cltsn.fastech-motions.com/en

CC-Link IE TSN Compatible
Ezi-SERVO Series
Ezi-STEP Series
Ezi-POS Series

Ezi-CT Manager (Configuration Program)
User's Manual

FASTECH
Fast Accurate Smooth Motion

Table of Contents

Chapter 1 Getting Started 1-1

1.1 Before Use 1-1
1.2 Safety Precautions 1-1
1.3 Guide to Function-Specific User Manuals 1-5

Chapter 2 Program Installation and Network Configuration 2-1

2.1 Installation 2-1
2.1.1 Minimum System Requirements 2-1
2.1.2 Recommended System Specifications 2-1
2.1.3 Program Installation 2-2
2.2 Network Settings 2-6
2.2.1 How to Connect the Network Cable 2-6
2.2.2 How to Configure the Network Environment 2-8

Chapter 3 Software Configuration 3-1

3.1 Main Screen 3-1
3.1.1 Menu Bar 3-2
3.1.2 Toolbar 3-3
3.1.3 Status Bar 3-4
3.2 Log Messages 3-5
3.2.1 Display Level 3-5
3.2.2 Clear Log Messages 3-5
3.2.3 Content 3-5
3.3 Parameters 3-6
3.3.1 Toolbar 3-7
3.3.2 Parameter List 3-8
3.3.3 Parameter Items 3-10
3.3.4 Parameter Item 3-11
3.4 Alarm History 3-13
3.4.1 Toolbar 3-14
3.4.2 Error History 3-14

3.4.3 Warning History 3-16
3.5 Download 3-17
3.5.1 Firmware 3-18
3.5.2 MotorDB 3-18
3.6 Test Run and Operation Monitoring 3-19
3.6.1 Common Control Functions 3-20
3.6.2 Test Run by Function 3-21
3.6.3 Operation Information 3-25
3.6.4 Operating Status 3-26
3.6.5 Input Signal 3-28
3.6.6 Output Signal 3-28
3.7 Network Operation Monitor 3-29
3.7.1 NMT State Machine Information 3-30
3.7.2 Drive Status Information 3-32
3.7.3 Operating Modes 3-36
3.7.4 Error Code 3-36
3.7.5 Related Objects 3-37
3.7.6 Controlword 3-38
3.7.7 Statusword 3-40
3.7.8 Digital Inputs 3-42
3.7.9 Digital Outputs 3-43
3.8 PDO Mapping 3-45
3.8.1 RxPDO 3-46
3.8.2 TxPDO 3-47

Chapter 4 Operation 4-1

4.1 Connecting the Device 4-1
4.1.1 Device Discovery and Connection 4-1
4.1.2 Ending Communication 4-4
4.1.3 Reconnecting to the Device 4-5
4.2 Parameter Monitoring and Settings 4-6
4.2.1 To open 4-6
4.2.2 Refresh 4-7
4.2.3 Save to Device 4-8
4.2.4 Factory Reset 4-9
4.2.5 Open from File 4-11

4.2.6 Save to File 4-13
4.2.7 Modify Parameters 4-15
4.3 Download 4-17
4.3.1 Open 4-17
4.3.2 Firmware Update 4-18
4.3.3 Motor DB Update 4-22
4.4 Commissioning 4-25
4.4.1 Open 4-25
4.4.2 Servo On 4-26
4.4.3 Servo Off 4-26
4.4.4 Deceleration Stop 4-27
4.4.5 Immediate Stop 4-27
4.4.6 Alarm Reset 4-28
4.4.7 Normal Operation – Manual Movement 4-29
4.4.8 General Operation – Position Movement 4-32
4.4.9 Home Position Search 4-34
4.4.10 Repetitive Operation 4-37
4.4.11 Output Signal Control – Enable 4-40
4.4.12 Output Signal Control – Deactivate 4-40

Appendix 1 Troubleshooting ..... Appendix 1-1

Appendix 1.1 Program-Related ..... Appendix 1-1
Appendix 1.2 Communication Issues ..... Appendix 1-1
Appendix 1.3 Device Control Issues ..... Appendix 1-1
Appendix 1.4 Parameter-related ..... Appendix 1-3

Appendix 2 Motion Profiles ..... Appendix 2-1

Appendix 2.1 **Trapezoidal Motion Profile** ..... Appendix 2-1
Appendix 2.2 **S-Curve Motion Profile** ..... Appendix 2-3

Appendix 3 Setting the IP Address for a NIC (Network Interface Card) for TSN Communication ..... Appendix 3-1

Appendix 3.1 If you are using Windows 10 ..... Appendix 3-1
Appendix 3.2 If you are using Windows 11 ..... Appendix 3-5

Appendix 4 Revision History ..... Appendix 4-1

Chapter 1 Getting Started

1.1 Before Use

(1) Thank you for choosing our company's products.

(2) The Ezi-SERVO CC-Link IE TSN is a stepper motor unit consisting of a drive equipped with a 32-bit high-performance ARM processor and various motors, and is used as a remote station on a CC-Link IE TSN network.

(3) The Ezi-SERVO CC-Link IE TSN is an industrial product. Please do not use it for any other purpose. Our company assumes no liability whatsoever for any damages resulting from failure to comply with this instruction.

(4) This user manual provides detailed instructions on how to use the product and safety precautions.

(5) Be sure to read this user manual before use to ensure safe and proper operation of the product.

(6) After reading this manual, keep it in a place where the user can always access it.

(7) The contents of this user manual and product specifications are subject to change without notice for performance improvements. If you need the latest version of the user manual, please refer to our company's website (www.fastech-motions.com, cltsn.fastech-motions.com).

1.2 Safety Precautions

To use this product safely, please read the entire user manual carefully. In particular, the safety precautions are intended to prevent unexpected hazards or damage, so please be sure to review them.

Safety precautions are classified into two categories: "Warning" and "Caution," with the following meanings:

⚠ Warning: Failure to follow these instructions may result in death or serious injury to the user.

⚠ Caution: Failure to follow these instructions may result in injury to the user or property damage.

⚠ Warning

■ General

● All work must be performed by a person with specialized knowledge in the relevant field. Failure to do so may result in fire, injury, or damage to the equipment.

- Before starting work, be sure to check that all power sources used by the system are turned off. Failure to do so may result in electric shock.
- Do not use the device in explosive environments, environments containing flammable or corrosive gases, areas subject to water splashes, or near flammable materials. Doing so may result in fire, electric shock, or injury.
- If an alarm (protective function) is triggered during operation, please eliminate the cause. Ignoring the alarm and continuing operation may result in injury or equipment damage due to drive or motor malfunction.

■ Installation

- Install the product inside the housing. Failure to do so may result in injury or electric shock.
- Do not place objects on the product or subject it to impact.
- Install each product with adequate spacing to prevent the drive from overheating (see "3.2.2 Installation Method" for details). Failure to do so may result in fire or malfunction.

■ Wiring

- The case of this product is isolated from the internal circuit ground (GND) by a capacitor, so be sure to ground it. Failure to do so may result in electric shock, fire, or malfunction.
- Use the rated voltage for the drive's power supply. Failure to do so may result in fire or electric shock.
- Do not bend the cables excessively or pull on them too hard. Doing so may cause a fire or electric shock.
- Do not modify the wiring while the power is on. Failure to follow these instructions may result in electric shock or damage to the device.

■ Operation, Maintenance, and Inspection

- Before performing any work, turn off the main power supply, wait at least 2 minutes, and verify that there is no voltage present using a voltage tester or similar device. Failure to do so may result in a risk of electric shock due to residual charge in the internal electrolytic capacitors.
- Do not disassemble or modify the product. Failure to comply may result in injury or damage to the device.
- Do not touch the power connectors while the power is on. Doing so may result in electric shock.
- When cleaning, loosening, or tightening screws, ensure that all power to the system has been turned off. Failure to do so may result in electric shock or malfunction.

Caution



■ General

- ● Use the product in accordance with the specified standards . Failure to do so may result in electric shock, injury, or damage to the device.
- ● Do not touch the product while it is in operation. Also, do not touch the product for a short time even after it has stopped operating. Failure to exercise caution may result in burns.
- ● Do not bend or pull the cables connected to the product with excessive force. Doing so may damage the device.

■ Installation

- ● Ensure that no metal foreign objects enter the product. Failure to do so may result in fire, electric shock, or injury.
- ● Do not drop the product. Doing so may damage the product or cause injury.
- ● Do not place flammable materials near the product. Failure to do so may result in a fire or burns.
- ● When using multiple units in a single enclosed space, install a cooling system. Overheating may pose a risk of fire or other hazards.

■ Wiring

- ● Please connect the wiring securely according to the wiring diagram. Failure to do so may result in a fire or electric shock.

■ Operation, Maintenance, and Inspection

- ● Use a DC power source with reinforced insulation between the primary and secondary sides. Failure to do so may result in electric shock.
- ● When applying power, set all control input signals on the drive to "Off." Failure to follow these instructions may cause the motor to start, resulting in injury or damage to the equipment.
- ● Use the drive and motor only in the specified combination. Failure to do so may result in a fire hazard.
- ● When manually moving moving parts, do so with the servo turned off. Failure to do so may result in injury.
- ● The product is shipped with preset values. When changing the settings, be sure to check the relevant information in the user manual. Changing the settings arbitrarily may result in damage to the product or equipment.
- ● If any of the above occurs, stop operation immediately and turn off the power. Failure to do so may result in fire, electric shock, or injury.

■ Disposal

● When disposing of this product, please treat it as industrial waste. There is a risk of toxic substances being released.

1.3 Guide to Function-Specific User Manuals

This manual describes the basic operation and control of the user program.

For instructions on other products, please refer to the appropriate manual based on the list below.

Function	Manual Title
Position Control System	Ezi-SERVO Series CC-Link IE TSN-Compatible User Software User's Manual
Digital I/O Modules	Ezi-IO DIO Series CC-Link IE TSN-Compatible Software User's Manual
Analog Input Modules	Ezi-IO AD Series CC-Link IE TSN-Compatible User Software Manual
Analog Output Modules	Ezi-IO DA Series CC-Link IE TSN-Compatible User Software User Manual
High-Speed Pulse Counter Module	Ezi-IO CNT Series CC-Link IE TSN-Compatible User Software User Manual

Chapter 2 Program Installation and Network Configuration

2.1 Installation

2.1.1 Minimum System Requirements

The minimum system requirements for using Ezi-CT Manager are as follows.

Item	Specification
OS	Windows 7 SP1 (with security updates and required patches applied)
CPU	Dual-core 2.0 GHz
RAM	4 GB
Storage	At least 500 MB of free space
Network	Gigabit Ethernet NIC
Display	1280 x 800

2.1.2 Recommended System Specifications

The recommended specifications for using Ezi-CT Manager are as follows.

Item	Specifications
OS	Windows 10 64-bit (Version 1803 or later)
CPU	Quad-core 2.5 GHz
RAM	8 GB
Storage	At least 1 GB of free space
Network	Gigabit Ethernet NIC
Display	1920 x 1080

Note

▶ This program can be used on operating systems where .NET Framework 4.7.2 is installed or that support this framework.

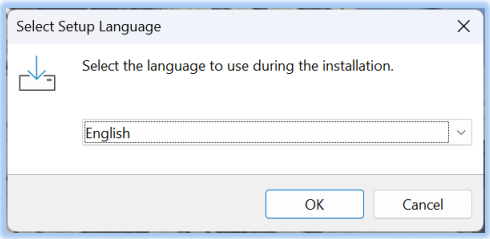
▶ On certain operating systems or OS versions, specific security updates and mandatory patches may be required to install and use .NET Framework 4.7.2.

▶ On certain OS versions that have been updated with a higher service pack or other updates, the installation of .NET Framework 4.7.2 may not be supported or may be restricted.

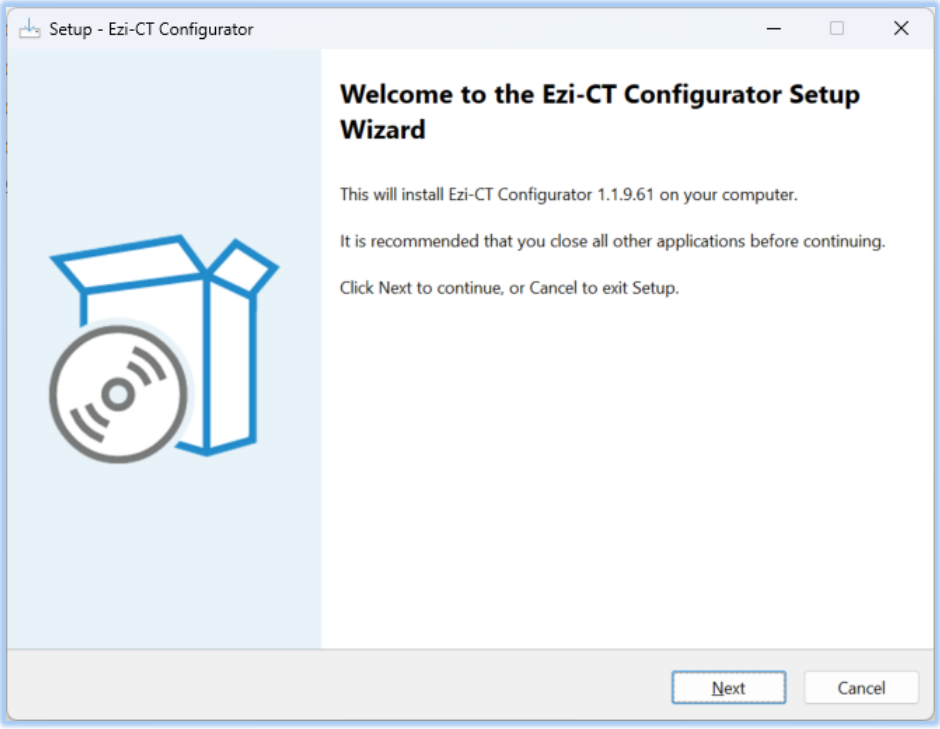
2.1.3 Program Installation

Download and run the Ezi-CT Manager program from our website (cltsn.fastech-motions.com), and follow the on-screen instructions as shown below.

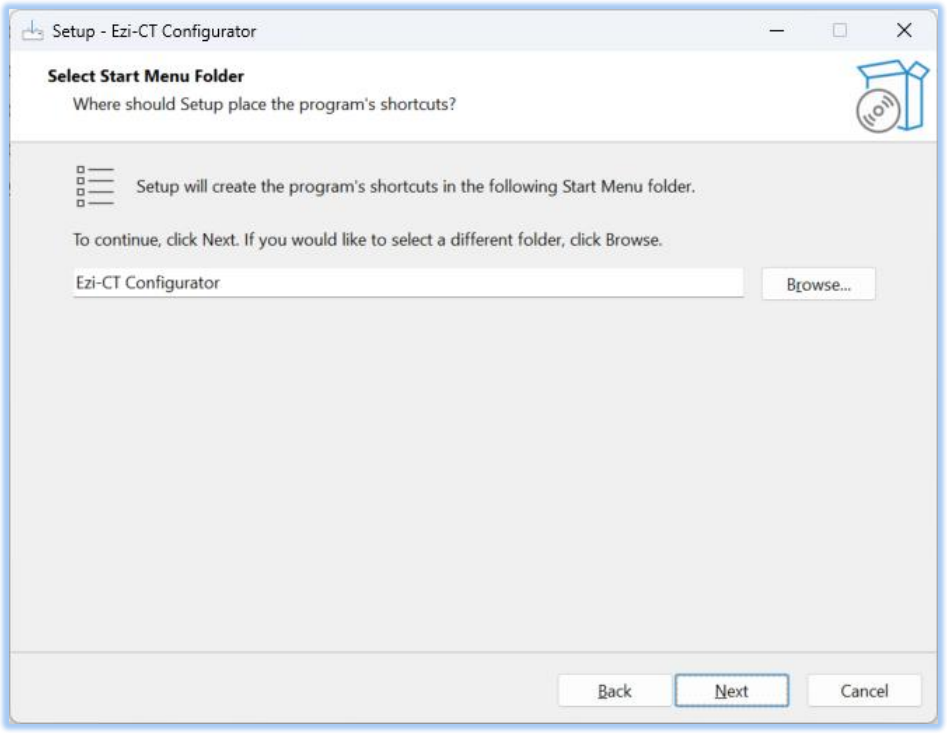
(1) Select the language for the installation screen, then click the [OK] button.



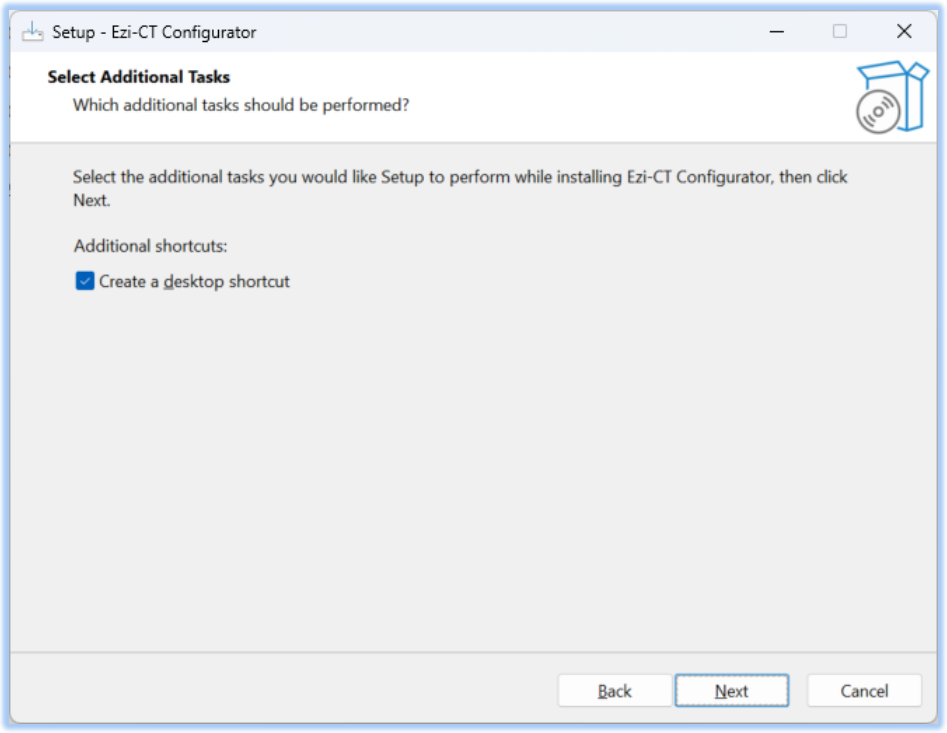
(2) Review the information (version) of the program you are installing, then click the [Next] button.



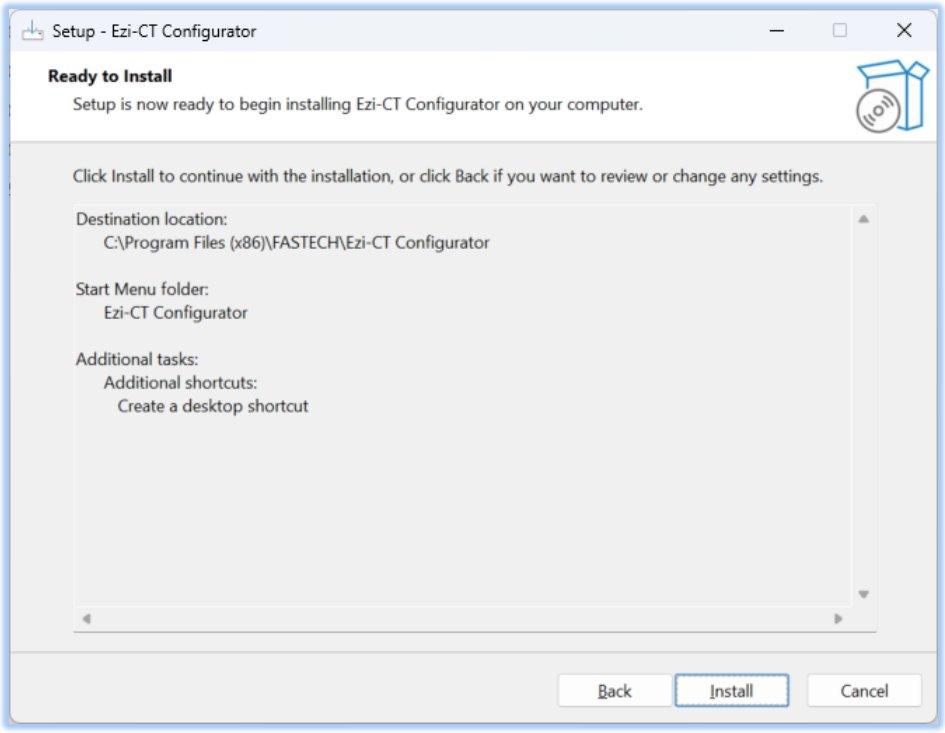
(3) Enter a name for the program in the Start Menu folder, then click the [Next] button.



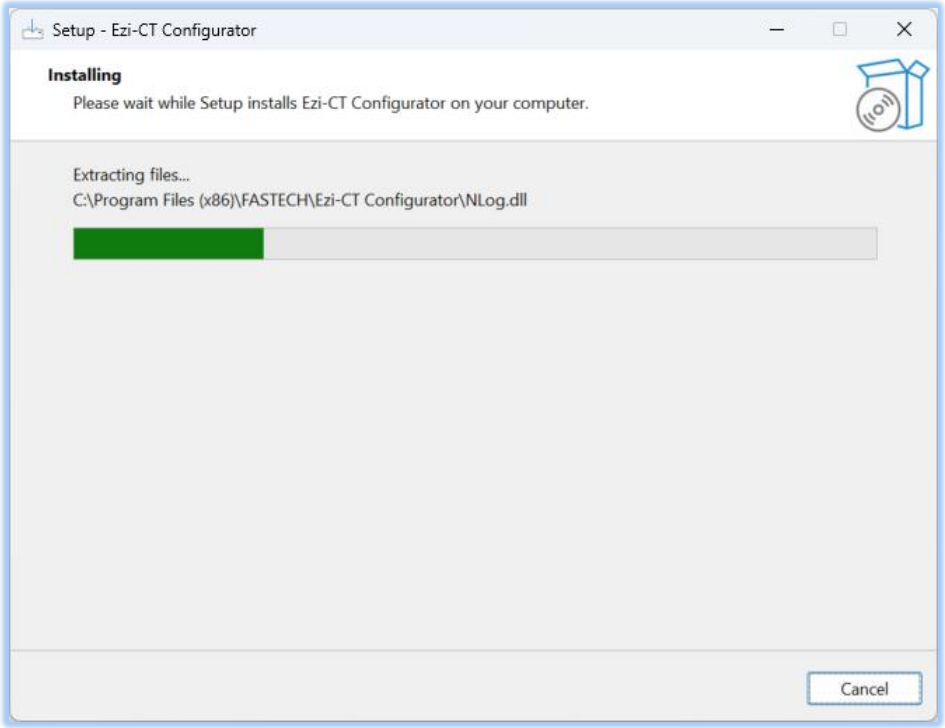
(4) Select whether you want to "Create a shortcut on the desktop," then click the [Next] button.



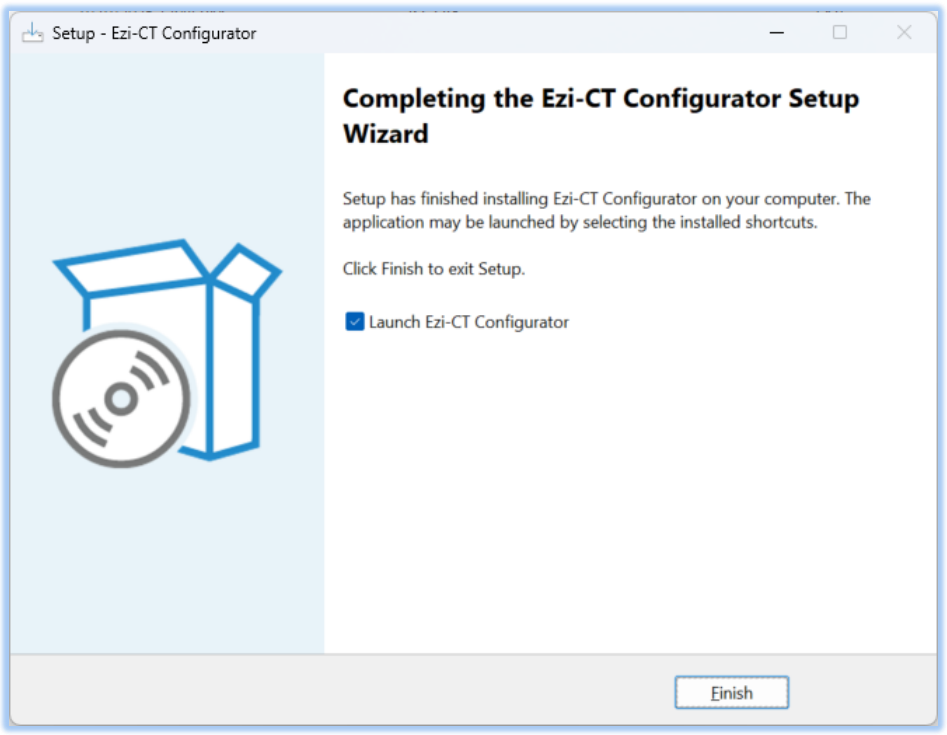
(5) Review the settings you've configured so far, then click the [Install] button.



(6) The program will be installed according to your settings.
If the same program is already installed, the existing program will be uninstalled, and the new one will be installed.



(7) Review the installation results, then click the [Finish] button to exit the installer.
If the "Run FASTECH Ezi-CT Manager" checkbox is selected, the program will launch immediately.



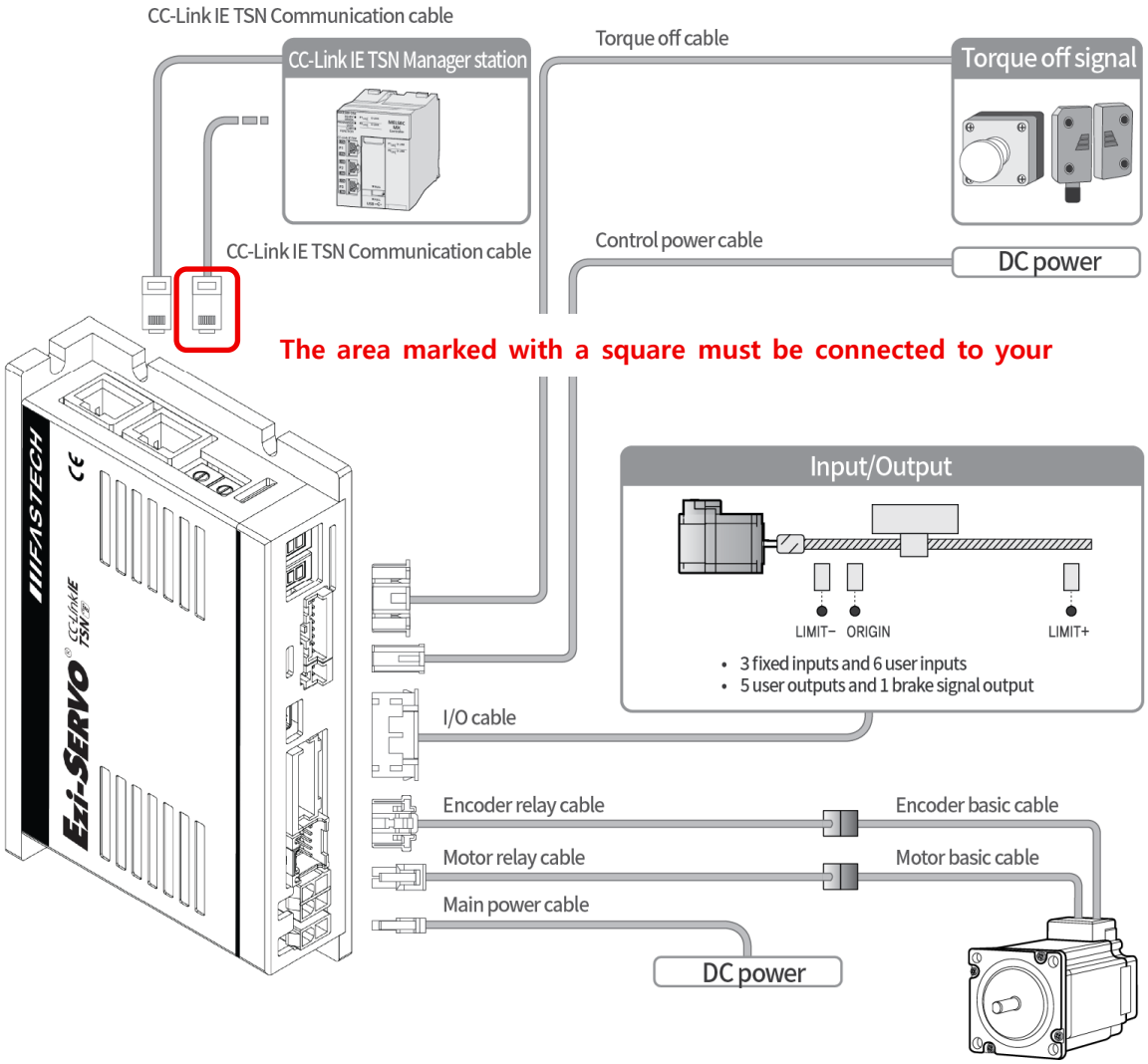
2.2 Network Settings

2.2.1 How to Connect the Network Cable

Depending on whether the network connection to the manager station is maintained, the following functional limitations may apply.

(1) If maintained

Use a spare RJ45 port on the terminal device.



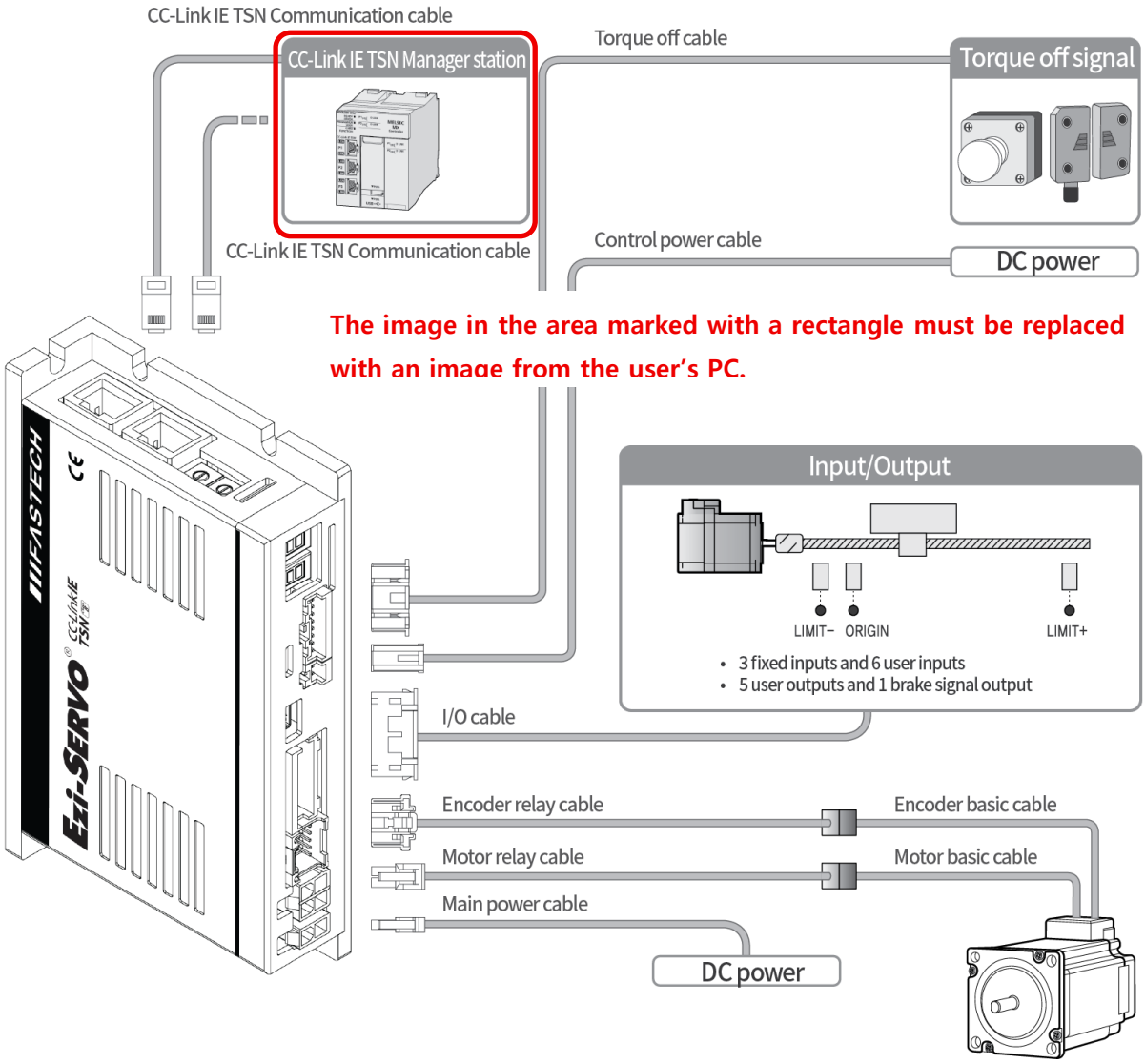
Note

▶ Generally, you can monitor the status of the remote station or change its settings.

▶ If the remote station is being controlled from the manager station, you cannot perform a test run in this program.

(2) If not maintained

Use an RJ45 cable for communication with the manager station.



Note

▶ You can perform controls such as status monitoring, setting changes, and commissioning.

▶ It is not possible to monitor operations related to TSN communication.

2.2.2 How to Configure the Network Environment

Set the IP address of the PC's NIC (network interface card) to 192.168.3.*, which is the default range for CC-Link IE TSN-based network IP addresses.

In this example, the NIC (network interface card) address is set to 192.168.3.249.

Note

▶ Set the PC's IP address to the same range (192.168.3.*) as the remote station.
Be sure to check the network address to ensure there are no conflicts with the IP addresses of the manager station and remote stations.

▶ The NIC (network interface card) must support a communication speed of at least 1 Gbps.

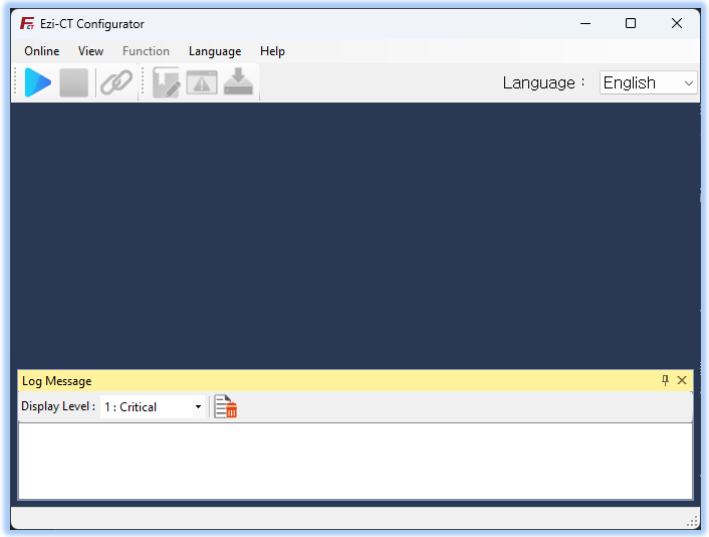
※ For instructions on how to configure the IP address of the NIC (network interface card), please refer to "Appendix 3: Configuring the IP Address of the NIC (Network Interface Card) for TSN Communication."

Chapter 3 Software Configuration

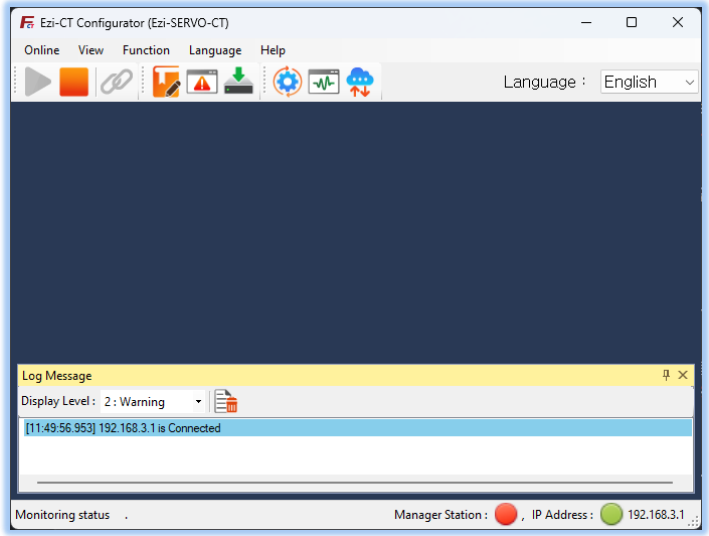
3.1 Main Screen

When you run the program, the following main screen appears.

(1) Before Connecting to a Device

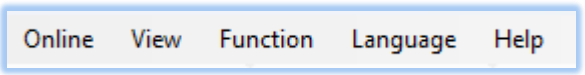


(2) After Connecting to a Device



3.1.1 Menu Bar

Provides the main features supported by the program.



The menu bar is organized as follows.

Category	Item	Function
Online	Connect	Searches for devices currently connected to the network and initiates communication with a specific device.
	Disconnect	Ends communication with the connected device.
	Reconnect	Restores communication with the device that was last connected.
	Exit	Exits the program.
View	Log Messages	Displays the log message window to the user.
Function	Parameters	Views and modifies the device's properties.
	Alarm History	Views the history of alarms that have occurred.
	Download	Update the device's operating software or the motor's database.
	Commissioning	Perform a commissioning test on the device.
	Network Monitor	Monitors general data regarding TSN communication.
	PDO Monitor	Monitors PDO data within the TSN communication.
Language		A list of languages supported by the program is provided.
Help	Software Information	You can view information related to the program.

Note

▶ PDO:
An acronym for Process Data Objects, which refers to data that the manager station and remote station periodically send and receive to share control and status information.

3.1.2 Toolbar

Provides most of the major functions supported by the program.

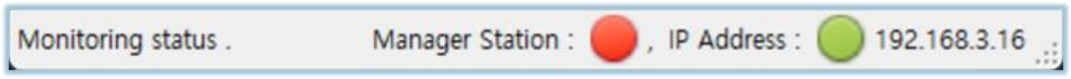


The toolbar is organized as follows:

Icon	Name	Function
	Connect	Scans for devices connected to the network and initiates communication with a specific device.
	Disconnect	Ends communication with the connected device.
	Reconnect	Restores communication with the device that was last connected.
	Parameters	Views and modifies the device's properties.
	Alarm History	Views the history of alarms that have occurred.
	Download	Update the device's operating software or the motor's database.
	Commissioning	Perform a commissioning test on the device.
	Network Monitor	Monitors PDO data related to TSN communication by function.
	PDO Monitor	Monitors the settings and contents of PDO data within the TSN communication.

3.1.3 Status Bar

Displays the program's operational status.



The status bar is organized as follows.

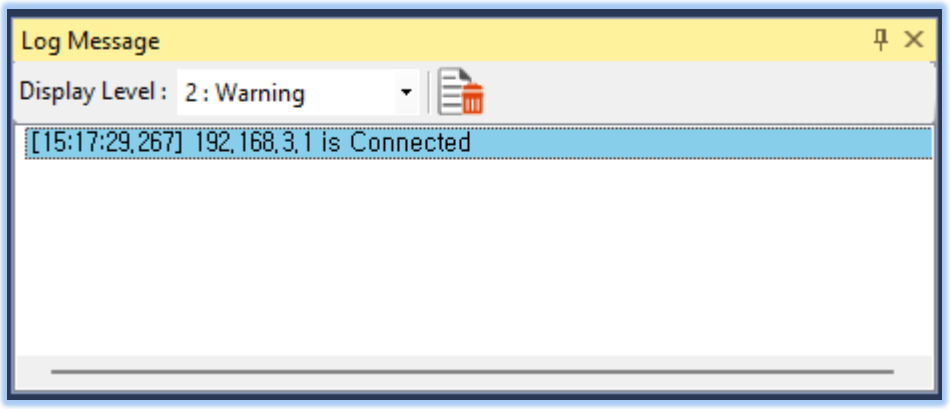
Item	Icon	Description
Monitoring status		Information on connected devices is being monitored.
Manager Station		The remote station is communicating with the manager station, and the manager station is controlling its position.
		The remote station is not communicating with the manager station.
IP Address		Currently online with the remote station.
		Currently offline from the remote station. The IP address is that of the device that was last connected.

Note

▶ When the manager station is controlling the remote station, you cannot perform a test run using this program.

3.2 Log Messages

Receives real-time log messages generated by the device.



3.2.1 Display Level

Sets the criteria for generating log messages from the device.

Value	Description
1: Critical	Generates a log message when an error occurs.
2: Warning	Generates log messages when errors or alarms occur.
3: Debug	Generates log messages related to errors, alarms, and device operation.

3.2.2 Clear Log Messages

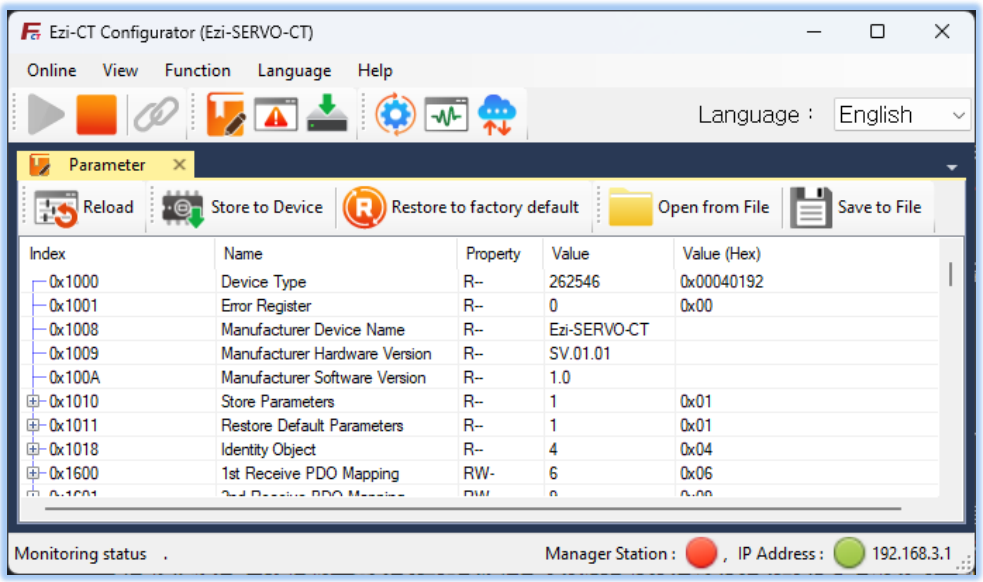
icon	Description
	Resets the data received by the program to date.

3.2.3 Content

Content	Content
Timestamp	Information about the time the log message was generated.
Log Message	The content of the log message generated by the device.

3.3 Parameters

You can view and change the current settings used by the device.



Note

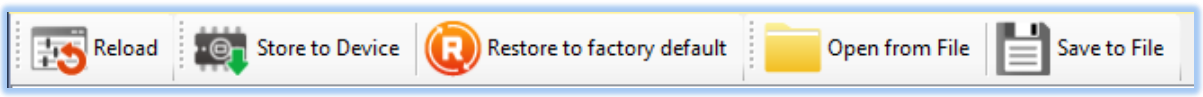
▶ To ensure fast operation, the program manages and utilizes a list of the device's default parameters in a file.

▶ If the information regarding the parameters changes due to reasons such as a software update, you must update the parameter list to ensure normal operation.

▶ Since the details of each parameter vary by device, please refer to the manual for your specific device.

3.3.1 Toolbar

Provides functions for managing parameters.

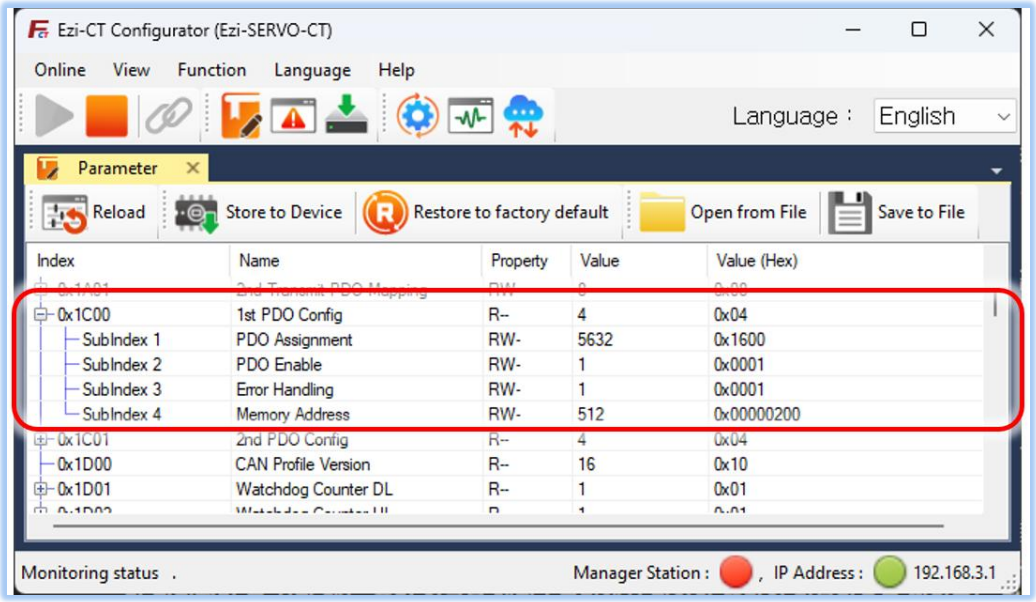


The toolbar is configured as follows.

Icon	Name	Function
	Reload	Reads the parameter list from the device to update the contents.
	Store to Device	Saves the current parameters to the device's ROM.
	Restore to factory default	Restores the device to the parameter values set at the time of shipment.
	Open from File	Reads the parameter settings saved in a file and applies them to the connected device.
	Save to File	Saves the current parameters to a file.

3.3.2 Parameter List

The parameters in this program are managed in the CANopen protocol format.
A CANopenObject uses a unique ID consisting of a combination of an index and a subindex.



The parameters are organized as follows.

Type	Content
Index	Used as a general classification of data and is expressed in hexadecimal. If there are no subitems, it is treated as a single item with a subindex value of 0. If subitems exist, the number of subitems is generally used as the value.
Subindex	Used as a subcategory of data and expressed as a decimal number.
Name	The unique name of the parameter.
Attributes	Indicates the read, write, and save attributes (R, W, S) of the parameter.
Value	Displays the parameter's current setting as a string or a decimal number.
Value (Hexadecimal)	Displays the parameter's setting value in hexadecimal, except for strings.

The property types are as follows; if a function is not supported, it is indicated by a '-' symbol.

Type	Description
R	Supports the read (Read) function.
W	Supports the Write function.
S	Stored in non-volatile memory (ROM), the values are retained even after the power is cycled.

Parameter values are represented in the following formats, depending on the data type.

Type	Value	Value (Hexadecimal)
String	FASTECH	
Signed 1-byte (INT8)	-10	0xF6
Signed 2-byte (INT16)	-1000	0xFC18
Signed 4-byte (INT32)	-100000	0xFFFE7960
Unsigned 1-byte (UINT8)	10	0x0A
Unsigned 2-byte (UINT16)	1000	0x03EB
Unsigned 4-byte (UINT32)	100000	0x000186A0

3.3.3 Parameter Items

There are three ways to manipulate parameter entries, as follows.

Type	Description
Change Parameter Property Value	Change the settings of parameters for which you have write permissions.
Expand Subitems [+]	Expands and displays the list of sub-items for an index that has sub-indexes.
Collapse Subitems [-]	Collapses and hides the expanded sub-index subitems.

(1) Expand Subitems

For parameters that have sub-indexes, click the [+] button to the left of the parameter to expand and display the sub-list.

Note

▶ For parameters without write permissions, the list will expand even if you double-click an item.
If you have write permissions, the parameter editing window will appear.

(2) Collapse Sub-Items

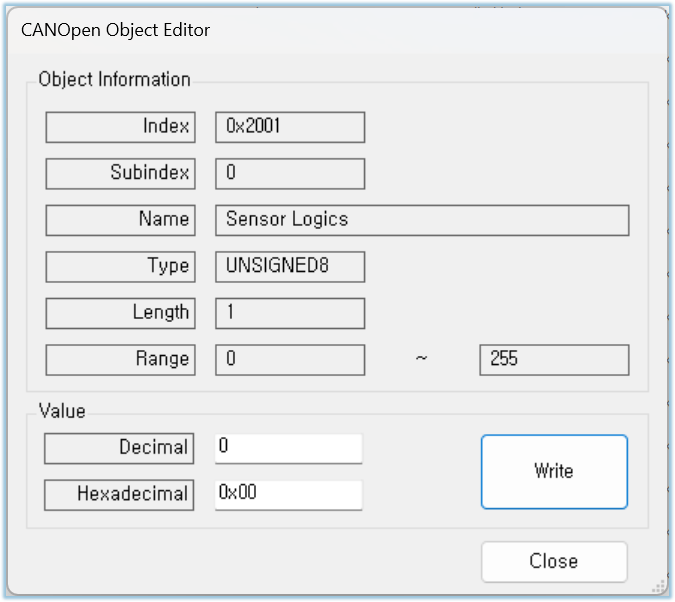
For parameters with an expanded sub-index list, you can hide the sub-items by clicking the [-] button to the left of the parameter.

Note

▶ For parameters without write permissions, double-clicking them again will collapse the list.
If you have write permissions, the parameter editing window will appear.

3.3.4 Parameter Item

This is the settings window that appears when you double-click a parameter item.



The details of each item in the settings window are as follows.

Group	Type	Description
Object Information	Index	Represents the index address of a parameter.
	Sub-Index	Represents the sub-index address of the parameter.
	Name	The unique name of the parameter.
	Type	Indicates the data type of the parameter.
	Length	Indicates the size of the parameter's data in bytes.
	Range	Indicates the range of values that can be set (entered) for the parameter.
Value	Decimal	Enter the setting value for the parameter you want to change in decimal.
	Hexadecimal	Enter the setting value for the parameter you want to change in hexadecimal.
	Write	Apply the entered setting to the connected device.
	Close	Closes the edit window and returns to the previous screen.

Note

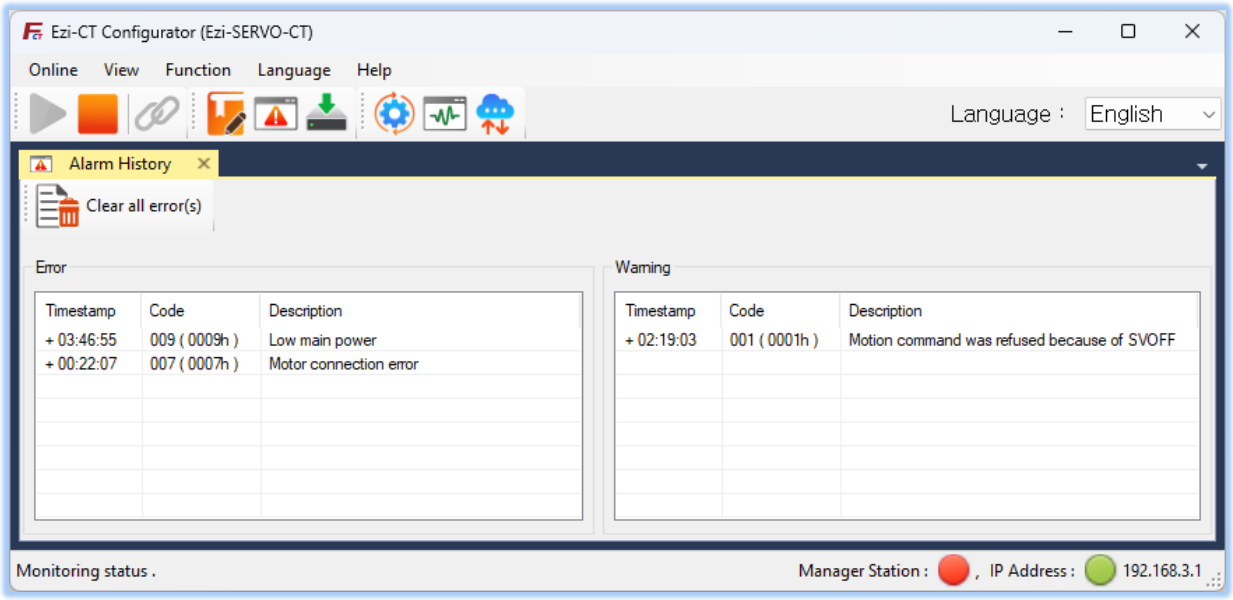
▶ If a parameter property supports writing (RW and RWS), you can change the setting.

▶ The values displayed in the "Range" field are examples based on general standards for data type sizes; the actual range or values applicable to the device may differ.

▶ If you modify the value in either the decimal or hexadecimal field, the value in the other field will automatically update accordingly.

3.4 Alarm History

You can check the history of errors and warnings generated by the device.



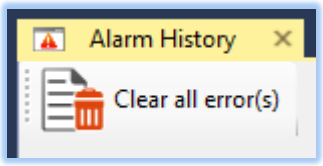
Note

▶ Since this feature operates in monitoring mode, there may be a slight time lag between when an alarm actually occurs and when it is displayed on the screen.

▶ The time information displayed in the timestamp is based on the elapsed time (uptime) since the device was powered on; however, once the connection to the manager station is established and the time information is synchronized, it is displayed based on the manager station's time.

3.4.1 Toolbar

Provides functions to manage the history.

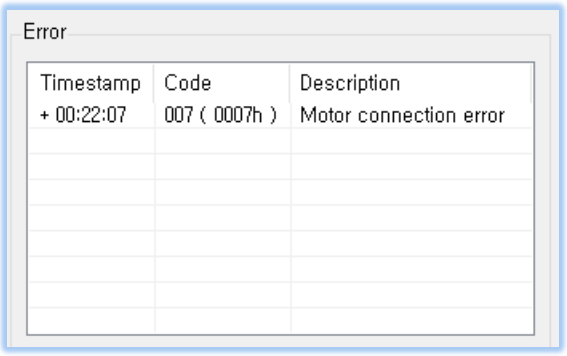


The detailed composition of the toolbar is as follows.

Icon	Name	Function
	Clear All Error(s)	Bulk-deletes the error and warning history recorded on the device.

3.4.2 Error History

Displays critical malfunctions that occurred during operation or events requiring a power cycle.
Since this history is stored in non-volatile memory (ROM), the data is retained even if the device is powered off.



The contents of each item in the Error History window are as follows.

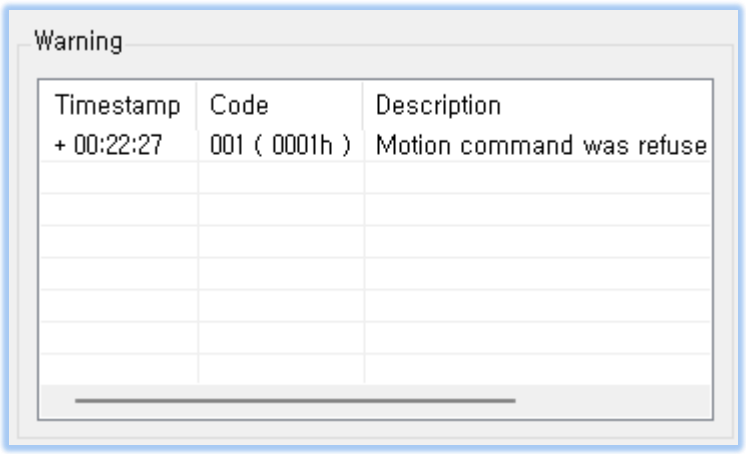
Type	Description
Timestamp	Indicates the time when the error occurred. It is displayed as the elapsed time since power-on; once communication with the manager station is established, it is displayed based on the manager station's time.
Code	Displays the unique code for the error that occurred.
Description	Displays the detailed cause of the error code.

Note	

▶ For information on the types of individual error codes and specific troubleshooting steps for each situation, refer to "Appendix 1.1: List of Error Codes."

3.4.3 Warning History

Displays information about settings or control commands that are in an abnormal state, or about non-critical malfunctions.
Unlike "Errors," these are managed as volatile data, so the history is reset (deleted) when the device is rebooted.



The contents of each item in the warning history window are as follows.

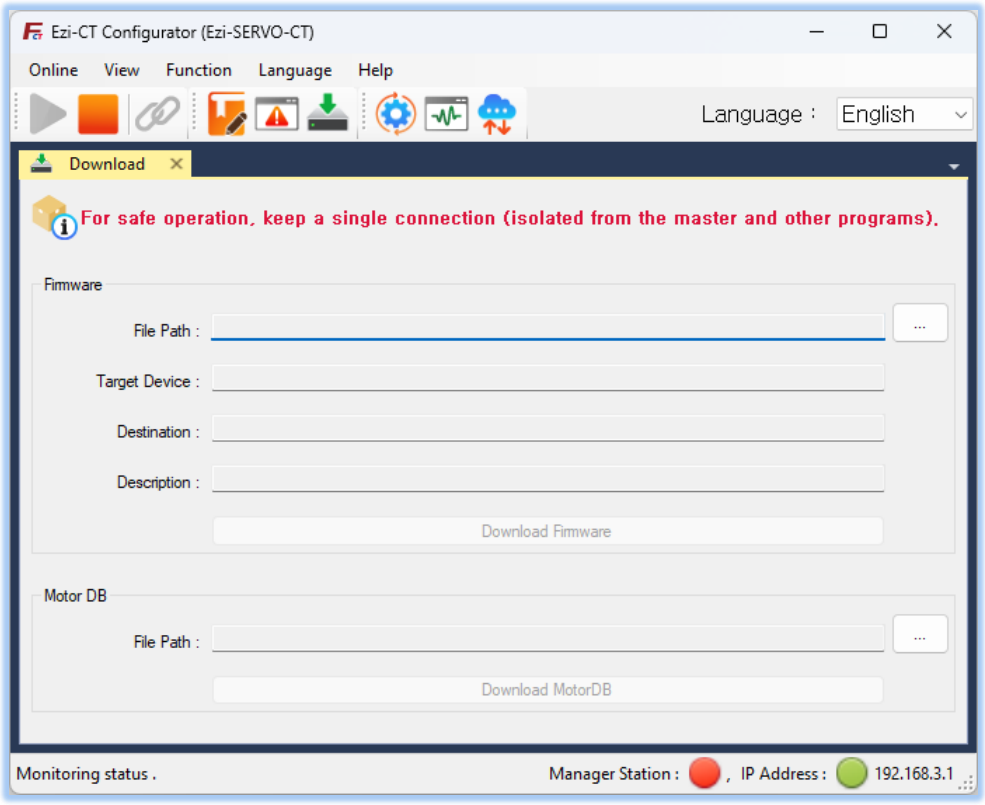
Type	Content
Timestamp	Indicates the time when the warning occurred. It is displayed as the elapsed time since power-on; if communication with the manager station is established, it is displayed based on the manager station's time.
Code	Displays the unique code of the warning that occurred.
Description	Displays the detailed cause of the warning code.

Note

▶ For information on the types of individual warning codes and specific countermeasures for each situation, refer to "Appendix 1.2: List of Warning Codes."

3.5 Download

Download and update the device's operating software (firmware) files or motor DB configuration files.



⚠ Caution

■ Operation

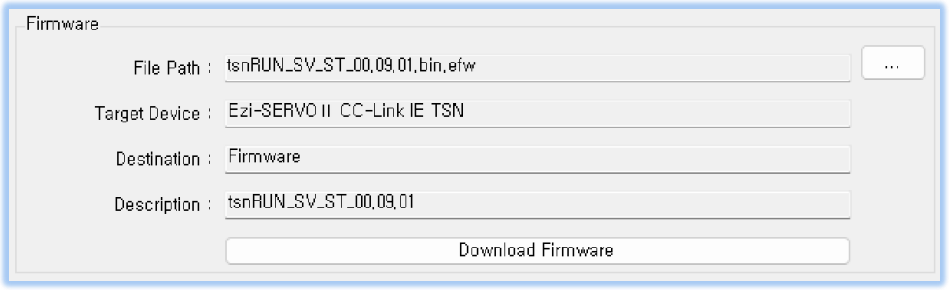
- For safety, be sure to perform firmware and motor DB downloads only when the equipment is stopped.

■ Communication

- Since the download function transfers large amounts of data sequentially, maintain a 1:1 single connection between this program and the device to prevent data loss.

3.5.1 Firmware

Updates the device's operating software.

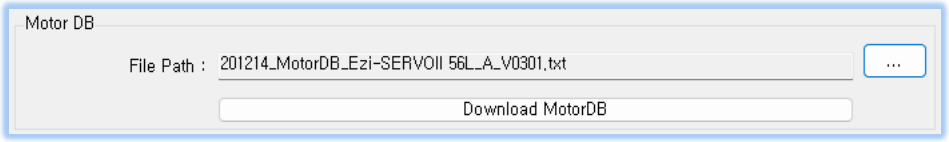


The configuration items are as follows.

Type	Content
File Path	Displays the path and name of the selected file.
Target Device	Displays the types of devices to which the file can be applied.
Target	Indicates which feature of the device the file applies to.
Description	Displays the software version information.

3.5.2 MotorDB

Updates the property data that controls the device's motor.

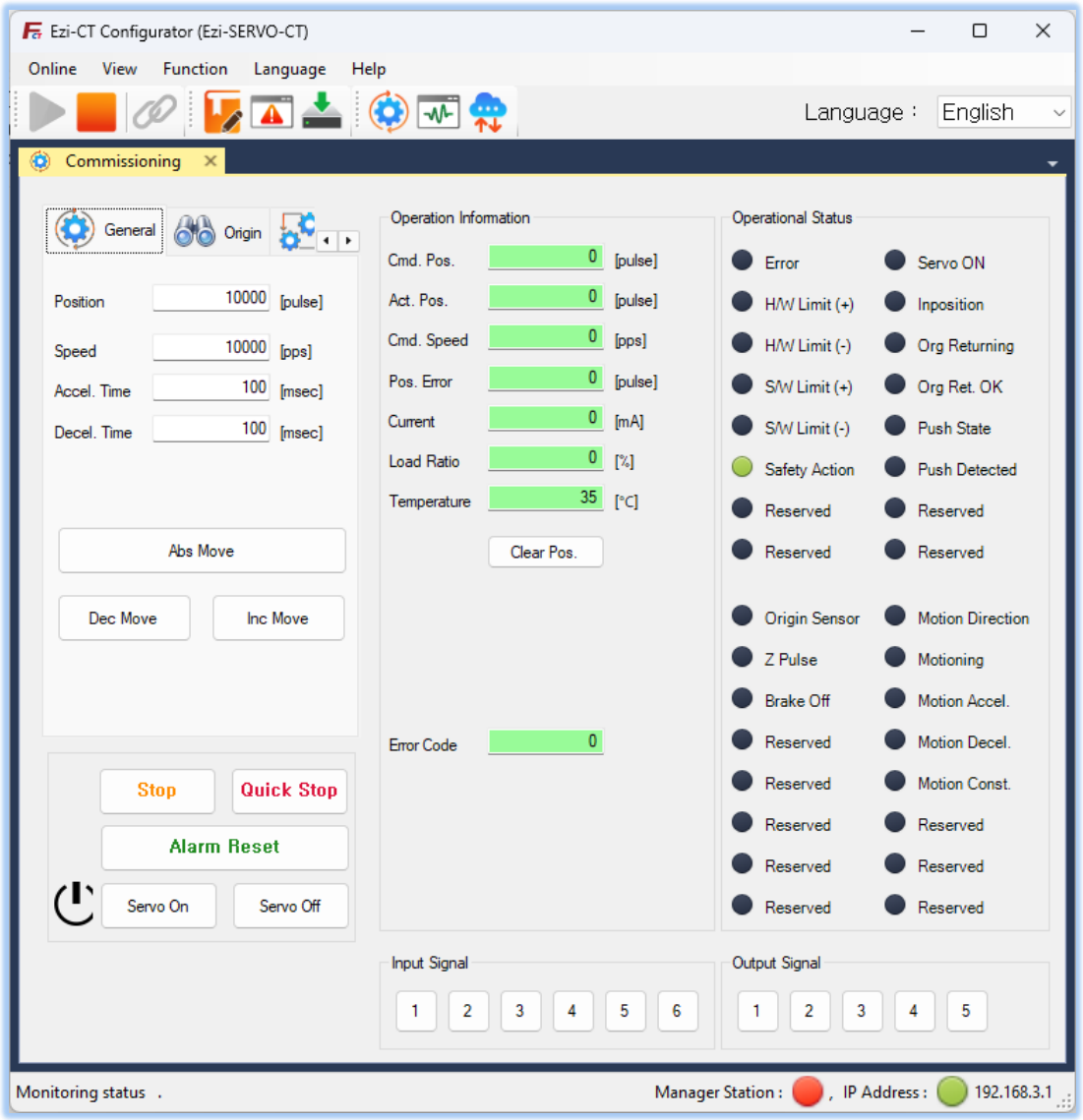


The configuration items are as follows.

Type	Content
File Path	Displays the path and name of the selected file.

3.6 Test Run and Operation Monitoring

Monitors the device's status or assists with basic commissioning.



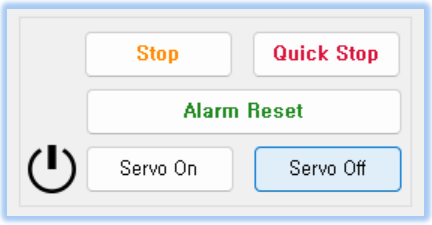
Note

▶ If the manager station is controlling the device, only operation monitoring is possible.

▶ Commissioning is possible only when the manager station is not controlling the device.

3.6.1 Common Control Functions

This section provides functions commonly used in all operations.



The structure and contents of the "Common Control Functions" are as follows.

Composition	Details
Deceleration and Stop	Stops the running motor by applying a preset deceleration time.
Immediate Stop	Stops a running motor immediately.
Alarm Reset	Clears any alarms that have occurred.
Servo ON	Enables the motor control function.
Servo Off	Disables the motor control function.

Depending on the motor's activation status, the icon's color changes as follows.

Icon	Color	Description
	Black	The motor is deactivated.
	Red	The motor is activated.

Note

▶ If there is an alarm that cannot be cleared by clicking the [Alarm Reset] button, please refer to "Appendix 1. Troubleshooting."

3.6.2 Test Run by Function

You can select and control the operation screen according to your operating needs.

(1) General Operation

Provides functions related to general position control operation.



The layout and contents of the "General Operation" screen are as follows.

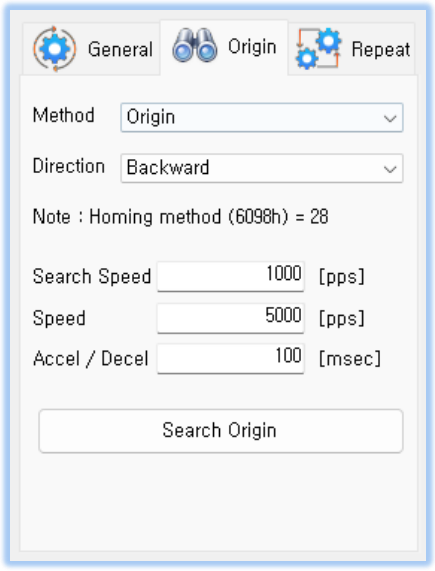
Layout	Content
Position	Set the destination and distance to travel.
Travel Speed	Set the maximum movement speed.
Acceleration Time	The acceleration time required to reach the travel speed.
Deceleration Time	The deceleration time required to come to a smooth stop at the target position.
Movement	Moves the motor so that its current position matches the set position value based on the configured settings.
Forward	Moves the motor forward (+) by the specified position value, applying the set parameters.
Reverse	Applies the specified settings to move the motor backward (-) by the specified position value.

Note

▶ For information on how to control the motor's rotation, please refer to [Appendix 4. Motion Profiles].

(2) Home Position Search Operation

This is used during test runs to set the mechanical reference position.



The configuration and procedure for "Return to Origin" operation are as follows.

Composition	Details
Method	Set the method for performing the home position search.
Direction	Sets the direction from which origin search begins.
Note	These are the settings for origin search, which combine the "Method" and "Direction" options.
Search Speed	The speed at which the robot moves to determine the exact reference position.
Movement Speed	The speed at which the robot moves to find an approximate reference position.
Acceleration/Deceleration Time	The acceleration and deceleration times applied to the "Search Speed" and "Movement Speed."

Note

▶ The home search methods supported vary by product.
Please refer to the manual for your specific product to select the appropriate home search method.

▶ For information on how to control motor rotation, please refer to [Appendix 4. Motion Profiles].

▶ For information on home search operations, refer to [Appendix 5. Home Search Methods].

(3) Repetitive Operation

This is used when moving back and forth between two points.



The layout and contents of the "Repetitive Operation" screen are as follows.

Layout	Description
Location A	The absolute location value where the round-trip drive begins.
Location B	The absolute position value at which the reciprocating motion ends.
Travel Speed	The speed at which the robot moves back and forth between the two points.
Acceleration Time	The acceleration time required to reach the travel speed.
Deceleration Time	The time required to decelerate in order to arrive smoothly at a position.
Dwell time	The time spent at a position after reaching it to stabilize the motion.
Repetition	The number of times the motion repeats the round trip between two points. If set to 0, the motion will repeat back and forth between the two points indefinitely until the user manually stops it.
To Position A	Move the motor to Position A.
To Position B	Moves the motor to point B.
Start / Stop	Starts or stops reciprocating operation.
Progress Bar	Displays progress when the number of repetitions is set to a value other than 0.

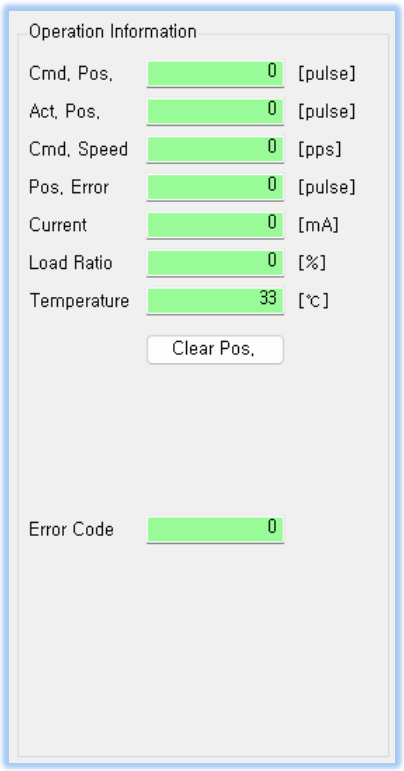
Note

▶ For information on how to control motor rotation, please refer to [Appendix 4. Motion Profiles].

▶ The value used for dwell time is the minimum wait time, not an exact duration, and the wait time may vary depending on the system conditions.

3.6.3 Operation Information

Displays the motor's current operating information as numerical values.

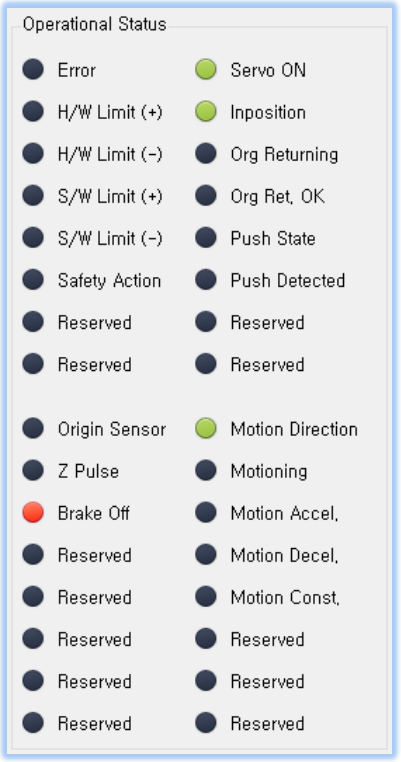


The structure and content of "Operation Information" are as follows.

Composition	Content
Target Position	The current target position commanded by the device.
Actual Position	The actual position as determined by an external encoder.
Command Speed	This is the current speed at which the device is moving.
Position Deviation	The deviation between the actual position and the commanded position.
Current	The current value the device is using to control the motor.
Load Ratio	The ratio of the output torque currently driving the motor to the device's rated torque.
Temperature	The temperature inside the device.
Error Code	A numeric code representing the current operating status of the device.
Position Reset	Resets the command position and actual position to 0.

3.6.4 Operating Status

Displays the device's current control signals and operating information.



The structure and content of "Operating Status" are as follows.

Composition	Content
Error	A problem has occurred that prevents the device from operating normally.
H/W Limit (+)	The limit sensor in the + direction has been activated.
H/W Limit (-)	The limit sensor in the - direction has been activated.
S/W Limit (+)	The motor's current command position is greater than the user-defined position in the + direction.
S/W Limit (-)	The motor's current command position is less than the user-defined position in the - direction.
Safety Action	A TQ operation is in progress.
Origin Sensor	The origin sensor signal has been activated.
Z Pulse	The Z-phase signal from the encoder is active.
Brake Off	The Brake Off signal is output to engage (or disengage) the brake.
Servo ON	Motor control has been activated.
In Position	The motor has reached its target position.
Org Returning	Searching for the origin.
Org Ret. OK	The origin search result is satisfactory.

Configuration	Content
Push State	Force control is in progress.
Push Detected	Force control has been completed according to the set conditions.
Motion Direction	The motor is rotating in the (-) direction.
Motioning	The motor is rotating.
Motion Acceleration	The motor is rotating while accelerating.
Motion Decel.	The motor is rotating while decelerating.
Motion Const.	The motor is rotating at a constant speed.

Note

▶ Supported functions and operations may vary by product.

3.6.5 Input Signal

Monitors the input signals coming into the device.



The layout and content of the "Input Signal" screen are as follows.

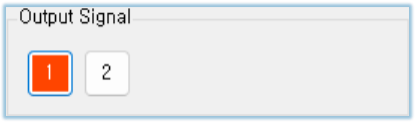
Layout	Description
Number	Input signal number
Default Color (Gray)	Indicates that the input signal is disabled
Green	The input signal is active

Note

▶ The number of supported input signals and their functions may vary by product.

3.6.6 Output Signal

Monitors and controls the output signals from the device.



The layout and content of the "Output Signal" screen are as follows.

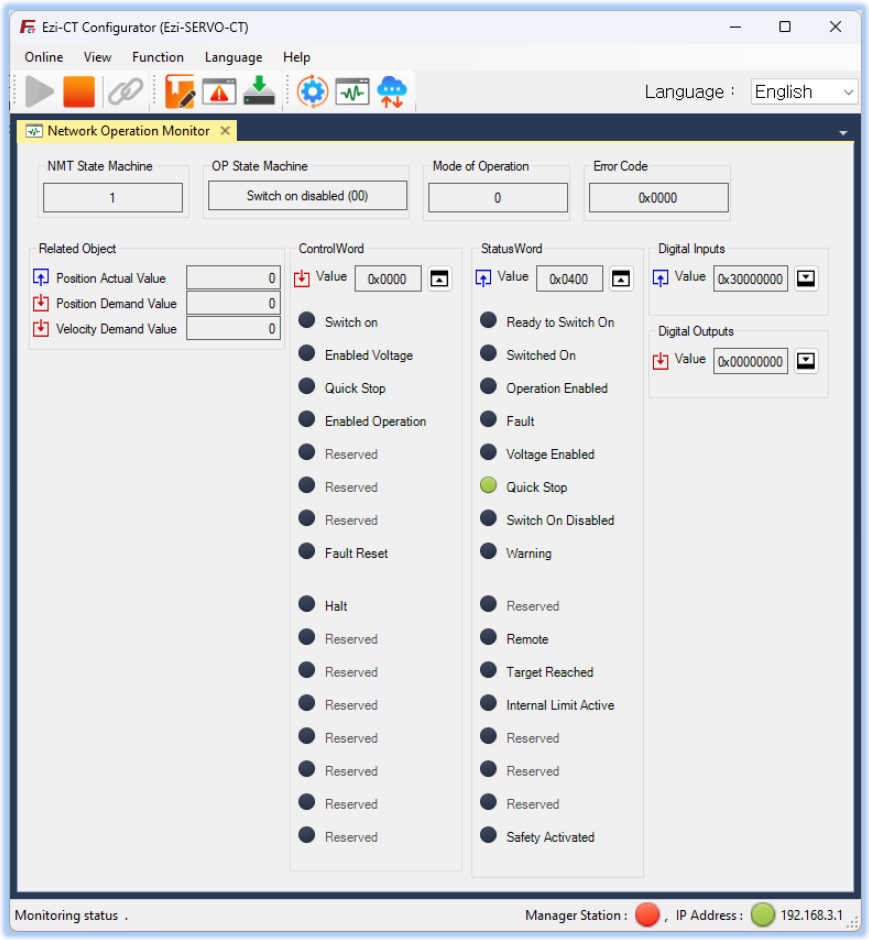
Layout	Description
Number	Output signal number
Default Color (Gray)	Indicates that the output signal is disabled
Red	The output signal is active

Note

▶ The number of supported output signals and their functions may vary by product.

3.7 Network Operation Monitor

This screen organizes the contents of PDO data so that users can easily understand them.

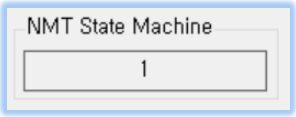


The icons used in the "Network Activity Monitor" are described as follows.

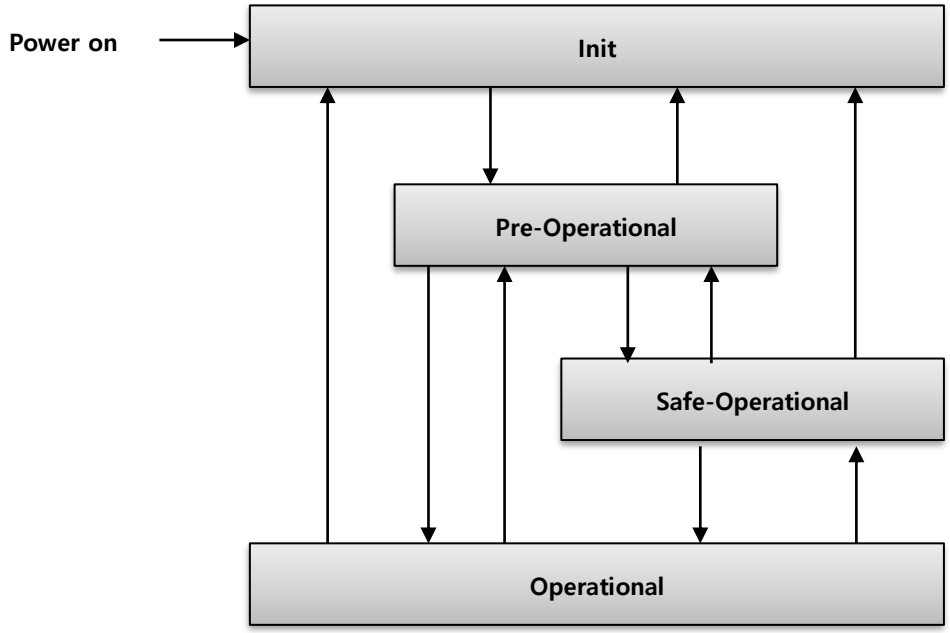
Icon	Description
	Indicates data transmitted from the Manager Station to the Remote Station.
	Indicates data being transmitted from the remote station to the manager station.
	The signal is deactivated.
	A signal requiring attention has been activated.
	A general signal has been activated. This button hides the details.
	This button hides the details.
	This function button displays details.

3.7.1 NMT State Machine Information

Displays operational information about the NMT (Network Management State Machine) to the user.



As shown in the figure below, the NMT state machine manages the state of remote stations from the manager station; it is controlled by the manager station.

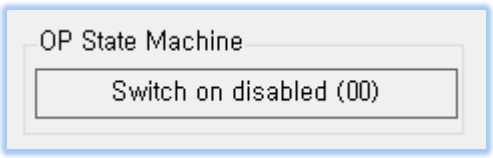


Status	Value	SDO Communication	PDO Transmission/Reception
	Content		
Init	1	Not possible	Not possible
	This is the stage where communication is initialized.		
Pre-Operational	2	Possible	Not possible
	This is the phase entered after communication initialization is complete. Only SDO communication is possible. It handles the initial network configuration.		
Safe-Operational	4	Possible	Possible
	A stage in which both SDO communication and PDO transmission are possible. The drive's status can be transmitted to the manager station via PDO transmission.		
Operational	8	Possible	Possible
	This stage supports all types of communication, allowing the manager station to control the drive and operate the motor.		

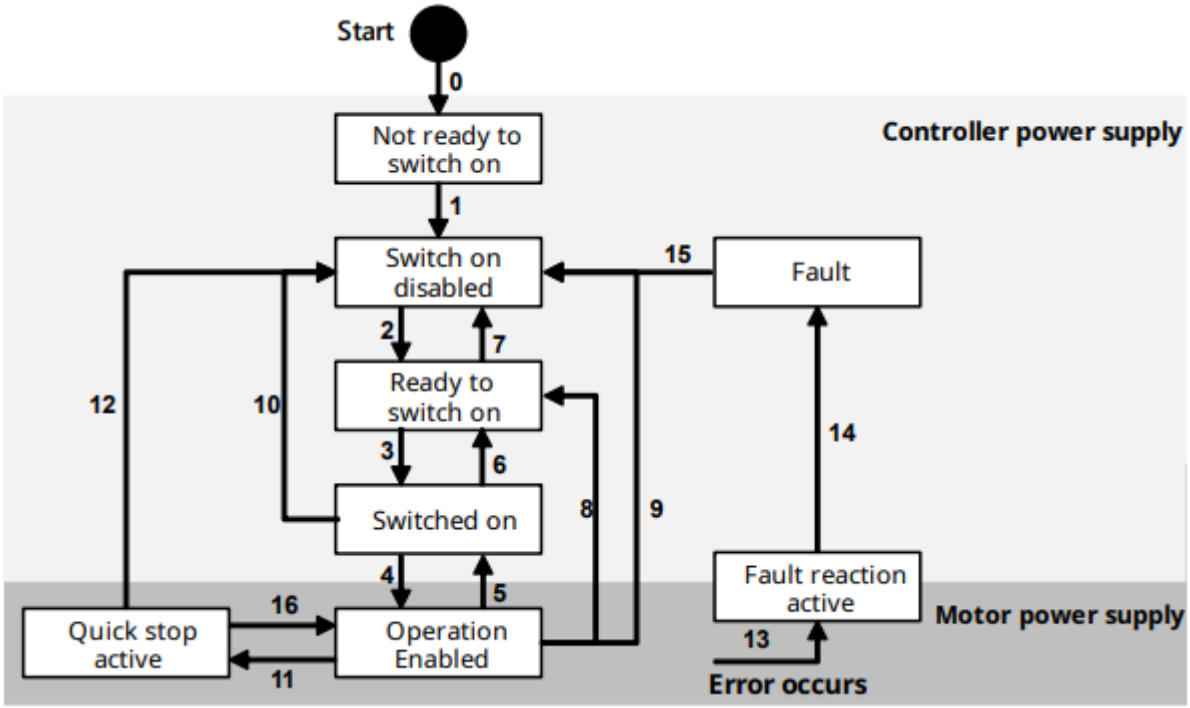
The state indicated by a downward-pointing arrow (↓) can only be changed by the manager station, while the state indicated by an upward-pointing arrow (↑) can also be changed by the remote station.

3.7.2 Drive Status Information

Displays the drive's activation status.



The drive's operating status changes as shown in the figure below. The drive status is controlled via the Control Word (6040h), and the current status can be checked via the Status Word (6041h).



Status	Description	Motor Status
Not ready to switch on	Power is on and initialization is in progress.	No load
Switch on disabled	The drive is not active.	No load
Ready to switch on	Same as above	No load
Switched on	Same as above	No load
Operation enabled	The drive's functions are enabled.	Enabled
Quick stop active	The vehicle has received a "Quick Stop" command and is currently performing the stop function.	Enabled
Fault reaction active	A fault has occurred in the drive, and the system is currently handling it.	Enabled
Fault	A fault has occurred in the drive.	No load

The conditions (events) required to transition to a state different from the current operational state of the drive are as follows.

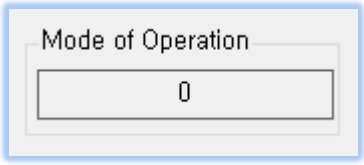
State Transition		Event Action
0	Auto skip 0	Moves automatically when power is applied The drive initializes
1	Auto skip 1	Once the drive initialization is complete, it automatically moves Communication is automatically enabled
2	Shutdown	· Automatically moves *1 · When a shutdown command is received -
3	Switch on	When a "Switch on" command is received -
4	Enable operation	When the "Enable operation" command is received The drive enters a state where it can function normally
5	Disable operation	When the "Disable operation" command is received · The drive is unable to function · The motor power is turned off
6	Shutdown	When a shutdown command is received -
7	Disable Voltage	· When a "Quick stop" command is received · When a "Disable voltage" command is received -
8	Shutdown	When a Shutdown command is received · The drive ceases to function · The motor power is turned off
9	Disable Voltage	When a "Disable voltage" command is received · The drive is not functioning · Motor power is off
10	Disable Voltage	· When a "Quick Stop" command is received · When a "Disable voltage" command is received -
11	Quick stop	When a "Quick Stop" command is received The Quick Stop function is executed (the motor stops abruptly)

State Transition		Event
		Action
12	Disable Voltage	· When the Quick Stop operation is complete and the Quick Stop option code is set to 1, 2, or 3 · If a "Disable voltage" command is received after a "Quick stop" operation is completed while the "Quick stop" option code is set to 5, 6, or 7
		· The drive fails to function · The motor power is turned off
13	An error occurs	If a fault is detected
		The configured fault response is executed
14	Auto Skip 2	After quickly completing the fault detection, the drive automatically resumes operation
		· The drive is not functioning · Motor power is off
15	Fault Reset	If a Fault reset command is received after the cause of the fault has been resolved
		If no fault condition exists, the drive clears the alarm
16	Enable operation	If the Enable operation command is received while the Quick stop option code is set to 5, 6, or 7
		The drive enters a state where it can function normally

*1: You can configure the drive to move only when it receives the " " "Shutdown," or " " commands, rather than moving automatically. Please refer to subindex 2 ("Disable automatic transition 2") in Advanced settings (2030h).

3.7.3 Operating Modes

The drive offers three operating modes based on how it controls the motor. The operating mode can be set via Mode of operation (6060h), and the current mode can be checked via Mode of operation display (6061h).



Test runs performed using this program operate in PP mode.

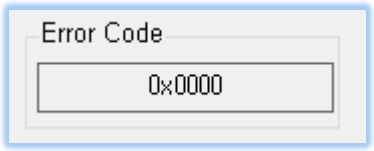
Mode of Operation Settings	Operating Mode
0 (Default)	Not set
1	Profile Position Mode (PP)
6	Home Mode (HM)
8	Cyclic Synchronous Position Mode (CSP)

Note

▶ Switch the operating mode while the drive is stopped. If you switch modes while the drive is running, the operating mode will not change.

3.7.4 Error Code

This screen displays a numerical code indicating the cause of a problem that has occurred with the device. It is displayed as a 4-digit hexadecimal number; if there are no issues, it displays as "0x0000."

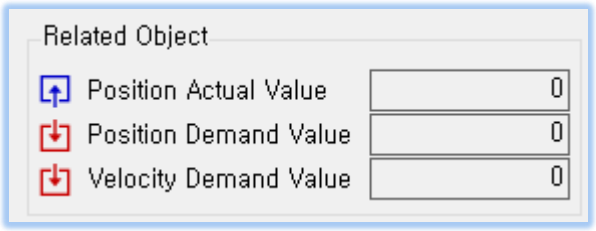


Note

▶ For more information on error codes, please refer to the manual for the device in question.

3.7.5 Related Objects

Displays a portion of the operational information exchanged between the manager station and the remote station.



For motor drives, the following information is displayed.

Configuration	Details
Actual position value	The actual position value of the motor transmitted from the remote station to the manager station
Requested Position Value	The commanded position value of the motor transmitted from the manager station to the remote station
Requested Speed Value	The motor's commanded rotational speed transmitted from the manager station to the remote station

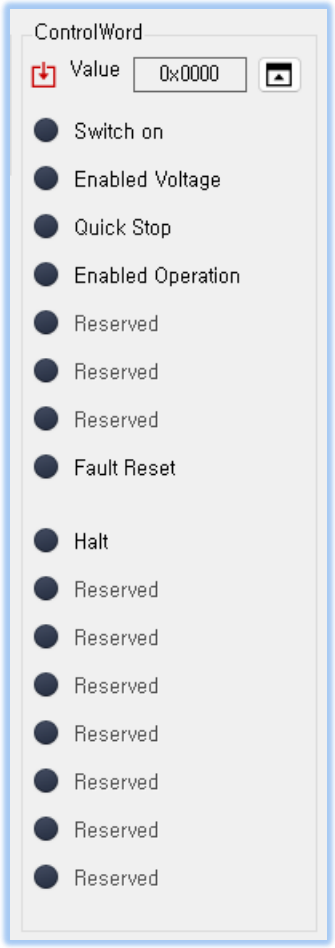
Note

▶ For the "Request Position Value," if "3.7.3 Operation Mode" is set to Profile Position Mode (PP), it is indicated as the setpoint value for the position control mode managed by the driver.

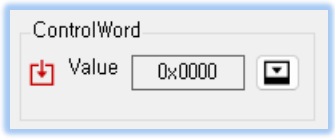
3.7.6 Controlword

Control information transmitted from the manager station to the remote station.

(1) Detailed Information Function (Displays the contents of the Controlword value mapped bit by bit)



(2) Simplified Information Function (Displays only the Controlword value)



The bit-by-bit structure and contents of the Controlword are as follows.

Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
-	-	oms*1	oms	-	-	-	oms
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Fault reset	oms	oms	oms	Enable Operation	Quick stop	Enable Voltage	Switch on

*1: oms: Operation mode-

The following state control commands can be implemented using bit combinations in the control word.

Command	Bit 7	Bit 3	Bit 2	Bit 1	Bit 0	State Transition Number
Shutdown	0	x	1	1	0	2, 6, 8
Switch on	0	0	1	1	1	3
Switch on + Enable operation	0	1	1	1	1	3 + 4
Disable voltage	0	x	X	0	x	7, 9, 10, 12
Quick stop	0	x	0	1	x	7, 10, 11
Disable operation	0	0	1	1	1	5
Enable operation	0	1	1	1	1	4, 16
Fault reset	0 → 1	x	X	x	x	15

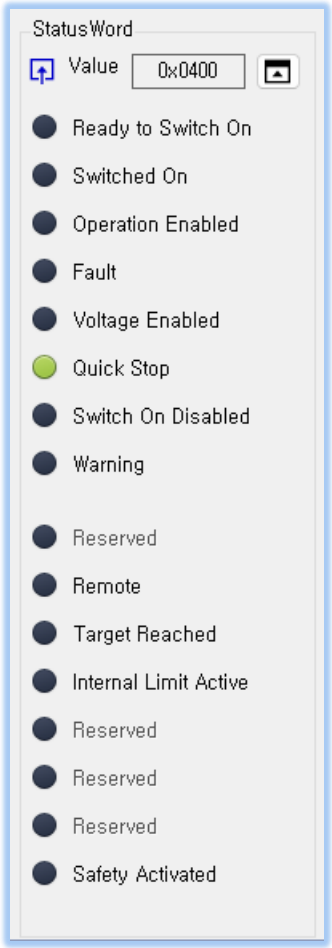
Note

▶ For details on the flow of control information, please refer to "3.7.2 Drive Status Information" and the manual for the relevant device.

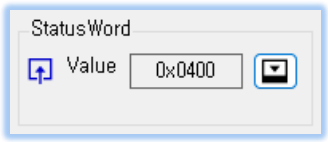
3.7.7 Statusword

This is status information transmitted from the remote station to the manager station.

(1) Detailed Information Feature (Displays the contents of the Statusword value mapped bit by bit)



(2) Simplified Information Feature (Displays only the Statusword value)



The bit-by-bit structure and contents of the Statusword are as follows.

Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
Safety activated	oms	oms	oms	Internal limit active	oms	Remote	oms
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
-	Switch on disabled	Quick stop	Voltage Enabled	Fault	Operation Enabled	Switched on	Ready to switch on

The status information that can be represented by combinations of bits in the status word is as follows.

Status	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Not ready to turn on	0	x	x	0	0	0	0
Switch on disabled	1	x	x	0	0	0	0
Ready to switch on	0	1	x	0	0	0	1
Switched on	0	1	1	0	0	1	1
Operation enabled	0	1	1	0	1	1	1
Quick Stop Active	0	0	x	0	1	1	1
Fault reaction active	0	x	x	1	1	1	1
Fault	0	x	x	1	0	0	0

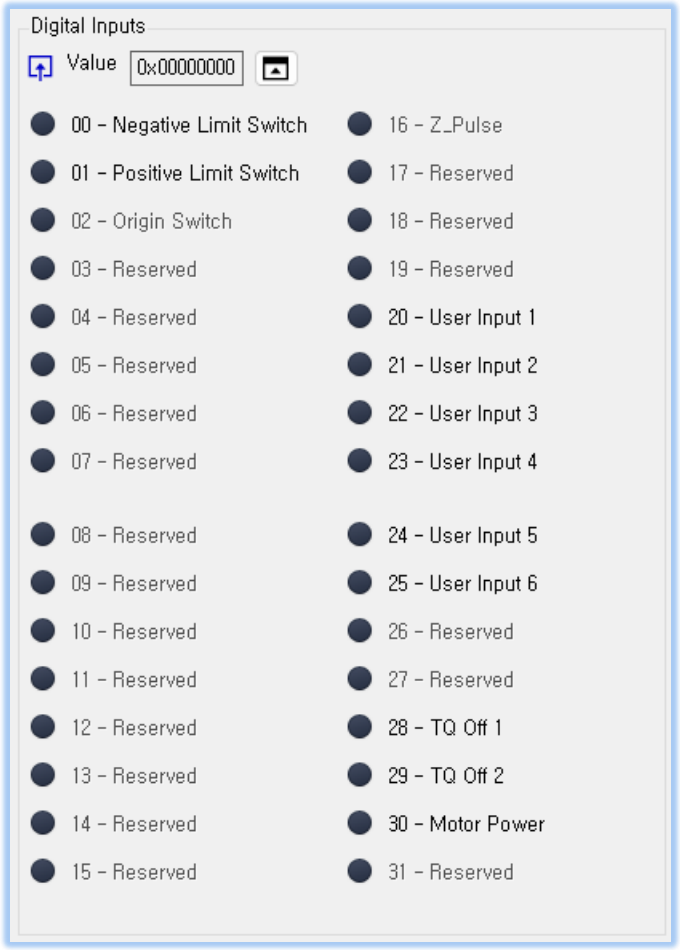
Note

▶ For information on the flow of status data, refer to "3.7.2 Drive Status Information" and the device's manual.

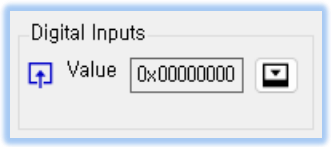
3.7.8 Digital Inputs

This screen shares the input signals detected by the device with the manager station.

(1) Detailed Information Function (Displays input signal values mapped bit by bit)



(2) Simplified Information Function (Displays only the input signal values)



Note

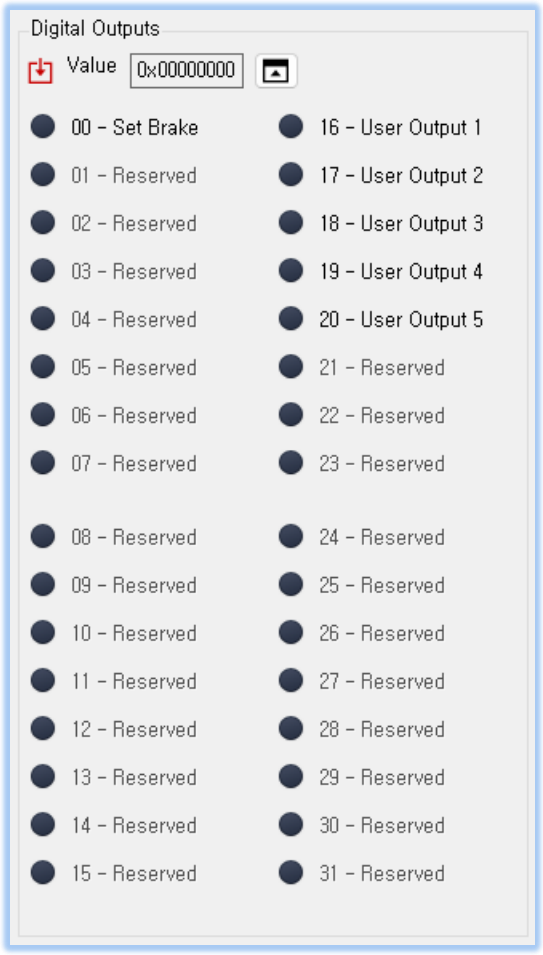
▶ The lower 2 bytes (00–15) are generally used as signals for position control in CiA402.

▶ The upper 2 bytes (00–31) are generally used as signals defined arbitrarily by each device.

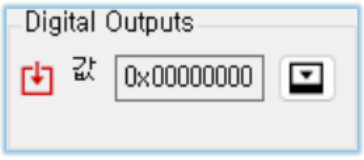
3.7.9 Digital Outputs

This is output control information transmitted from the manager station to the remote station.

(1) Detailed Information Function (Displays the contents of the output signal values mapped on a per-bit basis)



(2) Quick Info Feature (Displays only output signal values)

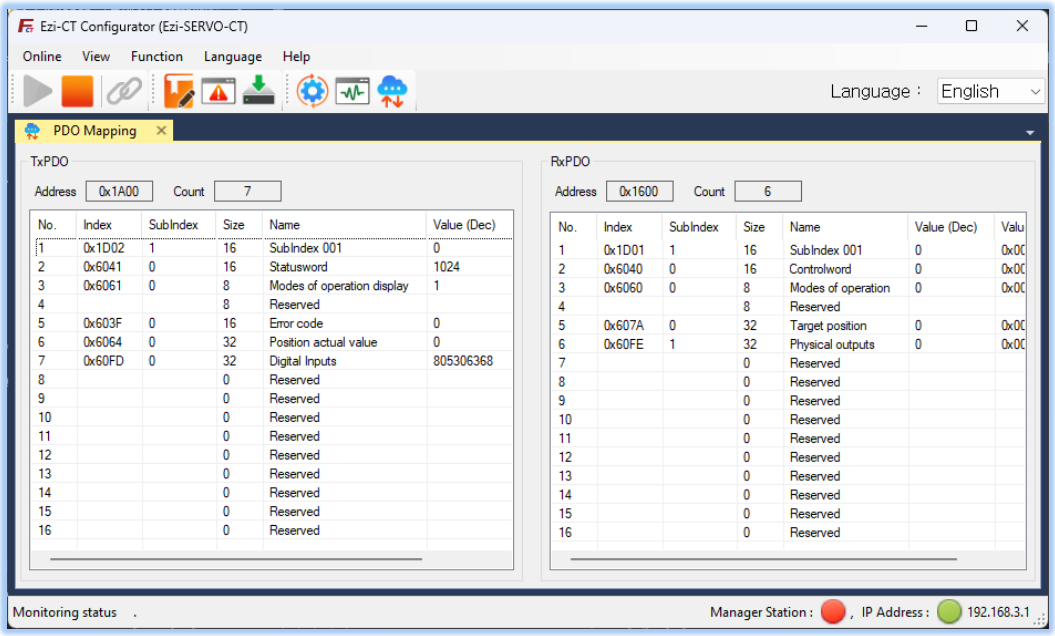


Note

▶ The behavior of the output signal may vary depending on the bit mask settings configured in the presets.
For details, refer to the device's manual.

3.8 PDO Mapping

Displays the contents of the PDO (Process Data Object) data (TxPDO, RxPDO) periodically exchanged between the manager station and the remote station.



From the manager station's perspective, the PDO data used for control consists of transmitted PDO (TxPDO) and received PDO (RxPDO).

In addition, TxPDO and RxPDO each have two configuration areas, and there are objects for configuring and managing them.

Category	Index	Subindex	Content
1st RxPDO	1600h	0–16	First RxPDO mapping object configuration area
2nd RxPDO	1601h	0–16	Second RxPDO mapping object configuration area
1st TxPDO	1A00h	0–16	First TxPDO mapping object configuration area
2nd TxPDO	1A01h	0–16	Second TxPDO mapping object configuration area
1st PDO Config	1C00h	0–4	RxPDO Configuration Area
2nd PDO Config	1C01	0–4	TxPDO Configuration Area

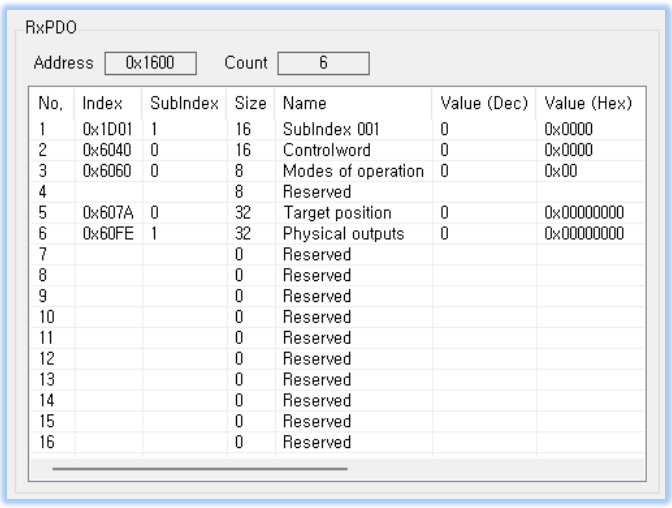
Note

▶ For more information on RxPDO and TxPDO, refer to the manual for the respective device.

▶ Select RxPDO and TxPDO in 1st PDO Config and 2nd PDO Config and use them for device operation.

3.8.1 RxPDO

This is status-related data transmitted from the remote station to the manager station.



The screen layout is as follows.

Layout	Content
Address	The address of the RxPDO selected in PDO Config
Count	The value at subindex 0 of the selected RxPDO zone (the number of objects that make up the RxPDO)
No.	Subindex number of the selected RxPDO zone
Index	The subindex value of the selected RxPDO zone is the index of the selected object
SubIndex	The subindex value of the selected RxPDO zone is the subindex of the selected object
Size	The subindex value of the selected RxPDO zone is the size of the selected object
Name	Name of the selected object
Value (Dec)	The decimal value of the selected object
Value (Hex)	Hexadecimal value of the selected object

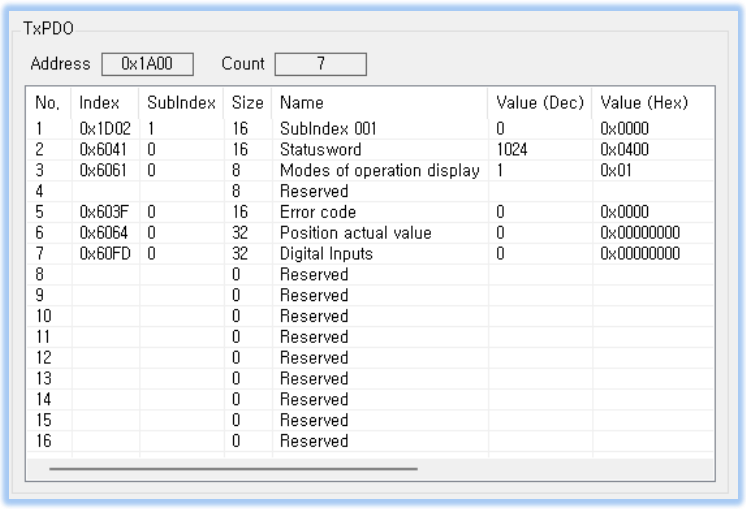
Note

▶ The following is an example of a data flow starting from the PDO Config area.

1. Check 1600h at index 1C00h, subindex 1
2. Check the number of RxPDO objects at index 1600h, subindex 0
3. Check the information for the corresponding object in the value (1D010110h) at index 1600h, subindex 1
4. Store the value at index 1D01h, subindex 1, in the relevant section of the RxPDO data area
5. Repeat steps 3 and 4 for the number of RxPDO objects

3.8.2 TxPDO

This is control-related data transmitted from the master station to the remote station.



The screen layout is as follows.

Layout	Content
Address	The address of the TxPDO selected in PDO Config
Count	The value of subindex 0 in the selected TxPDO zone (the number of objects that make up the TxPDO)
No.	Subindex number of the selected TxPDO zone
Index	The subindex value of the selected TxPDO zone is the index of the selected object
SubIndex	The subindex value of the selected TxPDO zone is the subindex of the selected object
Size	The subindex value of the selected TxPDO zone is the size of the selected object
Name	Name of the selected object
Value (Dec)	The decimal value of the selected object
Value (Hex)	Hexadecimal value of the selected object

Note

▶ The following is an example of a data flow starting from the PDO Config area.

1. Check 1A00h at index 1C01h, subindex 1
2. Check the number of TxPDO objects in index 1A00h, subindex 0
3. Check the information for that object in the value (1D020110h) at index 1A00h, subindex 1
4. Store the relevant contents of the TxPDO data area at index 1D02, subindex 1
5. Repeat steps 3 and 4 for the number of objects in the TxPDO

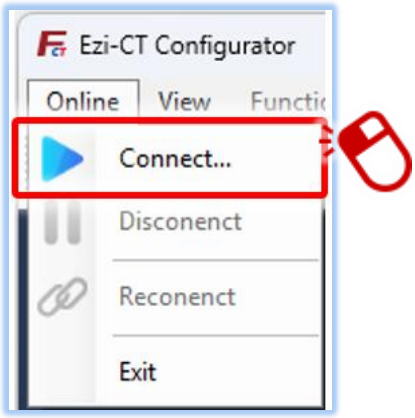
Chapter 4 Operation

4.1 Connecting the Device

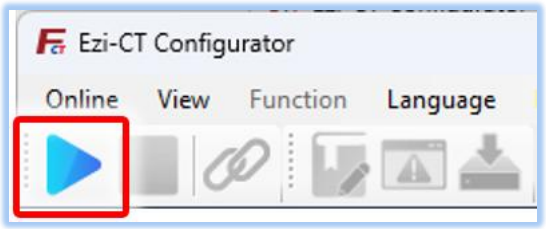
4.1.1 Device Discovery and Connection

Search for devices connected to the network, display a list, and initiate communication.

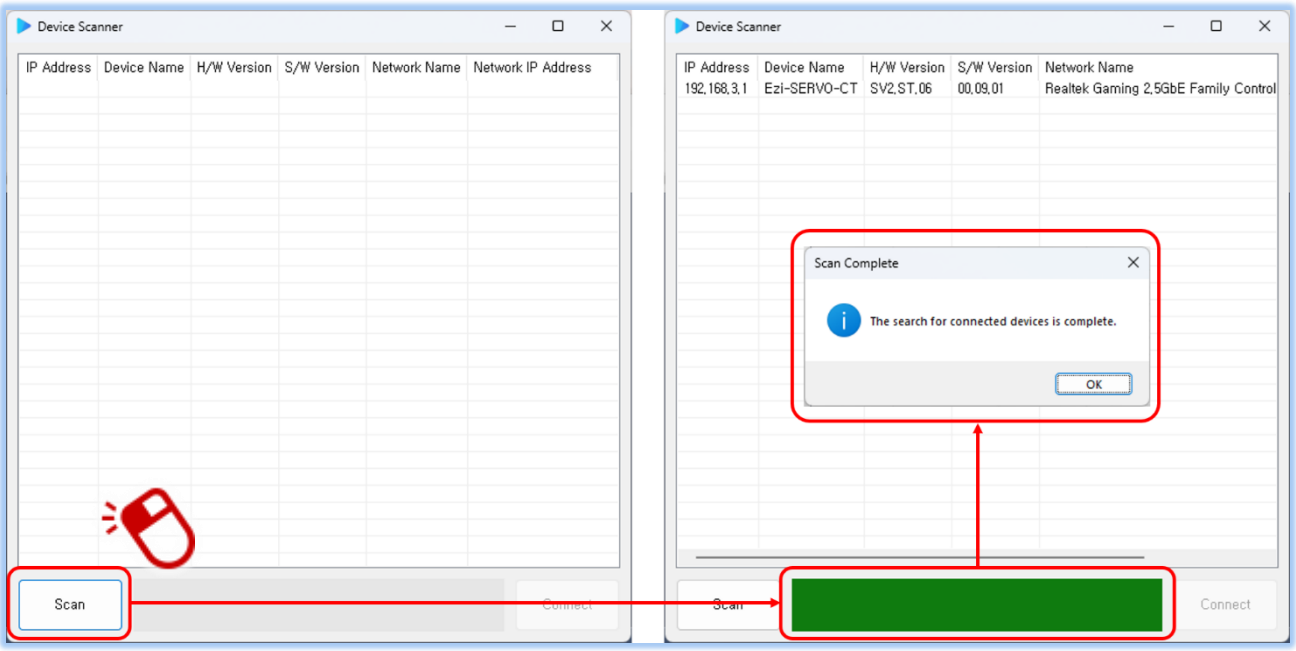
(1) Click "Online" >> "Connect..." in the "Menu Bar."



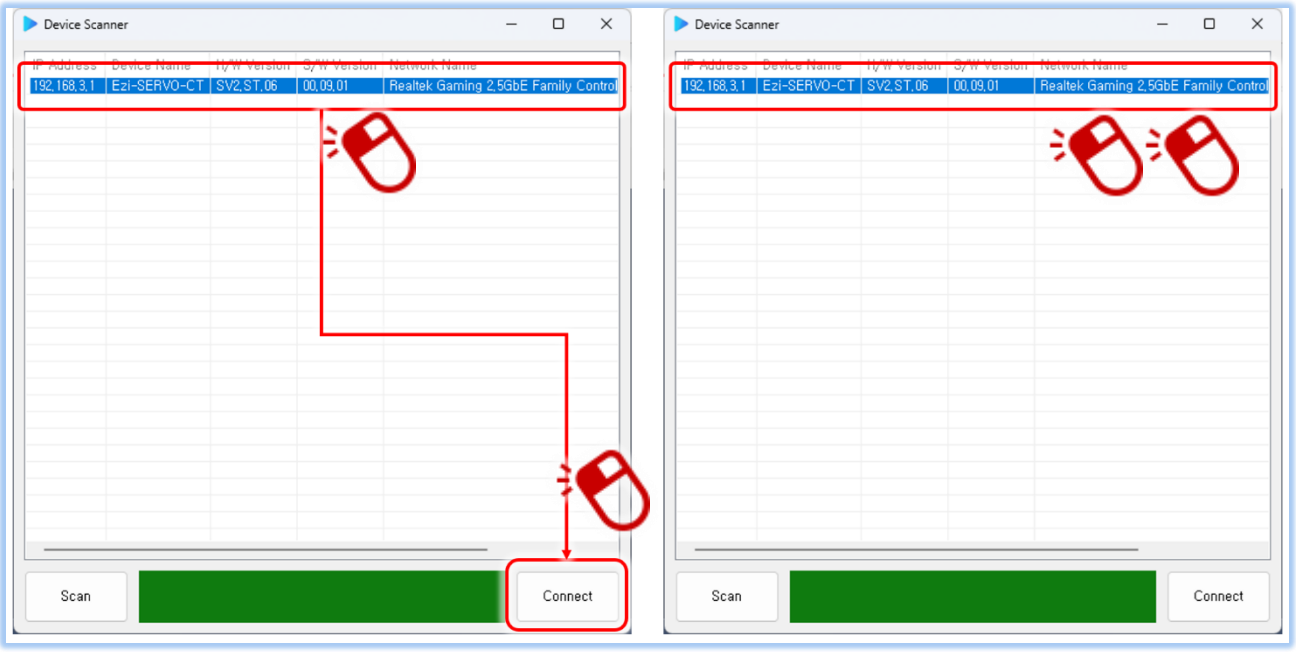
Alternatively, you can perform the same action by clicking the "Connect" button on the "Toolbar."



(2) On the Device Scanner screen, click **the "Find" button and** wait for the scan to complete.
Once the scan is complete, the following screen will appear, and a list of devices will be displayed in the scanner window.



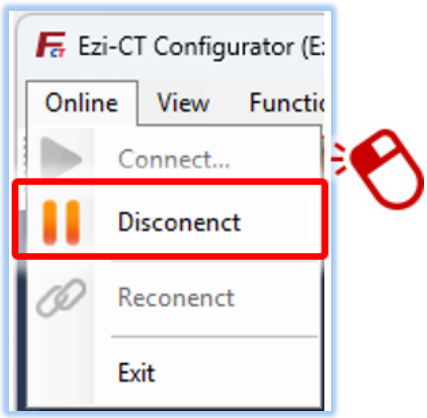
(3) **Select the device** you want to connect to, **then** click **the "Connect" button** or **double**-click **the device in the list**.



4.1.2 Ending Communication

Terminate communication with devices connected to the network.

(1) On the **"Menu Bar**," click "Online" >> **"Disconnect**."

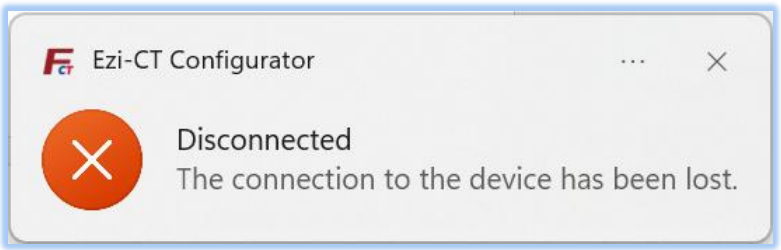


Alternatively, you can click the "**Disconnect**" button in **the "Toolbar"** to perform the same action.



Note

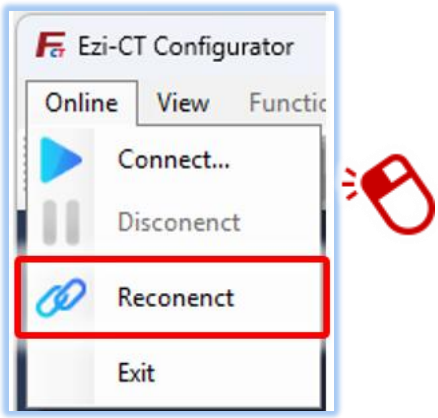
If a communication error occurs, the connection will be automatically terminated, and a notification window indicating the error will briefly appear in the lower-right corner of the Windows screen, as shown below.



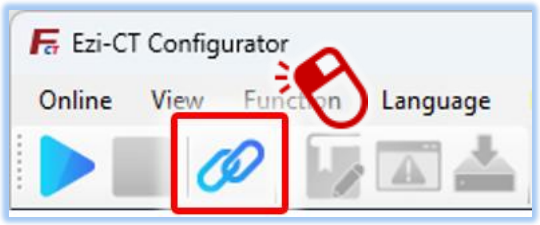
4.1.3 Reconnecting to the Device

This resumes the connection with the device you last connected to.

(1) Click **"Online"** >> "Reconnect" on the "Menu Bar."



Alternatively, clicking the "Reconnect" button on the "Toolbar" performs the same action.



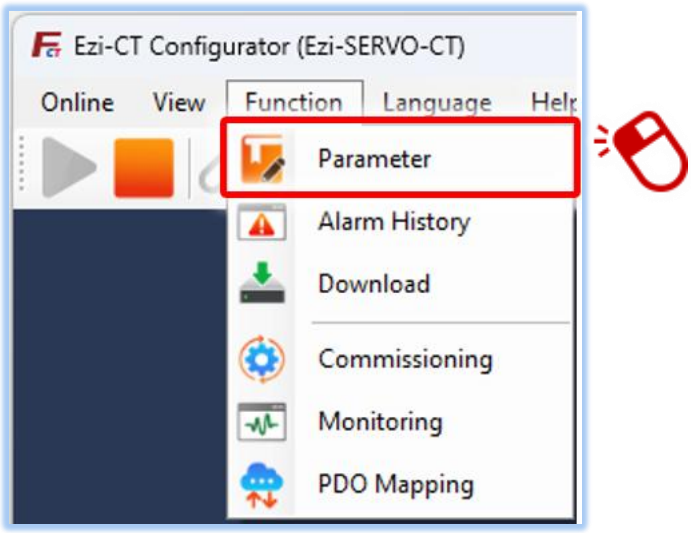
Note

▶ This feature is available only if the program has been connected to the device at least once since it was launched.

4.2 Parameter Monitoring and Settings

4.2.1 To open

(1) Click "Parameters" in the "Functions" section of the "Menu Bar."



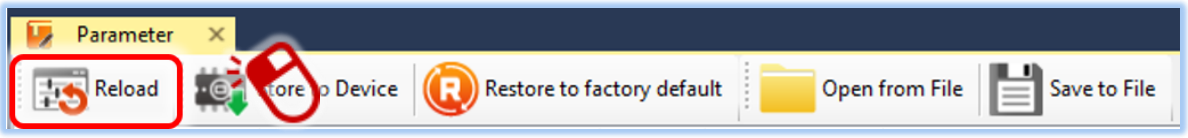
Clicking the "Connect" button on the "Toolbar" performs the same function.



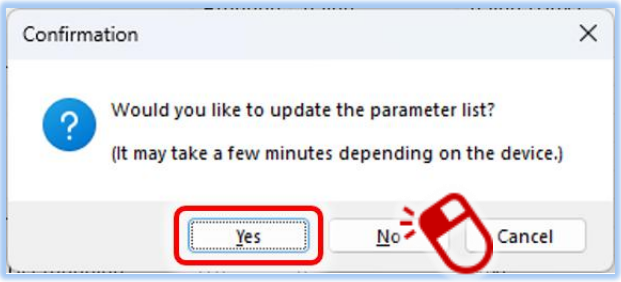
4.2.2 Refresh

Updates the parameter list for the currently connected device to the latest version.

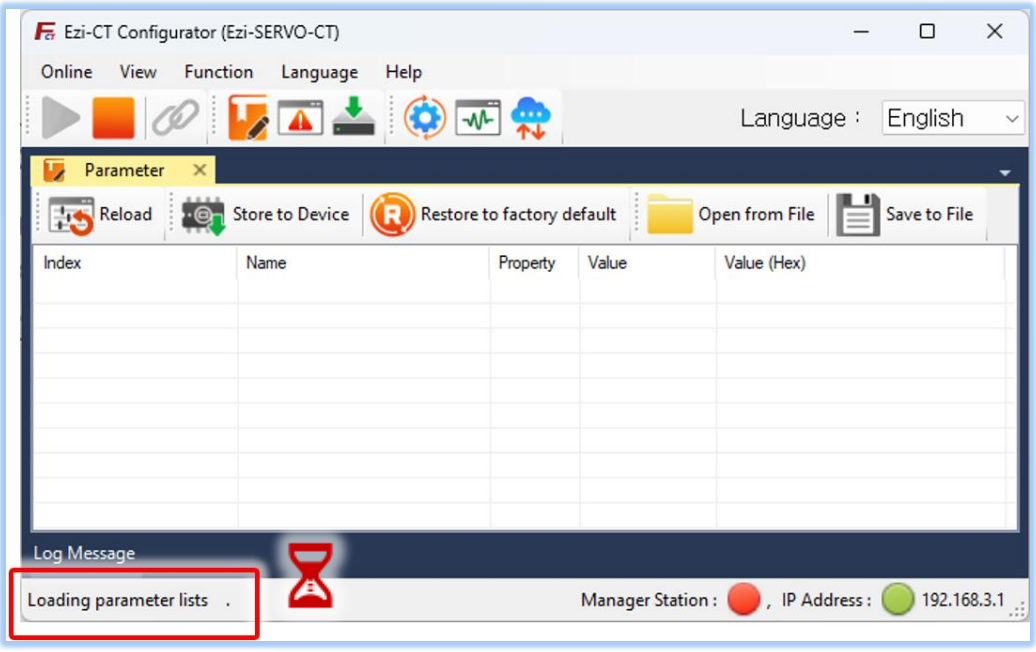
(1) Click the [Refresh] button in the "Toolbar."



(2) A message window will appear asking if you want to proceed; select [Yes].



(3) After verifying the entire list of parameters from the device as shown below, the update to the latest version is complete.



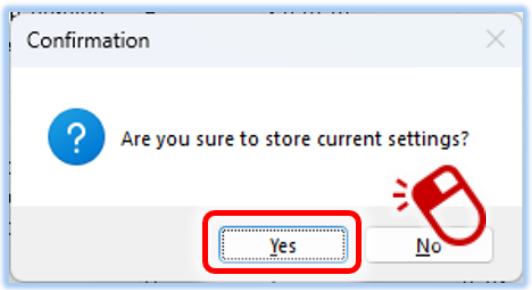
4.2.3 Save to Device

Save the parameters currently applied to the device to the ROM so that the settings are retained even after the power is cycled.

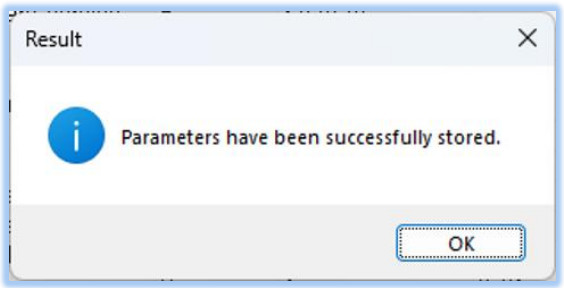
(1) Click the [Save to Device] button in the "Toolbar."



(2) Select [Yes] in the message window asking if you want to proceed.



(3) Once the operation is complete, the results will be displayed as follows.



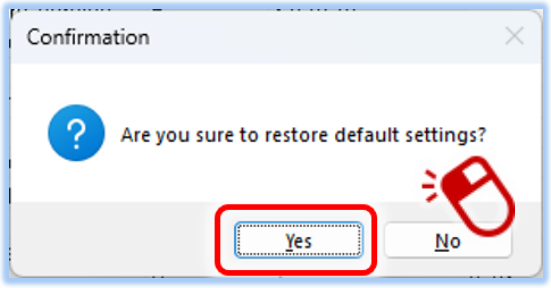
4.2.4 Factory Reset

Resets the entire parameter list **to the "Software Default Values."**

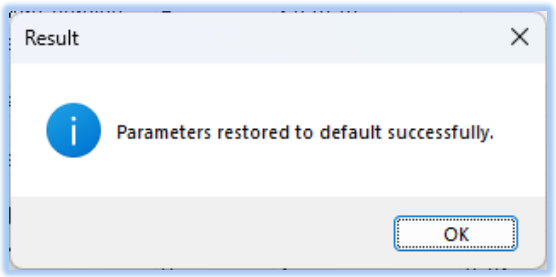
(1) Click the [Factory Reset] button in the "Toolbar."



(2) Click [Yes] in the message window asking if you want to proceed.



(3) Once the operation is complete, the results will be displayed as follows.



(4) **Power cycle** the device to complete **the reset**.

Note

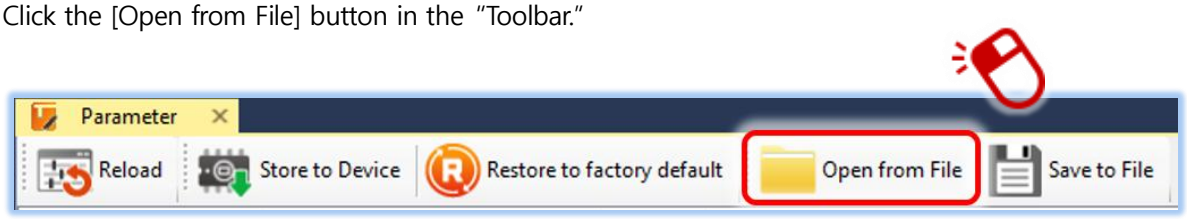
▶ This factory reset function restores the device **to the standard software defaults**, regardless of any pre-shipment configurations (such as user-requested settings).

▶ After performing the reset, be careful not to overwrite the parameters by pressing the [Save to Device] button.

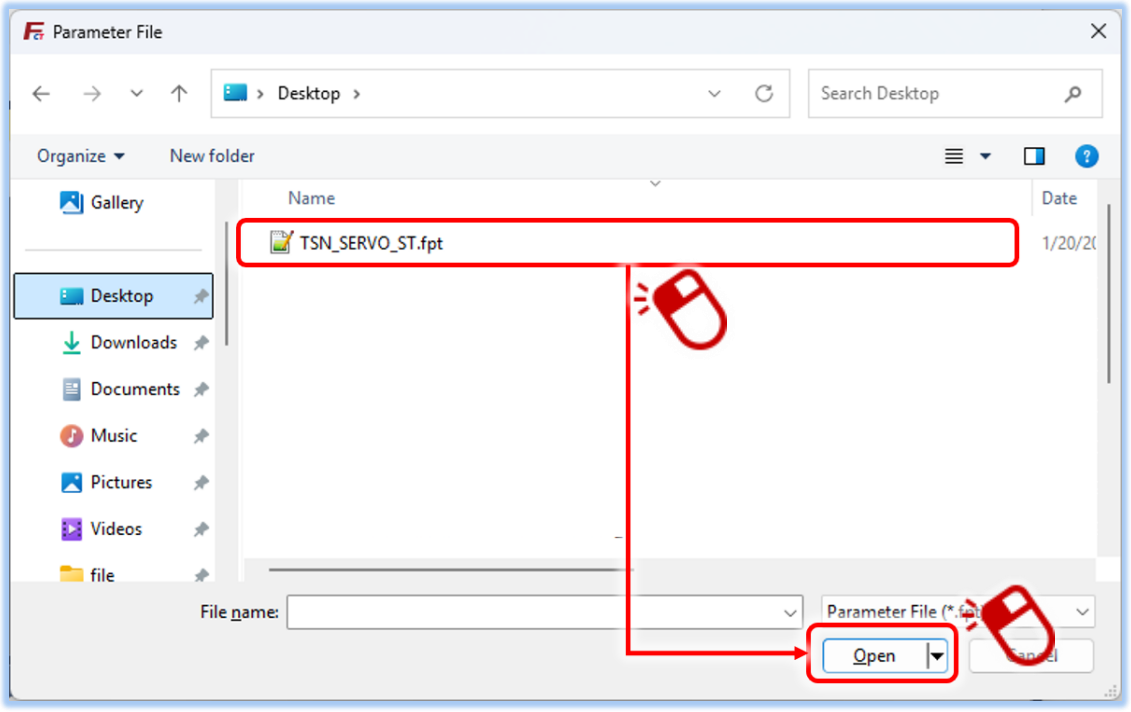
4.2.5 Open from File

Applies parameters saved as a file to the currently connected device.

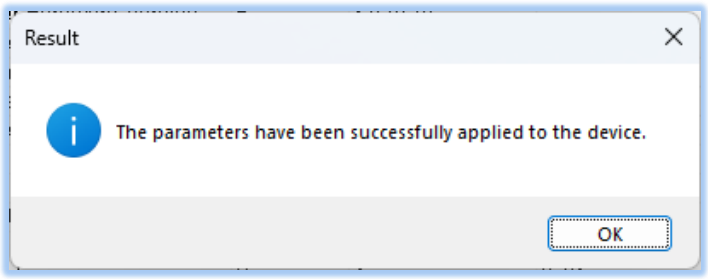
(1) Click the [Open from File] button in the "Toolbar."



(2) In the file browser window, select a file and click the [**Open**] button.



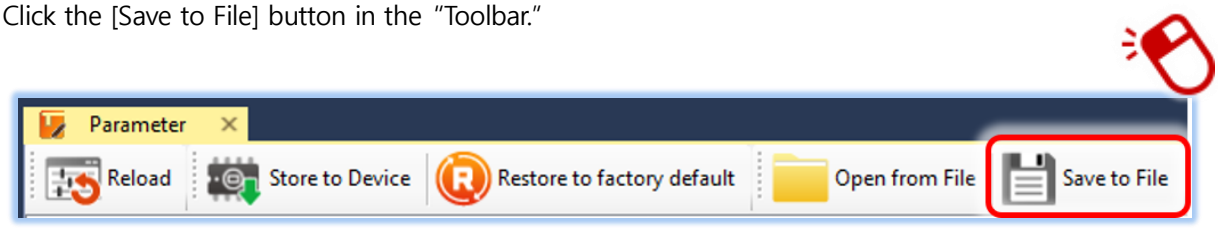
(3) The parameters saved in the file are transmitted to the connected device, and once the parameters have been transmitted and applied, the results screen appears as shown below.


Result
The parameters have been successfully applied to the device.
OK

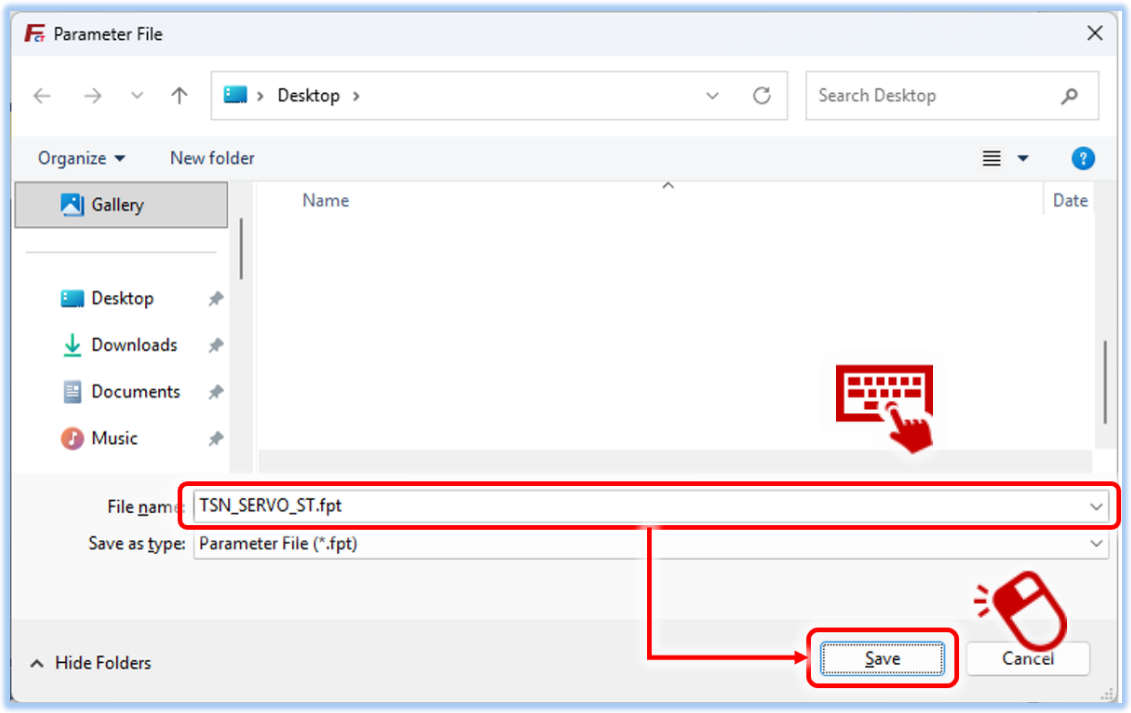
4.2.6 Save to File

Saves the parameters currently applied to the connected device to a file.

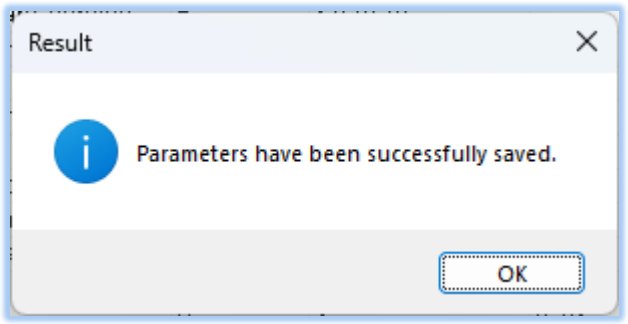
(1) Click the [Save to File] button in the "Toolbar."



(2) Select a file in the file explorer window and click the [Save] button.



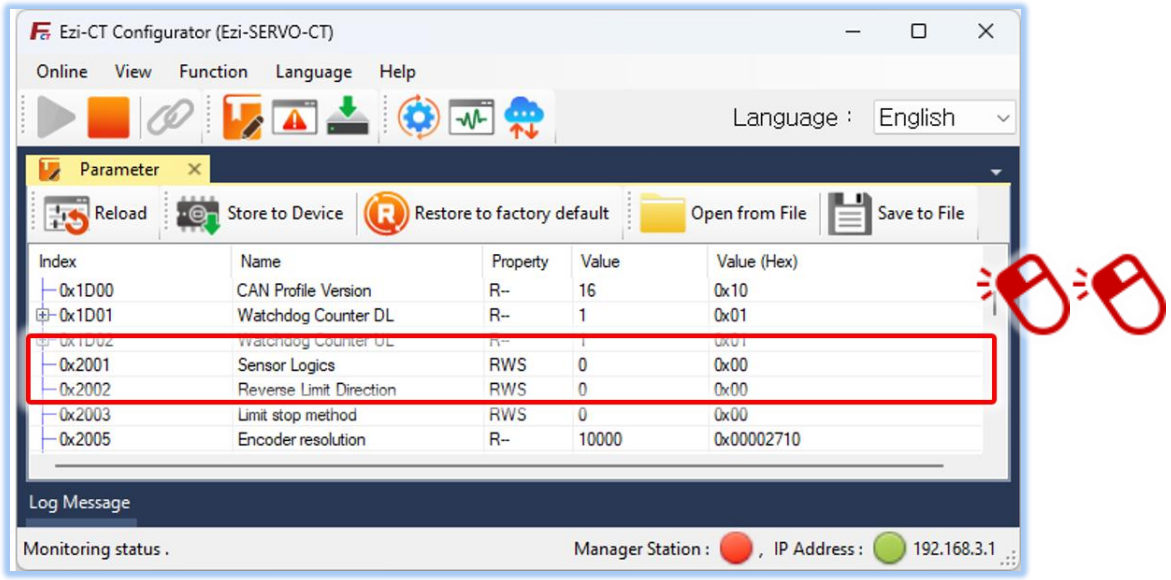
(3) Once the current parameters have been saved to a file, the results screen will appear as shown below.


Result
Parameters have been successfully saved.
OK

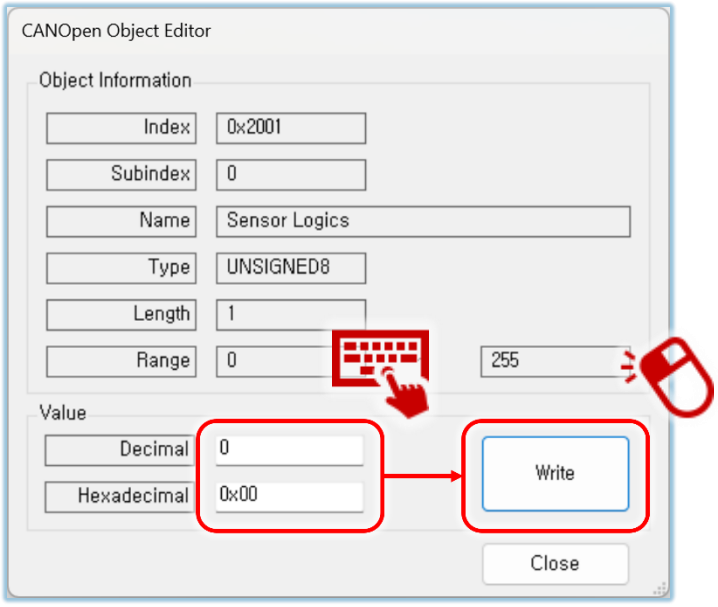
4.2.7 Modify Parameters

Modify the parameters currently applied to the connected device.

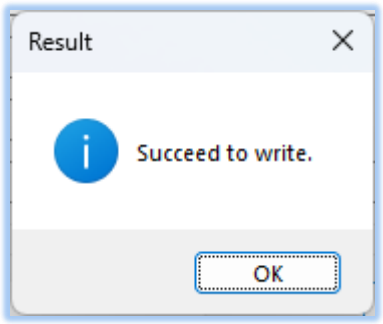
(1) **Double**-click the parameter you want to edit.
If the parameter property supports **writing (RW and RWS)**, you can change the settings.



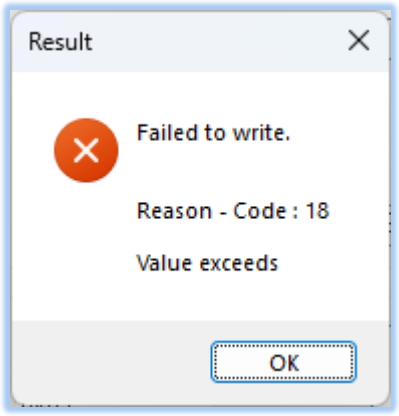
(2) Enter the setting value in the "Value" field, then click the **[Write]** button.



(3) The result of applying the setting is displayed as follows.



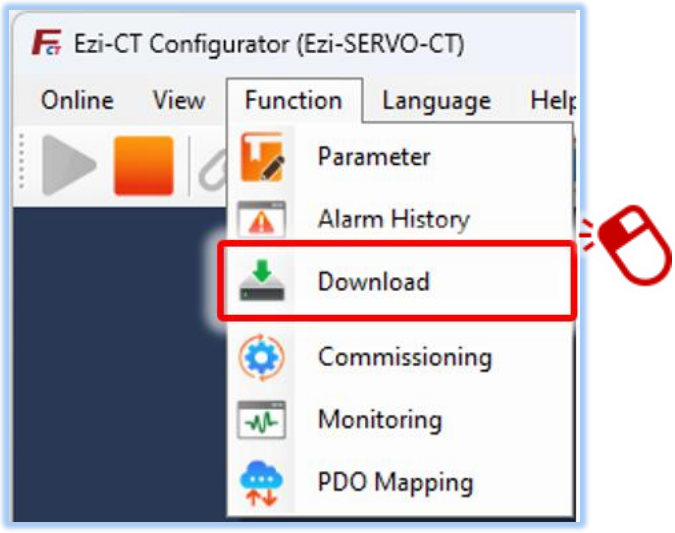
(4) If there is a problem with the setting or the device, the following message will appear.



4.3 Download

4.3.1 Open

(1) Click "Download" in the "Functions" section of the "Menu Bar."

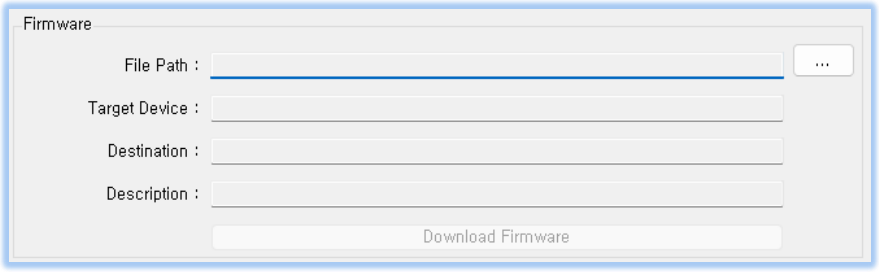


Clicking the "Connect" button on the "Toolbar" performs the same function.



4.3.2 Firmware Update

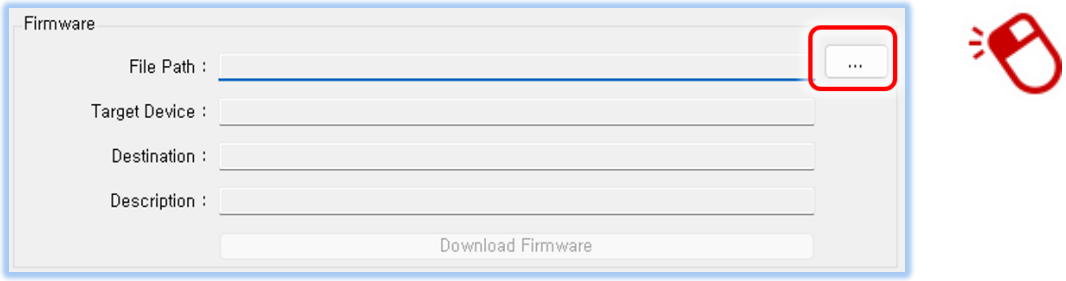
Update the software for the currently connected device.

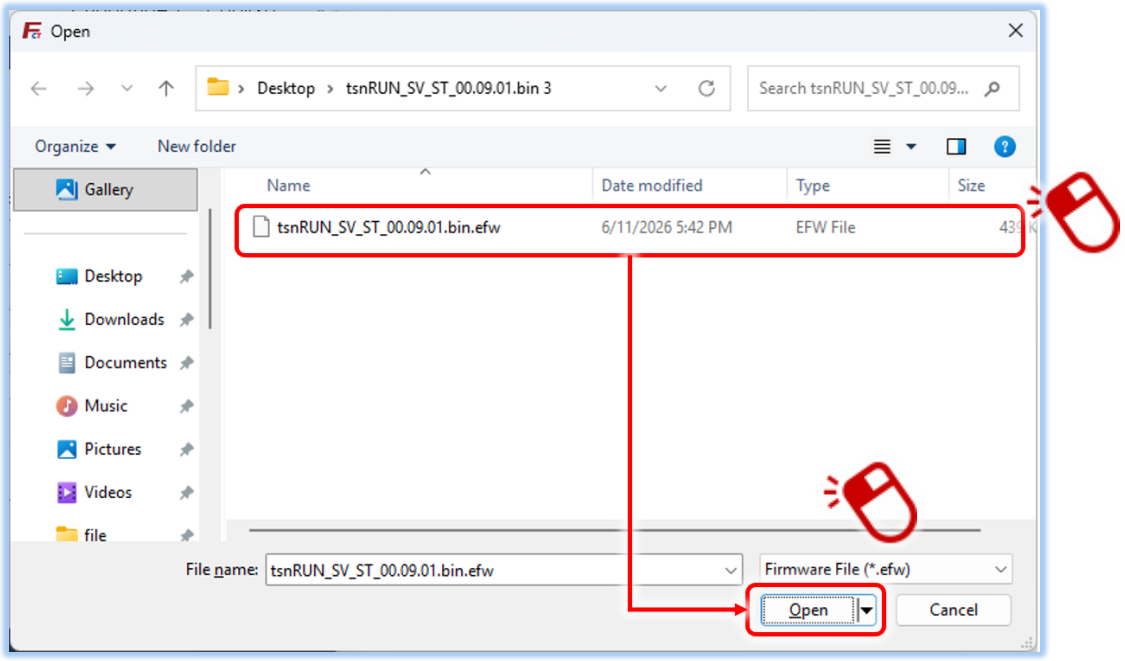


The firmware update process proceeds as follows:

(1) Selecting the Firmware File

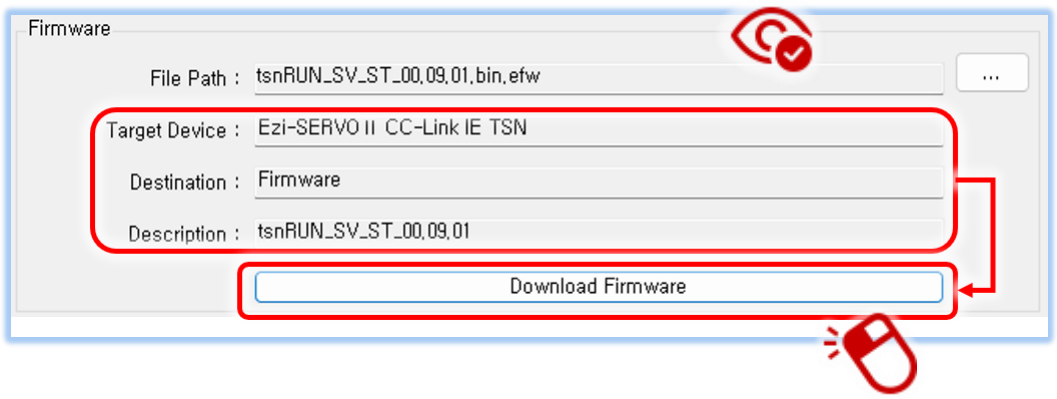
Click the "..." button in the file path field and select the firmware file to update from the file selection dialog.





(2) Check Firmware File Information

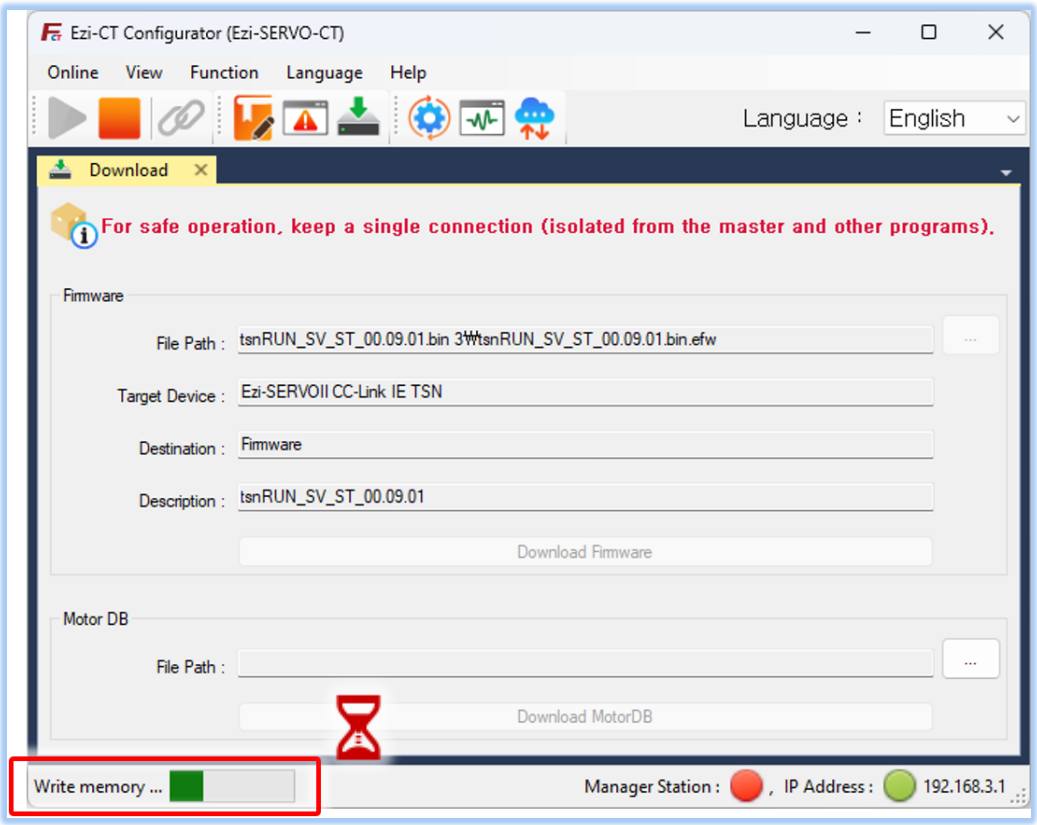
After verifying that the firmware is the correct file, click the "Download Firmware" button.



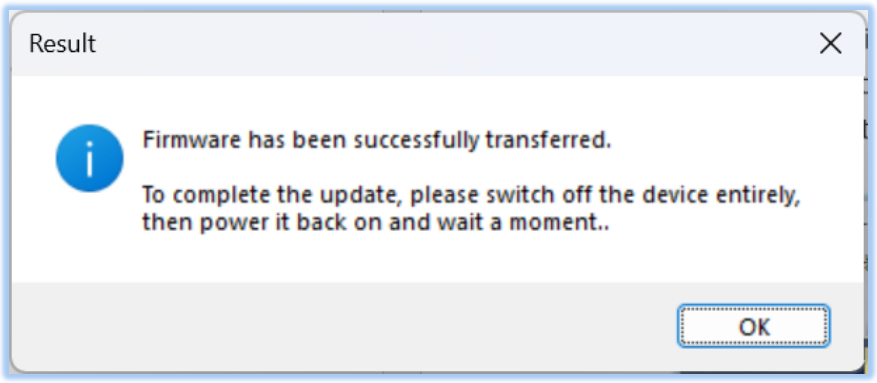
(3) Transferring the Firmware File

The selected file will be transferred to the device, and you can check the progress as shown below.

File transfer **may take anywhere from a few tens of seconds to several minutes, so please wait until the transfer is complete.**



(4) Once the transfer is complete, the file transfer results will appear as shown below.



(5) Turn the device off completely, then turn it back on to ensure the transferred firmware is applied to the device before using it.

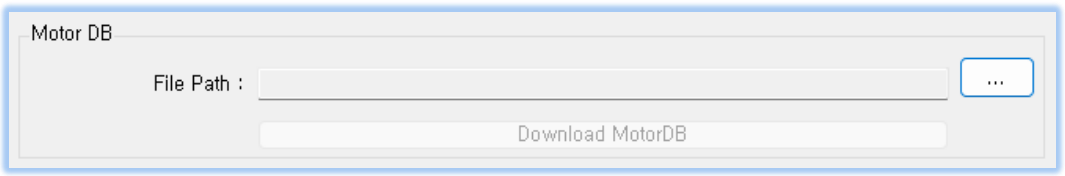
⚠ Caution

■ Maintain Power Supply

● **Be sure** to keep **the device powered on** while the transferred files are being written to the device.
This could result in damage to the internal software, causing the device to malfunction, or **a permanent hardware failure that cannot be recovered by the user**.

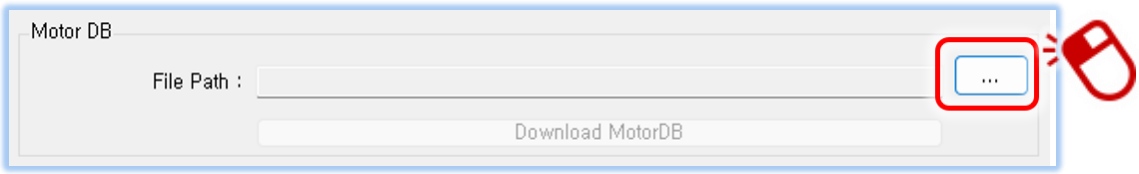
4.3.3 Motor DB Update

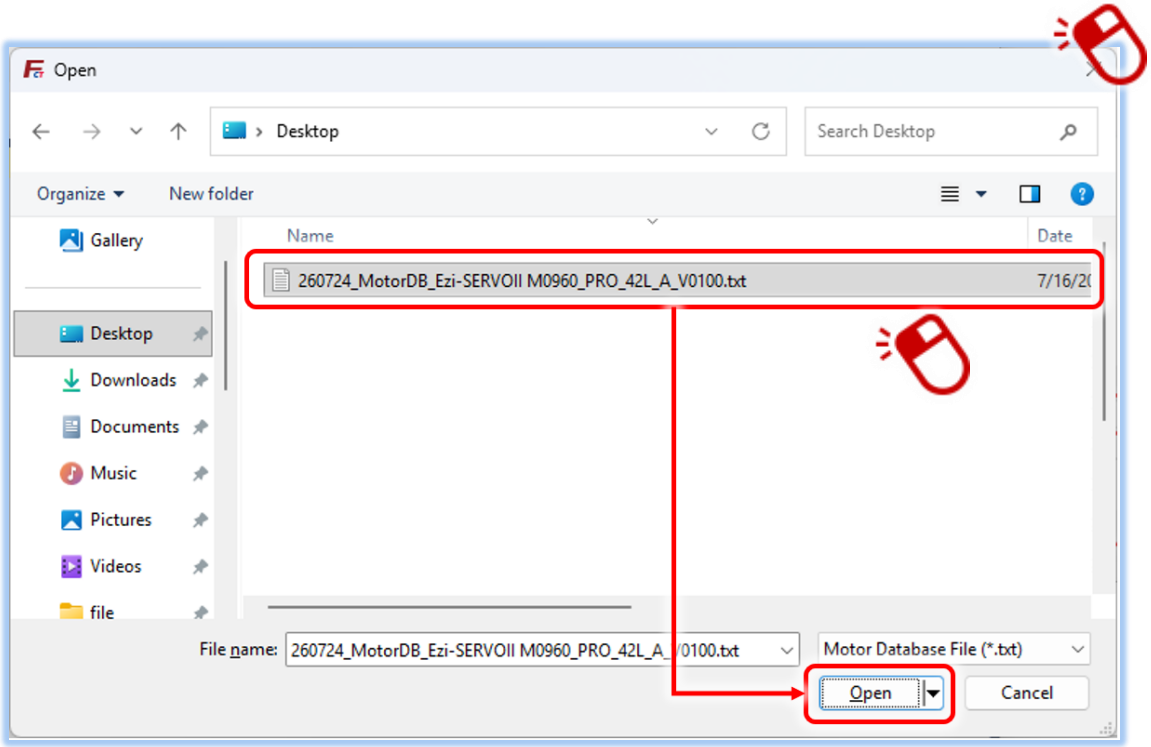
Update the motor DB applied to the device.



The firmware file update proceeds in the following order.

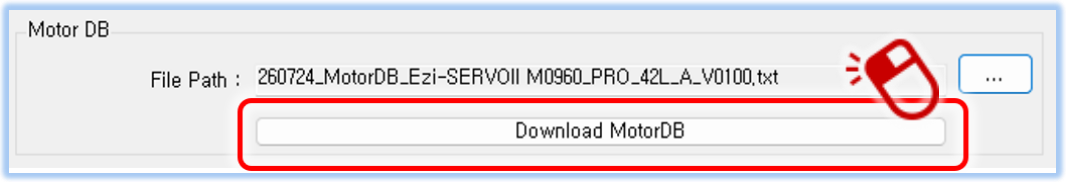
(1) Click the "..." button in the file path field and select the motor DB file to update from the file selection window.





(2) Transfer and Apply Motor DB File

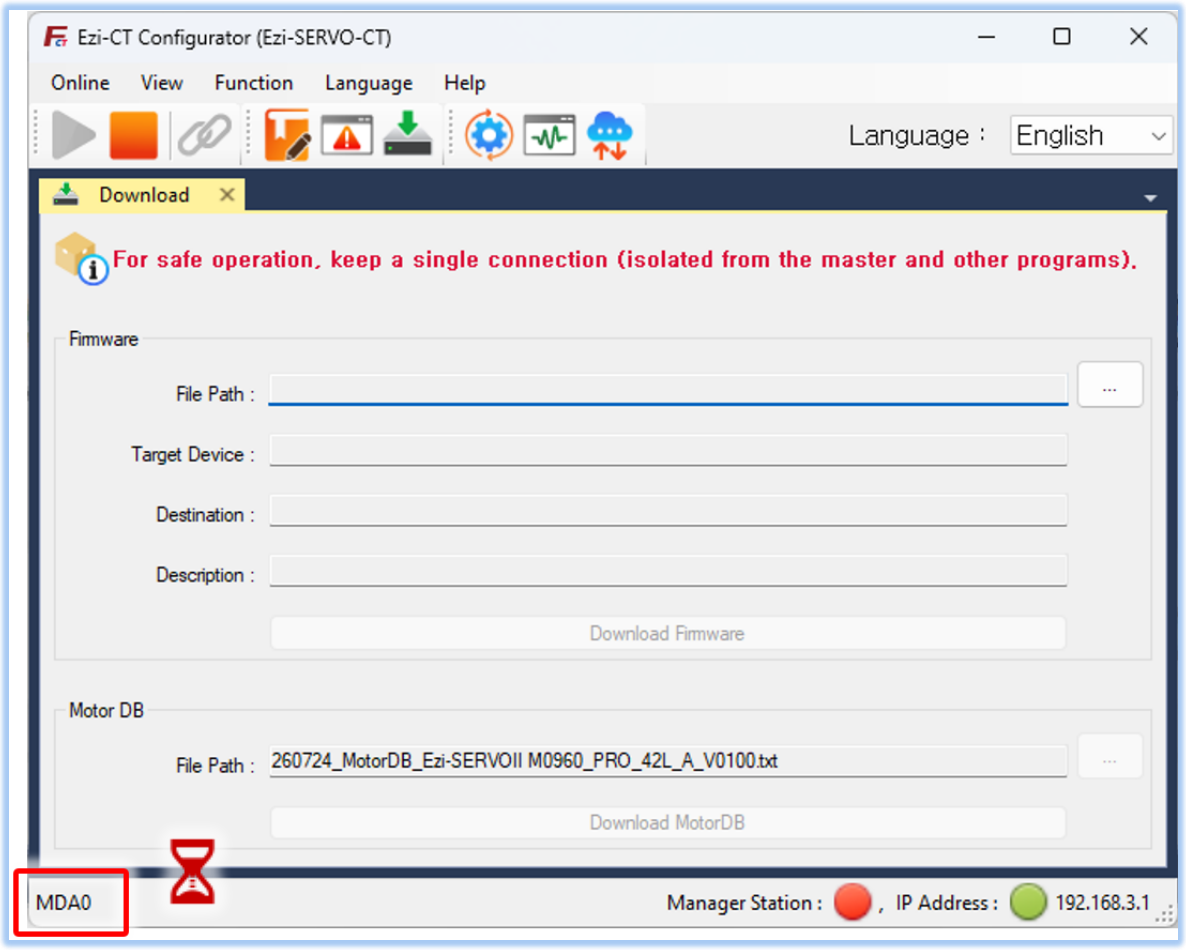
After verifying that the firmware file is correct, click the "Download Motor DB" button.



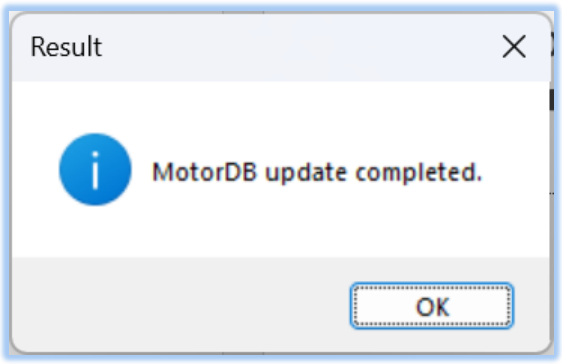
(3) Transferring the Motor DB File

The selected file will be transferred to the device, and the transfer progress will be displayed in the status bar at the bottom left.

File transfer **may take several tens of seconds** to complete**, so please wait until the transfer is finished.**



Once the transfer is complete, the file transfer results will appear as shown below.



⚠ Caution

■ Maintain Power Supply

● **Be sure** to keep **the device powered on** while the transferred files are being written to the device.
This could result in damage to the internal software, causing the device to malfunction, or **a permanent hardware failure that cannot be repaired by the user**.

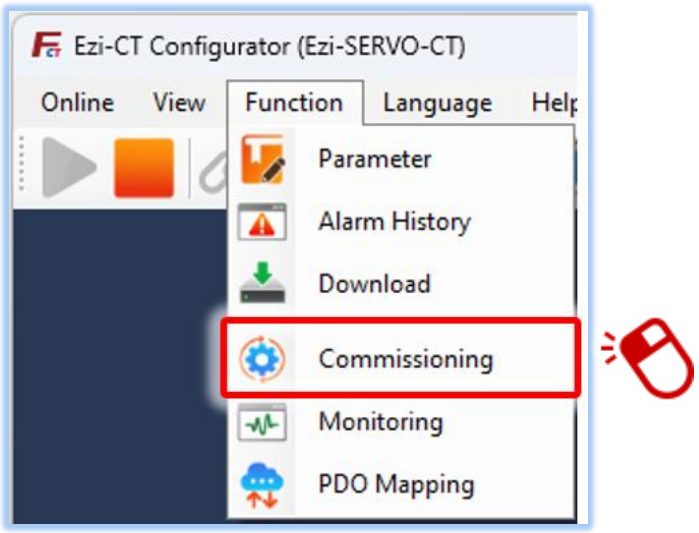
■ Device Deactivation

● To prevent safety incidents and ensure smooth application of the MotorDB, **be sure to verify that the device is in the "Servo Off" state and deactivate it before** proceeding with **the update**.

4.4 Commissioning

4.4.1 Open

(1) On **the "Menu Bar,"** click **"Online"** >> "Connect...".



(2) Alternatively, you can achieve the same result by clicking the "Connect" button in **the "Toolbar**."



Note

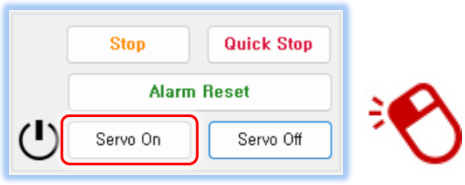
▶ If the Manager Station is controlling the device, only operation monitoring is possible.

▶ Test operation is possible only when the manager station is not controlling the device.

4.4.2 Servo On

The drive supplies current to the motor to generate rotational force (holding torque) and activates it so that the higher-level controller can drive the motor.

(1) Click the "Servo On" button in the "Common Control Functions" section.



(2) The drive supplies current to the motor and performs an initial operation to maintain the current position.

(3) Once initialization is complete, the power icon will turn red as shown below.

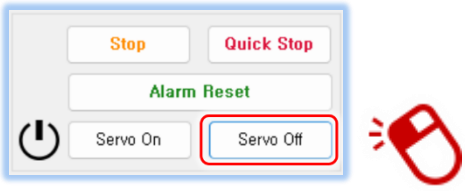


Note
▶ For products that support safety functions, disable those functions.

4.4.3 Servo Off

This deactivates the motor by cutting off the current supplied to the motor coils, causing the motor to lose its magnetic force and enter a "Free" state where it can move freely.

(1) Click the "Servo Off" button in the "Common Control Functions" section.



(2) This cuts off the current supplied to the motor from the driver.

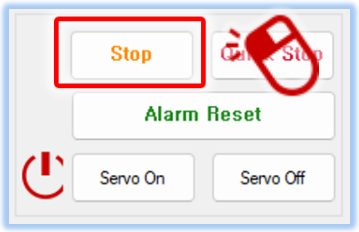
(3) When the power supply is interrupted, the power icon turns black, as shown below.



4.4.4 Deceleration Stop

The running motor begins to decelerate according to the preset deceleration settings and comes to a stop.

(1) In the "Common Control Functions" section, click the "Deceleration Stop" button.



(2) The motor's rotational speed begins to decrease to 0.

(3) When the motor's rotational speed reaches 0, the stop is complete.

4.4.5 Immediate Stop

Stops the running motor immediately, bringing it to a standstill.

(1) Click the "Decelerate and Stop" button in the "Common Control Functions" section.



(2) The motor's rotational speed immediately drops to 0, and the motor stops in place.

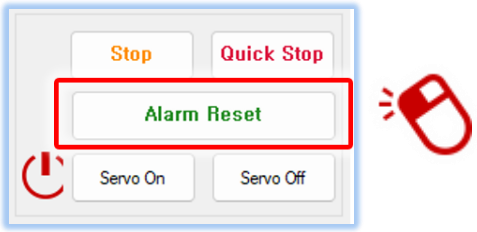
Note

▶ When using the immediate stop function, exercise extreme caution as inertial loads may cause impact to the machine and the transported object.

4.4.6 Alarm Reset

Clears alarms generated by the device.

(1) In the "Common Control Functions" section, click the "Deceleration Stop" button.



(2) When the alarm is cleared, the "Error Code" value in the "Operation Information" column changes to 0, and the "Error" indicator in the "Operation Status" column is deactivated.



Note

▶ If the alarm does not reset, refer to the device's manual to take appropriate action, then try again.

4.4.7 Normal Operation – Manual Movement

"Manual Movement" is a function that moves the device forward or backward once by a distance set by the user.

The conditions for the action to be implemented in this example are as follows.

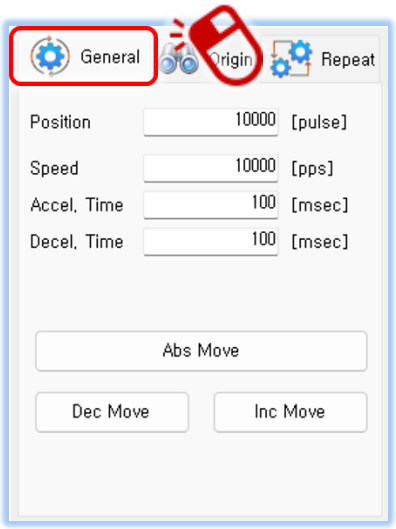
1. The driver is already active (server on).
2. Move forward 10,000 pulses from the current position.
3. The maximum driving speed is set to 5,000 pulses per second.
4. Accelerate for 0.1 seconds to reach the maximum driving speed.
5. Deceleration begins 0.2 seconds before reaching the target point.

Note

▶ For details on each property, refer to the "General Operation Items" section in [3.6.2 Functional Test Run].

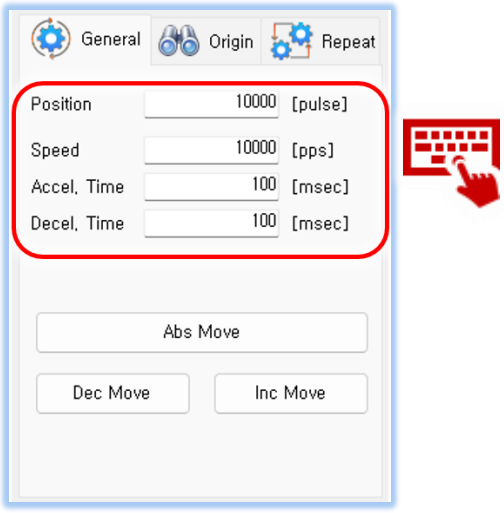
▶ For motor rotation control techniques, refer to [Appendix 4. Motion Profiles].

(1) Click the "General" tab on the commissioning screen.

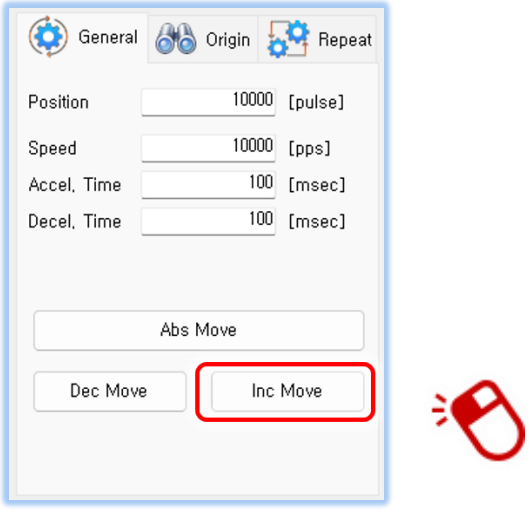


(2) Enter the following values for each item

Item	Value	Remarks
Location	10,000	
Movement Speed	5,000	
Acceleration Time	100	Convert seconds to milliseconds (msec)
Deceleration time	200	Convert seconds to milliseconds (msec)



(3) Click the "Forward" button.



(4) The action starts according to the set conditions.

(5) When the position reaches 10,000 units beyond the starting position, the manual operation (forward motion) is complete.

4.4.8 General Operation – Position Movement

"Position Movement" is a function that moves the motor to a location specified by the user.

The conditions for the behavior to be implemented in this example are as follows:

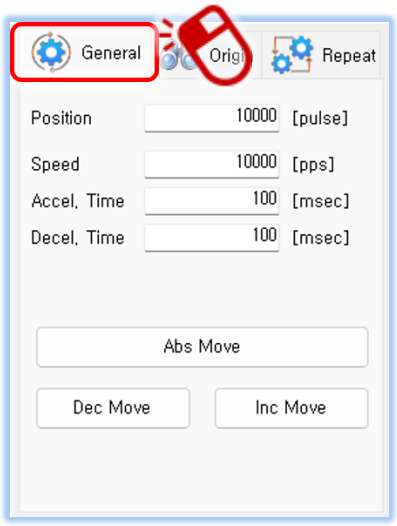
1. The driver is already active (server on).
2. The target position is 100,000 pulses.
3. The current command position is more than 5,000 pulses away from 100,000 pulses.
4. The maximum operating speed is set to 8,000 pulses per second.
5. Accelerate for 0.2 seconds to reach the maximum operating speed.
6. Deceleration begins 0.3 seconds before reaching the target point.

Note

▶ For details on each property, refer to the "General Operation Items" section in [3.6.2 Functional Test Run].

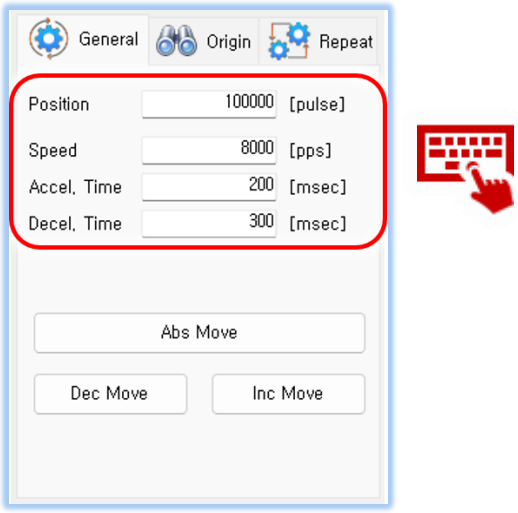
▶ For motor rotation control techniques, refer to [Appendix 4. Motion Profiles].

(1) On the commissioning screen, click the "General" tab.

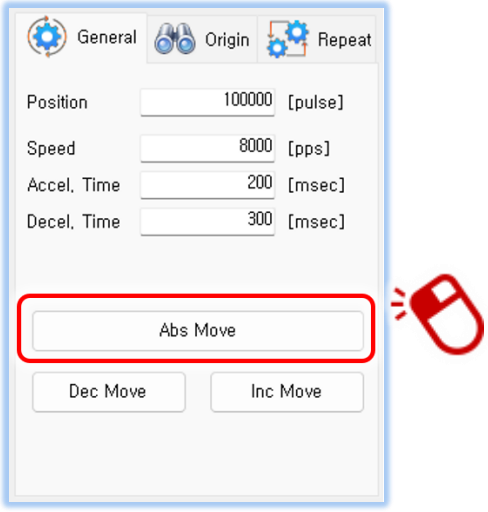


(2) Enter the following values for each item.

Item	Value	Remarks
Position	100,000	
Speed	8,000	
Accel. Time	200	Convert seconds to milliseconds (msec)
Decel. time	300	Convert seconds to milliseconds (msec)



(3) Click the "Abs Move" button.



(4) The motion starts according to the set motion conditions.

(5) When the target position reaches 100,000, the position drive is complete.

4.4.9 Home Position Search

This section describes the function for setting the reference point of the coordinate system to initialize the system.

The conditions for the action to be implemented in this example are as follows:

1. The driver is already active (server on).
2. The origin search method uses the origin sensor (Origin) search method.
3. The search direction is set to reverse.
4. The speed of movement toward the origin sensor is set to 3,000 pulses per second.
5. The speed for moving to the exact position is set to 1,000 pulses.
6. Once movement begins, the target speed is reached over 0.2 seconds.
7. When deceleration begins, the robot comes to a complete stop over a period of 0.2 seconds.

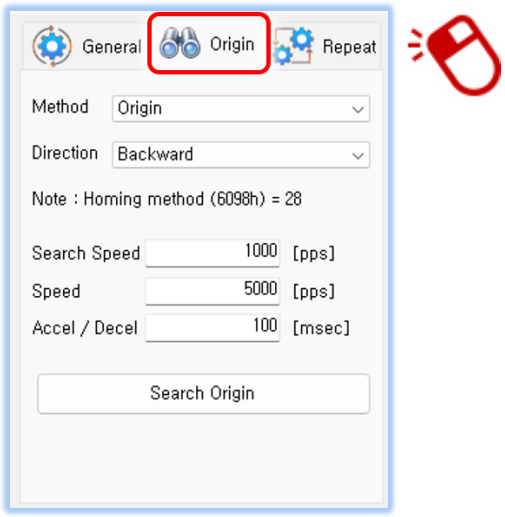
Note

▶ For details on each property, refer to the "Home Position Search Operation" section in [3.6.2 Functional Test Run].

▶ For information on how to control motor rotation, refer to [Appendix 4. Motion Profiles].

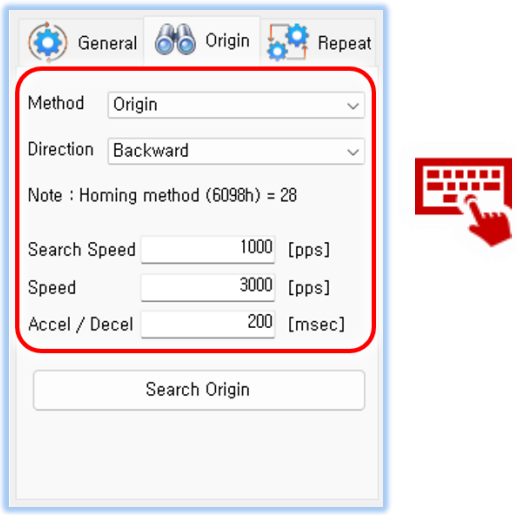
▶ The procedure for performing a home search may vary by device, so please refer to the manual for your specific device.

(1) On the commissioning screen, "click" the "Return to Origin" tab.

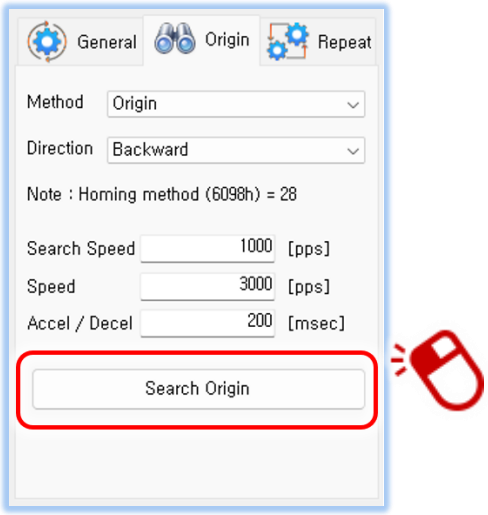


(2) Enter the following values or select the appropriate options for each item.

Item	Value	Remarks
Method	Origin	
Direction	Backward	
Search Speed	1,000	
Speed	3,000	
Accel / Decel Time	200	Convert seconds to milliseconds (msec)



(3) Click the "Search Origin" button.



(4) Move backward toward the home sensor using the "Travel Speed" and "Acceleration/Deceleration Time" settings.

(5) When the home sensor is detected, decelerate to a stop using the "Acceleration/Deceleration Time" setting.

(6) Move forward using the "Search Speed" and "Acceleration/Deceleration Time" settings until the home sensor is deactivated (Off).

(7) Once the home sensor is deactivated (Off), use the "Acceleration/Deceleration Time" settings to decelerate to a stop.

(8) Reverse toward the home sensor using the "Search Speed" and "Acceleration/Deceleration Time" settings.

(9) Stop immediately when the home sensor is detected.

(10) End the operation.

4.4.10 Repetitive Operation

Verify the device's functionality and reliability through continuous back-and-forth movements, and check the equipment's operating conditions.

The conditions for the operation to be implemented in this example are as follows.

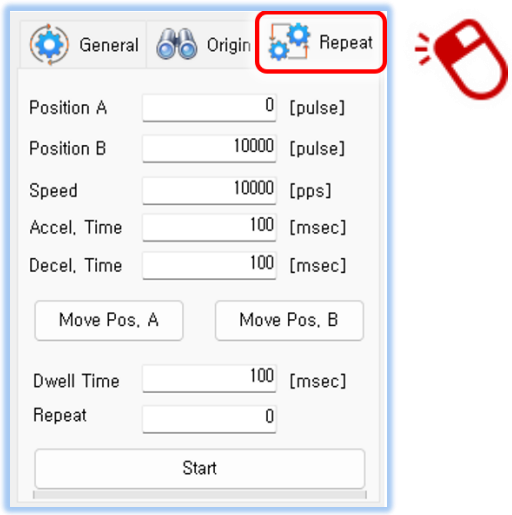
1. The driver is already activated (server on).
2. The starting position (Position A) is set to 5,000 pulses.
3. The destination position (Position B) is set to 15,000 pulses.
4. The travel speed is set to 10,000 pulses per second.
5. Once movement begins, the target speed is reached over 0.1 seconds.
6. When deceleration begins, it takes 0.2 seconds to come to a complete stop.
7. The dwell time for operational stability is set to 0.5 seconds.
8. The motion cycles back and forth between the start position and the destination position 10 times.

Note

▶ For information on each property, refer to "Repetitive Operation Items" in [3.6.2 Functional Test Run].

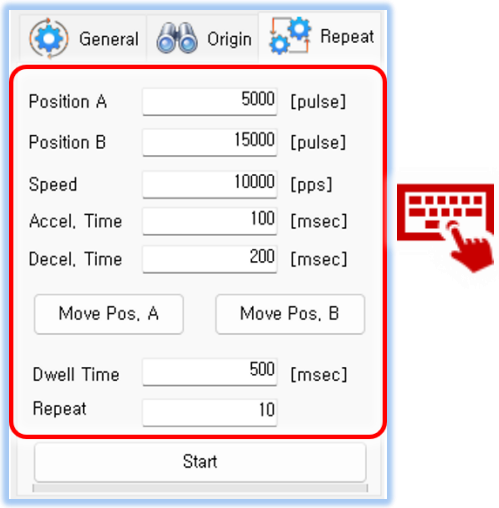
▶ For information on how to control the motor's rotation, please refer to [Appendix 4. Motion Profiles].

(1) On the commissioning screen, click the "Repeat" tab.

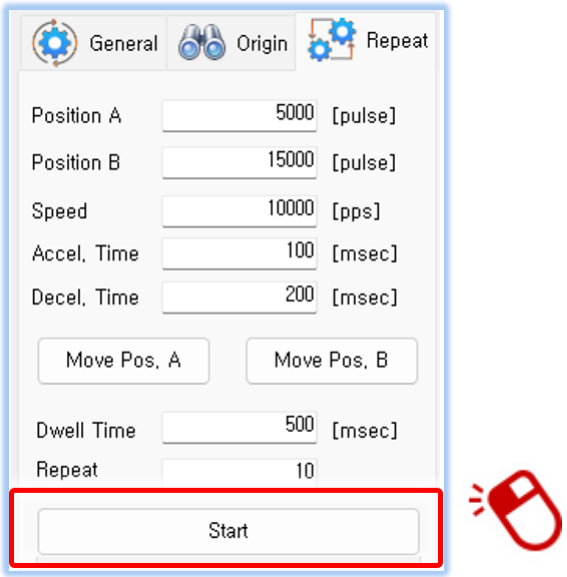


(2) Enter the following values for each item

Item	Value	Remarks
Position A	5,000	
Position B	15,000	
Speed	10,000	
Accel. Time	100	Convert seconds to milliseconds (msec)
Decel. time	200	Convert seconds to milliseconds (msec)
Dwell time	500	Convert seconds to milliseconds (msec)
Repeat	10	



(3) Click the "Start" button.



(4) Move to point A according to the set motion conditions.

(5) Wait for the duration set in "Dwell Time."

(6) Move to Point B according to the set motion conditions.

(7) Wait for the duration set in "Dwell Time."

(8) Repeat steps (4) through (7) the specified number of times.

(9) Terminate operation.

4.4.11 Output Signal Control – Enable

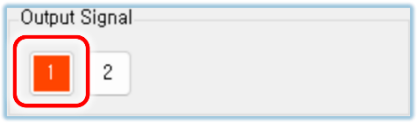
Enable (ON) the output signal built into the drive.

The action to be implemented in this example is to enable (ON) signal 1.

(1) On the commissioning screen, click the disabled "1" button in the "Output Signal" group.



(2) The background color of the "1" button will change to red, as shown below, and the corresponding signal will be enabled.



4.4.12 Output Signal Control – Deactivate

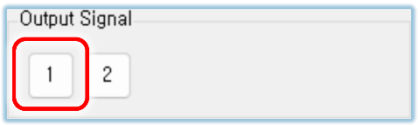
Deactivates (OFF) the drive's built-in output signal.

The action to be performed in this example is to deactivate (OFF) signal 1.

(1) On the test run screen, click button "1" in the "Output Signal" group.



(2) The background color of button "1" will change to the default background color for standard buttons, as shown below, and the signal will be deactivated.



Appendix 1 **Troubleshooting**

Appendix 1.1 Program-Related

Issue	Solution
The program does not run.	1. Please verify that .NET Framework 4.7.2 is installed. A. If you cannot install .NET Framework 4.7.2, you will not be able to use this program.

Appendix 1.2 Communication Issues

Issues	Solution
I cannot connect.	1. Check whether the device is receiving power. 2. Check the connection between the device and the network cable. A. Check the device's network status LED to see if the "LINK" indicator is lit. 3. Verify that the controller's NIC (network adapter) supports 1 Gbps speeds. 4. Verify that the device is in the same IP address range. A. Use the Ping command in the command prompt to check if the device is responding. 5. Verify that the device is not using the same IP address as another device. A. If there is an IP address conflict, the connection may not work properly.
When you connect to the device, the connection.	1. Verify that the device is in the same IP address range. A. If the IP address ranges are different, the connection will not be maintained.
Communication is unstable.	1. Check the connection status of the network cable. A. If the "LINK" indicator on the device's network status LED is flashing, please replace or inspect the network cable. 2. Check whether the controller's NIC (network adapter) is a USB device. A. Please try again using a different type of NIC that is not a USB device.

Appendix 1.3 Device Control Issues

Issue	Solution
The device cannot be controlled.	1. Check to see if the device's status is displayed. A. If the device's status is displayed, check the communication status between the manager station and the device. If the device is being controlled by the manager station, it cannot be controlled using this program.
The servo does not turn on.	1. Check to see if an alarm has been triggered. A. If an alarm has occurred, check the error code and resolve the cause.

	2. Check whether the device supports the TQ function. A. If the device supports the TQ function, please check the status of the TQ Off and TQ Mon signals.
The alarm does not clear.	1. Check the error code and resolve the cause. 2. Check whether the device supports the TQ function. A. If the Safety function is activated, cycle the device power.

Appendix 1.4 Parameter-related

Issue	Solution
The contents of the parameter file to the device.	1. Verify that the parameter file is correct. A. If the device is not compatible with the parameter file, it cannot be used. 2. Check the device's operating system (firmware) version. A. If the device's operating system version does not match the version stored in the parameter file, the settings may not be applied.
The parameter file was applied to the device but the device is behaving erratically.	1. Please check the device's operating system (firmware) version. A. This issue may occur if the device's operating system version does not match the version stored in the parameter file. Use a parameter file with the same version whenever possible. B. Restart the device.
You cannot change the contents of the parameters .	1. Check the parameter values to be applied. A. The range of parameter values and the content that can be entered may vary depending on the device. Please refer to the manual for the target device.

Appendix 2 **Motion Profiles**

This appendix describes the two profiles most commonly used in the industry.

Motion profiles generally use the following three types of motion segments:

Section	Description
Acceleration Zone	This is the section where the motor accelerates from a stationary state until it reaches the target speed.
Constant-Velocity Zone	The phase during which the motor moves at a constant target speed.
Deceleration Zone	This is the phase during which the motor decelerates from the target speed until it comes to a complete stop.

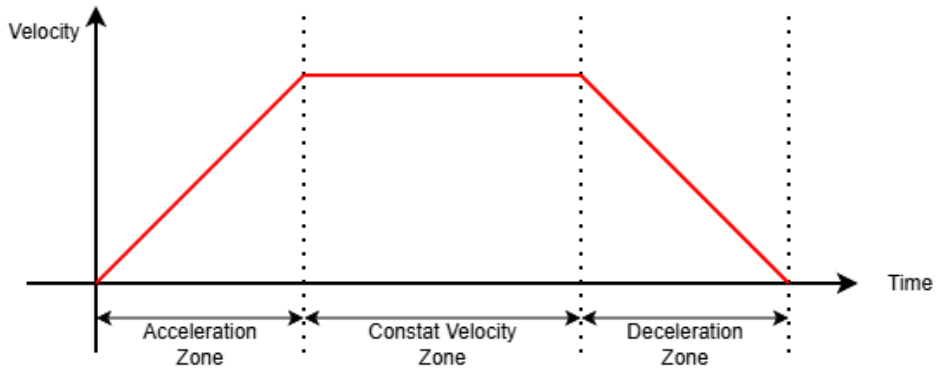
Note

▶ The appendix assumes that there is sufficient travel distance.

▶ If the acceleration or deceleration zones are too short, unexpected impacts may occur on the equipment.

Appendix 2.1 **Trapezoidal Motion Profile**

This is a motion profile in which the acceleration and deceleration zones operate with a constant slope.

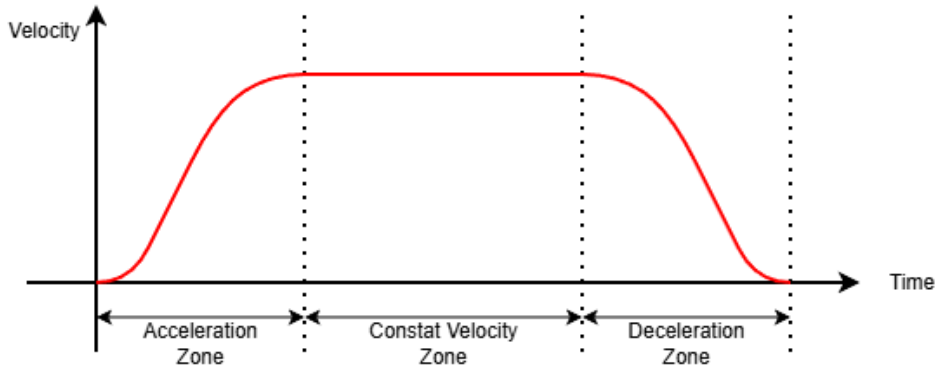


The speed changes rapidly and linearly at start and stop, which may cause vibration (shock) to the equipment during these phases.

It can be applied to general conveying equipment and high-rigidity mechanical components that are not sensitive to shocks or vibrations.

Appendix 2.2 **S-Curve Motion Profile**

This is a motion profile in which the slopes of the acceleration and deceleration zones follow an S-shaped curve.



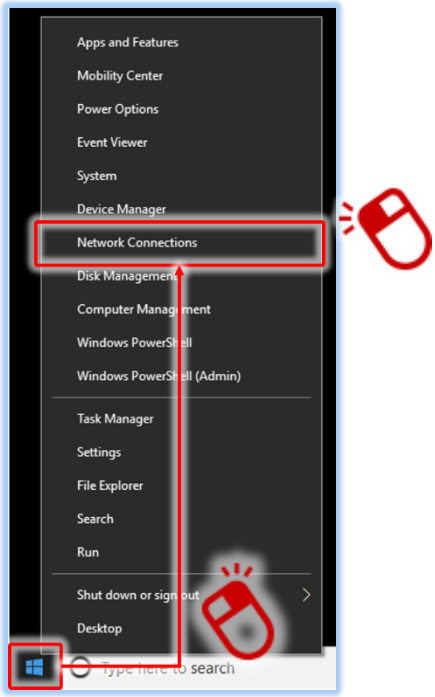
Speed changes smoothly in an S-shaped curve during start and stop, resulting in significantly less vibration compared to the trapezoidal motion profile.

It can be applied to equipment sensitive to shock or vibration, such as semiconductor wafer transport, liquid dispensing, and precision inspection equipment.

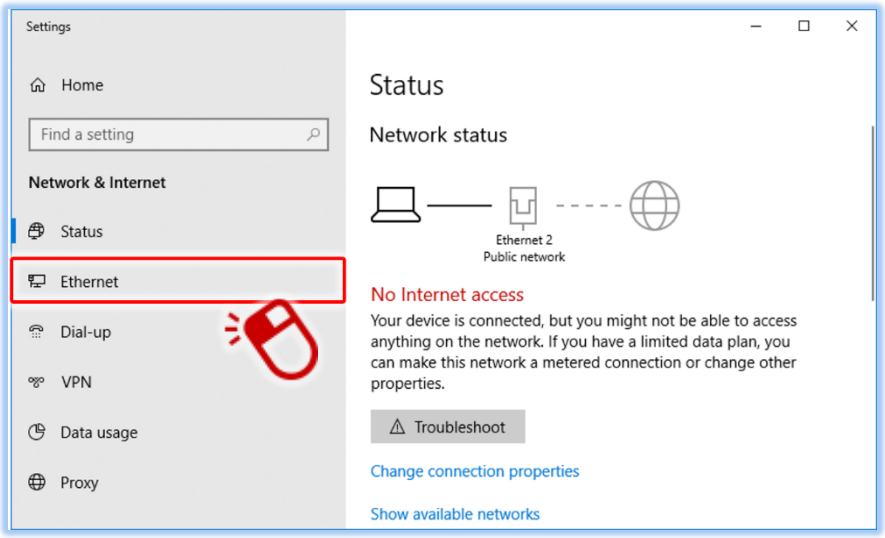
Appendix 3 **Setting the IP Address for a NIC (Network Interface Card) for TSN Communication**

Appendix 3.1 If you are using Windows 10

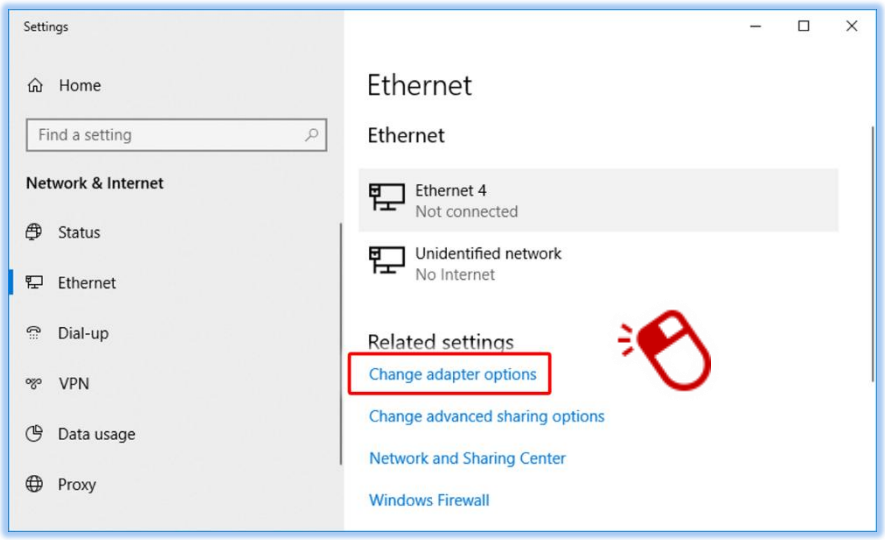
(1) Right-click the Windows button and Click "Network Connections."



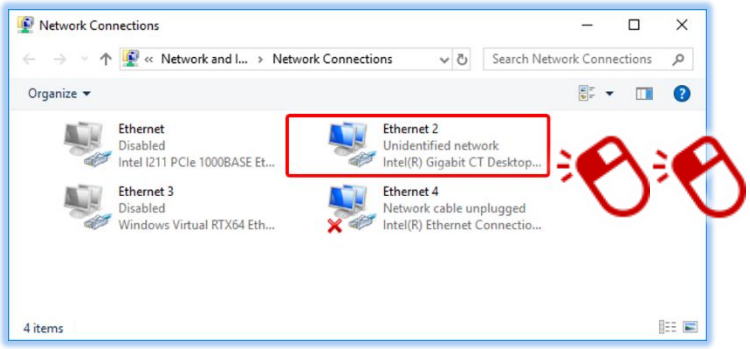
(2) Click "Ethernet."



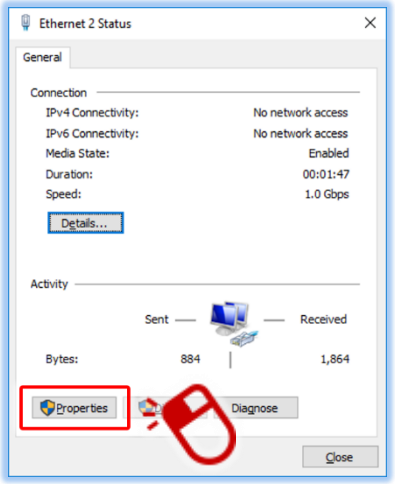
(3) Click 'Change adapter options' from 'Related settings'.



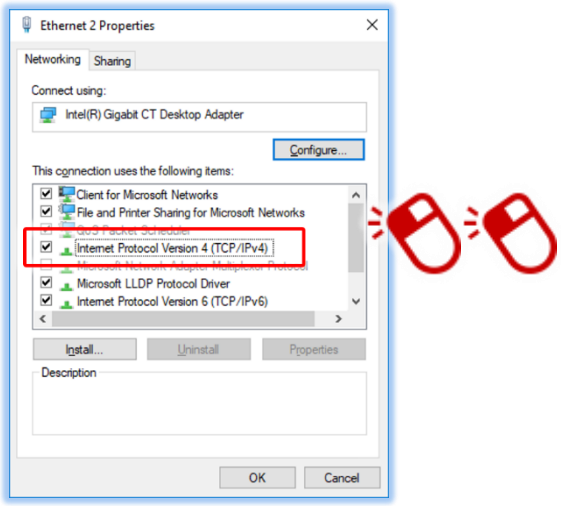
(4) Double-click the target network adapter (NIC).



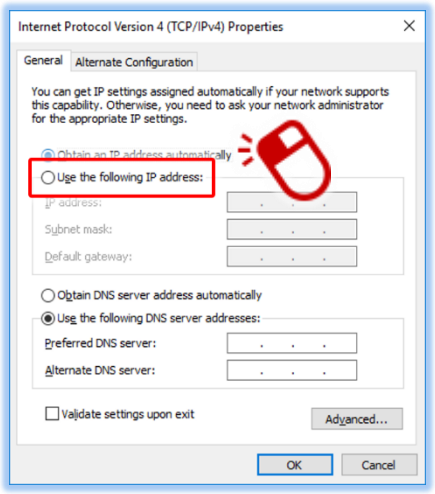
(5) Click the "Properties' button.



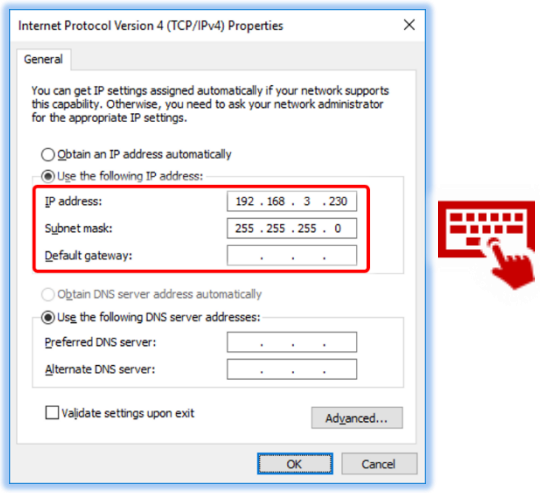
(6) Double-click the "Internet Protocol Version 4 (TCP/IPv4)" entry.



(7) Select "Use the following IP address" to enable manual configuration.



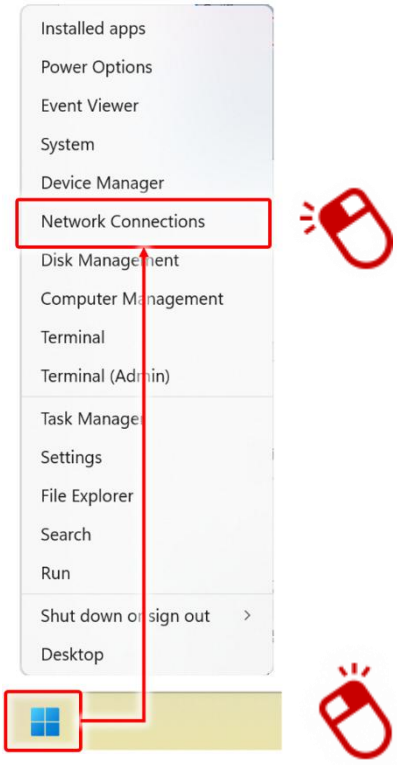
(8) Enter the appropriate values for the following fields, then click the "OK" button.



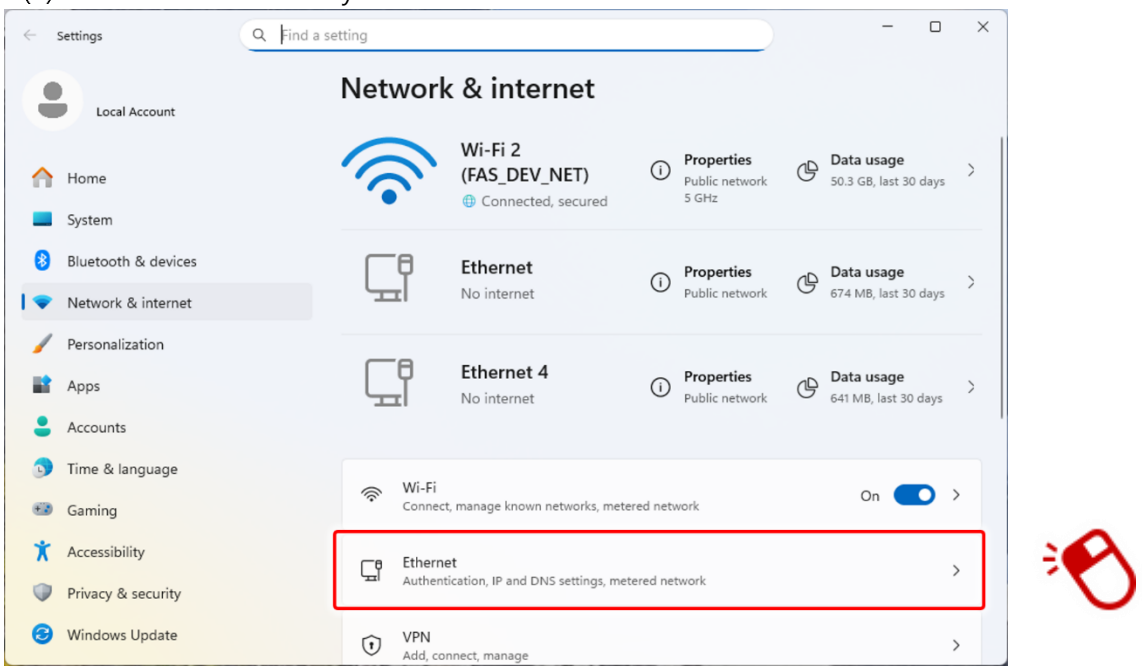
Item	Setting			
IP Address	192.	168.	3.	249
Subnet mask	255.	255.	255.	0

Appendix 3.2 If you are using Windows 11

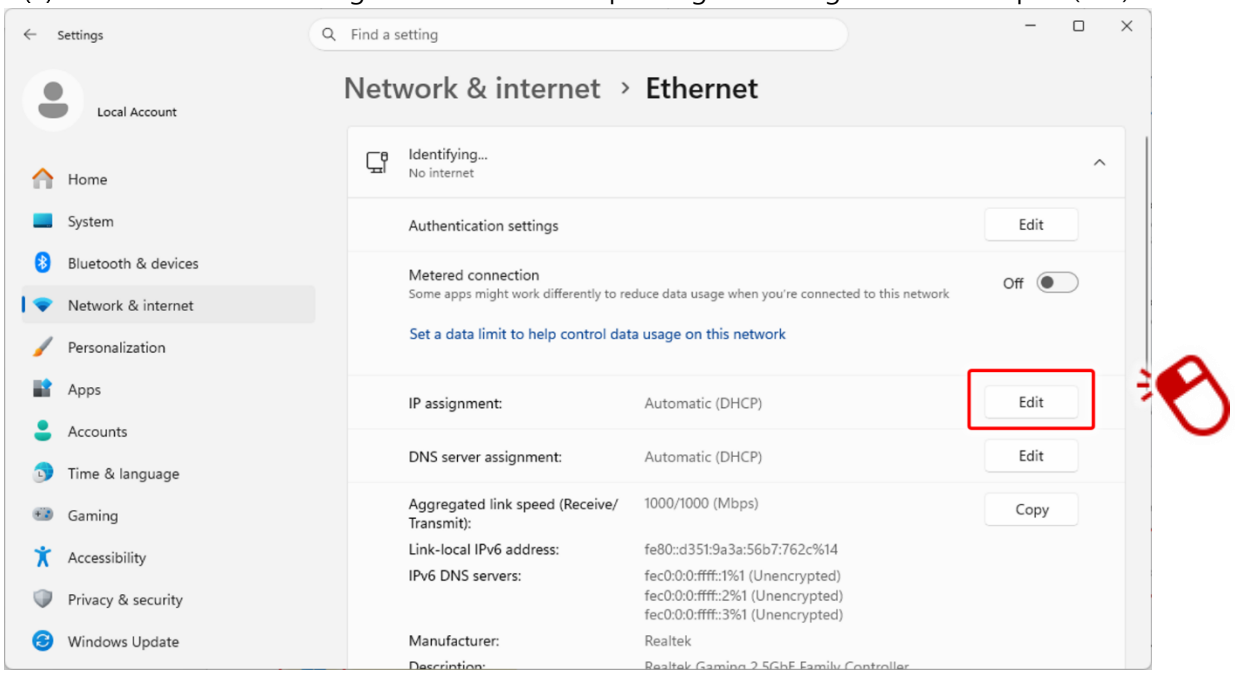
(1) Right-click the Windows button and Click "Network Connections."



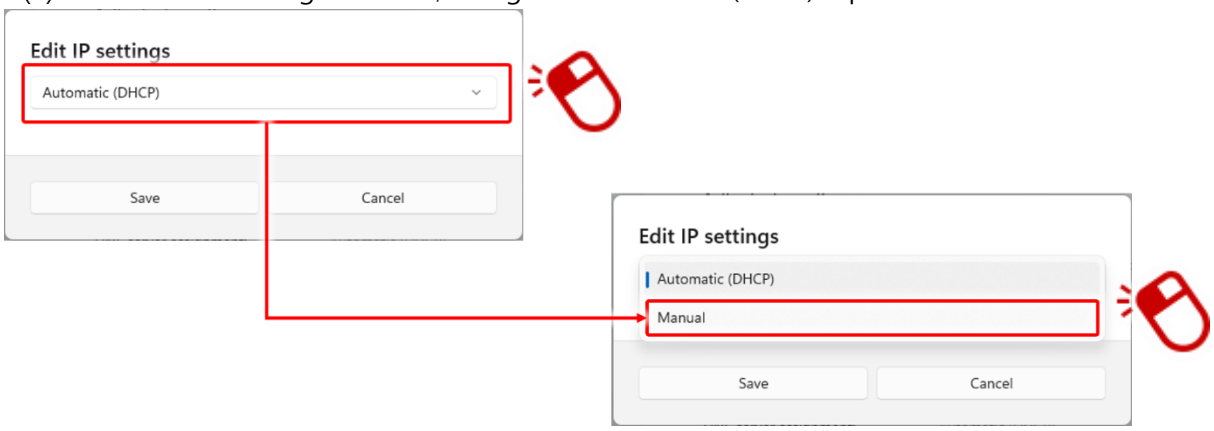
(2) Click the "Ethernet" entry.



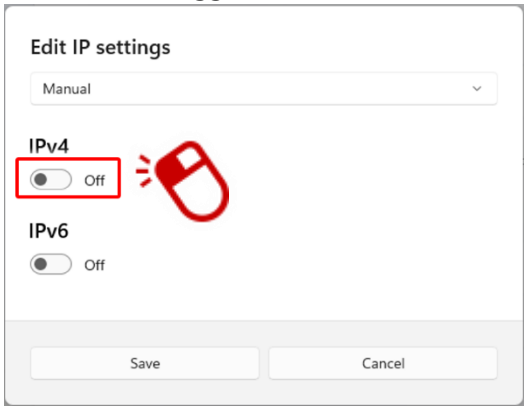
(3) Click "Edit" in the IP assignment section corresponding to the target network adapter (NIC).



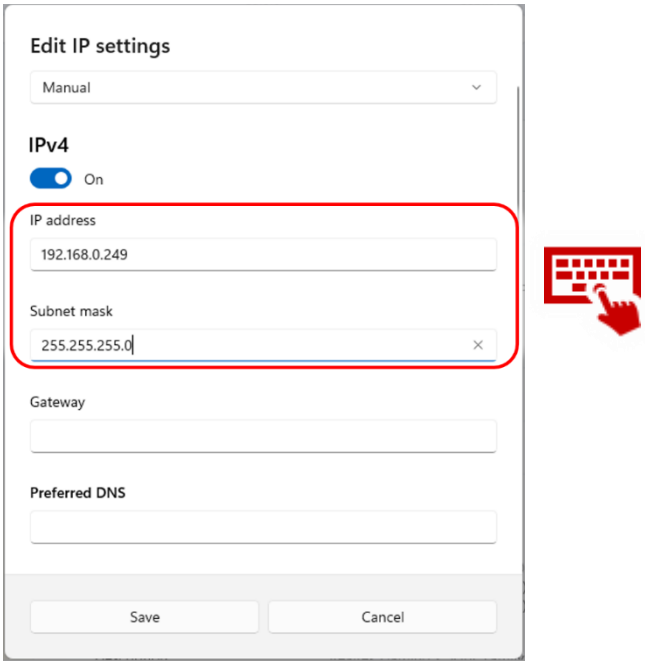
(4) In the "Edit IP Settings" window, change the "Automatic (DHCP)" option to "Manual."



(5) Click the toggle button next to "IPv4" to enable it.



(6) Enter the information for the following fields, then click the "Save" button.



Item	Setting Value			
IP Address	192.	168.	3.	249
Subnet mask	255.	255.	255.	0

Appendix 4 **Revision History**

Please refer to the back cover for the revision number of this user manual.

Revision Number	Revision Date	Revision Details/Related Pages
Rev. 1	June 2026	First Edition Published

CC-Link IE TSN

Accelerating the construction of smart factories with

ⓒ Copyright 2026 FASTECH Co., Ltd.
All Rights Reserved.
2026-10-06 Rev.1

- Unauthorized reproduction or copying of any part or the entirety of the user's manual is prohibited.
- If you need a replacement user's manual due to damage or loss, please contact our company headquarters or your nearest authorized dealer.
- The contents of the user's manual and product specifications are subject to change without notice for performance improvements.

- Ezi-SERVO, Ezi-STEP, Ezi-POS is a registered trademark of FASTECH Co., Ltd. registered in Korea.
- CC-Link IE TSN is a registered trademark of the CC-Link Association.
- Other system names and product names appearing in this document are trademarks or registered trademarks of their respective companies.

FASTECH
Fast Accurate Smooth Motion

FASTECH Co., Ltd.

FASTECH Headquarters : (Postal Code:14502) Rm#1201 ~ 1202, 401-dong, Bucheon Techno-Park, 655 Pyeongcheon-ro, Wonmi-gu, Bucheon-si, Gyeonggi-do, Republic of Korea
TEL : +82-32-234-6317 FAX : +82-32-234-6302 E-mail : sales@fastech-motions.com

FASTECH JAPAN : (〒 450-0001 Aichi) Nagoya, Nakamura Ward, Nagono, 1-Chome 47-1 Nagoya International Center Bldg. 18th Floor
TEL : +81-70-6588-5905 E-Mail : sales_japan@fastech-motions.com