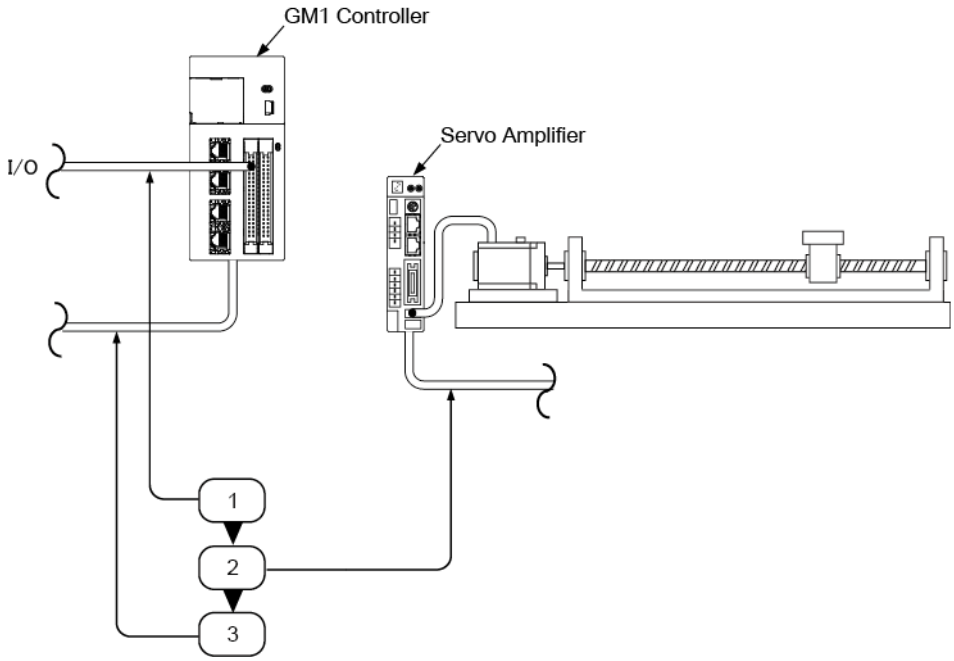
4.1 Power ON

When turning ON the power supply to the system incorporating the GM1 Controller, turn ON the power supply in the following order.

- Consider the nature and statuses of any external devices connected to the system, and take sufficient care so that turning ON the power supply will not initiate unexpected movements.

Procedure

1. Turn ON the power supplies to the I/O devices connected to the GM1 Controller.
2. Turn ON the power supply to the servo amplifier.
3. Turn ON the power supply to the GM1 Controller.



4.2 Operation Mode Switching

■ Switching to the RUN mode

There are the following two methods.

- Press the operation button (►) on the GM Programmer while the STOP LED is lit.
- Set the RUN/STOP switch on the GM1 Controller to RUN.

Info.

- The switch cannot be set to the RUN mode if an error that does not allow to continue operation has occurred or if an exceptional situation has occurred.

■ Switching to the STOP mode

There are the following two methods.

- Press the stop button (■) on the GM Programmer while the RUN LED is lit.
- Set the RUN/STOP switch on the GM1 Controller to STOP.

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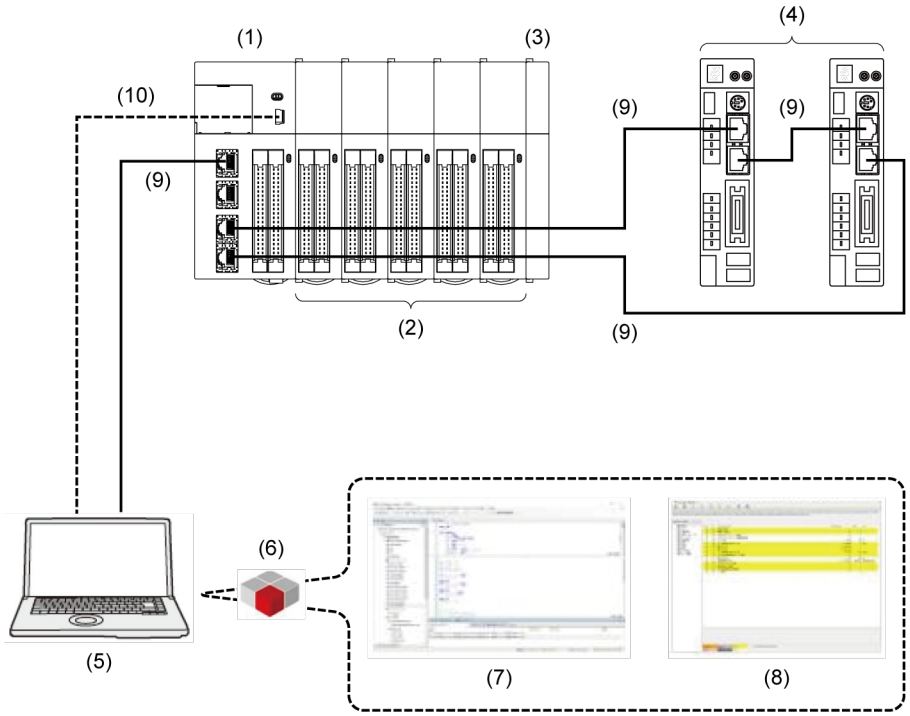
5 Installation and System Setup

5.1 System Configuration Diagram

The figure below shows the configuration of the GM1 series motion controller (Controller and expansion units), servo amplifiers, and PC. The GM Programmer and PANATERM Lite for GM communicate with the GM1 Controller via Gateway.



No.	Name
(1)	GM1 controller
(2)	Expansion unit
(3)	End unit
(4)	Servo amplifier
(5)	PC (on which GM Programmer and PANATERM Lite for GM are installed)
(6)	Gateway, CodeMeter
(7)	GM Programmer
(8)	PANATERM Lite for GM
(9)	Ethernet cable(Note 1)
(10)	USB cable(Note 1)

(Note 1) Use either one of the two cables: Ethernet cable or USB cable.

Info.

- To operate the system, you must install GM Programmer and PANATERM Lite for GM on the PC.
- When GM Programmer is installed, MINAS setup support software "PANATERM Lite for GM", Gateway (the application that connects GM Programmer and the GM1 Controller), and CodeMeter are installed at the same time.

5.2 Work Flowchart

The following table explains the workflow from installation of the GM1 controller through to its operation.

Step	Description		Reference
1	Install GM Programmer and PANATERM Lite for GM.		"P.6-3"
2	Make preparations for the servo amplifiers.		"P.8-1"
	2-1	Connect the servo amplifiers and the PC.	"P.8-2"
	2-2	Install the USB driver on the PC.	"P.8-2"
	2-3	Configure initial settings for the servo amplifiers.	"P.8-2"
	2-4	Disconnect the servo amplifiers from the PC.	"P.8-4"
3	Connect the GM1 Controller and each servo amplifier with cables.		"P.9-1"
4	Connect the GM1 Controller and the GM Programmer.		"P.10-1"
	4-1	Connect the GM1 Controller and the PC with a cable.	"P.10-2"
	4-2	Creating a new project.	"P.10-3"
	4-3	Make communication settings.	"P.10-6"
	4-4	Add and set up device objects for servo amplifiers.	"P.10-9"
	4-5	Make basic settings of the RTEX axis	"P.10-13"
	4-6	Connect the GM1 Controller and each servo amplifier and perform an operation check.	"P.10-19"
	4-7	Log in to the GM1 Controller.	"P.10-24"
	4-8	Log out from the GM1 Controller.	"P.10-25"
5	Connect the GM1 Controller and PANATERM Lite for GM.		"P.11-1"
	5-1	Set up the servo amplifier connected to the GM1 Controller.	"P.11-2"
	5-2	Write parameters to the servo amplifier.	"P.11-6"
6	Prepare for operation.		"P.12-1"
	6-1	Check if safety circuit design is implemented.	"P.12-3"
	6-2	Check wiring for each device.	"P.12-2"
	6-3	Perform an operation check.	"P.12-7"
7	Using the GM Programmer, make settings for GM1 parameters, motion control, unit control, and communication function.		GM1 Controller RTEX User's Manual (Operation)
	7-1	Make settings for the GM1 Controller.	
	7-2	Make settings for the motion control.	
	7-3	Make settings for the unit control.	
	7-4	Make settings for the communication function	
8	Create programs with GM Programmer.		
	8-1	Create objects (POU objects) for a program.	
	8-2	Select a program language (LD program / ST program / SFC program / FBD program / IL program / CFC program) and enter a program.	

Step	Description		Reference
	8-3	Set variables.	
9	Set the GM1 controller with the GM Programmer.		
	9-1	Make time setting.	
	9-2	Log in to the GM1 Controller.	
	9-3	Log out from the GM1 Controller.	
	9-4	Upload the source.	
10	Configure security settings with GM Programmer.		
	10-1	Configure user management settings.	
	10-2	Configure encryption and signature settings.	
	10-3	Configure write-protection settings.	

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6 Overview of the GM Programmer

6.1 System Requirements

6.1.1 Usage Environment of the GM Programmer

Programming software

Product name	Version	Applicable language
GM Programmer	Ver.1.1	Japanese / English / Chinese

(Note 1) When GM Programmer is installed, MINAS setup support software "PANATERM Lite for GM" is installed at the same time.

Software operating environment

Item	Description
OS	Microsoft(R) Windows(R) 10: 32 bit / 64 bit
PC	PC with the following installed: ● Microsoft.NET Framework 4.6.1 or higher ● Microsoft Visual C++ 2010 SP1 Redistributable Package (x86) ● Microsoft Visual C++ 2010 SP1 Redistributable Package (x64) ● Microsoft Visual C++ 2013 Redistributable Package (x86) ● Microsoft Visual C++ 2013 Redistributable Package (x64) ● Microsoft Visual C++ 2015 Update 3 Redistributable Package (x86) ● Microsoft Visual C++ 2015 Update 3 Redistributable Package (x64)
HDD	At least 4 GB of free space
Memory	At least 8 GB
Communication port	LAN port (for Ethernet connection) USB 2.0 port (for USB connection)

6.2 Installation and Uninstallation

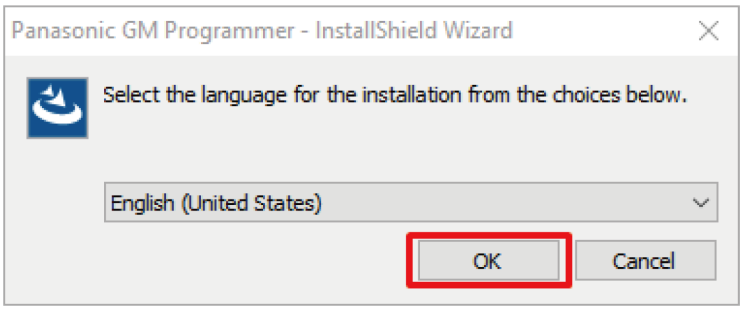
6.2.1 Installing GM Programmer

Before installing the GM Programmer on a PC, log on to the PC as an account with Administrator privileges.

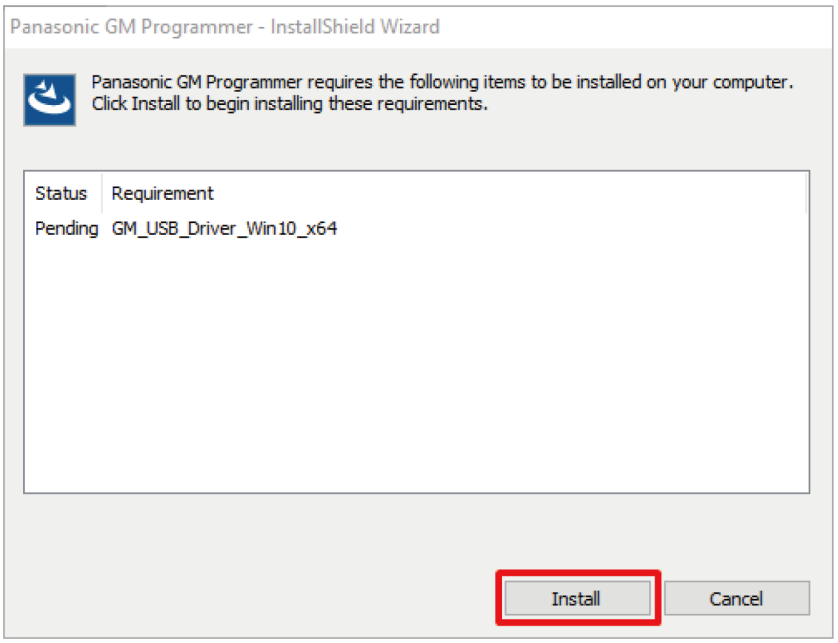
If other applications are running, be sure to close all the applications before installing GM Programmer.

Procedure

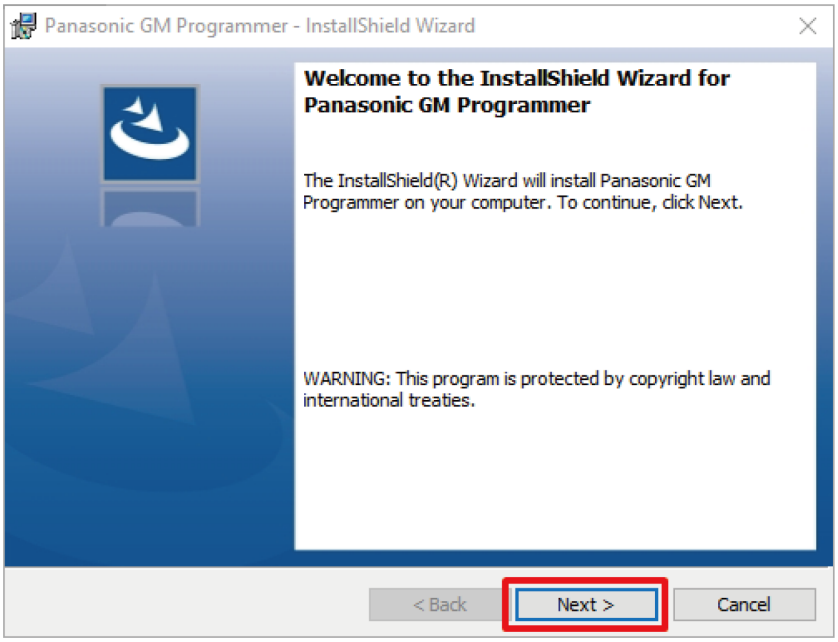
1. Double-click "setup.exe".
   The following window will be displayed. Click [OK].



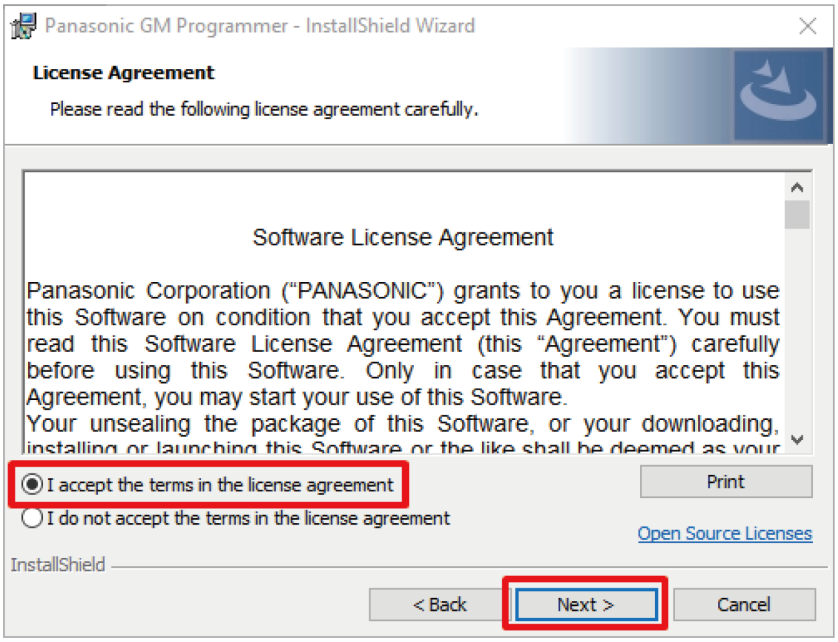
2. The following window will be displayed. Click [Install].
   The display content differs according to the PC environment that you use. (This window may not be displayed at all, depending on the situation.)



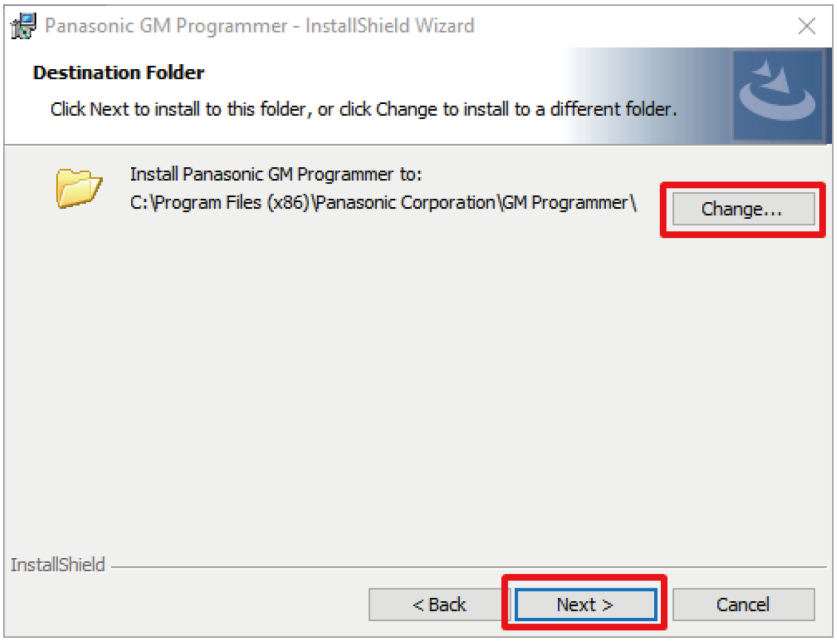
3. The following window will be displayed. Click [Next].



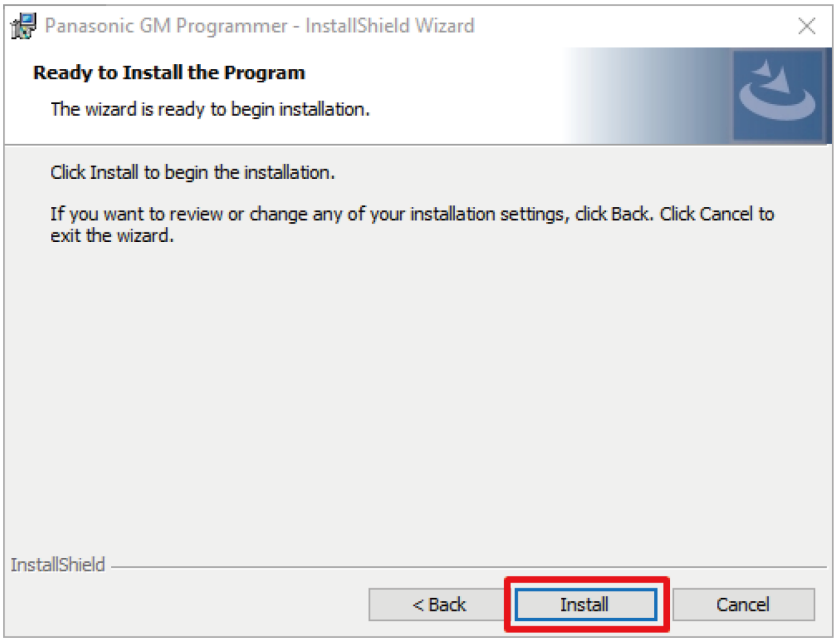
4. The following window will be displayed. Select [I accept the terms in the license agreement] and click [Next].



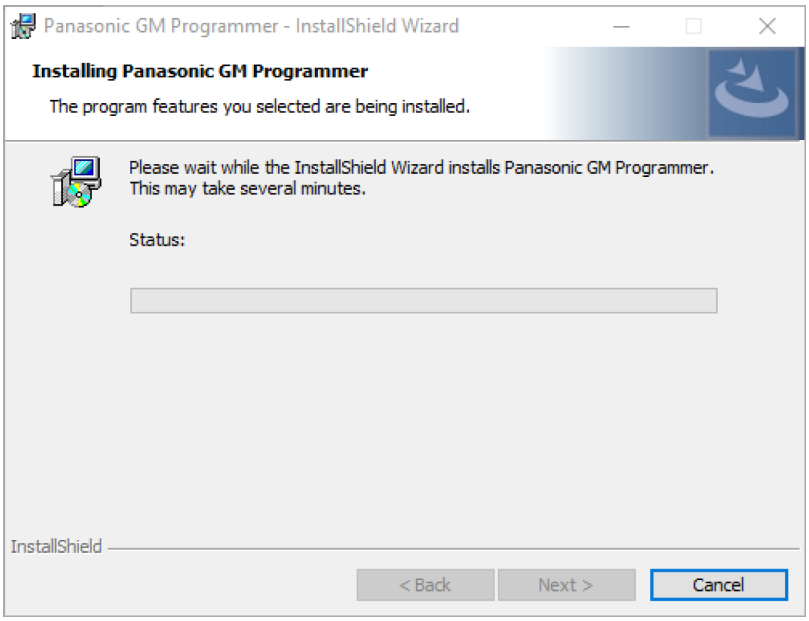
5. The following window will be displayed. If you change the installation destination folder, click [Change] and specify a desired installation destination. If you do not change the installation destination folder, click [Next].



6. The window below will be displayed. Click [Install] to start the installation.



7. The following window will be displayed while the installation is in progress.

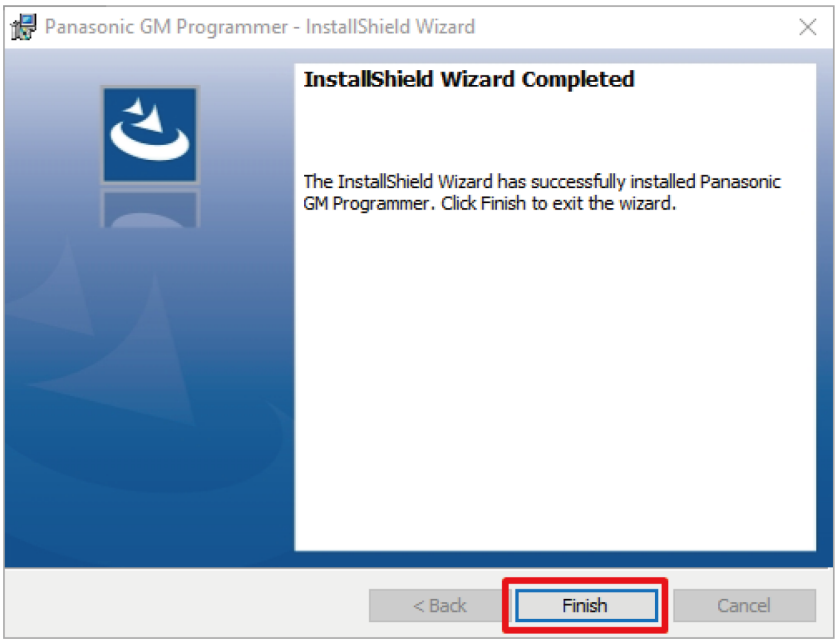


Following this installation, the three packages below will be installed. (The segments indicated by * differ according to the version of the software.)

- CODESYS SoftMotion*.*.*.*_P
- GMPLibrary (*.*.*.*)
- PANATERM-Lite for GM V*.*

These packages take a long time to install. Take care not to click [Cancel] while the installation is in progress.

8. When the installation of all the packages is completed, the following window will be displayed. Click [Finish].



This completes the installation procedure.

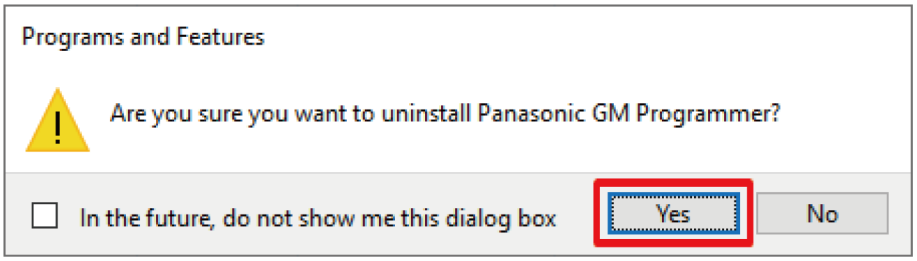
Info.

- When the GM Programmer is installed, PANATERM Lite for GM, Gateway (CODESYS Gateway), and CodeMeter applications are installed at the same time.

6.2.2 Uninstalling GM Programmer

Procedure

1. From the Start menu, select **Windows System**>**Control Panel**, and then click "Uninstall a program".
   A list of installed programs will be displayed.
2. Double-click "Panasonic GM Programmer".
   The following window will be displayed. [Yes]



3. Click the [Yes] button.
   The GM Programmer will be uninstalled.

Info.

- When the GM Programmer is uninstalled, PANATERM Lite for GM and Gateway are also uninstalled at the same time.
- CodeMeter will not be uninstalled at this time. Uninstall it separately.

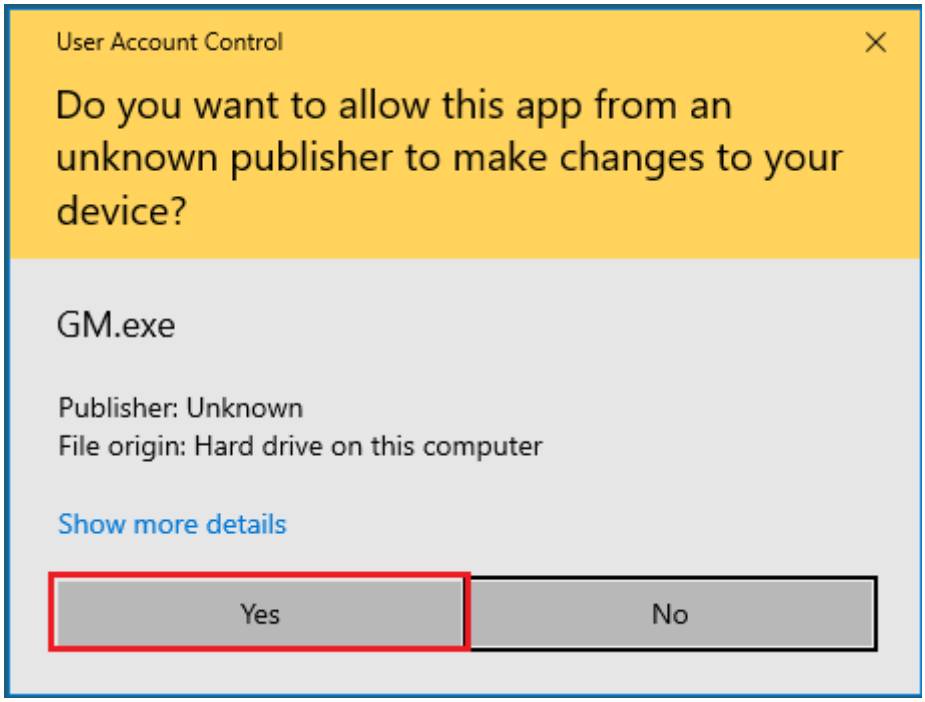
6.3 Basic Operations

This section explains how to start and quit GM Programmer.

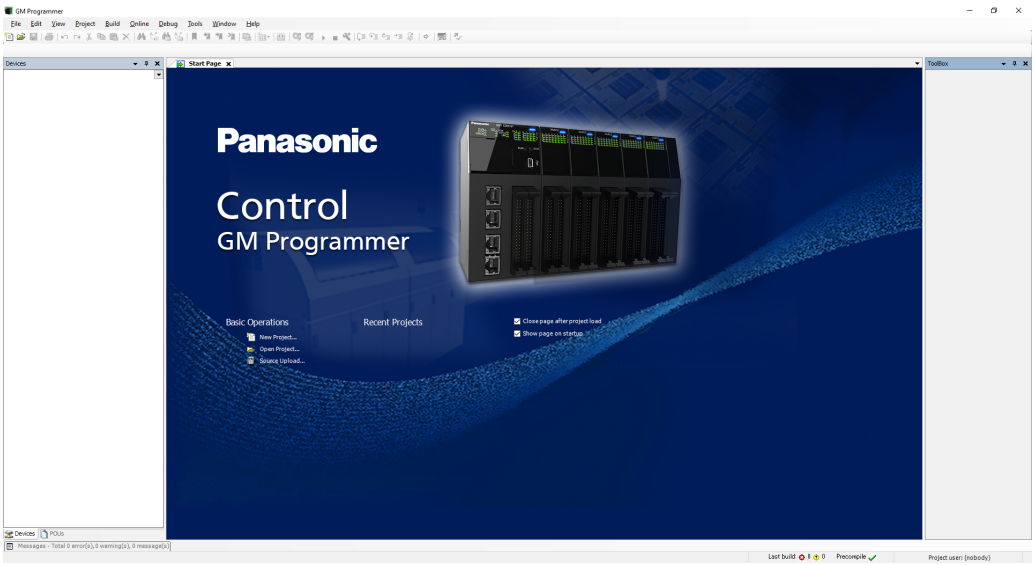
6.3.1 How to start

Procedure

1. Click the [Start] button and select **Panasonic Corpration>GM Programmer**.
   The "User Account Control" dialog box will be displayed. Click [Yes].



GM Programmer will be started.

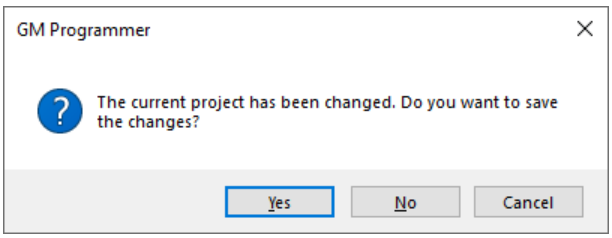


6.3.2 How to quit

- Before closing GM Programmer, be sure to save any project files that you are editing and must save.

Procedure

1. From the menu bar, select **File**>**Exit**.
   If changes have not been saved, the following window will be displayed.
   If exiting without saving, select [No].
   If changes need to be saved, select [Yes] to perform the save process.



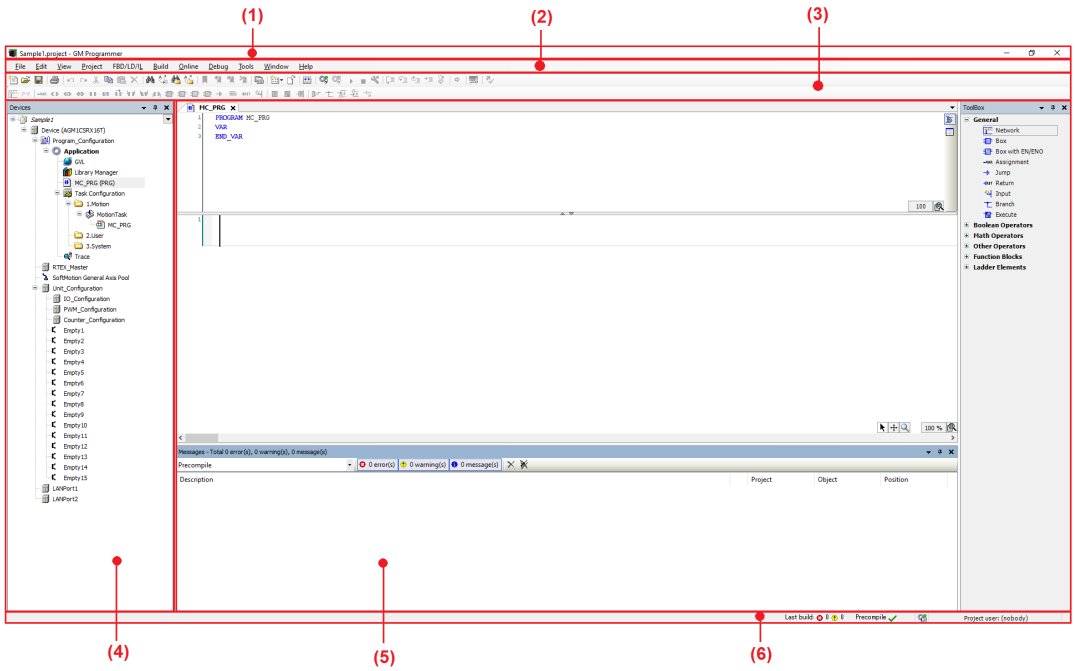
2. Click the [Yes] button.
   GM Programmer will be closed.

Info.

- You can also close GM Programmer by clicking the [×] button on the title bar.

6.4 Component Names

This section presents the name and display content of each component of GM Programmer.



No.	Name	Description
(1)	Title bar	The title bar displays the project file name, [minimize] button, [maximize] button, and [close] button.
(2)	Menu bar	The menu bar displays the menu commands for each purpose in list format.
(3)	Toolbar	The toolbar displays each command as an icon.
(4)	Navigator pane	The navigator pane displays the objects (such as devices, applications, and programs) added to the project in a tree structure.
(5)	Main pane	The main pane displays a program, function settings, messages, and other data. The window can be switched by selecting a desired tab.
(6)	Status field	The status bar displays the build status, logged-in users, and other information.

6.5 Other Functions

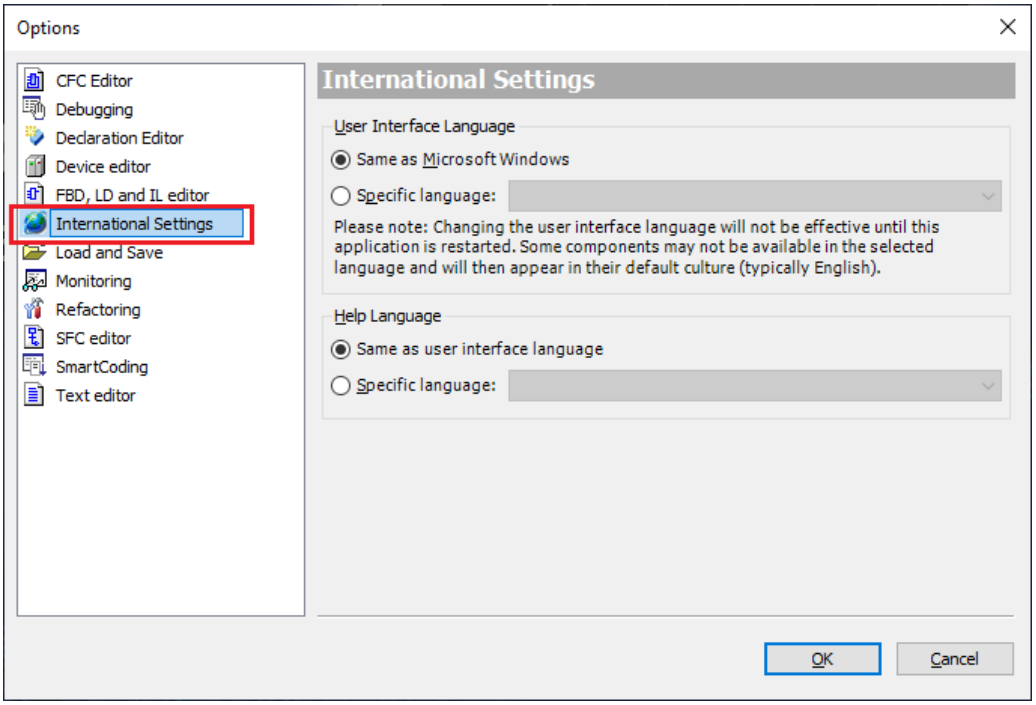
6.5.1 Display Language Setting Function

This function allows the user to change the display language setting for GM Programmer.

The default setting is the same language as the one used in the operating system. If you want to use a different language from the one used in the operating system, change the display language setting. After you change the language setting, you must restart GM Programmer.

Procedure

1. From the menu bar, select **Tools**>**Options**.
   The "Options" dialog box will be displayed.
2. Select "International Settings" from the Categories pane.
   The "International Settings" pane will be displayed.



3. Select **User Interface Language**>**Specific language** option and specify a desired language in the field.
4. Click [OK].
   The "Options" dialog box will be closed.
   At this stage, the language has not been changed yet.
5. Close GM Programmer and then start GM Programmer again.
   After GM Programmer is started, the selected language takes effect.

Info.

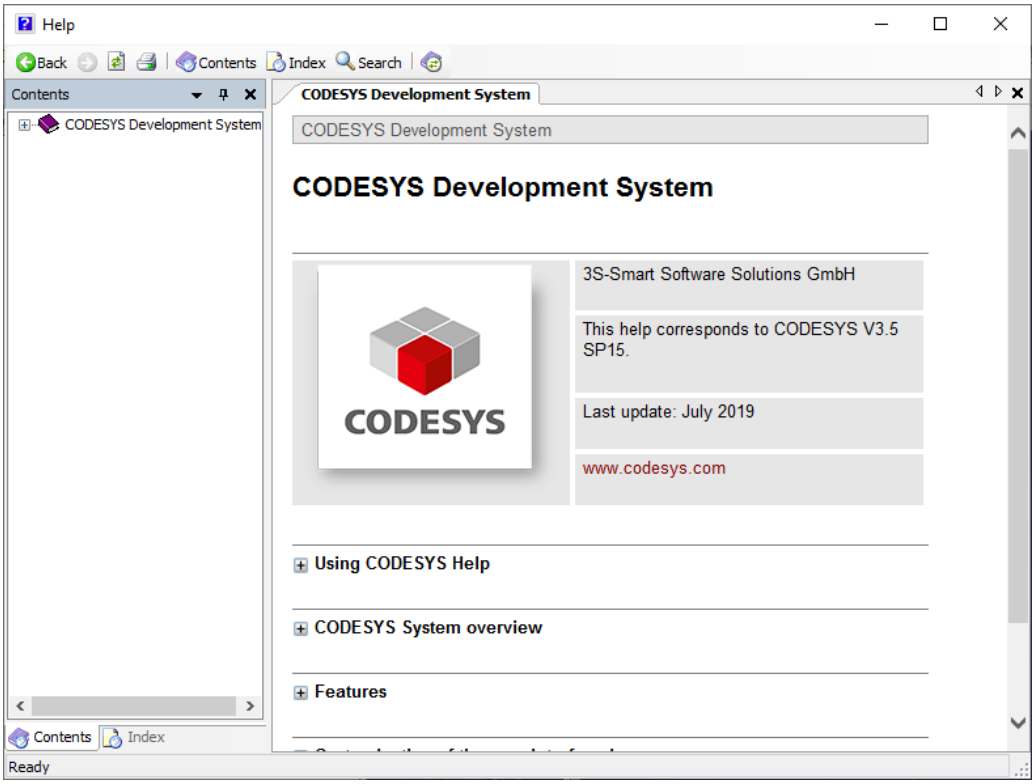
- The display language setting of GM Programmer is linked with that of PANATERM Lite for GM. Therefore, if the display language setting of PANATERM Lite for GM is changed, the display language setting of GM Programmer will also be changed automatically.

6.5.2 Online Help Function

This function allows the user to open the manual and check information such as operating methods.

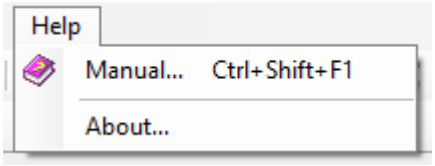
Procedure

1. Press the [F1] key.
   Online help will be started and the page corresponding to the displayed window will be displayed.



Info.

- You can also start online help by selecting **Help**>**Manual** from the menu bar.



6.5.3 Version Display Function

This function allows the user to check the version, license, and other information for GM Programmer.

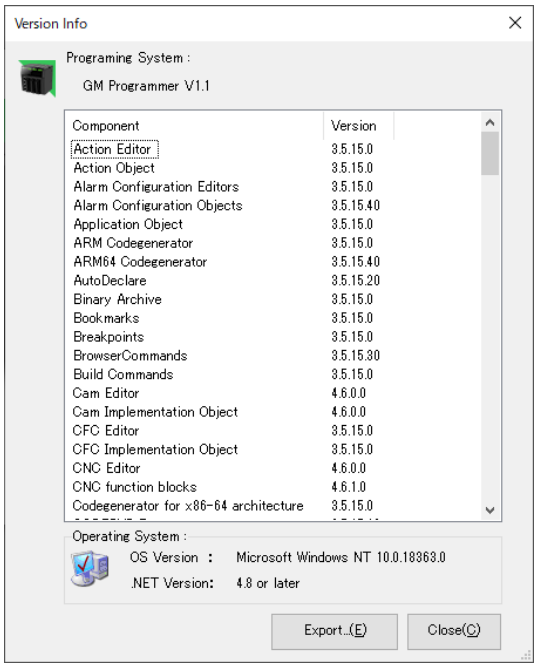
Procedure

1. From the menu bar, select **Help**>**About**.
   You can check the logo, profile name, and trademark.

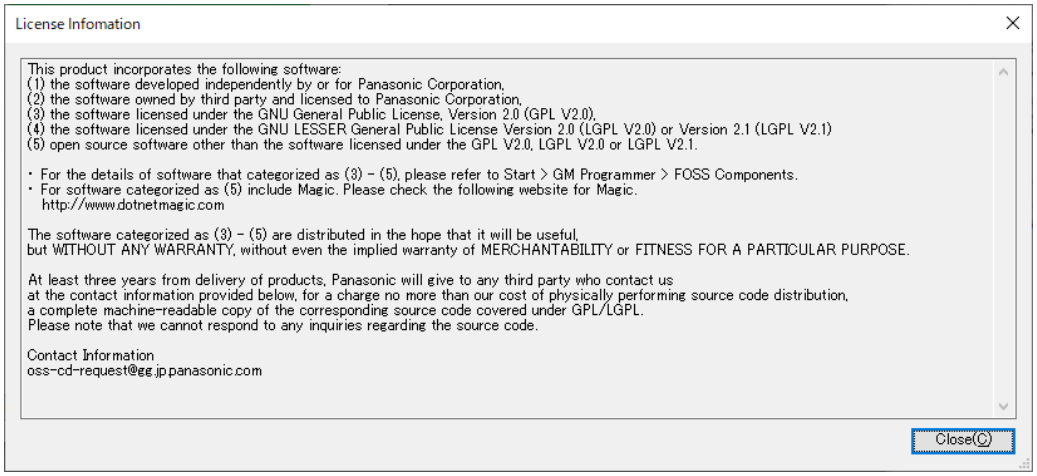
2. Click a desired button at the bottom of the window.

Button	Description
Version Info	Displays information about the plug-ins that have been applied and the operating system of the PC that is used.
License Info	Displays license information for the software used by GM Programmer.

Clicking the [Version Info] button displays the "Version Info" dialog box.



Clicking the [License Info] button displays the "License Information" dialog box.



7 Overview of PANATERM Lite for GM

7.1 System Requirements

7.1.1 Usage Environment of PANATERM Lite for GM

Programming software

Product name	Version	Applicable language
PANATERM Lite for GM	Ver.1.1	Japanese / English / Chinese

(Note 1) When the GM Programmer is installed, MINAS setup support software "PANATERM Lite for GM" is installed at the same time.

Software operating environment

Item	Description
OS	Microsoft(R) Windows(R) 10: 32 bit / 64 bit
PC	PC with the following installed: ● Microsoft.NET Framework 4.6.1 or higher ● Microsoft Visual C++ 2010 SP1 Redistributable Package (x86) ● Microsoft Visual C++ 2010 SP1 Redistributable Package (x64) ● Microsoft Visual C++ 2013 Redistributable Package (x86) ● Microsoft Visual C++ 2013 Redistributable Package (x64) ● Microsoft Visual C++ 2015 Update 3 Redistributable Package (x86) ● Microsoft Visual C++ 2015 Update 3 Redistributable Package (x64)
HDD	At least 4 GB of free space
Memory	At least 8 GB
Communication port	LAN port (for Ethernet connection) USB 2.0 port (for USB connection)

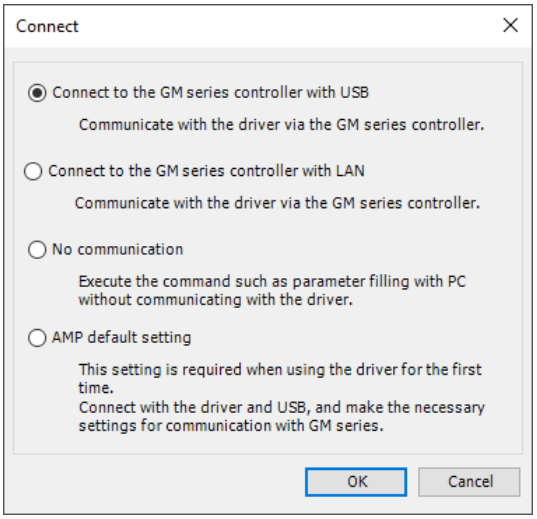
7.2 Basic Operations

This section explains how to start and exit PANATERM Lite for GM.

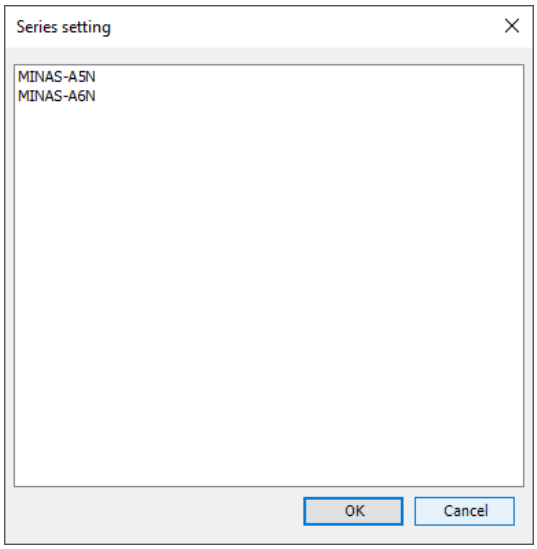
7.2.1 How to Start

Procedure

1. Click the [Start] button in the Windows task bar and select **Panasonic Corporation**>**PANATERM Lite for GM**.
2. The "Connect" dialog box will be displayed.
   Select communication settings and click [OK].

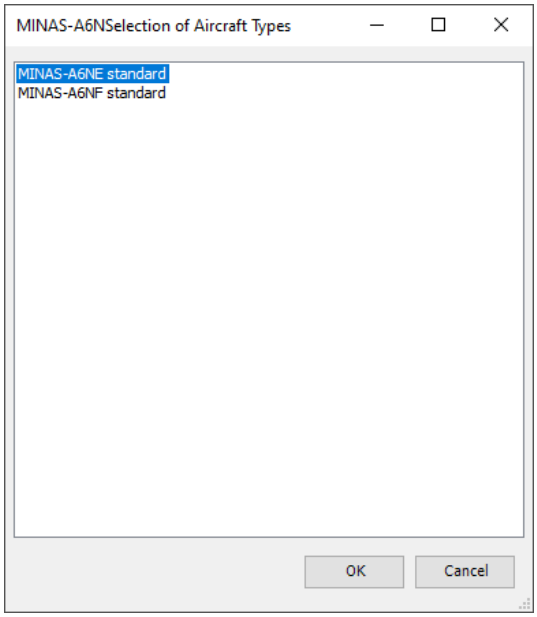


3. The "Series setting" dialog box will be displayed.

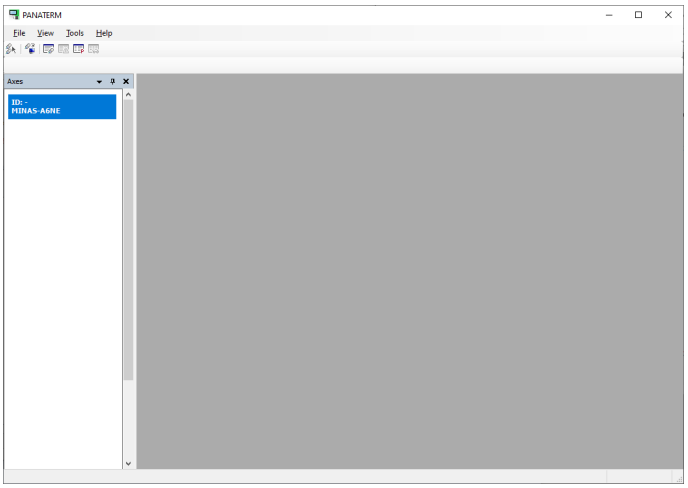


Note

When the "Selection of Aircraft Types" dialog box is displayed, select a model and click the "OK" button.



4. PANATERM Lite for GM will be started.



7.2.2 How to Exit

- Note that all information will be lost if you close the program without saving settings, collected data, or other information.

Procedure

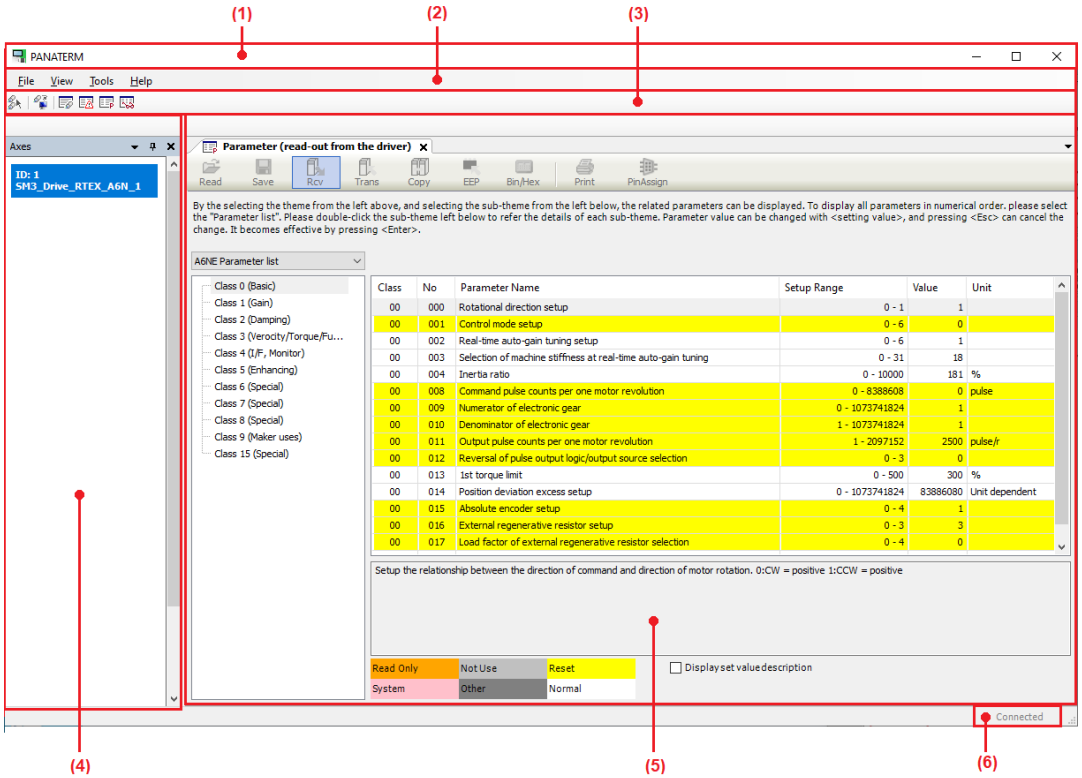
1. From the menu bar, select **File**>**Exit**.
   PANATERM Lite for GM will be closed.

Info.

- You can also close PANATERM Lite for GM by clicking the [×] button on the title bar.

7.3 Component Names

This section explains the components and displays of PANATERM Lite for GM.

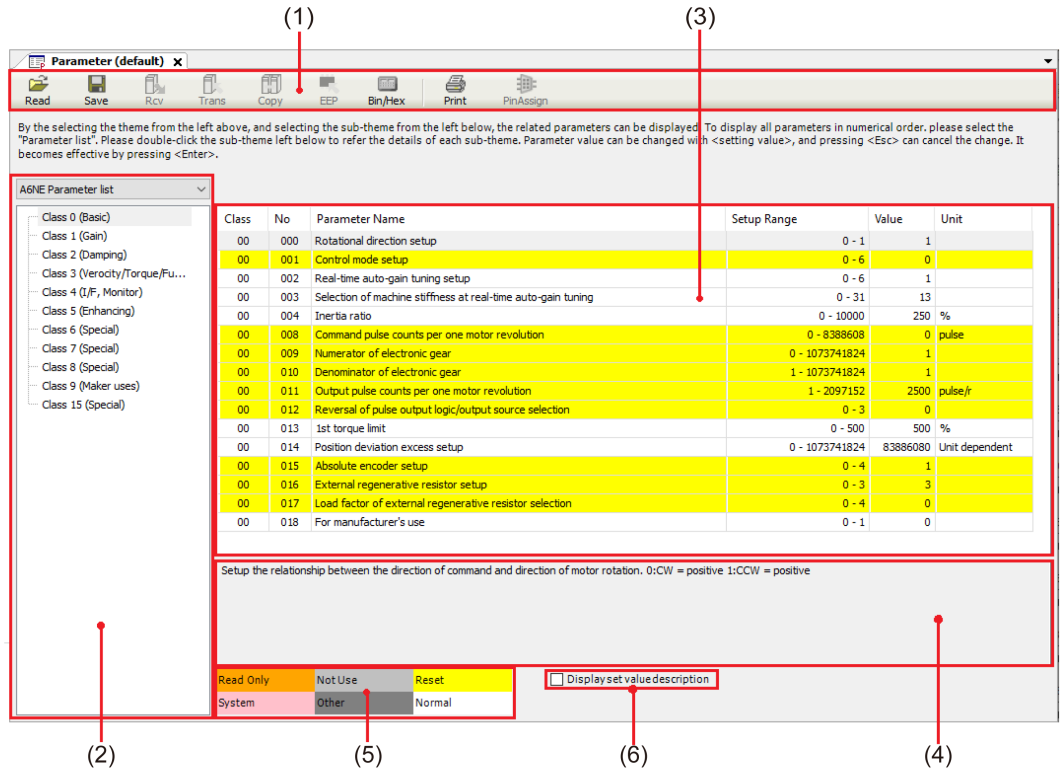


No.	Name	Description
(1)	Title bar	The title bar displays the project file name, [minimize] button, [maximize] button, and [close] button.
(2)	Menu bar	The menu bar displays the menu commands for each purpose in list format.
(3)	Toolbar	The toolbar displays each command as an icon.
(4)	Navigator pane	This pane displays a list of axes.
(5)	Main pane	This pane displays the Parameter window, Monitor window, Alarm window, and other windows. The window can be switched by selecting a desired tab.
(6)	Status field	This field displays the status of connection to the GM1 controller.

7.4 Parameter Window

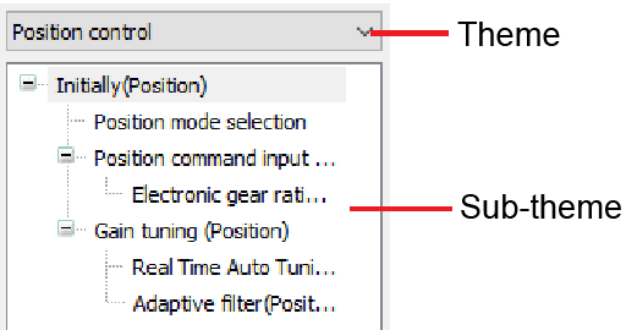
The Parameter window allows the user to check and rewrite the values of servo amplifier parameters, save them to parameter files, and perform parameter-related operations.

7.4.1 Configuration of Parameters Window



No.	Name	Function
(1)	Toolbar	The toolbar consists of basic operation commands related to parameters, such as save and read.

Icon	Name	Function
	Read	Reads parameters from file ".prm5". When this button is enabled, you can specify a parameter file also by drag-and-drop operation.
	Save	Writes parameters to file ".prm5".
	Rcv	Receives parameters from the servo amplifier.

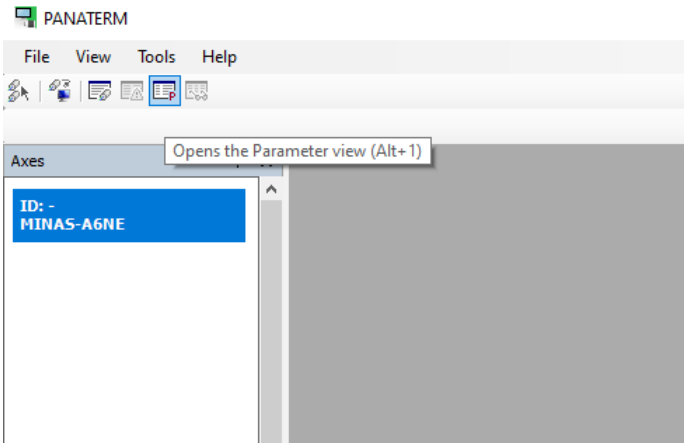
<table>
<tr><th>No.</th><th>Name</th><th>Function</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Icon</th><th>Name</th><th>Function</th></tr>
<tr><td>  </td><td>Trans</td><td>Transmits parameters to the servo amplifier.</td></tr>
<tr><td>  </td><td>Copy</td><td>Copies the parameters of a servo amplifier to servo amplifiers for other axes.</td></tr>
<tr><td>  </td><td>EEP</td><td>Writes parameters to EEPROM of the servo amplifier.</td></tr>
<tr><td>  </td><td>Bin / Hex</td><td>Inputs the selected settings in binary or hexadecimal format.</td></tr>
<tr><td>  </td><td>Print</td><td>Prints parameters.</td></tr>
<tr><td>  </td><td>Pin assignment setting</td><td>Sets I/O pin assignment.</td></tr>
</table>
</td></tr>
<tr><td>(2)</td><td>Theme selection pane</td><td>After a theme is selected, if a parameter category is selected from a sub-theme, related parameters will be displayed in the parameter setting area.
 
For details on each parameter, refer to the instruction manual and other technical references for the servo amplifier.</td></tr>
<tr><td>(3)</td><td>Parameter setting area</td><td>Allows the user to set or edit parameters.
<table>
<tr><th>Name</th><th>Function</th></tr>
<tr><td>Class</td><td>Displays parameter categories</td></tr>
<tr><td>No.</td><td>Displays parameter numbers</td></tr>
<tr><td>Parameter Name</td><td>Displays parameter names</td></tr>
<tr><td>Setup Range</td><td>Displays the maximum and minimum allowable values of parameter settings</td></tr>
<tr><td>Value</td><td>Displays parameter values. Values can be changed. For parameters provided with a ▼ button beside the set value, a desired value can be selected from the combo box. After selecting a value from the combo box, press the <Enter> key. For parameters without a ▼ button beside the set value, either directly enter a value using <numerical> keys or click "▲""▼" to edit the value by increasing or decreasing it. To set a</td></tr>
</table>
</td></tr>
</table>

No.	Name	Function
		<table><tr><th>Name</th><th>Function</th></tr><tr><td></td><td>value, press the <Enter> key. To return a value to its original value, press the <Esc> key.</td></tr><tr><td>Unit</td><td>Displays the unit of parameter settings.</td></tr></table>
(4)	Text display area	Displays a description related to the selected parameter.
(5)	Parameter attribute description area	Displays a description of parameter attributes. The background color of each parameter in the parameter setting area represents an attribute.
(6)	"Display-set value description" check box	Selecting the check box displays combo boxes and decimal points in the "Value" column of the parameter setting area. To display parameter set values in an easy-to-understand manner, select the check box.

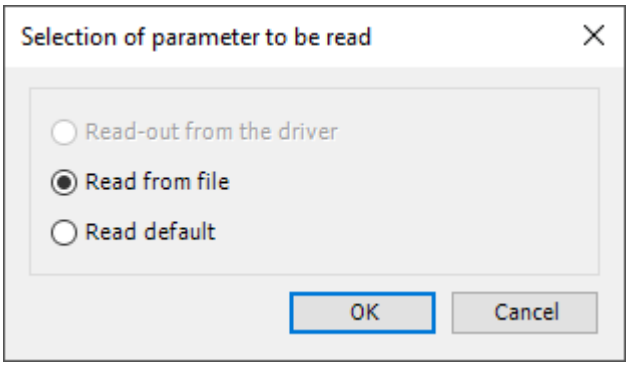
7.4.2 Setting Parameters

Procedure

1. From the menu bar on the main pane, select **Display**>**Parameter**. Alternatively, on the toolbar, click the"Open the Parameter view" icon.



The "Selection of parameter to be read" dialog box will be displayed.



☐Read-out from the driver

Communicates with the connected servo amplifier and reads the parameter settings from the servo amplifier. If this mode is selected, parameter values will be reflected in the servo amplifier as soon as they are changed.

☐Read from file

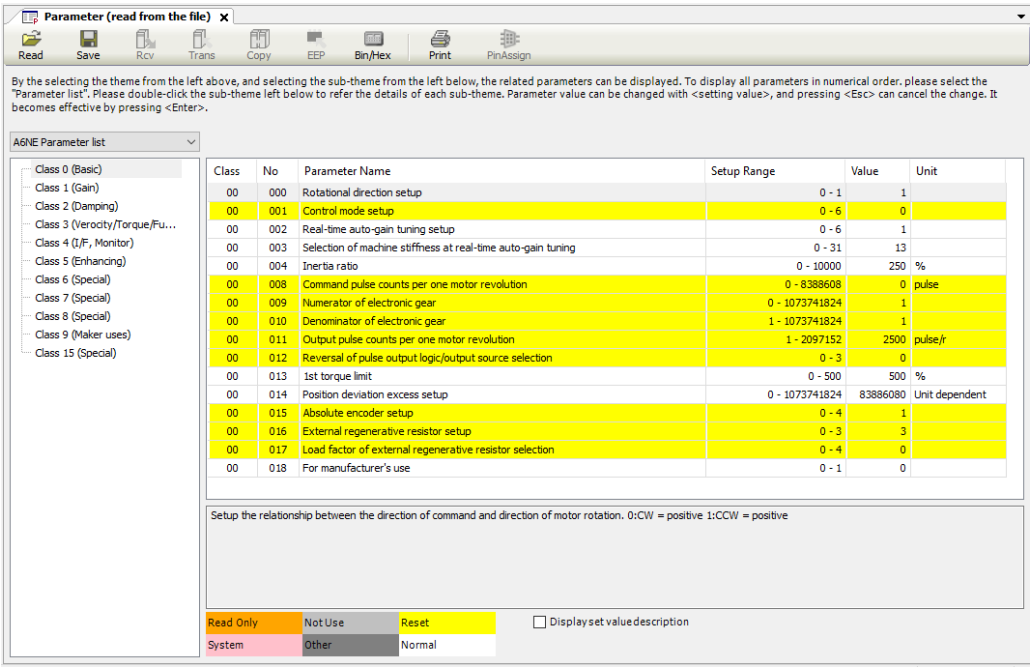
Read the parameter file (".prm5") that was edited previously. If communication is performed with the servo amplifier, parameter values will be reflected in the servo amplifier as soon as they are changed.

☐Read default

Reads the standard default settings of the servo amplifier that were saved during installation. If communication is performed with the servo amplifier, parameter values will be reflected in the servo amplifier as soon as they are changed.

2. Select one of the three options above and click the [OK] button.

The Parameter window will be displayed.



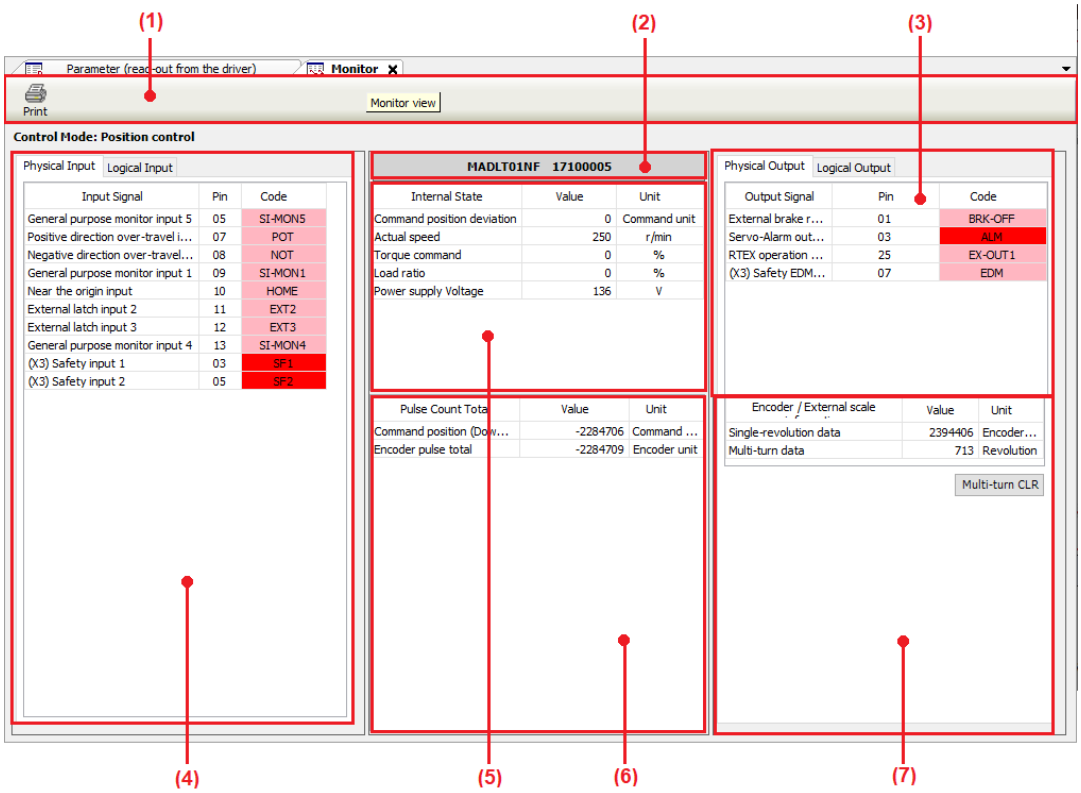
3. After changing the parameter settings, click the [EEP] button to write the parameter settings to the EEPROM of the servo amplifier.

4. Click the [×] button on the Parameter window to close the Parameter window.

7.5 Monitor Window

The Monitor window displays the operating states of servo amplifiers and motors, I/O signals, internal statuses, and other information and also allows the user to check them.

7.5.1 Configuration of Monitor Window



NO.	Name	Description
(1)	Toolbar	The toolbar consists of basic operation commands related to parameters. **Icon** / **Name** / **Function** Print / Print / Prints the contents of the Monitor window.
(2)	Amplifier model name and serial number	Displays the model name and serial number of the servo amplifier.
(3)	Output signal status monitor	Displays the status of each output signal. The tab can be switched between "Physical Output" and "Logical Output". Physical Output – Displays the status of output signals from the servo amplifier. Red: Indicates that output transistor is ON Pink: Indicates that output transistor is OFF

<table>
<tr><th>NO.</th><th>Name</th><th>Description</th></tr>
<tr><td></td><td></td><td>Logical Output – Displays the status of signals within the servo amplifier.
Red: Indicates that signal status is active
Pink: Indicates that signal status is inactive</td></tr>
<tr><td>(4)</td><td>Input signal status monitor</td><td>Displays the status of input signals. The tab can be switched between "Physical Input" and "Logical Input".
Physical Input – Displays the status of input signals to the servo amplifier.
Red: Indicates that COM- is connected
Pink: Indicates that signal status is open
Logical Input – Displays the status of signals within the servo amplifier.
Red: Indicates that signal status is active
Pink: Indicates that signal status is inactive</td></tr>
<tr><td>(5)</td><td>Internal status monitor</td><td>Displays the internal status of the servo amplifier.
<table><tr><th>Name</th><th>Function</th></tr><tr><td>Commanded position deviation</td><td>Displays the position deviation of a command unit.</td></tr><tr><td>Actual speed</td><td>Displays the monitor speed</td></tr><tr><td>Torque command</td><td>Displays the torque command.</td></tr><tr><td>Load factor</td><td>Displays the ratio relative to the rated load. Adjust the operation pattern so that 100% is not exceeded.</td></tr><tr><td>Power supply voltage value</td><td>Displays the voltage (voltage between the P and N terminals) of power supply to the servo amplifier.</td></tr></table></td></tr>
<tr><td>(6)</td><td>Pulse sum monitor</td><td>Displays the sum of command and encoder pulses received by the servo amplifier.</td></tr>
<tr><td>(7)</td><td>Encoder information monitor</td><td>Displays encoder information.
<table><tr><td>Single-turn data</td><td>Displays an absolute position when the motor makes no more than a single turn.</td></tr><tr><td>Multi-turn data</td><td>Displays how many turns the motor made after "Clear" operation.</td></tr></table>Clicking "Clear Multi-turn" resets the multi-turn data stored in the encoder to "0" and clears all encoder errors.
Note: Before using "Clear Multi-turn", check the precautions on use. To clear encoder errors, you may need to restart the servo amplifier.</td></tr>
</table>

(Note 1) Because Ethernet communication is used to transfer data between the servo amplifier and PC, there is a difference or delay between the value displayed on the screen and the actual value of the servo amplifier.

(Note 2) When the polarity is "+", symbol "+" is not displayed.

(Note 3) The monitor function is not a measuring instrument. Use the values displayed in the Monitor window as a guide.

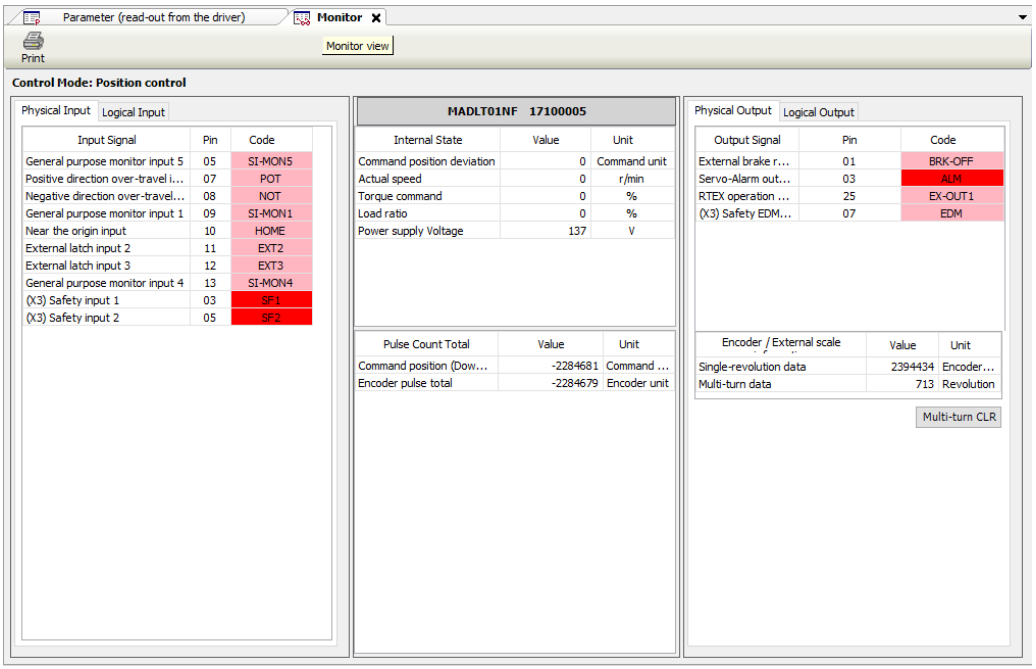
(Note 4) If the servo amplifier outputs "Error 40.0 Error protection from absolute system failure" or "Error 42.0 Error protection from absolute overspeed", execute "Clear Multi-turn". Unless the absolute encoder is reset, the alarm cannot be cleared.

7.5.2 Checking the Monitor Window

Procedure

1. From the menu bar on the main pane, select **Display**>**Monitor**. Alternatively, on the toolbar, click the"Open the Monitor view" icon.

The Monitor window will be displayed.



2. Check each item.

   Check the input signal state, output signal state, and the internal status of the servo amplifier.

3. Click the [×] button on the Monitor window.

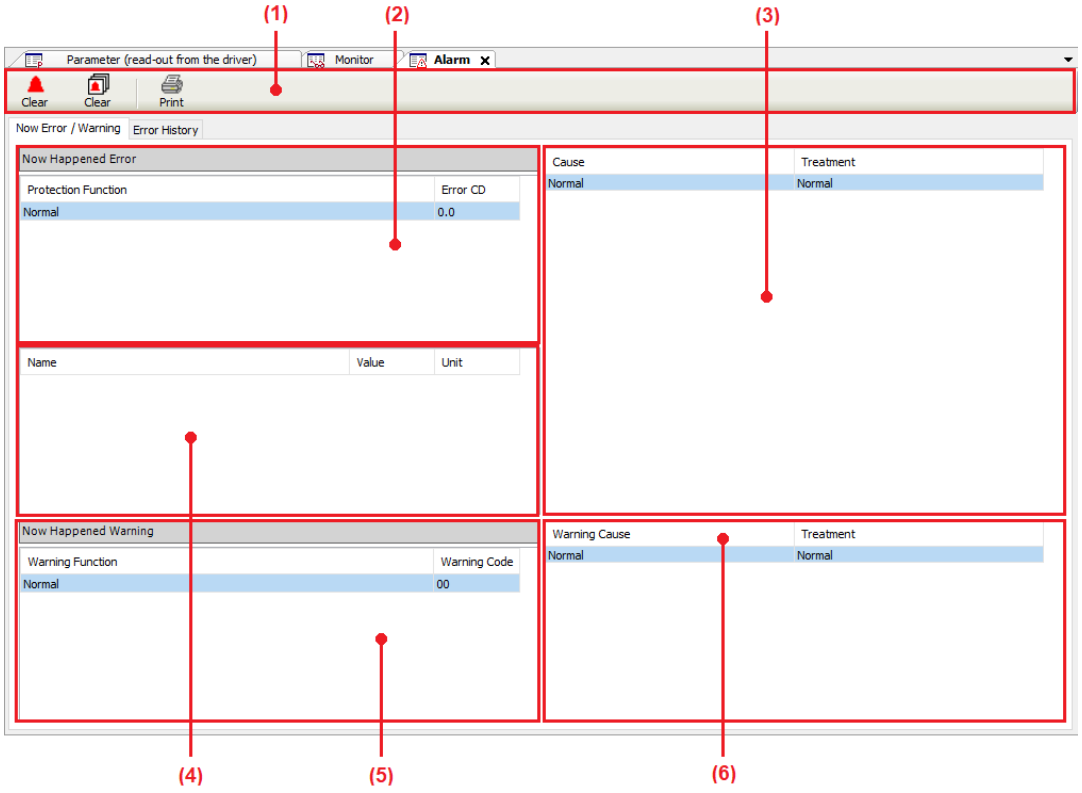
   The Monitor window will be closed.

7.6 Alarm Window

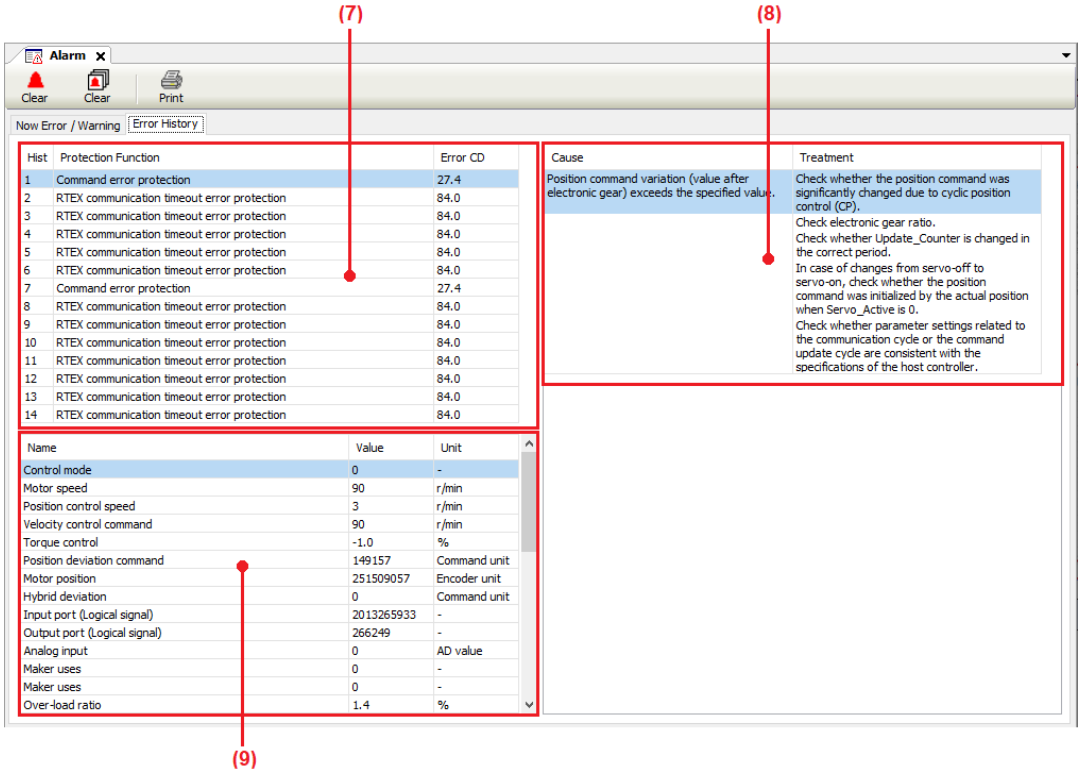
The Alarm window allows the user to check error status when the front panel of the servo amplifier is blinking due to motor operation failure or for some other reason.

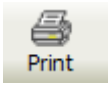
7.6.1 Configuration of Alarm Window

Display of the current errors and warnings (only during communication with servo amplifier)



Display of error histories



No.	Name	Description
(1)	Toolbar	<table><tr><th>Icon</th><th>Name</th><th>Function</th></tr><tr><td>  </td><td>Clear</td><td>Allows the user to clear the current alarm history. If you click this button after eliminating the cause of the alarm, the current alarm will be cleared and normal operation will be performed. However, you cannot clear any alarms that cannot be cleared by alarm clear input signals of servo amplifiers. In such a case, turn off the servo amplifier, eliminate the cause of the alarm, and then turn the power on again.</td></tr><tr><td>  </td><td>Clear</td><td>Allows the user to clear error histories.</td></tr><tr><td>  </td><td>Print</td><td>Prints error-related information.</td></tr></table>
(2)	Current error display area	Displays the alarm numbers and names of all errors that are currently occurring.

No.	Name	Description
		The alarm displayed on the top of the list is the alarm displayed on the front panel of the servo amplifier.
(3)	Error cause / treatment display area	Displays the cause and treatment of the selected error.
(4)	Motor internal status display area	Displays the motor internal status in the event of an alarm.
(5)	Current warning display area	Displays the warning numbers and names of all warnings that are currently occurring.
(6)	Warning cause / treatment display area	Displays the cause and treatment of the selected warning.
(7)	Error history display area	Displays the order of error histories, alarm numbers, and error names.
(8)	Error cause / treatment display area	Displays the cause and treatment of the selected error.
(9)	Motor internal status display area	Displays the motor internal status in the event of an alarm.

(Note 1) Some alarms cause tripping as errors but are not recorded in error histories. For alarms that are not recorded in error histories, refer to the instruction manual of the servo amplifier.

(Note 2) Up to 14 error histories are stored. When more than 14 errors occur, error histories are erased in chronological order (the oldest error history is erased first).

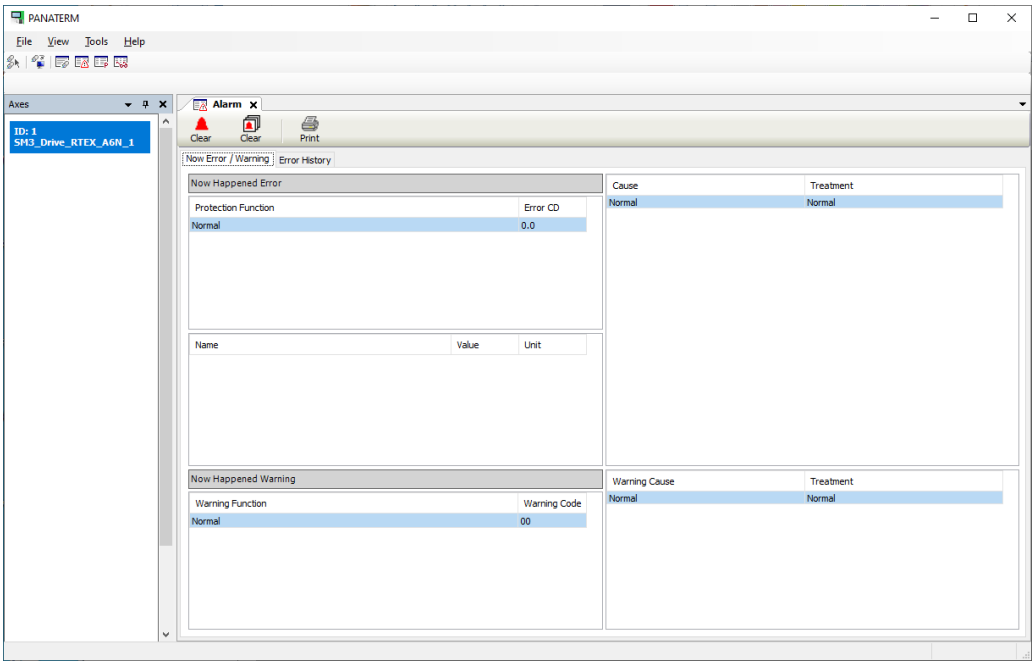
(Note 3) Up to three histories of motor internal status in the event of an alarm are stored. If an alarm occurs immediately after the power is turned on, motor internal status may not be captured normally.

7.6.2 Checking Alarms

Procedure

1. From the menu bar on the main pane, select **Display**>**Alarm**. On the toolbar of the main pane, click the"Open the Alarm view" icon.

The Alarm window will be displayed.



2. Check for any errors that are currently occurring.
Click the current "Now Error / Warning" tab and check for any errors that are currently occurring.

3. Check for any errors that occurred in the past.
Click the "Error History" tab and check for any errors that occurred in the past.

4. Click the [×] button on the Alarm window.
The Alarm window will be closed.

7.7 Other Functions

7.7.1 Language Setting Function

This function allows the user to set the display language of PANATERM Lite for GM.
The default setting is the same language as the one set in GM Programmer.

Procedure

1. Select a language from the menu bar tool.
   The language set in PANATERM Lite for GM will be switched.

Info.

- The display language setting of PANATERM Lite for GM is linked with that of the GM Programmer.

7.7.2 Help Function

While performing operation in PANATERM Lite for GM, you can start the Help function to check information such as operating methods.

Procedure

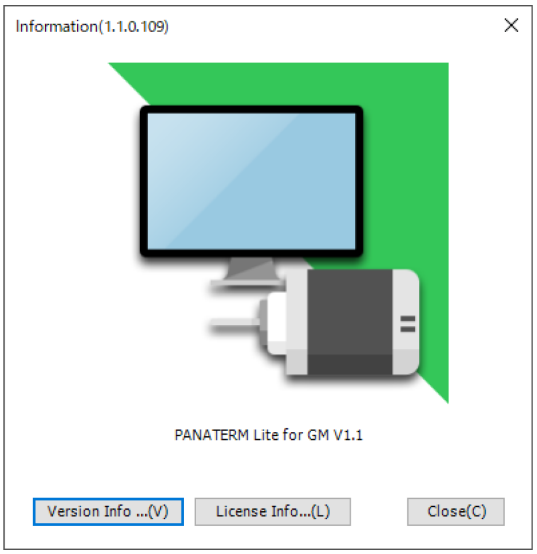
1. From the menu bar, select **Help**>**PANATERM Lite for GM Help**.
   "PANATERM Lite for GM Operation Guide" will be started.

7.7.3 Version Display Function

This function allows the user to check the version, license, and other information for PANATERM Lite for GM.

Procedure

1. From the menu bar, select **Help**>**Version Info**.



2. Click a desired button at the bottom of the window.

Button	Description
Version Info	Displays information about the plug-ins that have been applied and the operating system of the PC that is used.
License Info	Displays license information for the software used by PANATERM Lite for GM.

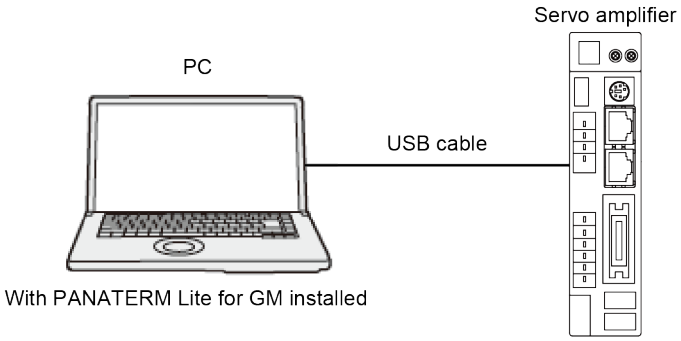
(MEMO)

8 Preparing for Servo Amplifiers

8.1 Initial Setup for Servo Amplifiers

8.1.1 Connecting the Servo Amplifier and PC

Use a USB cable to connect the servo amplifier and a PC on which PANTERM Lite for GM has been installed.



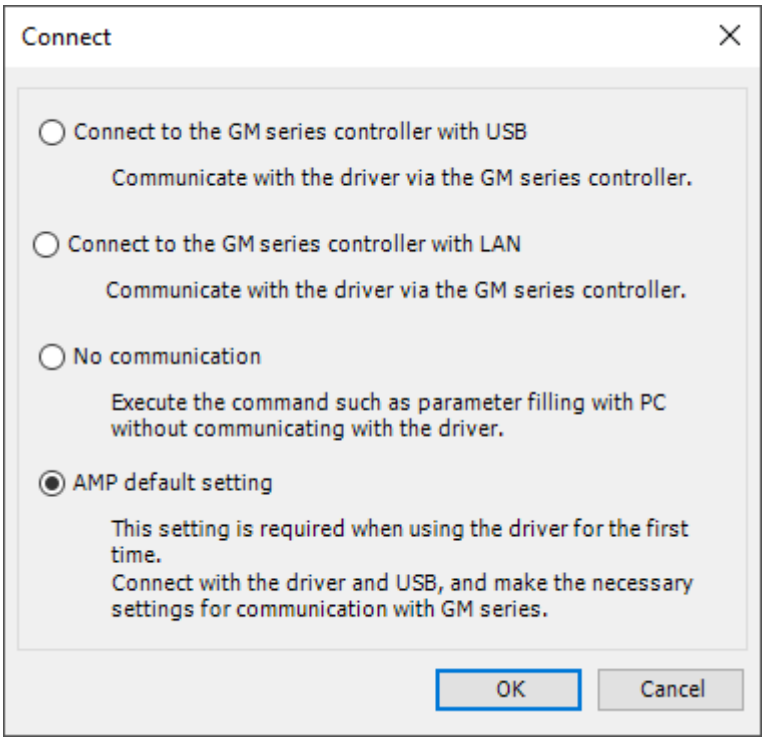
8.1.2 Installing the USB Driver

When the GM Programmer is installed, the USB driver is also installed at the same time.

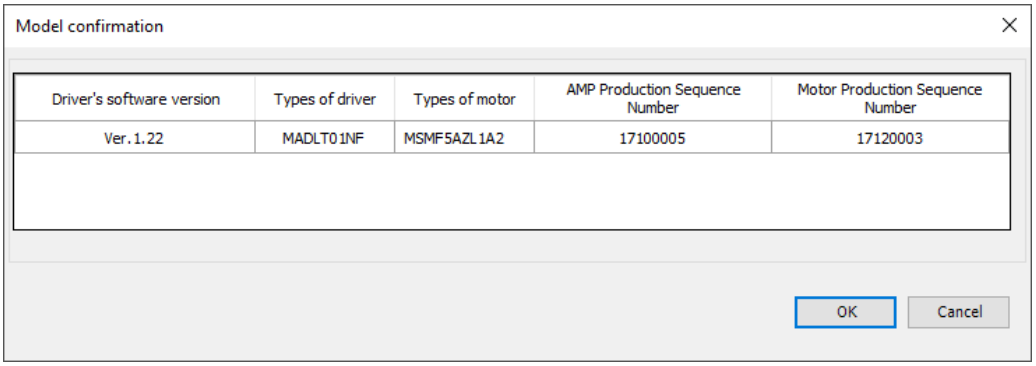
8.1.3 Initial Setup for Servo Amplifiers

1 2 Procedure

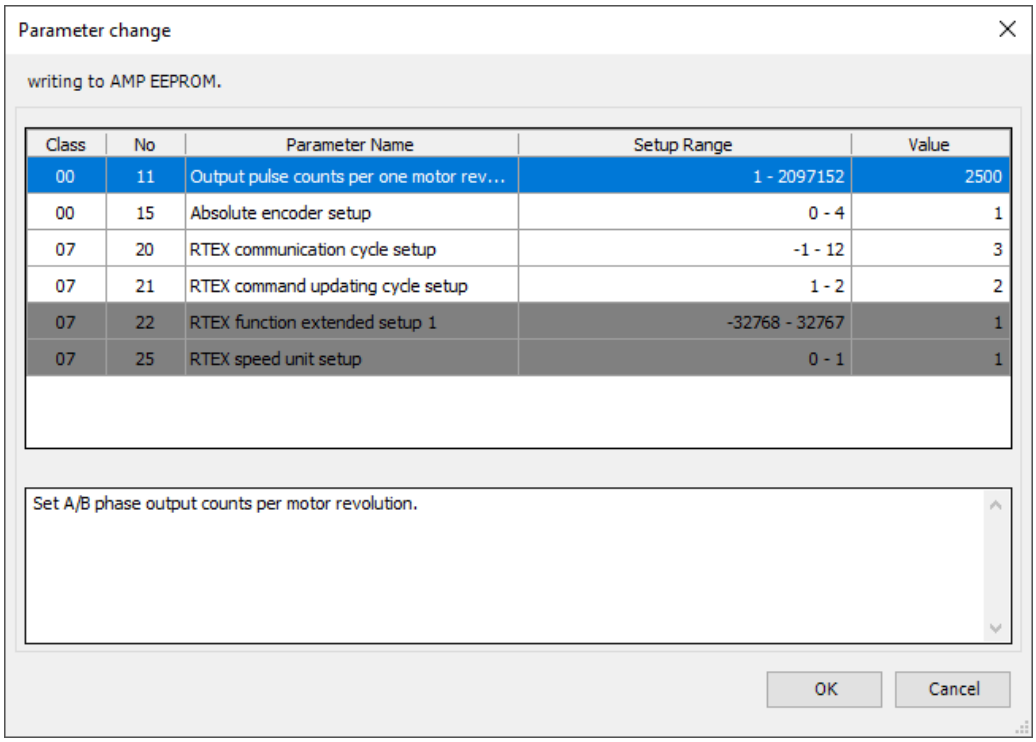
1. Start PANATERM Lite for GM.
   The "Connect" dialog box will be displayed.



2. Select "AMP default setting" and click [OK].
The "Model confirmation" dialog box will be displayed.



3. Check the software version of the servo amplifier for which settings are to be changed and then click [OK].
The "Parameter change" dialog box will be displayed.



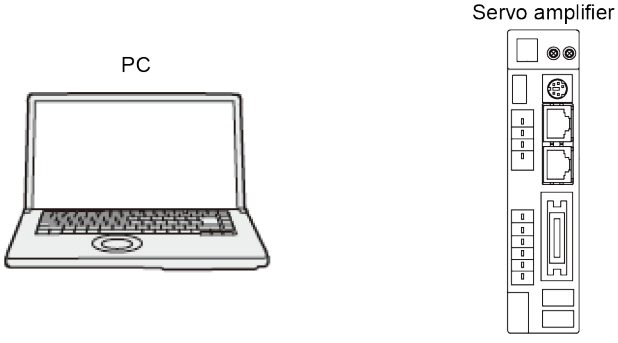
If you use parameters "Absolute encoder setup", "Output pulse counts per one motor rev...", "RTEX communication cycle setup", and "RTEX command updating cycle setup", change the settings according to the operating environment.

4. Click [OK].
   The "Setting Complete" dialog box will be displayed.

5. Click [OK].
   The main pane will be displayed. Start the servo amplifier.

8.1.4 Disconnecting the Servo Amplifier from the PC

Disconnect the USB cable connecting the PC and the servo amplifier.



9 Connecting the GM1 Controller and Servo Amplifiers

9.1 Setting an Address for Each Servo Amplifier

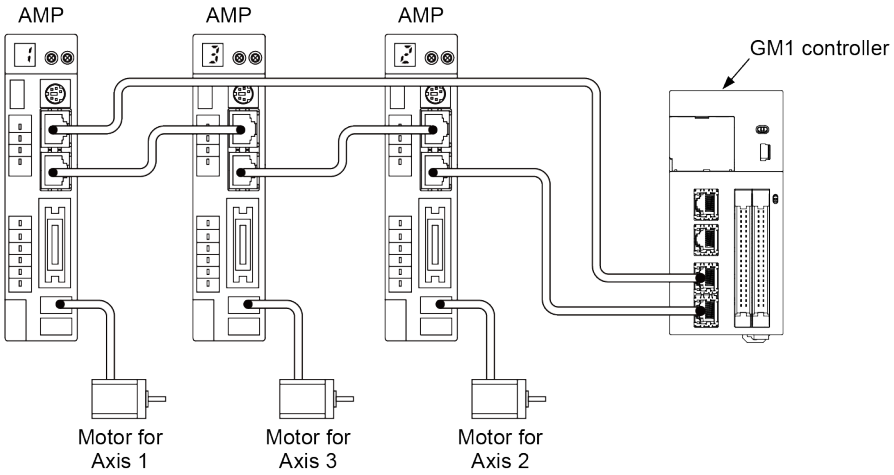
Set the MAC ID using the address switch of the servo amplifier.
The order of connections on the network is not related to the MAC ID.

Note

- For details on how to set station numbers for servo amplifiers, refer to the instruction manual of each servo amplifier.

9.2 Connecting the GM1 Controller and Servo Amplifiers via RTEX

Connect the RTEX ports on the GM1controller and each servo amplifier.



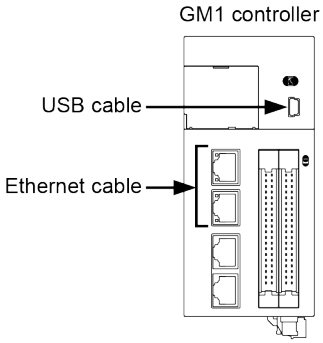
(MEMO)

10 Connecting the GM1 Controller and the GM Programmer

10.1 Connecting the GM1 Controller and PC

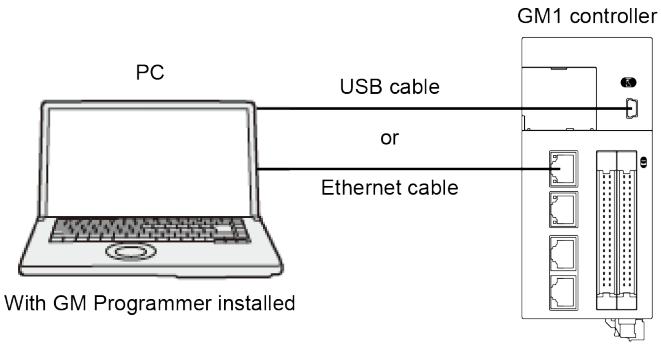
10.1.1 Selecting a Connection Port for GM Programmer

Select either LAN port connection or USB port connection.



10.1.2 Connecting the GM1 Controller and PC with a Cable

Use an Ethernet cable or USB cable to connect the GM1 Controller and a PC on which the GM Programmer is installed.



10.2 Creating a New Project

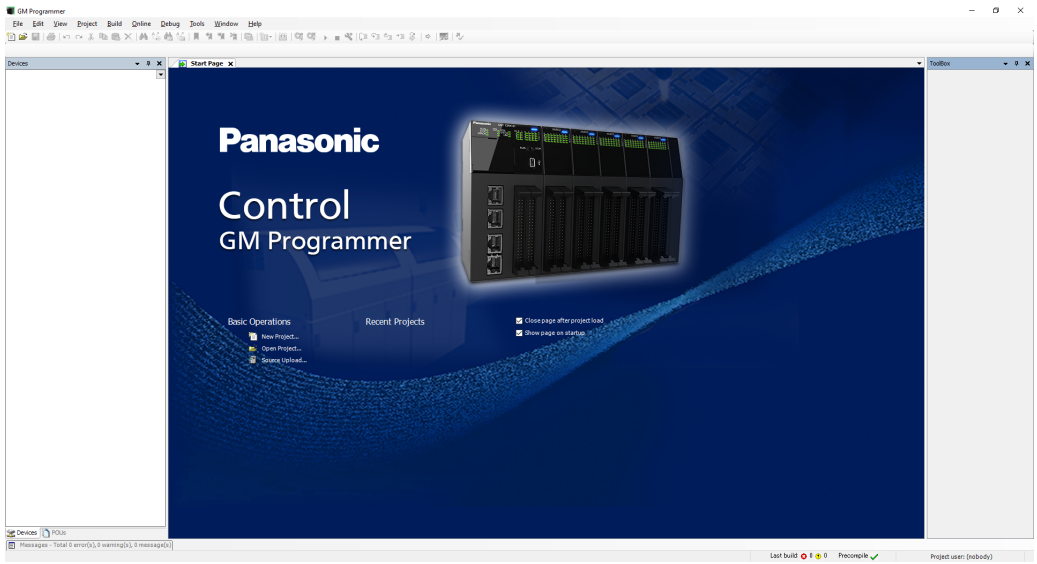
When creating a program using the GM Programmer for the first time, create a new project. For the new project, set a device and a programming language to be used.

This section describes how to create a new project.

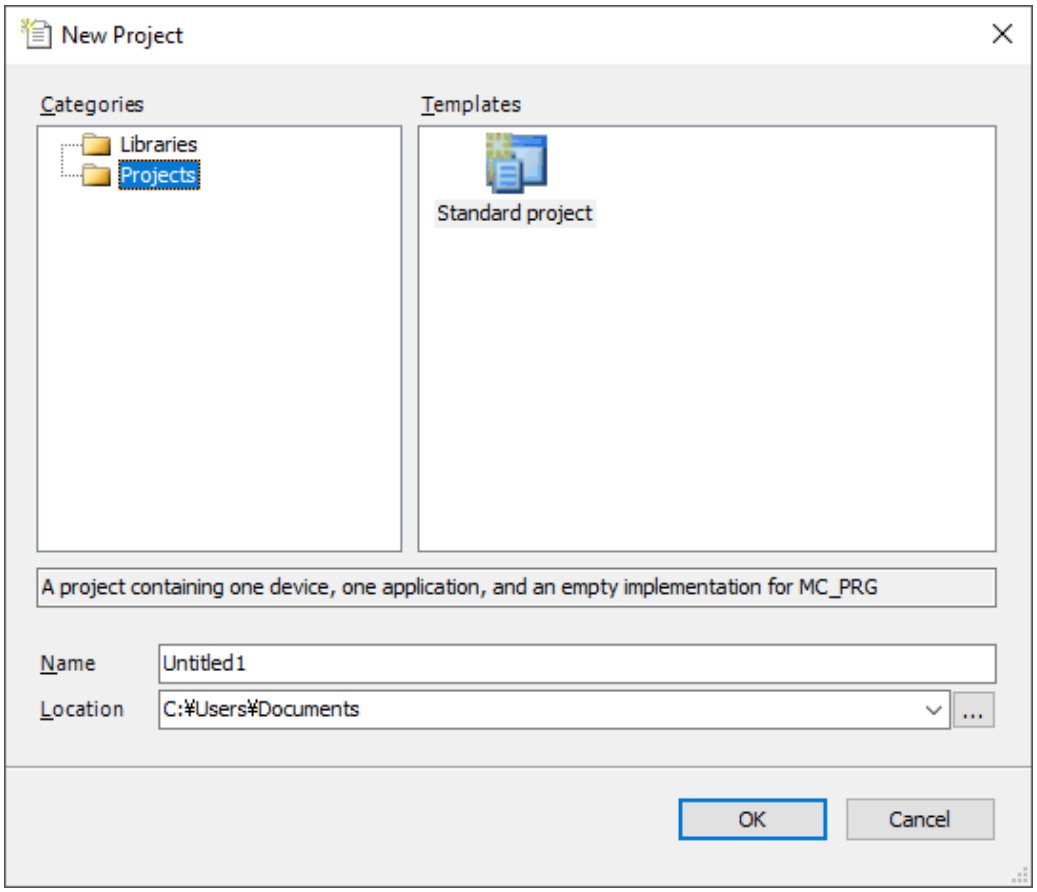
Given below is an example that explains the procedure to create a project for the GM1 controller (product number: AGM1CSRX16T) in Structured Text (ST) format.

Procedure

1. Start up the GM Programmer.
   For details on how to start up, refer to "6.3.1 How to start".
   When the GM Programmer is successfully started, the Start Page will be displayed.

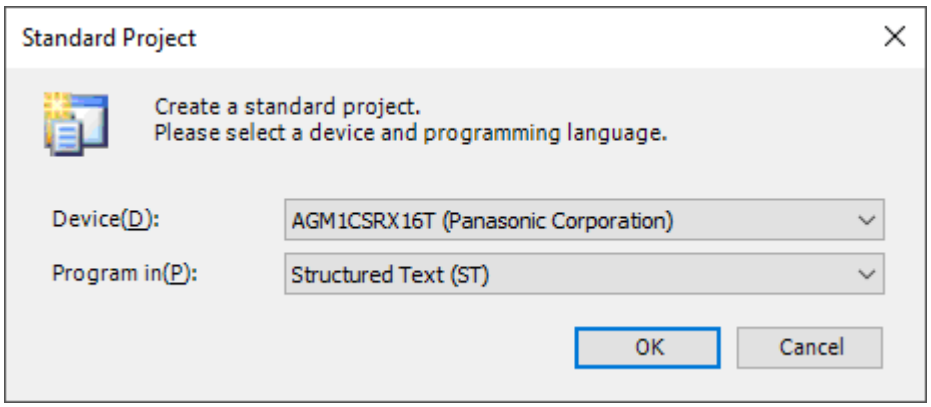


2. Select "New Project" under "Basic Operations".
   The "New Project" dialog box will be displayed.



3. Select **Project>Standard project**, and specify a project file name in the "Name" field and a project storage location in the "Location" field.

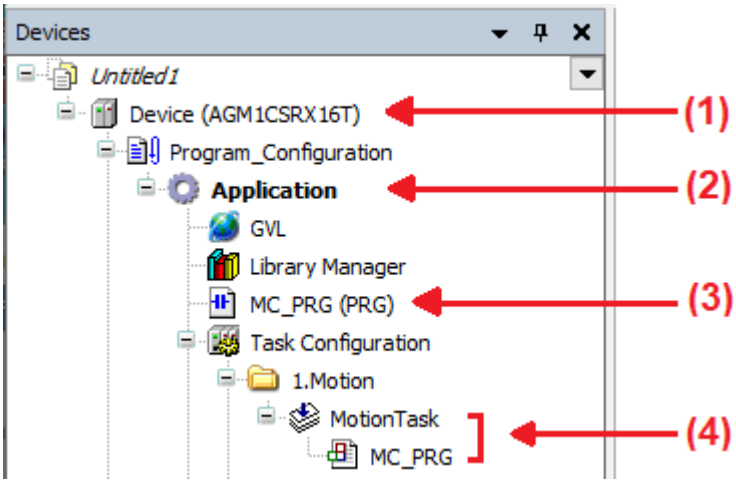
4. Click the [OK] button.
   The "Standard Project" dialog box will be displayed.



5. Select "AGM1CSRX16T(Panasonic Corporation)" in the "Device" field and "Structured Text (ST)." in the "Program in" field, and click the [OK] button.

A new project will be created. Device and other objects including objects for ST programs are arranged in the navigator pane.

<Uses of objects arranged in the navigator pane>



No.	Name	Function
(1)	Device object	Sets up device objects.
(2)	Application object	Sets up application objects.
(3)	Program object (POU object)	Sets up program objects (POU objects).
(4)	Task object	Sets up task objects.

Info.

- A new project can also be created from the menu bar by selecting **File**>**New Project**.

10.3 Communication Setting

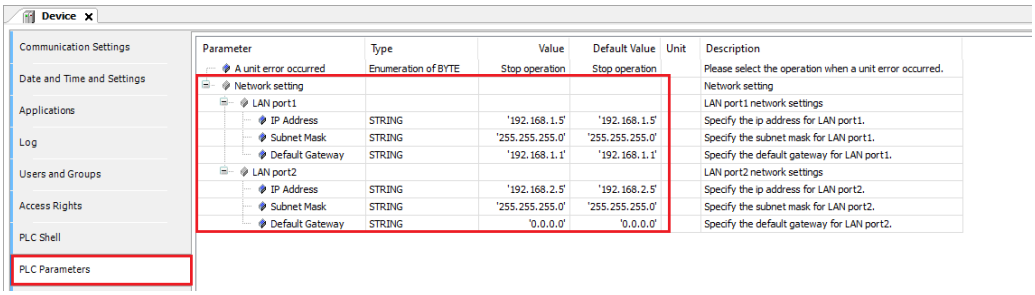
10.3.1 Setting the LAN Port

Set communication settings of the LAN port through the network settings of the PLC parameters.

When connecting the GM Programmer and the GM1 via the LAN port, match the PC network settings with those of the GM1.

Procedure

1. Double-click the "Device(AGM1CSRX16T)" object in the navigation pane.
   The device editor will open.
2. Open the "PLC Parameters" tab.



3. Check the GM1 network settings and match the PC network settings with those of the GM1.
4. Open the "Communication Settings" tab and click "Network scan".
5. Select a GM1 Controller that you want to connect and click the [OK] button.

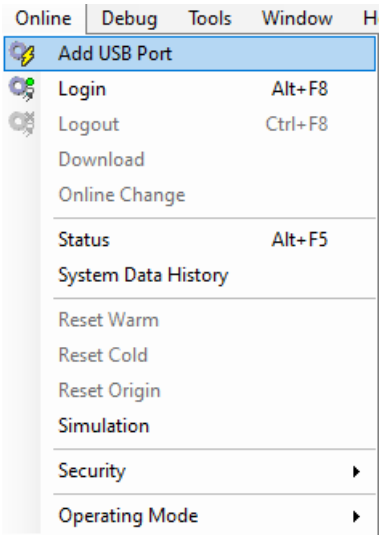
> ● When the GM1 settings have been changed, the changes will become valid after the project is downloaded.

10.3.2 Addition of the USB Port

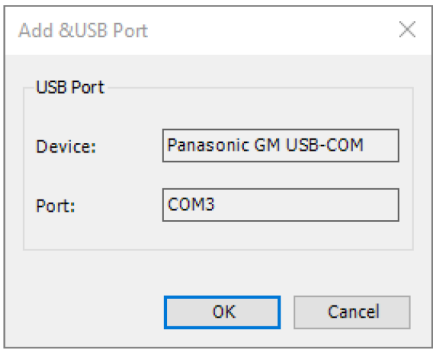
This function allows the user to set a USB port to the communication interface between the GM Programmer , PANATERM Lite for GM, or other tool and the GM1 Controller.

Procedure

1. Connect the GM1 Controller and PC with a USB cable .
2. From the menu bar, select **Online**>**Add USB Port**.

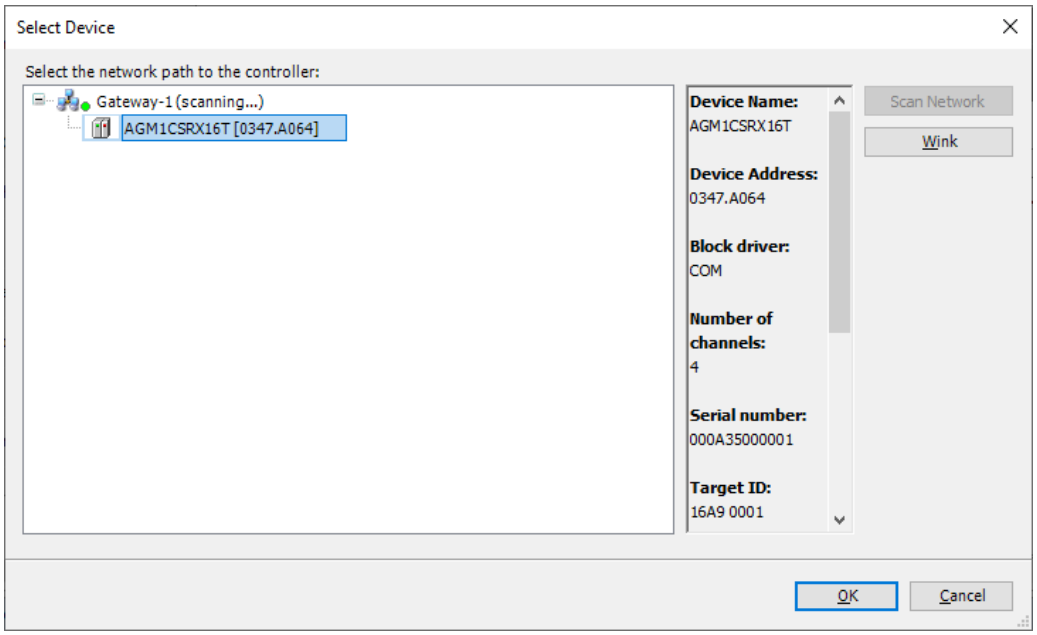


The "Add &USB Port" dialog box will be displayed.

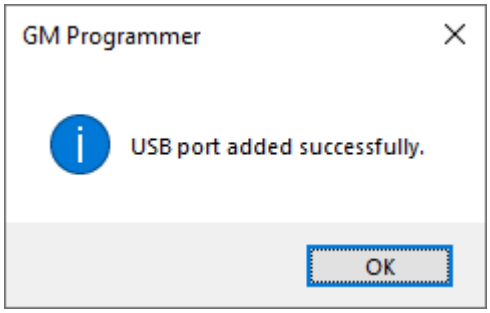


3. Click the [OK] button.
A dialog box to restart the Gateway will be displayed.

4. Click the [OK] button.
The "Select Device" dialog box will be displayed.



5. Select a GM1 Controller that you want to connect and click the [OK] button.
When the connection is completed, a dialog box will be displayed to notify successful connection.



6. Click the [OK] button.
A USB port is added the communication interface between the PC and GM1 Controller.

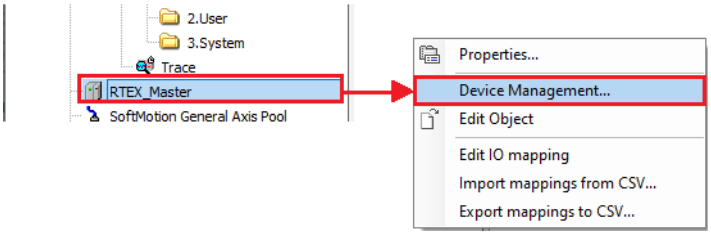
10.4 Adding and Setting up Servo Amplifiers

Add device objects for servo amplifiers to a project and set them up.

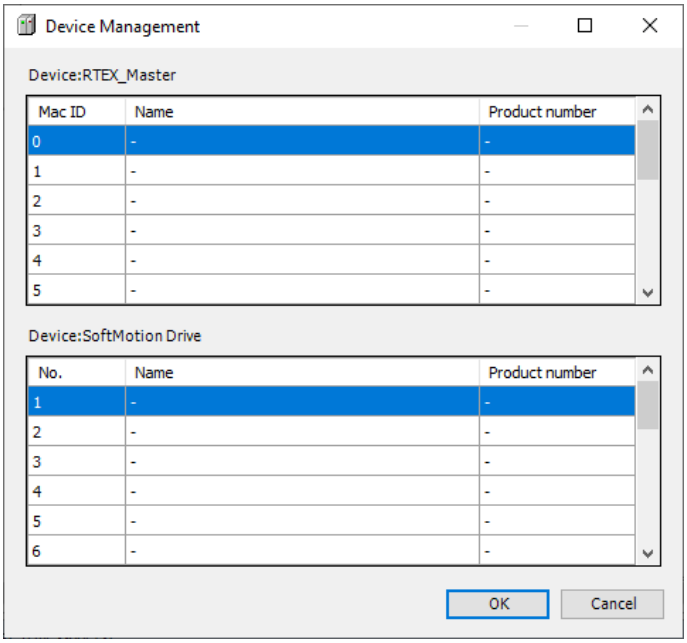
The description below explains how to add device objects for A6N servo amplifiers to a project and how to set them up.

Procedure

1. Right-click the [RTEX_Master] object in the navigator pane and then select "Device Management" from the context-sensitive menu that is displayed.



The "Device Management" dialog box will be displayed.

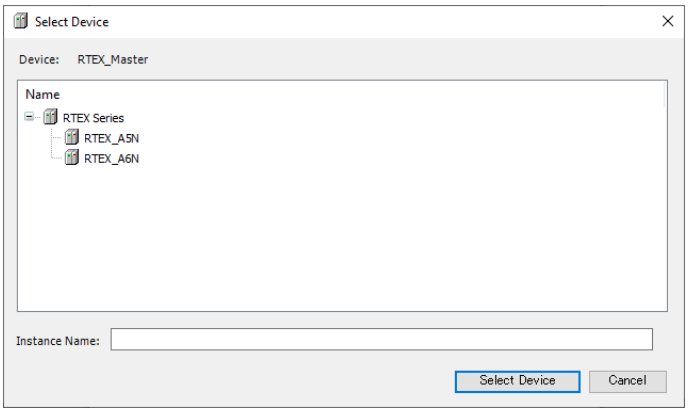


2. Double-click the MAC ID row in the "Device: RTEX_Master" table.

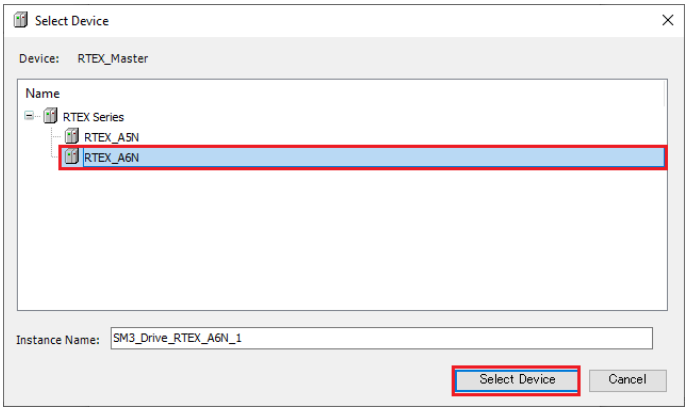
Info.

- For the MAC ID, double-click the same No. as the No. set using the address switch of the servo amplifier.

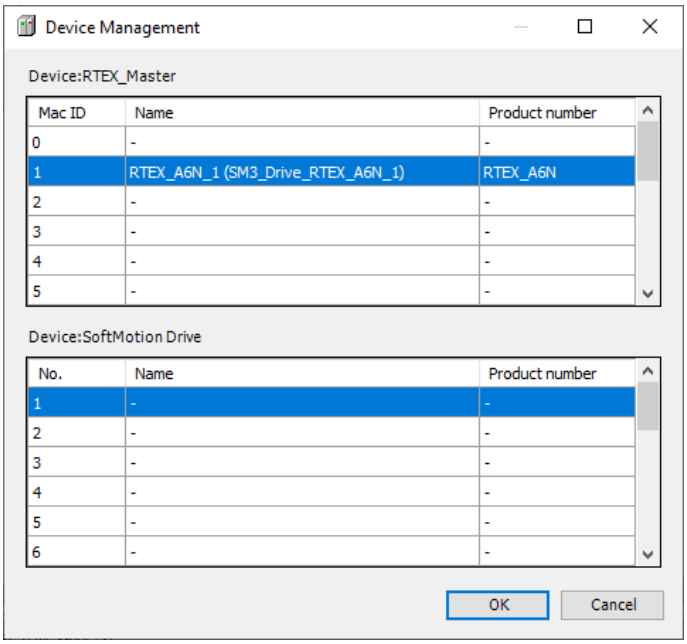
The "Select Device" dialog box will be displayed.



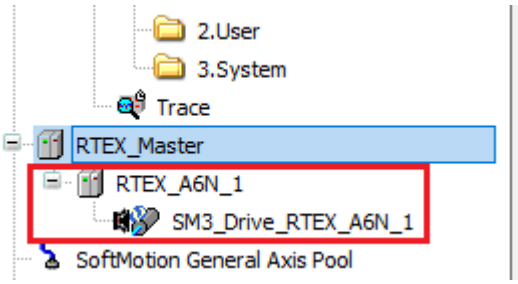
3. Select a device object for the servo amplifier.
The selected device object of the servo amplifier will be added.



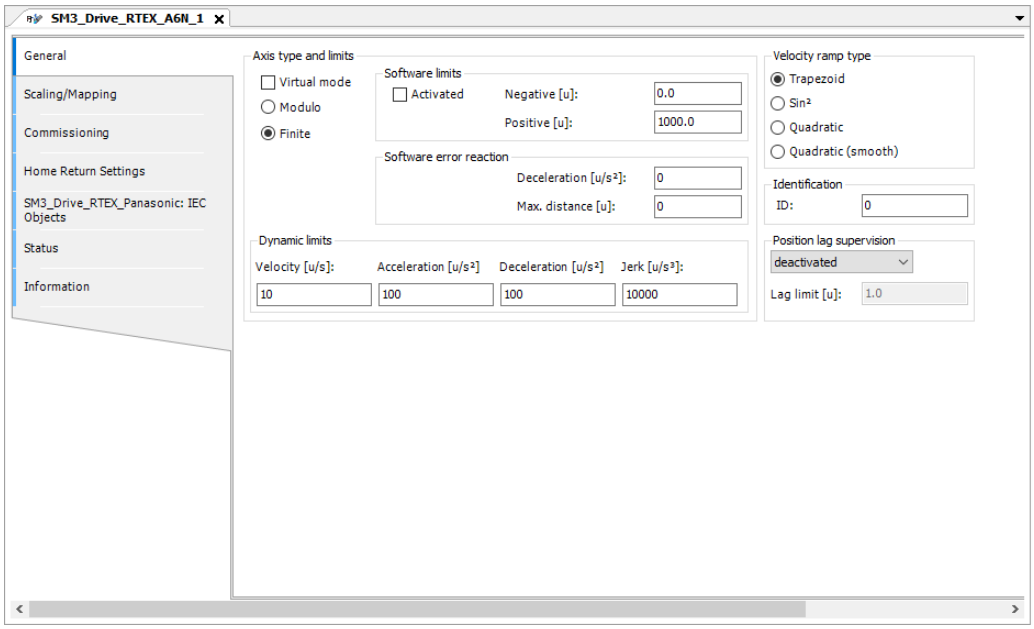
4. Click the [Select Device] button.



5. Click the [OK] button.
The selected device object of the servo amplifier will be added to the navigator pane.



6. Double-click the added object.
The setting pane will be displayed in the main pane. Specify settings related to servo amplifier A6N.



Info.

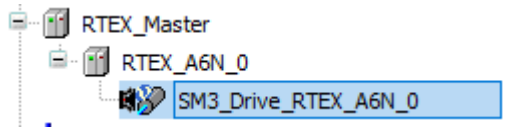
- To remove a device object that has been added, select the device object in the navigator pane and press the "Delete" key.

10.5 Basic Settings of the RTEX Axis

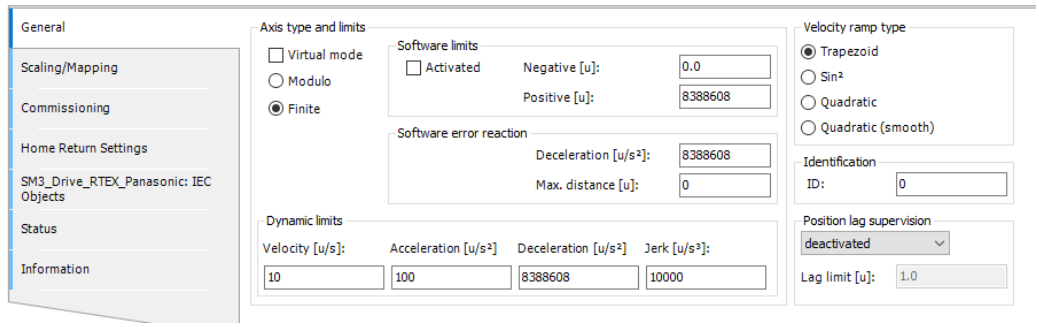
- Be sure to set the RTEX axis,

Procedure

1. Double-click the servo amplifier object in the navigator pane.

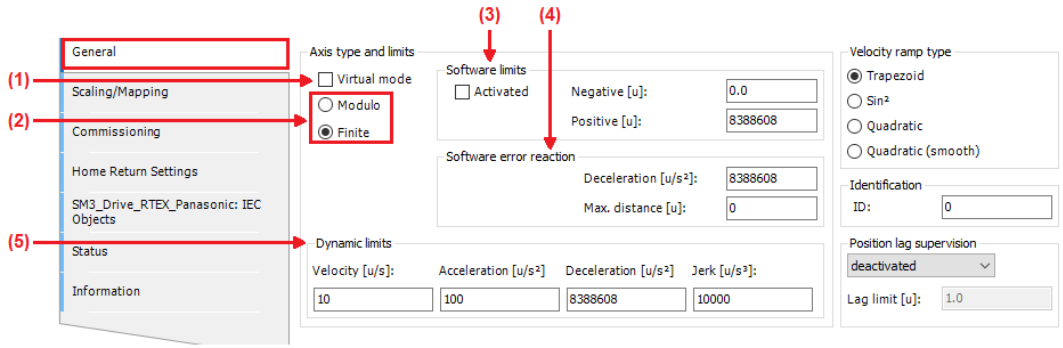


2. From the displayed menu, select "Edit Object".
   The "RTEX Axis Setting" dialog box will be displayed.



10.5.1 General Settings

Select the "General" tab and set the following items.



(1) Virtual mode

You can set the real axis or virtual axis.

Use of the real axis: The real axis is used to actually control the servo amplifier.

Use of the virtual axis: A virtual servo amplifier is created in the GM1 Controller and its virtual axis is used.

(2) Modulo / Finite

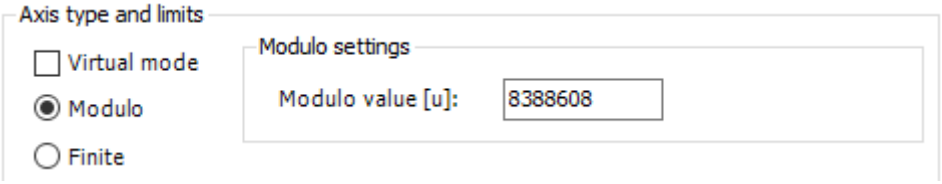
The axis type can be specified.

- Modulo

  Modulo: The motor rotates infinitely (belt drive, etc.) without limiting the travel range.

  - The command position value keeps looping between 0 and modulo value.
  - The maximum settable modulo value is "255×units in application"(*1).

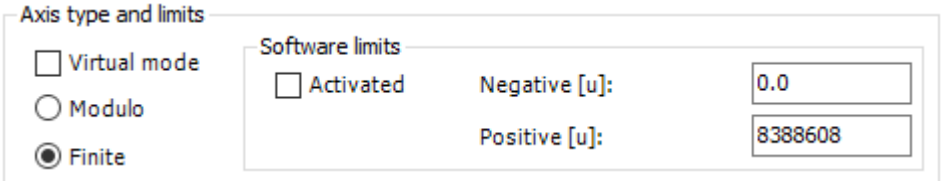
    *1: Set the units in application in the Scaling / Mapping.
  - A negative value cannot be set. (A warning is issued. If the data is downloaded as is, an error will occur when executing the GM1.



- Finite

  The set value for the command position is a finite value.

  Software limit can be set. Note that an error will occur if a 32-bit real number is exceeded.

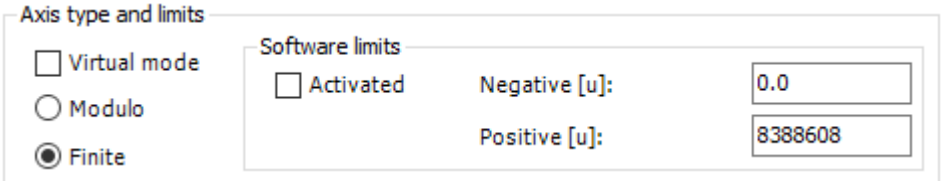


(3) Software limit

A software limit can be set if the axis type is set to “Finite”.

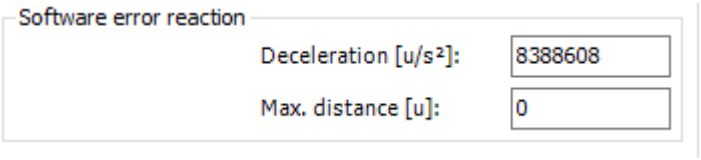
If the command position is outside the software limit setting range, an error stop occurs and operation stops.

When operation is stopped by exceeding the software limit, the shortest time from the start of deceleration to the stop among the following settings is applied: the value set for the deceleration in response to the software error, for the maximum distance in response to the software error, or for the dynamic limit.



(4) Software error reaction

Settings can be made to stop operation when an error occurs.

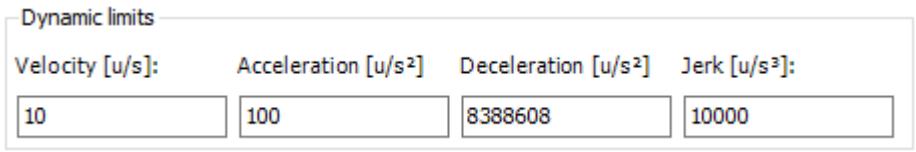


Info.

- When operation is switched from Run to Stop, an emergency stop is made regardless of the software error reaction.
- For the stop operation that takes place when an error stop occurs or when the software limit is exceeded, the shortest time from the start of deceleration to the stop among the following settings is applied.
  - Deceleration in software error reaction
  - Maximum distance in software error reaction
  - Dynamic limit
- If the deceleration and maximum distance in software error reaction are set to 0, these become invalid. In that case, operation stops according to the deceleration rate set in the dynamic limit.

(5) Dynamic limit

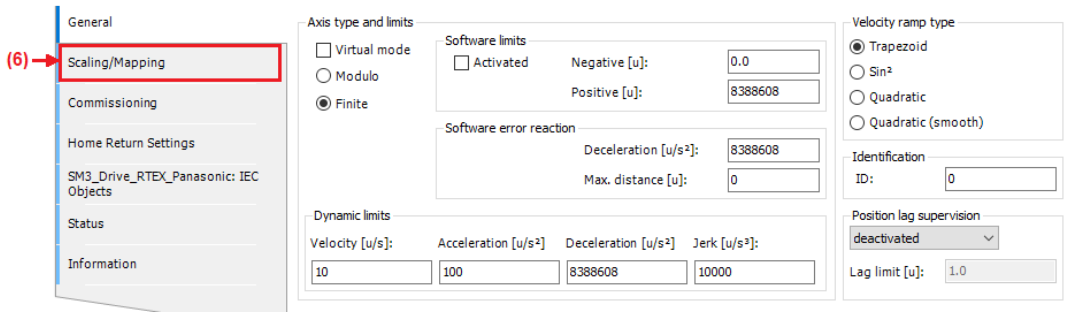
Speed, acceleration, and deceleration settings cannot be set to 0. If they are set to 0, a warning is issued.



The values set in the dynamic limit can be checked if they are exceeded during axis operations using the "SMC_CheckLimits" function block Note that an excess of the jerk cannot be detected using the "SMC_CheckLimits" function block. Therefore, do not use the jerk column.

10.5.2 Scaling / Mapping Settings

Select the "Scaling/Mapping" tab and set the following items.



(6) Scaling/Mapping

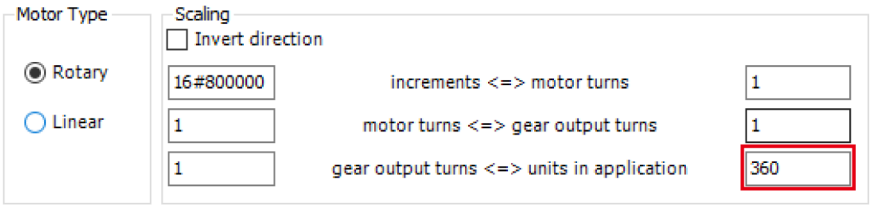
- Rotary type

  When the axis type is set to modulo, the ratio in the conversion from the drive increment to the application unit is set.

  The unit on the servo amplifier and the unit on the application (POU) are converted.

  Example:

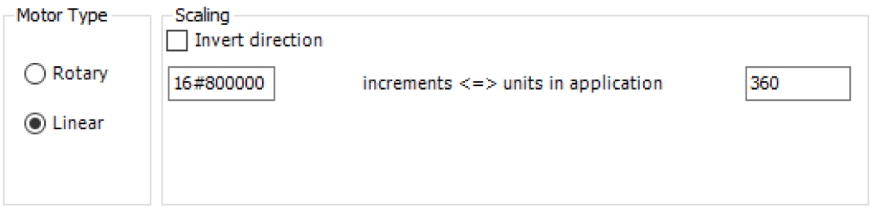
  One rotation of the MINAS A6N is 0x800000. To treat one rotation as 360 on the application, set this to 360.



Note: Invert direction: The direction is inverted.

- Linear type

  When the axis type is set to finite, the ratio in the conversion from the drive increment to the application unit is set.



Note: Invert direction: The direction is inverted.

10.6 Connecting to the GM1 Controller

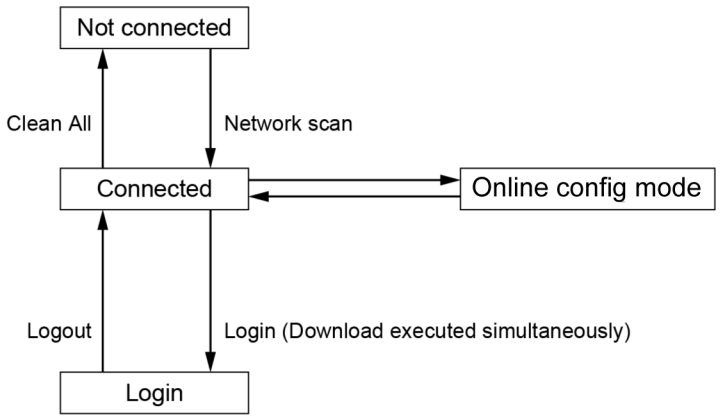
Connect the PC where the GM Programmer is installed to the GM1 Controller.

The connection status of the PC includes "Connected", "Connection as a device user", "Login", and "Online config mode".

Depending on the connection status, operations that can be executed are different.

If the Controller is provided with a device user registration, connection must be made as the device user.

■ Without device user registration



List of available GM1 Controller operations

Function	Not connected	Connected	Login	Online config mode
Setting / acquiring Controller information	×	○	○(Note 1)	×
Application management	×	×(Note 2)	○	×
Reset	×	×(Note 3)	○	×(Note 4)
Security	×	×	○	○
Debug	×	×	○	×
Commissioning	×	×	×	○

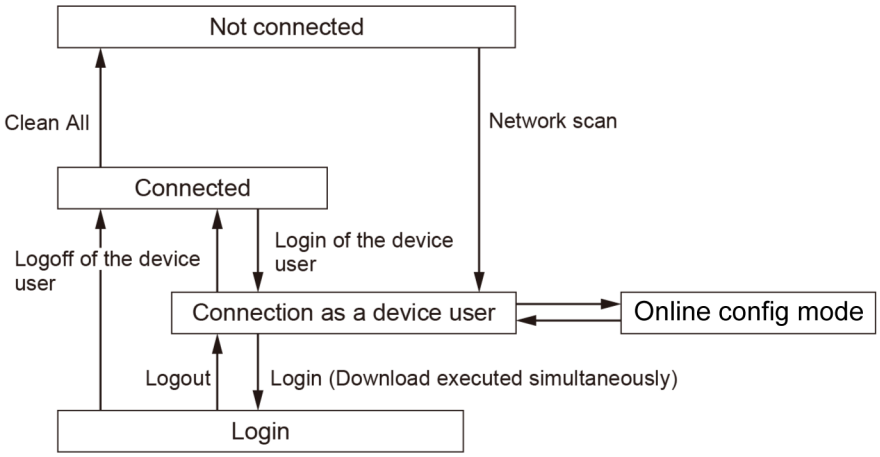
(Note 1) Not possible to operate the PLC Shell.

(Note 2) Possible to upload the source.

(Note 3) Possible to reset the device (PLC initialization) or to delete device application from the device.

(Note 4) Possible to reset the device (PLC initialization).

■ With device user registration



List of available GM1 Controller operations

Function	Not connected	Connected	\as a device user	Login	Online config mode
Setting / acquiring Controller information	×	×	○	○(Note 1)	×
Application management	×	×	×(Note 2)	○	×
Reset	×	×	×(Note 3)	○	×(Note 4)
Security	×	×	○(Note 5)	○	○
Debug	×	×	×	○	×
Commissioning	×	×	×	×	○

(Note 1) Not possible to operate the PLC Shell.

(Note 2) Possible to upload the source.

(Note 3) Possible to reset the device (PLC initialization) or to delete device application from the device.

(Note 4) Possible to reset the device (PLC initialization).

(Note 5) Addition of the device user, changing the password for the device user, or deletion of the device user cannot be made if the user of the Device Editor is not synchronized with "Synchronization" of the group tab.

10.7 Commissioning

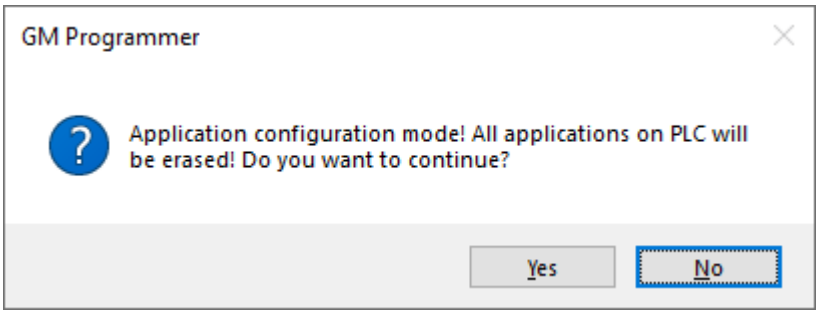
10.7.1 Online Config Mode

When the online config mode is selected, the servo amplifiers are set to be connected to the GM1 Controller.

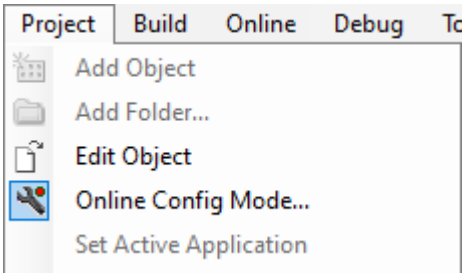
When using the online config mode, perform the setting as described in "10.3 Communication Setting" in advance.

Procedure

1. From the menu bar, select **Project>Online Config Mode**.
   A confirmation message will be displayed, asking whether to remove all applications.



2. Click [Yes].
   All applications will be removed from the GM1 controller, and the GM1 controller and servo amplifiers will be connected in online config mode.
   While online config mode is in progress, "Online Config Mode" in the menu bar remains selected.



Info.

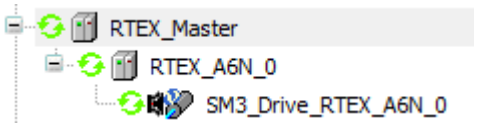
- To cancel the online config mode, select **Project>Online Config Mode** from the menu bar again.

10.7.2 Conducting Commissioning for Servo Amplifiers

While in the online config mode, you can conduct commissioning for servo amplifiers.
There is no need to create a program for commissioning.
The following is an example of commissioning using the A6N-series servo amplifiers.

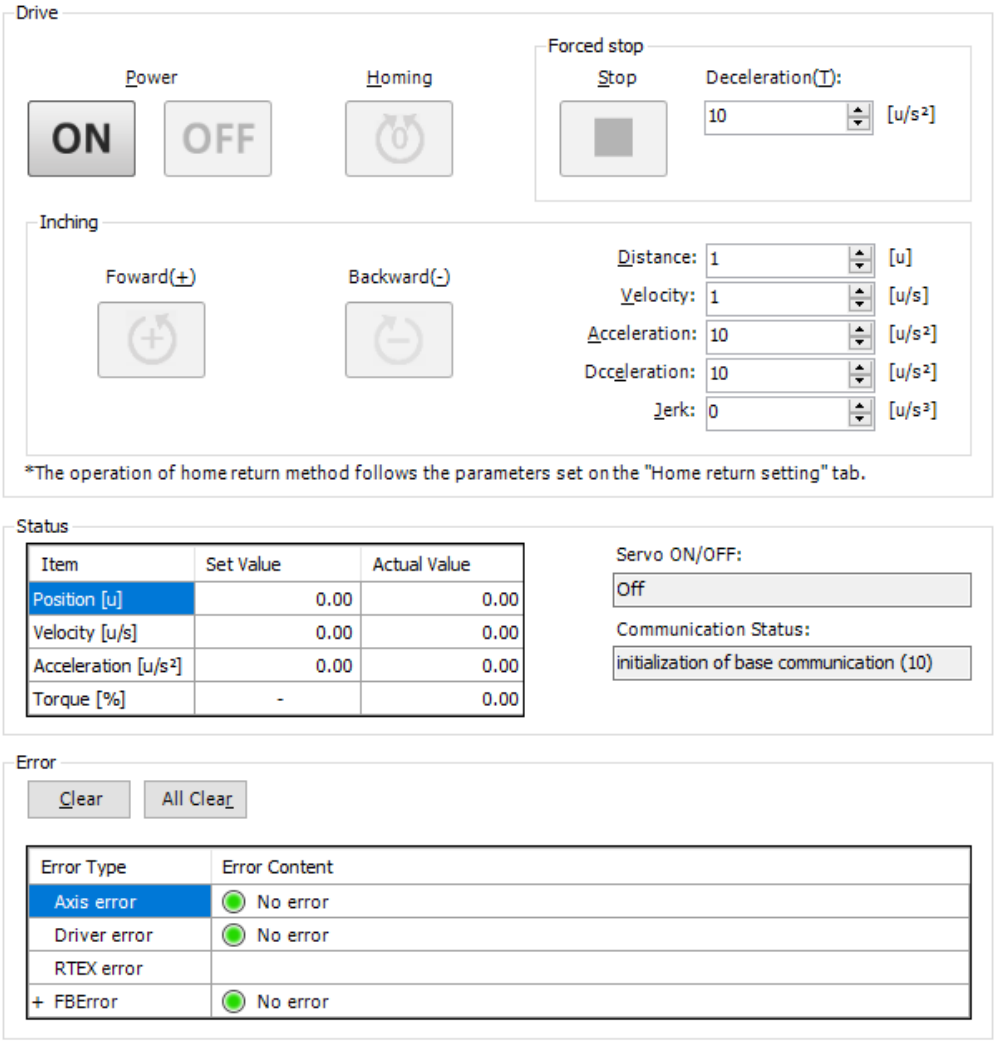
Procedure

1. Double-click the servo amplifier object in the navigator pane.



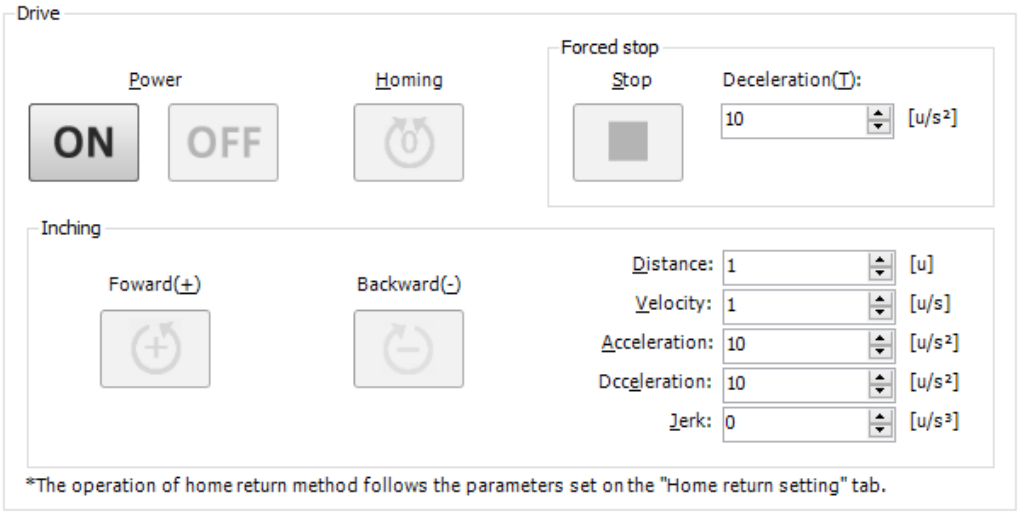
   The "RTEX Axis Setting" dialog box will be displayed.

2. Click the "Commissioning" tab.
   The Commissioning screen will be displayed.



Group	Description
Drive	Allows the user to set commissioning parameters. Allows the user to execute commissioning.
Status	Displays the running status of the servo amplifiers during commissioning.
Error	Displays errors that occurred during commissioning. Allows the user to clear errors.

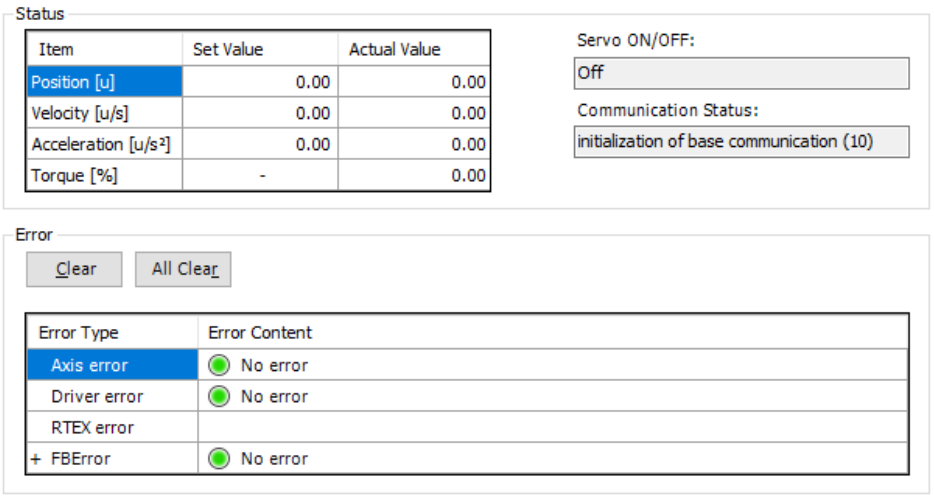
3. Click an appropriate button in the Operation group to start commissioning.
Clicking an icon starts the corresponding commissioning procedure.
To change home return parameters, use the "Home Return Settings" tab.



4. For the servo amplifier and RTEX statuses during commissioning, check the "Status" and "Error" groups.

4-1 To erase errors that are displayed, click the [Clear] button or [All Clear] button in the "Error" group.

- Pressing the [Clear] button will erase axis errors, drive errors, RTEX errors, and FB errors [0].
- Pressing the [All Clear] button will erase axis errors, drive errors, RTEX errors, and FB errors [0] to [5].



If the display of FB errors is collapsed, the number of FB errors will be displayed as "0" in the "Error Content" column.

5. From the menu bar, select **Project>Online Config Mode**.
If online config mode is canceled, commissioning will be terminated.

This completes commissioning for servo amplifiers.

Info.

- If you display another window during commissioning, "Stop" will be executed.
- Even if communication with the servo amplifier is disrupted during "Inching" or "Home Return" operation, the servo amplifier will continue commissioning operation.
- If online config mode is canceled, commissioning will be terminated. To cancel the online config mode, select **Project**>**Online Config Mode** from the menu bar again.

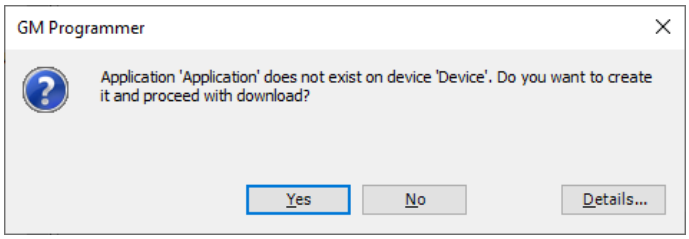
10.8 Login

GM Programmer allows the user to log in to the GM1 Controller. When "Login" is executed, applications are downloaded to the GM1 Controller.

Procedure

1. From the menu bar, select **Online**>**Login**, or press the <Alt> key and the <F8> key simultaneously.

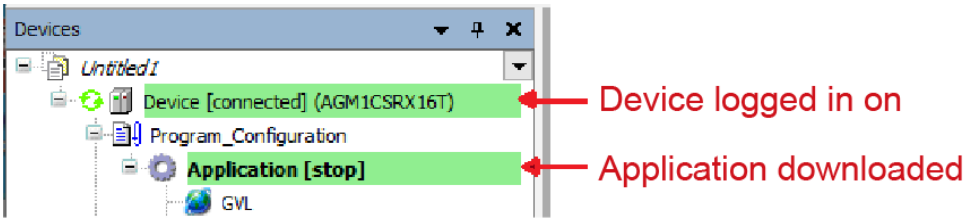
   A confirmation message will be displayed, asking whether to download the applications to the GM1 controller (device).



2. Click [Yes].

   The applications will be downloaded to the GM Programmer at the same time as you log in to the GM1 Controller (device).

   "connected" will be displayed at the [Device] object in the navigator pane and the status of the downloaded applications will be displayed.



Info.

- You can also log in by clicking on the toolbar.
- If you log in again after the applications have been downloaded, the confirmation message will not be displayed.

10.9 Logout

This function allows the user to log out from the device to which the user logged in.

Procedure

1. From the menu bar, select **Online**>**Logout**, or press the <Ctrl > + <F8> key simultaneously. You will be logged out.

Info.

- You can also log out by clicking on the toolbar.

(MEMO)

11 Setting up the Servo Amplifier Connected to the GM1 Controller

11.1 Setting up the Servo Amplifier Connected to the GM1 Controller

The PC communicates with the servo amplifier connected to the GM1 Controller.

Connect the PC and GM1 Controller with a USB cable or Ethernet cable. With the GM1 Controller and servo amplifier connected with a Cat5e shielded cable, set up the servo amplifier.

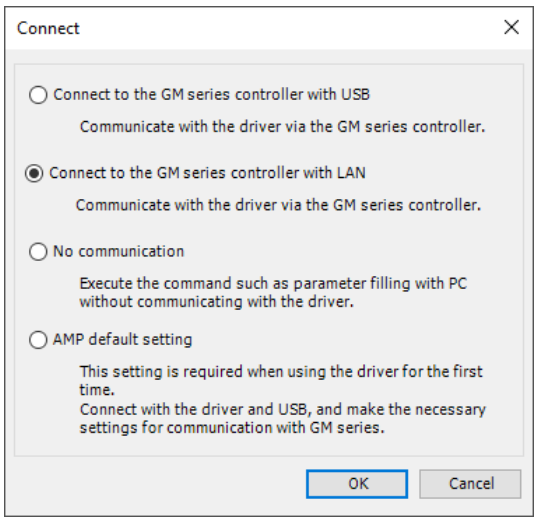
> Make this setting only after the connection between the GM1 Controller and the servo amplifier has been established.

11.1.1 When Connected Using the Ethernet Cable

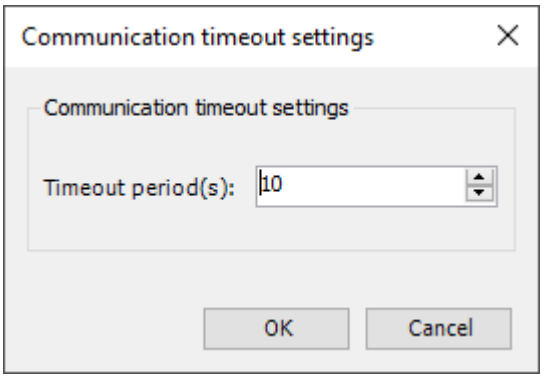
If connected using the Ethernet cable, use the following procedure.

Procedure

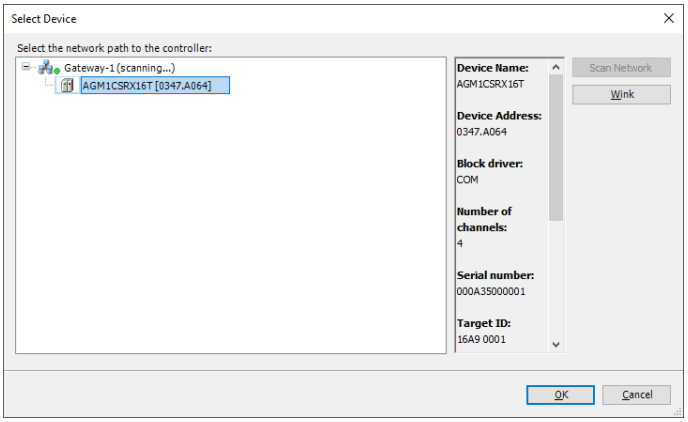
1. Start PANATERM Lite for GM.
   The "Connect" dialog box will be displayed.



2. Select "Connect to the GM series controller with LAN" and click the [OK] button.
   The "Communication timeout settings" dialog box will be displayed



3. Change the timeout time and click the [OK] button.
The "Select Device" dialog box will be displayed.



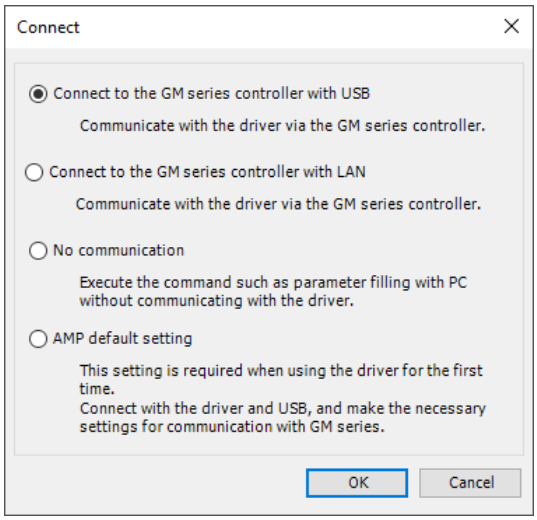
4. Click the [Scan Network] button, select the GM1 Controller, and click the [OK] button.
The main pane will be displayed.

11.1.2 When Connected Using the USB Cable

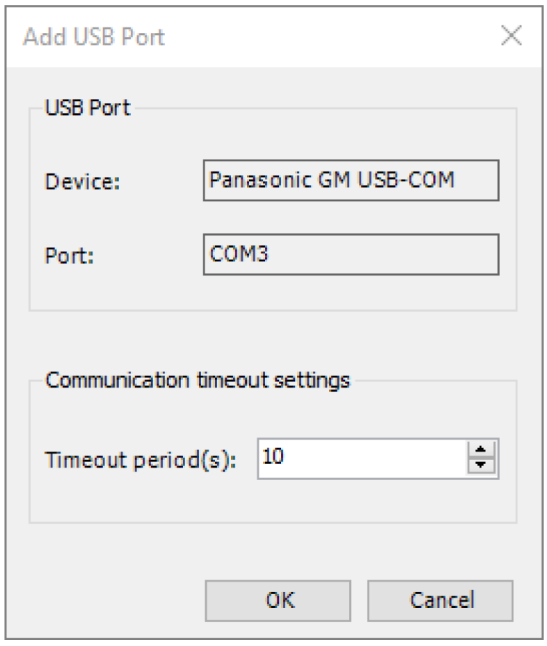
If connected using the USB cable, use the following procedure.

Procedure

1. Start PANATERM Lite for GM.
   The "Connect" dialog box will be displayed.

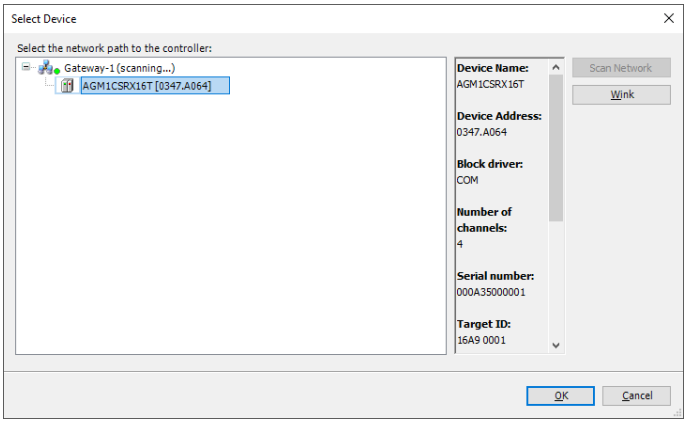


2. Select "Connect to the GM series controller with USB" and click the [OK] button.
   The "Add USB Port" dialog box will be displayed.



3. Change the timeout time and click the [OK] button.
A dialog box to add a USB port and to restart the Gateway will be displayed.

4. Click the [OK] button.
The "Select Device" dialog box will be displayed.



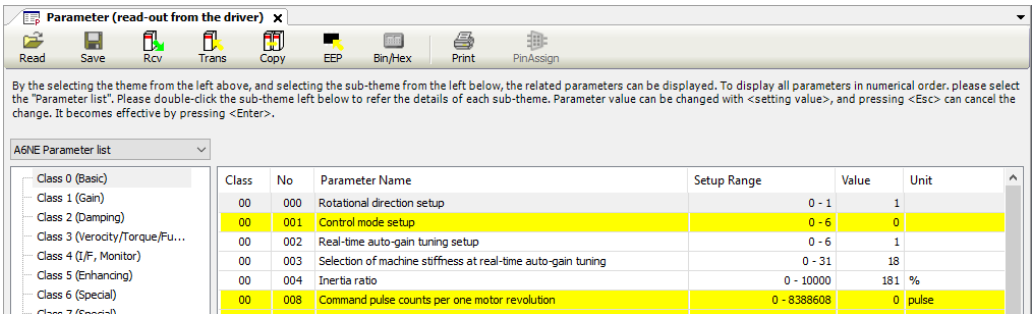
5. Click the [Scan Network] button, select the GM1 Controller, and click the [OK] button.
The main pane will be displayed.

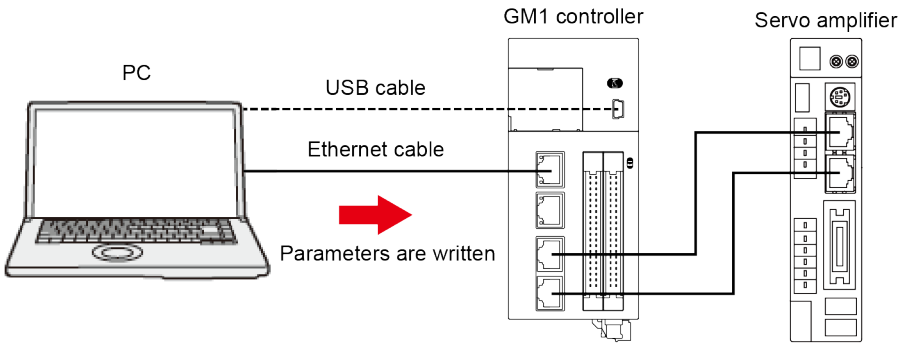
11.2 Writing Parameters to Servo Amplifier

Connect the PC with the servo amplifier and directly write the parameters set with PANATERM Lite for GM to the servo amplifier.

Procedure

1. Start PANATERM Lite for GM.
2. Click "Trans" on the toolbar.
   The parameters will be sent from PANATERM Lite for GM to the servo amplifier.





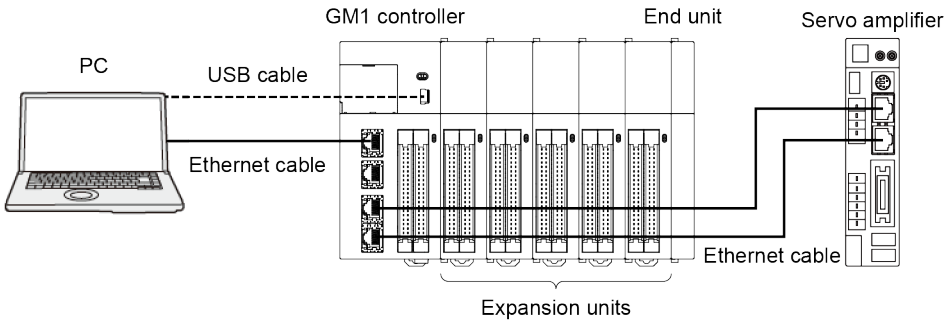
Info.

- When changes were made to the parameters with yellow background, click “EEP” on the toolbar to restart the servo amplifier.

12 Preparation for Operation

12.1 Checking Wiring

Firstly, check whether the GM1 Controller, expansion units, servo amplifier, and PC are connected correctly.



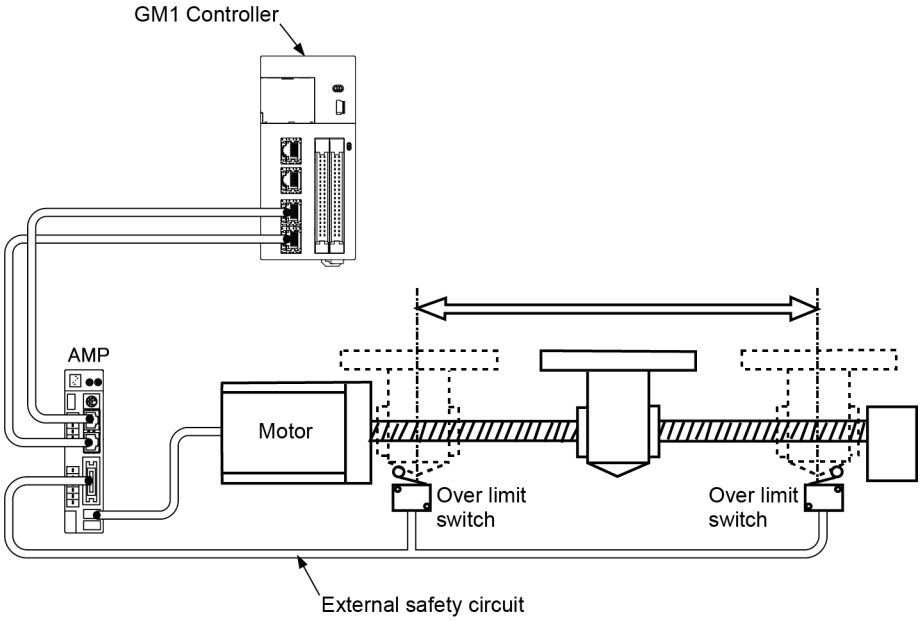
12.2 Checking Safety Circuit Design

12.2.1 Safety Circuit Design

■ **Example of a safety circuit**

Be sure to create a safety circuit when using this product.

Installation of over limit switches

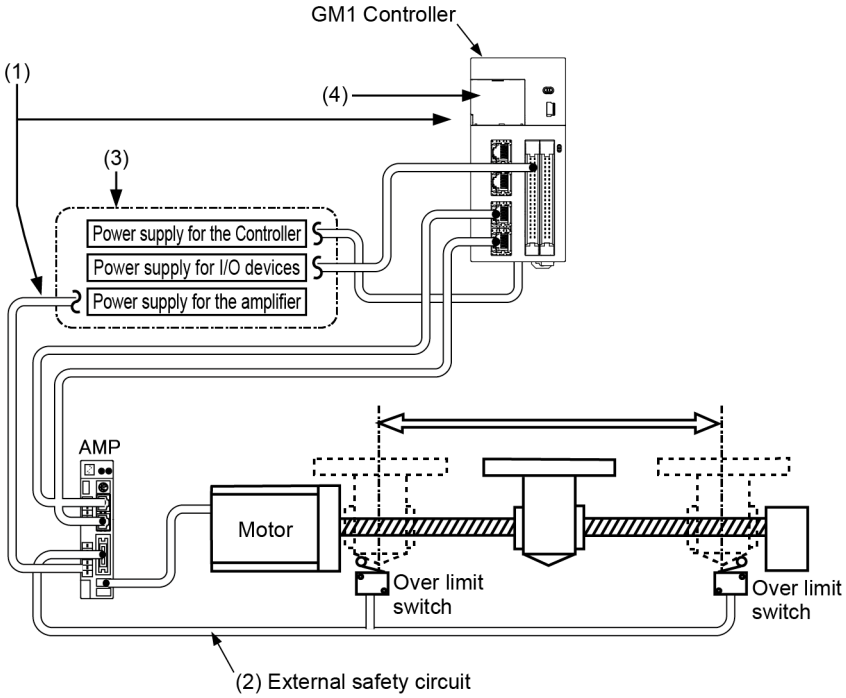


- Install over limit switches as shown above.
- Connect them to the CW and CCW over-travel inhibit inputs of the parallel I/O connector of the servo amplifier. For the GM1 Controller, connect them to the limit input (+) and limit input (-) through the network.

- Install the safety circuit recommended by the manufacturer of the motor being used.

12.2.2 Items to Check during Wiring

■ **System configuration example**



(1) Checking connections of each device

Check to make sure that each device has been connected as indicated by the design.

(2) Checking the installation of the external safety circuit

Check to make sure the safety circuit (wiring and installation of over limit switch) based on the external circuit has been installed properly.

(3) Checking the settings for power ON sequence

Make sure that settings have been entered so that power supplies will be turned according.

(4) Checking the GM1 Controller mode selector switch

Set the GM1 Controller to the STOP mode. Setting it in the RUN mode can cause inadvertent operation.

REFERENCE

12.2.3 Power ON Operation

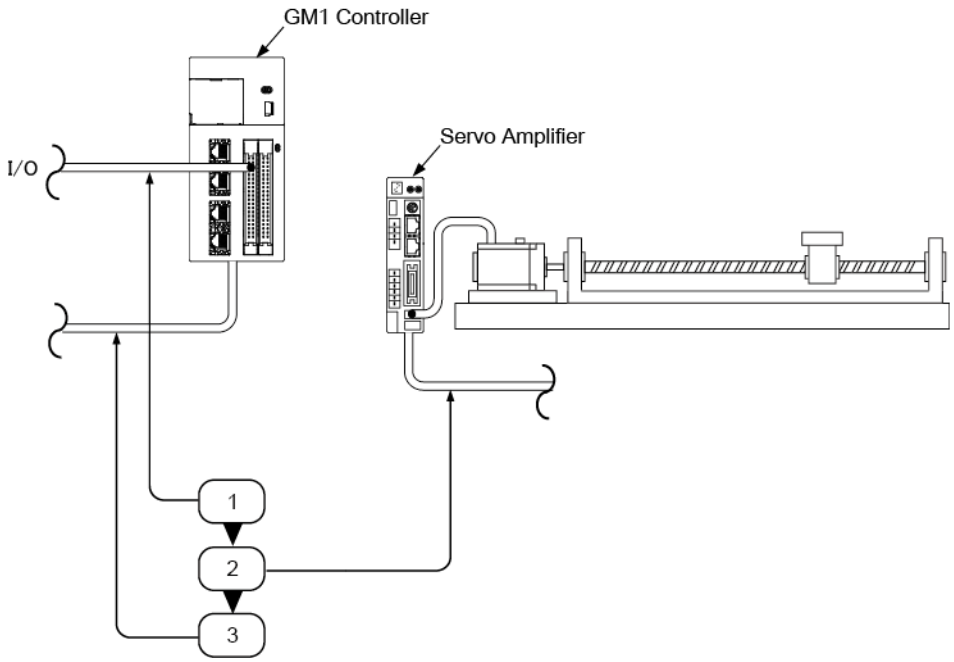
12.2.3 Power ON Operation

When turning ON the power supply to the system incorporating the GM1 Controller, turn ON the power supply in the following order.

- Consider the nature and statuses of any external devices connected to the system, and take sufficient care so that turning ON the power supply will not initiate unexpected movements.

Procedure

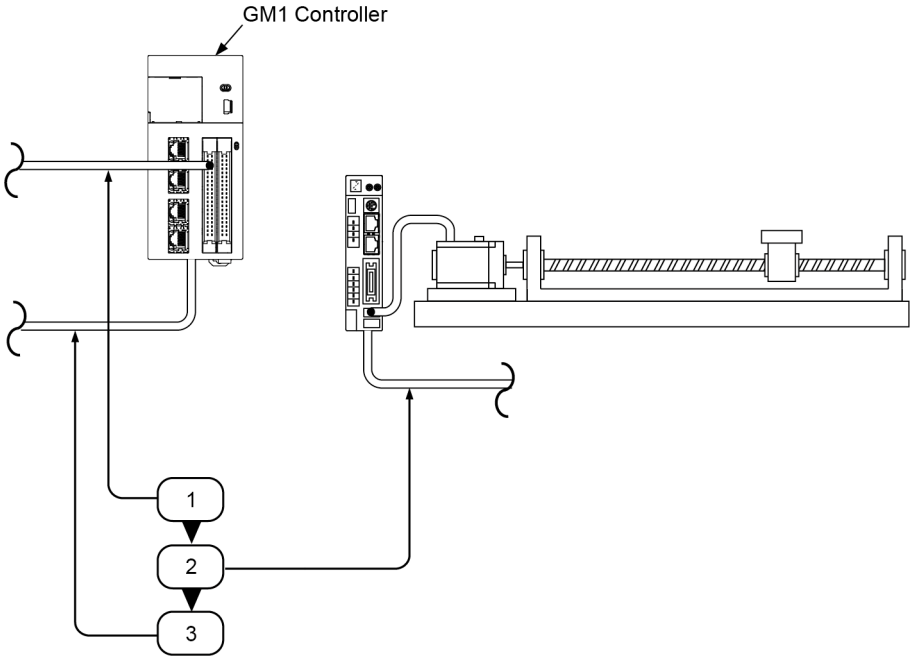
1. Turn ON the power supplies to the I/O devices connected to the GM1 Controller.
2. Turn ON the power supply to the servo amplifier.
3. Turn ON the power supply to the GM1 Controller.



12.2.4 Power OFF Operation

Procedure

1. Check to make sure the rotation of the motor has stopped, and then turn OFF the power supply to the GM1 Controller.
2. Turn OFF the power supply to the servo amplifier.
3. Turn OFF the power supplies to the I/O devices connected to the GM1 Controller.


GM1 Controller
1
2
3

12.3 Operation Check

12.3.1 Checking the Network

After turning ON the power supplies, check if the operation monitor LEDs of the GM1 Controller are in the following states.

- STATUS: Lit
- LINK: Lit

Info.

- If the "STATUS" LED is flashing, the network is not established.
- If the "LINK" LED is not lit, the “RX” (reception side) of the GM1 Controller and “TX” (transmission side) of the servo amplifier are not electrically connected normally.

12.3.2 Checking Input Signals

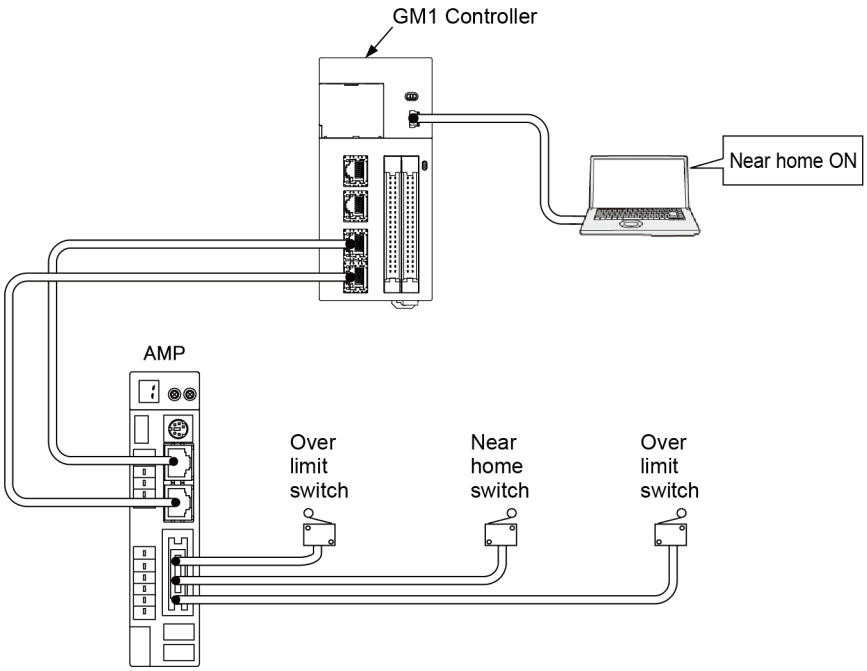
Check the input of the over limit switch for the safety circuit connected to the servo amplifier and the input of the near home (DOG) switch.

Check whether signal inputs are properly loaded into the GM1 Controller, with each switch operated forcibly.

The input state of each switch can be checked on the monitor screen of the MINAS Series Setup Support Software "PANATERM Lite for GM".

Info.

- If the operating direction of the motor is opposite to the position of the limits (+) and (-) after the installation of the over limit switch, check the physical connection of the limit switch.



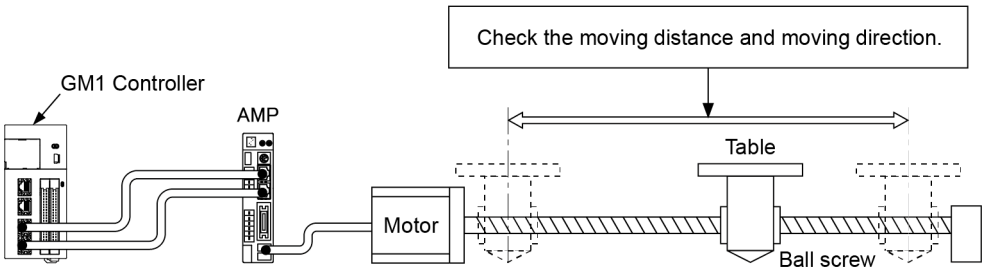
12.3.3 Checking Rotating and Moving Directions and Moving Distance

Check whether the rotating and moving directions of the motor and the moving distance are correct. The operations can be easily confirmed using the commissioning function of the GM Programmer without user programs.

■ Using the commissioning function

On the GM Programmer, select **Project>Online Setting Mode**.

Open the “Commissioning” screen for each axis to use the commissioning function.



■ Checking the rotation direction

Set the rotation direction on the servo amplifier.

Check the rotation direction by executing inching operation on the Commissioning screen.

■ Checking the moving distance

Set the moving distance on the servo amplifier.

Next, set the scale on the "Scaling / Mapping" screen for each axis on the GM Programmer. Check the moving distance by executing inching operation on the Commissioning screen.

Info.

For details on inching operation on the Commissioning screen, refer to "10.7.2 Conducting Commissioning for Servo Amplifiers".

(MEMO)

Appendix Warranty / Cautions for Proper Use

Warranty

Warranty Period

Warranty period shall be 12 months from the ex-factory date or 18 months from the date of manufacturing.

This Warranty shall be exempted in the following cases,

1. Defects resulting from misuse and/or repair or modification by the customer.
2. Defects resulting from drop of the Product or damage during transportation.
3. Defects resulting from improper usage of the Product beyond the Specifications.
4. Defects resulting from fire, earthquake, lightening, flood, damage from salt, abnormal voltage or other Act of God, or other disaster.
5. Defects resulting from the intrusion of foreign material to the Product, such as water, oil or metallic particles.

   Parts exceeding their standard lifetime specified in this document are excluded.

Warranty Scope

Panasonic warrants the replacement of the defected parts of the Product or repair of them when the defects of the Product occur during the Warranty Period, and when the defects are under Panasonic responsibility.This Warranty only covers the Product itself and does not cover any damage incurred by such defects.

Panasonic in accordance with 'Warranty Period' records,in any case,the machine state is poor,and cause damage to your company and the third party,all liability,Panasonic is not responsible.

1. The machines are not assembled in accordance with the instructions or precautions noted in this specification.
2. When the machine does not match the product assembled in the machine.
3. This specification does not depend on your company.
4. When the machine condition is not caused by Panasonic reasons.

Cautions for Proper Use

- Practical considerations for exporting the product or assembly containing the product
  When the end user of the product or end use of the product is associated with military affair or weapon, its export may be controlled by the Foreign Exchange and Foreign rade Control Law. Complete review of the product to be exported and export formalities should be practiced.
- This product is intended to be used with a general industrial product, but not designed or manufactured to be used in a machine or system that may cause personal death when it is failed.
- Installation, wiring, operation, maintenance, etc., of the equipment should be done by qualified and experienced personnel.
- Install a safety equipments or apparatus in your application, when a serious accident or loss of property is expected due to the failure of this product.
- This product is designed for general industrial equipments.Don´t use this product under special conditions such as nuclear energy control, aerospace equipments, transportation, medical equipment, various safety equipments or special equipments.
- The wiring condition(earth wire method and cables length and shield cable condition of signal lines) may affect the noise resistance,please confirm the noise resistance of the machine.
- Failure of this product depending on its content, may generate smoke of about one cigarette. Take this into consideration when the application of the machine is clean room related.
- Product overload can cause the goods to fall,please follow the marking.
- Do not use benzine, thinner, alcohol, acidic cleaner and alkaline cleaner because theycan discolor or damage the exterior case.
- This product shall be treated as industrial waste when you dispose.
- This product related standards,laws and the user is responsible for matching between machine and components in terms of configuration, dimensions, life expectancy, characteristics, when installing the machine or changing specification of the machine. The user is also responsible for complying with applicable laws and regulations.
- The product will not be guaranteed when it is used outside its specification limits.
- Parts are subject to minor change to improve performance.

(MEMO)

Revision History

The manual code is shown at the bottom of the cover page.

Date of issue	Manual code	Revision details
February 2021	WUME-GM1RTXSU-01	First edition
August 2021	WUME-GM1RTXSU-02	2nd Edition ● Added the following models. • Digital I/O unit (Source type) • Analog I/O unit • Pulse output unit
March 2022	WUME-GM1RTXSU-03	3rd edition ● Clerical corrections
April 2022	WUME-GM1RTXSU-04	4th edition ● Changed the Company name

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(MEMO)

Please contact .....

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WUME-GM1RTXSU-04