



M-Series PLC Software Interface

User Manual



Since the content of the manual will be revised as the version changes, this version may not be the final version. To download the latest version of the manual, please go to the technical

support area of www.fatek.com

FATEK AUTOMATION CORP.

INDEX

Chapter	1	Overview	1-8
Chapter			
2-1		perating Environment	
2-2		stallation Process	
Chapter	3	Introduction of UperLogic 錯	¦誤」尚未定義書籤。
-			
3-1 3-2		ck Toolbar	
3-2		erface Outlook Setting	
3-3 3-4		bon Tag Page	
3-4		ject Window	
3-6		bpage Configuration Management	
3-7		ick Key	
Chapter		Project Management	
4-1		en a New Project	
4-1 4-2		ject Setup	
4-2		omatic Project Backup	
4-4		/e the Project	
4-5		/e a New Project	
4-6		ject Content Import and Export	
4-7		en Old Projects	
4-8		ject History	
4-9	Prir	nt	
Chapter	5	System Parameters 錯	誤!尚未定義書籤。
5-1	I/O	Configuration	
5-2		ting up the Number of Component Memory	
5-3		ting up the content of Read-only Register	
5-4	Ser	vo Configuration	
5-5	Cor	mmunication Configuration	
Chapter	6	Creating Program	3-1
6-1		in Program and Sub-program Unit Management	
6-2		lder Diagram	
6-3		uctured Text (ST)	
6-4		p Ladder Instruction Description	
6-5		ntax Check	
6-6		errupt Program	
6-7		nction Module Program	
Chapter		-	
7-1		le Management	
7-2		k Table	
7-3		vo Parameter Table	
7-4		vo Program Table	
7-5	Gel	neral Purpose Link Table	

Index

7-6	Register Table	5-63
7-7	Modbus Master Table	5-65
Chapter	8 Comment and Label Information	6-1
8-1	Program Unit Comment	
8-2	Network Comment	
8-3	Element Comment	6-5
8-4	Controlling of Comment Display	6-8
8-5	Label	8-10
Chapter	9 Motion Control	7-1
9-1	Motion Network	7-2
9-2	Motion Axis	7-15
9-3	Motion Point	7-17
9-4	Motion Flow	7-20
9-5	Motion Sync Control	7-38
9-6	Motion Param Mapping	7-42
9-7	Motion Recipe	7-43
Chapter	[•] 10 Module Configuration	8-1
10-1	Creating Module Layout Drawing	8-2
10-2	Module List	8-7
10-3	Device Monitor	8-9
10-4	Power Consumption	8-13
10-5	Module Setting	8-15
10-6	I/O Configuration Status	
Chapter	¹ 11 Communication Function	8-1
Chapter 11-1	11 Communication Function	
-		8-2
- 11-1	Connection	8-2 8-5
- 11-1 11-2	Connection Offline Editing	8-2 8-5 8-5
11-1 11-2 11-3	Connection Offline Editing Upload	8-2 8-5 8-5 8-8
11-1 11-2 11-3 11-4 11-5 11-6	Connection Offline Editing Upload Download Run/Stop PLC Clear PLC	8-2 8-5 8-5 8-8 8-10 8-11
11-1 11-2 11-3 11-4 11-5 11-6 11-7	Connection Offline Editing Upload Download Run/Stop PLC Clear PLC PLC Status	8-2 8-5 8-5 8-8 8-10 8-11 8-12
11-1 11-2 11-3 11-4 11-5 11-6 11-7 11-8	Connection Offline Editing Upload Download Run/Stop PLC Clear PLC PLC Status PLC Status	8-2 8-5 8-5 8-8 8-10 8-11 8-11 8-12 8-12
11-1 11-2 11-3 11-4 11-5 11-6 11-7 11-8 11-9	Connection Offline Editing Upload Download Run/Stop PLC Clear PLC PLC Status PLC Setting Quick Control	8-2 8-5 8-5 8-8 8-10 8-11 8-11 8-12 8-1 8-1 8-3
11-1 11-2 11-3 11-4 11-5 11-6 11-7 11-8 11-9 11-10	Connection Offline Editing Upload Download Run/Stop PLC Clear PLC PLC Status PLC Status PLC Setting Quick Control Online Edit	8-2 8-5 8-5 8-8 8-10 8-11 8-11 8-12 8-12 8-1 8-3 8-3
11-1 11-2 11-3 11-4 11-5 11-6 11-7 11-8 11-9 11-10	Connection Offline Editing Upload Download. Run/Stop PLC Clear PLC PLC Status PLC Status PLC Setting Quick Control. Online Edit.	
11-1 11-2 11-3 11-4 11-5 11-6 11-7 11-8 11-9 11-10 Chapter 12-1	Connection Offline Editing Upload Download Run/Stop PLC Clear PLC PLC Status PLC Status PLC Setting Quick Control Online Edit 12 Monitoring Function Displaying Ladder Diagram Status.	8-2 8-5 8-5 8-8 8-10 8-11 8-11 8-12 8-1 8-1 8-3 8-5 9-1 9-2
11-1 11-2 11-3 11-4 11-5 11-6 11-7 11-8 11-9 11-10 Chapter 12-1 12-2	Connection Offline Editing Upload Download. Run/Stop PLC. Clear PLC PLC Status PLC Status PLC Setting Quick Control. Online Edit. 12 Monitoring Function . Displaying Ladder Diagram Status. Status Page	
11-1 11-2 11-3 11-4 11-5 11-6 11-7 11-8 11-9 11-10 Chapter 12-1 12-2 Chapter	Connection Offline Editing Upload Download Run/Stop PLC Clear PLC PLC Status PLC Setting Quick Control Online Edit 12 Monitoring Function Displaying Ladder Diagram Status. Status Page 13 Security	
11-1 11-2 11-3 11-4 11-5 11-6 11-7 11-8 11-9 11-10 Chapter 12-1 12-2 Chapter 13-1	Connection Offline Editing Upload Download Run/Stop PLC Clear PLC PLC Status PLC Status PLC Setting Quick Control Online Edit 12 Monitoring Function Displaying Ladder Diagram Status Status Page 13 Security Program ID	
11-1 11-2 11-3 11-4 11-5 11-6 11-7 11-8 11-9 11-10 Chapter 12-1 12-2 Chapter 13-1 13-2	Connection Offline Editing Upload Download Run/Stop PLC Clear PLC PLC Status PLC Setting Quick Control Online Edit 12 Monitoring Function Displaying Ladder Diagram Status Status Page 13 Security Program ID Project Password	
11-1 11-2 11-3 11-4 11-5 11-6 11-7 11-8 11-9 11-10 Chapter 12-1 12-2 Chapter 13-1 13-2 13-3	Connection Offline Editing Upload Download Run/Stop PLC . Clear PLC PLC Status PLC Setting Quick Control Online Edit 12 Monitoring Function Displaying Ladder Diagram Status Status Page 13 Security Program ID Project Password	
11-1 11-2 11-3 11-4 11-5 11-6 11-7 11-8 11-9 11-10 Chapter 12-1 12-2 Chapter 13-1 13-2 13-3 13-4	Connection Offline Editing Upload Download Run/Stop PLC Clear PLC PLC Status PLC Status PLC Setting Quick Control Online Edit 12 Monitoring Function Displaying Ladder Diagram Status Status Page 13 Security Program ID Project Password Program Password	
11-1 11-2 11-3 11-4 11-5 11-6 11-7 11-8 11-9 11-10 Chapter 12-1 12-2 Chapter 13-1 13-2 13-3 13-4 13-5	Connection Offline Editing Upload Download Run/Stop PLC Clear PLC PLC Status PLC Setting Quick Control Online Edit 12 Monitoring Function Displaying Ladder Diagram Status Status Page 13 Security Program ID Project Password Program Password Program Unit Password	8-2 8-5 8-5 8-8 8-10 8-11 8-12 8-1 8-1 8-3 8-3 8-5 9-1 9-2 9-7 9-1 9-2 9-7 9-1 9-2 9-7 9-1 9-2 9-3 9-3 9-4 9-6
11-1 11-2 11-3 11-4 11-5 11-6 11-7 11-8 11-9 11-10 Chapter 12-1 12-2 Chapter 13-1 13-2 13-3 13-4 13-5 13-6	Connection Offline Editing Upload Download. Run/Stop PLC. Clear PLC PLC Status PLC Setting Quick Control Online Edit 12 Monitoring Function Displaying Ladder Diagram Status. Status Page 13 Security Program ID Project Password Program Password Program Unit Password Data Password Download Password	
11-1 11-2 11-3 11-4 11-5 11-6 11-7 11-8 11-9 11-10 Chapter 12-1 12-2 Chapter 13-1 13-2 13-3 13-4 13-5	Connection Offline Editing Upload Download Run/Stop PLC Clear PLC PLC Status PLC Setting Quick Control Online Edit 12 Monitoring Function Displaying Ladder Diagram Status Status Page 13 Security Program ID Project Password Program Password Program Unit Password	8-2 8-5 8-5 8-8 8-10 8-11 8-12 8-1 8-1 8-1 8-3 8-5 9-1 9-2 9-7 9-1 9-2 9-7 9-1 9-2 9-3 9-3 9-4 9-6 13-7 13-8 .13-9

Chapter	14 Tools 錯誤! 尚未定義書籤。
•	System Backup and Restore9-2
14-2	Memory Card Operations9-6
14-3	CRC16 Calculator

Manual for the FATEK M-Series PLC Software Interface

Preface

This Manual provides important information related to the use of the FATEK M-Series PLC CPU Module. Before using the product, be sure to read this Manual carefully in order to get familiar with and understand its content. Should you have any questions or comments, please contact the FATEK distributor for detailed warranty services and responsibility limit.

Warranty Service The warranty period provided by FATEK for its product shall last for one year (or other period as otherwise agreed) starting from the date when the product is sold and it will be offered under the preconditions that there are no defects in product use. Please contact FATEK or the local distributor in the event failure occurs on any of the FATEK products for reasons not caused by man-made factors during the aforesaid warranty period. However, the failure due to any of the following reasons shall not be covered by the warranty services: 1. The malfunction is due to the user' s failure in following the conditions, environment, operations, installation and correct wiring method specified in this Manual. 2. The malfunction is not due to the reasons of the product. 4. The malfunction is not due to the reasons of the product. 5. The malfunction is caused by other types of *force majeure* factors such as natural disasters or manmade negligence. In the meantime, the aforesaid warranty services shall be limited to the FATEK product only and the

losses resulting from the product failure will not be covered in the warranty scope.

Limit of responsibilities

Unless it has been confirmed that the product is properly used, stored, installed and serviced and that it has not been contaminated, abused, misused or improperly modified or repaired as being analyzed by FATEK; otherwise, FATEK shall not be liable for any product-related particular damage, consequential damage or derivative damage or even revenue loss or commercial loss that resulted from whatever means.

Precautions on Using the Product

Compliance with the application-related conditions

The user shall evaluate the suitability of FATEK product and shall install the product in the well-designed equipment or system.

The user needs to check if the system, machinery or device currently used is compatible with the FATEK product. If the user fails to confirm the compatibility or the suitability, then FATEK shall not be liable for the suitability of the product.

When required by the customer, FATEK shall provide correlated third party certification to define the value rating and the application restrictions that will be applicable for the product. However, the aforesaid certification message shall not be considered as sufficient to determine the suitability of the FATEK product, the final product, the machine, the system and other applications or relevant combinations. Described below are certain applications that should be cautiously treated by the user. In spite of this, the content described below shall neither be considered as having included all of the intended product purposes nor suggesting that all of the following purposes shall be entirely suitable for the product. For example, outdoors use, use in an area subjected to potential chemical contamination or electrical interference or used under conditions or functions not mentioned in this Manual or used with the system, machine and equipment that may create risks to life or properties.

Before working with the product, the user will be required to check if the entire system is marked with a hazard sign and shall select the design that can ensure the safety such as the backup design, etc. Otherwise, the user shall not be allowed to use the product in the application that will present personnel and the property safety concerns. In no event shall FATEK be liable for the specifications, statutory regulations or restrictions that will be used by the customer in the product combination or the product operations.

When using the product, FATEK shall not be liable for the programs edited by the user or the resulting consequences.

Disclaimers

Dimensions and weight

The dimensions and the weight specified in the manual are nominal values only. Even if provided with the tolerance, they cannot be used in the manufacturing purposes.

Performance data

The data specified in this Manual mean that the performance data obtained under FATEK's test conditions are provided for the user to confirm its compliance only. Therefore, the user is also required to consider the actual application conditions. Therefore, actual performance shall be defined according to the content of the guarantee and the limit of responsibilities established by FATEK.

Errors and negligence

The content of this Manual is provided through careful checking process and is considered as correct. However, FATEK shall not be liable for the errors or the negligence that may be found in the text, printing content and proofreading.

Change of specifications

The product specifications and accessories may be subject to change along with the technical improvement or other reasons. In the event that the published specifications or performance need to be changed or where significant structural change is required, FATEK will change the model number of the product accordingly. If certain specifications of the product have changed, then FATEK will not give the notice under the following situation: when it is required to use a special model number or create particular specifications in order to support the customer' s application according to the instructions given by the customer. To confirm actual specifications of the product to be purchased, please contact the local FATEK distributor.

Precautions for Safety

Signs and meaning of safety precautions

The following signs will be used in this Manual in order to provide precautions that will be required for using the M-Series PLC safely. These precautions are extremely important for using the product safely. Please read the safety precautions carefully in order to get familiar with and understand the content and the meaning of the aforesaid instructions.

\triangle		Means a potentially dangerous situation that will result in death or serious
	Warning	injury if not avoided. In the meantime, it may also lead to serious property
		losses.

\mathbb{N}	Continu	Means a potentially dangerous situation that may result in minor or
	Caution	medium level injury or property losses if not avoided.

\bigcirc	Means operations that must not be executed.
0	Means operations that must be executed.
\triangle	Means general precautions.
	Means the precautions relating to hot surfaces.
	Means the precautions related to the wiring, grounding and electrocution of the electrical system.

Disclaimers

Warning			
Do not attempt to dismantle any module or touch the internal side of the module when	\wedge		
it is under energized status or it may lead to electrocution injury.	\bigcirc		
Do not attempt to touch any terminal or terminal board when the module is under	٨		
energized status, or it may lead to electrocution injury.	14		
To ensure the system safety in order to avoid abnormal actions that may be caused by			
man-made external factors or false actions resulting from the faulty PLC, it is required to			
install the following safety measures in the external circuit (not within the PLC			
procedure); otherwise, it may lead to serious accident.			
The externally controlled circuit must be provided with emergency stop switch,			
interlocking circuit, limit switch and similar safety measures. The PLC will stop outputting			
the signals when encountering major failure alarm during the operations. However, the			
errors in the I/O controller and the I/O register as well as other undetectable errors will			
still trigger unexpected actions. To deal with the aforesaid errors, you are required to			
install external safety measures to protect the system safety. If the output relay is			
jammed, burnt or if the output transistor is damaged, then the PLC may still maintain its			
output at the ON or OFF status.			
To solve the aforesaid issues, it is required to install external safety measures to protect			
the system safety. By installing the corresponding safety measures in the system and the			
equipment, it allows you to maintain the safety of the entire system in spite of the fact			
that communication errors or false actions have occurred during the operating process.			
The user must take corresponding failure preventive measures in order to ensure safety			
when the signal line is damaged or when the power is instantly disconnected or when			
the signal is wrong, missing or abnormal as may be caused by other reasons. If failing to			
taking the appropriate measures, it may lead to improper operations that may result in			
serious accidents.			

Disclaimers

Precautions			
Do not touch the power module when the PLC is under energized status or when the			
power source is disconnected. At this time, the power module might still present			
extremely high temperature that can cause a scorching injury.			
When connecting with the terminal board of the power module, the cable should be			
secured with the appropriately sized Ferrule. If the cable is loose, it may lead to			
burning or the failure of the power module.			
The online editing shall be allowed only after confirming that the extended PLC cycle			
duration will not result in any adverse impact or the system may not be able to read	$\overline{\langle \cdot \rangle}$		
the input signal.			
After confirming that the I/O terminal is safe, you may transmit the required	\wedge		
parameters to other terminals such as PLC setting, I/O table and I/O register data,	$\overline{\langle i \rangle}$		
etc. Otherwise, it may lead to unexpected actions if transmitting or modifying the			
aforesaid data before that.			

Precautions for Use

When using the M-Series PLC, please observe the precautions provided below.

Using the power

- Please use the voltage specified in the Manual. Incorrect voltage will lead to false action or burning damage to the equipment.
- If the number of the module being connected exceeds the current rating of the power module, you may not be able to start the CPU module or other modules.
- Please use the designated power source and then supply the power according to the specified voltage and frequency rating. Special attention should also be given to the location subjected to unsteady power supply, as incorrect power supply may result in false action.
- Before starting any of the following operations, be sure to disconnect the PLC power; or it may lead to false action or electrocution injury.

(1) When installing or dismantling power module, I/O module, CPU module or any other type of module.

- (2) When connecting cables or executing the system wiring.
- (3) When connecting or disconnecting the connector.
- When using the power module, be sure to observe following precautions.

(1) The voltage applied at the equipment output point or the connected load shall not be higher than the rated specifications established for the power module.

(2) If it is required to put aside the power module for over 3 months, it shall be stored in a cool and dry location in order to maintain its function at normal status.

(3) If the power module is improperly installed, it will result in the accumulation of heat as to cause the aging or the damage of the component within. Therefore, it shall be properly connected and you are also required to use the standard installation method.

Installation

- Do not install the PLC at the location near a high frequency noise interfering source.
- Confirm that the terminal board, the connector, the memory card, the peripheral communication wires and other buckle-mounted devices are latched in position. Improper latching will result in false action.
- After connecting to the adjacent module, the buckle at the top or the bottom must be securely locked (*i.e.,* properly latched). If failing to lock the buckle tightly, the module may not be able to achieve the intended function.

Wiring

- Please follow the instructions provided in the Manual in order to execute the wiring operations correctly.
- Before connecting the power, please check the setting status of all wires and switches. Incorrect wiring may result in burning damage to the equipment.
- After checking the installation position, you may start installing the terminal board and the connector.
- During the wiring process, the label should be tagged on the module. If you tear off the label, foreign mattes may get into the module as to cause a false action.
- To ensure normal heat dissipating function, please tear off the label after completing the wiring operations. If retaining the label, it may lead to false action.
- Please use an EU-standard terminal to execute the wiring operations. Do not connect the terminal with bare stranded wires. The aging or the breaking of wires may result in burning damage to the equipment.
- The voltage applied to the input module shall not be higher than the input voltage rating or it may result in burning damage to the equipment.
- The voltage or the load applied to the output module shall not be higher than the maximum switch capacity. The over-voltage or the overload may result in burning damage of the equipment.
- Do not drag or bend the cable excessively. Such action may cause the breaking of the cable.
- Do not place any objects on the cable or other type of wires or it may cause the breaking of the cable.
- Please set the grounding wire correctly for the power module and communication port to avoid communication error and equipment malfunction caused by noise interference.
- It is recommended to use M series dedicated AC power modules to supply power to MPLC related modules.
- It is recommended to use twisted-pair shielded cables for communication cables and ground them properly.

Operating

- Before supplying power to the MPLC to start the operations, ensure that the setting of the data register is correct without any mistakes.
- Before executing any of the following tasks, confirm that it will not bring about any adverse impact on the system; otherwise, it may result in unexpected action.
 - (1) When changing the operating mode of the PLC (RUN Mode/STOP Mode).
 - (2) When executing compulsory enable/ compulsory disable for any of the data retained in the register.

(3) When changing the present value of any bit or setting that has been logged in the register.

- Do not attempt to dismantle, repair or modify any module; or it may result in false action, fire or electrocution.
- It is required to protect the PLC from falling or from excessive vibration or impact.
- If the I/O is located at the "ON" position, when switching the "RUN Mode" to the "STOP Mode," the system will set the PLC output at the "OFF" position and then all output actions will be disabled. Please ensure that the external load will not generate hazardous factors during the aforesaid process.
- If the CPU module stops running due to catastrophic error, please set all of the output points on the output module at the "OFF" position. The output status will be retained after being set as the holding-type memory configuration parameters.
- If the status monitoring pages or the parameters are improperly set, it may result in unexpected action. Even though the status monitoring pages or the parameters are correct, it is also required to confirm that the controlled system will not be subject to adverse impact before starting.
- When applying maximum level of voltage or when the power supplied to the operating switch is interrupted suddenly during the Insulation Strength Test, it may result in the damage of the CPU module. In this case, please use the variable resistor to increase or reduce the voltage level gradually.
- Before conducting the Withstand Voltage Test or the Insulation Resistance Test, please separate the wire grounding terminal of the power module from the functional grounding terminal. Otherwise, it may result in burning damage to the equipment.

Precautions for the Application Environment

- Please follow the instructions described in this Manual for carrying out the installation activities correctly.
- Do not operate the control system in any of the following locations:
 - (1) The location exposed to direct sunlight.
 - (2) The location with temperature or humidity exceeding the specified range.
 - (3) The location vulnerable to dewing effect due to abrupt temperature changes.
 - (4) The location exposed to corrosive or combustible gases.
 - (5) The location exposed to dust (especially iron chips) or smoke.
 - (6) The location exposed to water, oil or chemicals.
 - (7) The location vulnerable to impact or vibration.
- When installing the system in any of the following locations, appropriate and effective preventive measures should be taken:
 - (1) The location exposed to electrostatic or other type of noise.
 - (2) The location exposed to strong electromagnetic field.
 - (3) The location that may be exposed to radioactive pollution.
 - (4) The location near the power supply source.

Disclaimers

1

Overview

Chanter

\Lambda Danger

- 1. When installing or removing the M-series CPU modules and various expansion modules or the equipment connected to it, all power must be turned off, otherwise it may cause electric shock or wrong action, resulting in death or serious personal injury and damage to the machine equipment.
- 2. Before the installation and wiring construction is completed, do not tear off the dust-proof paper on the PLC cooling hole, so as to prevent the drilling iron filings or wiring scraps from falling into the PLC during construction, causing fire, failure or malfunction.
- 3. After confirming that the installation and wiring are all completed, remember to tear off the abovementioned dustproof paper to avoid poor heat dissipation of the PLC, resulting in fire, failure or malfunction.

UperLogic is a professional PLC software, which is mainly used to design and configure the new generation of M-series PLC. It runs on Windows operating system and is completely designed according to the operating habits of Windows environment. The window interface is presented in the style that is commonly used by the general public today. Easy to learn and use, both beginners and experienced users can operate in a very efficient way. The software adopts the project concept and presents the development content of the program in a hierarchical manner in a visual way, so that the relevant work content can be presented to the user at a glance. Both program development and maintenance can be carried out in a very intuitive way. In addition, it provides convenient keyboard and mouse shortcut operation methods, which can complete program editing and testing in a very efficient manner. It also provides a Multiple Document Interface (MDI) editing program screen, which can simultaneously display and compare, copy and edit programs in different sections.

Main Functions and Features:

- Full support for global tags, regional tags and system tags, which facilitates programmers to configure and manage registers in a more intuitive way.
- Supports Ladder Diagram (LD), Structured Text (ST), mainstream PLC language editing, and supports custom Function Module (FCM), can be aimed at repetitive logic program packaging and release for use.
- Provides three modes: Offline Editing/Online Monitoring/Online Editing, making it safer and more convenient to design programs and test machines.
- In addition to the monitoring table function to monitor the registers online in real time, it also provides a Data chart tool, which can more intuitively present register data from different sources on the graph at the same time, and can also facilitate comparisons.
- Brand new Device View function, more intuitive to set PLC and IO module system parameters and configuration. And you can know the device size, power consumption, module resources and other information in advance. In the On-line Monitor mode, you can directly monitor and modify IO data and understand the status of the PLC system.
- Users can divide the entire development work into several program units according to different functions or other classification methods, and can perform independent input annotations and tests, which is of great help to program development and subsequent maintenance work.
- Diversified program searching functions, in addition to basic search functions, also supports memory configuration and cross query functions. Help users understand the usage of the memory more quickly, and quickly find and open the relevant functions or program window screens of the register used, and modify the parameters.

- Provides program syntax checking function, the execution of this function can be proposed by the user, or the system will automatically execute when the user issues an operation command. After execution, a syntax check report window will be generated, and various errors will be listed in columns. If you click the error item directly with the mouse, the program corresponding to the error will be called out directly, and the cursor will be placed on the wrong location, this judgment on the error is helpful for the subsequent correction.
- Perfect protection of intellectual property rights. In addition to project passwords, program passwords, data passwords, and download passwords, protection measures for program IDs and PLC IDs are also provided, allowing users' projects and systems to be assigned according to the different roles of designers and operators. Different password permissions, thereby protecting the security of the system and intellectual property.
- Supports complete motion control functions, such as servo trial run, motion monitoring diagram, motion trajectory preview, and motion flow block. It can easily set the servo and cam related configuration (E-CAM), and plan the motion control process conveniently and systematically.

2

Installation Instructions

<u>2-1</u>	Operating Environment	.2-2
<u>2-2</u>	Installation Process	.2-2

Chapter 24

<u>∧</u> Danger

- 1. When installing or removing the M-series CPU modules and various expansion modules or the equipment connected to it, all power must be turned off, otherwise it may cause electric shock or wrong action, resulting in death or serious personal injury and damage to the machine equipment.
- 2. Before the installation and wiring construction is completed, do not tear off the dust-proof paper on the PLC cooling hole, so as to prevent the drilling iron filings or wiring scraps from falling into the PLC during construction, causing fire, failure or malfunction.
- 3. After confirming that the installation and wiring are all completed, remember to tear off the abovementioned dustproof paper to avoid poor heat dissipation of the PLC, resulting in fire, failure or malfunction.

This section introduces the installation requests and process of UperLogic.

2-1 Operating Environment

It supports the following operation systems: Windows 7 (32&64 bits) Windows 8 (32&64 bits) Windows 10 (32&64 bits) Windows 11 (32&64 bits)

2-1-1 Connection Configuration

Through the USB/Type C or by connecting network to PC and PLC, it allows the user to upload and download the ladder diagram, control the PLC operation and monitor the PLC Register, etc.

2-2 Installation Process

This section describes how to install UperLogic.

 After downloading the UperLogic Installation file from the official website, double click [Install] file to begin the installation. The system will ask if the user want to install the UperLogic to the PC. If yes, please click [Next].



Fig. 1: Installation interface_1

 The system will ask the user about the type to be installed. It is recommended that [Complete] be selected to prevent from missing out the corresponding drive software. After being confirmed, click [Next].

UperLogic - InstallShield Wizard X					
Setup Type Select the set	Setup Type Select the setup type to install.				
Please select a	a setup type.				
© Complete	All program features will be installed. (Requires the most disk space.)				
O Custom	Select which program features you want installed. Recommended for advanced users.				
InstallShield	< Back Next > Cancel				

Fig. 2: Installation interface_2

3. After confirming that the executed installation as correct, click [Install] to being the installation. To modify the previous setting, click [Back] and you may return to the previous page to perform the required setting.

UperLogic - InstallShield Wizard X				
UperLogic - InstallShield Wizard X				
Ready to Install the Program				
The wizard is ready to begin installation.				
Click Install to begin the installation.				
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.				
InstallShield				
< Back Install Cancel				

Fig. 3: Installation interface_3

4. During the system installation process, the FATEK Program Drive Install will appear in the webpage. Click [Next] to begin the drive program installation.

FATEK Device Installer		
	Welcome to the FATEK USB Device Installer!	
	This wizard will walk you through installing the drivers for your FATEK device.	
FATEK		perLogic - InstallShield Wizard X
AUTOMATION CORP.		Setup Status
		The InstallShield Wizard is installing UperLogic
	To continue, click Next.	Installing
	< Back Next > Cancel	
		Cancel

Fig. 4: Drive program installation interface

5. After installing the drive program, the system will display following information. Click [Finish] to complete the drive program installation.



Fig. 5: Drive program installation finished

6. After installing the drive program, the system will show that the UperLogic has been successfully installed. Click [Finish] to complete the installation.

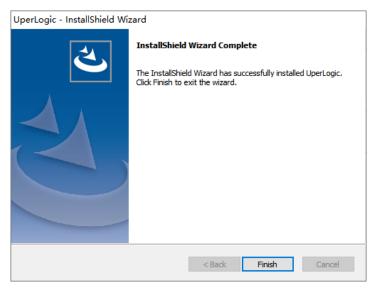


Fig. 6: Installation finished

7. After completing the installation of UperLogic, the user will find the corresponding software shortcut



on the desktop.



8. Double click

shortcut to open UperLogic.

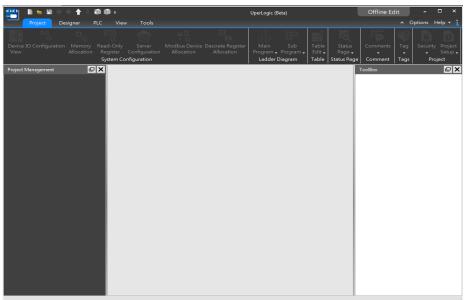


Fig. 7: Open software

3

Introduction of UperLogic

<u>3-1</u>	<u>File</u>	2-3
<u>3-2</u>	Quick Toolbar	2-4
<u>3-3</u>	Interface Outlook Setting	2-5
<u>3-4</u>	Ribbon Tag Page	2-7
<u>3-5</u>	Project Window	2-16
<u>3-6</u>	Webpage Configuration Management	2-20
<u>3-7</u>	Quick Key錯誤!	尚未定義書籤。

<u> A</u> Danger

- 4. When installing or removing the M-series CPU modules and various expansion modules or the equipment connected to it, all power must be turned off, otherwise it may cause electric shock or wrong action, resulting in death or serious personal injury and damage to the machine equipment.
- 5. Before the installation and wiring construction is completed, do not tear off the dust-proof paper on the PLC cooling hole, so as to prevent the drilling iron filings or wiring scraps from falling into the PLC during construction, causing fire, failure or malfunction.
- 6. After confirming that the installation and wiring are all completed, remember to tear off the abovementioned dustproof paper to avoid poor heat dissipation of the PLC, resulting in fire, failure or

malfunction.

This section describes the functions that will be displayed in the UperLogic software interface.

Displayed in the webpage below are the UperLogic working window and the status of the respective connection window.

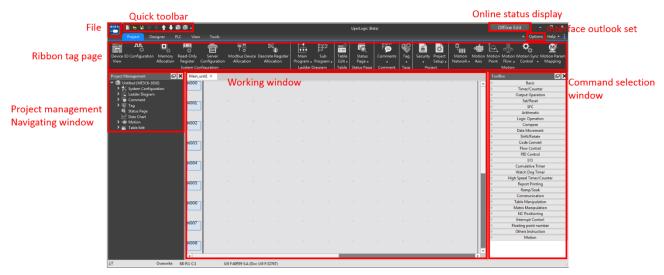


Fig. 8: Webpage configuration

3-1 File

Such function allows the user to perform project operations such as opening a new project, saving a

project, saving a new file, importing and exporting, and printing.

🖹 💻		↑ ∔@@=				UperLogic (B	:ta)
New Open	Ctrl+N	Recent Documents 1.pdwx 2 ST COOL.pdwx 3 test.pdwx	 Descrete Register Allocation	Main Program + Pr Ladder Dia	Sub ogram 🗸	Table Status Edit - Page - Table Status Page -	Comme
Save As	•	4 clink_UPER.pdwx 5 st cool.pdwx 6 FUN151.pdwx 7 fun112.pdwx		*			
Import Export	•	8 fun199.pdwx	•	. e		*	•
Print	•		 *	*)			
		N004	 ÷	•		÷	•
		N005	*	*			•



Function	Description	Detailed introduction
Open new project	Create a new project for executing the editing.	Please refer to
		Section 4.1.
Open project	Open previously written project for executing the	Please refer to
	editing.	Section 4.8.
Save project	Save currently edited project to disk.	Please refer to
		Section 4.4.
Save project as	Save currently edited project as another project name	Please refer to
	in the disk.	Section 4.5.
Close project	Close currently edited project.	
Import	Import previously saved information to project.	Please refer to
		Section 4.6.
Export	Export the information from project to disk.	Please refer to
		Section 4.6.
Exit	Close UperLogic.	

Table 1: Detailed file function introduction

3-2 Quick Toolbar

The Quick Toolbar allows users to select frequently used functions for quick selection.

HS I I I I I I I I I I I I I I I I I I I	ols		UperLogic (Beta)			Offline Edit	- 🗆 × Options Help • 🛔
Device IO Configuration View Allocation System Configuration	er Modbus Devic ration Allocation	e Descrete Register Allocation	Main Sub Program • Program • Ladder Diagram	Table Status Edit V Page V Table Status Page V	Comm	nents Tag	명 _배 후 음 후 예 약 후 ፲스 앞 Motion
Project Management 🛛 🔽 Main_unit1 ×						ToolBox	e ×
✓			· · ·			Þ	Basic
> 🕺 System Configuration						Timer	/Counter
Ladder Diagram						Output	Operation
> Comment						Set	/Reset
Y 📡 Tag						Þ	SFC
🐨 Status Page						▷ Arit	hmetic
Data Chart						D Logic (Operation
> I Motion						D Co	mpare
> 📷 Table Edit						Data N	Novement
						▷ Shift	t/Rotate
N003			•			Code	Convert
						Flow	Control
						PID	Control

Fig. 10: Quick Toolbar

Quick key will display the function that can be used under current status.

Status	Quick Toolbar display status
Offline editing, and project not	▶ 늘 월 @ ◎ ↑ ↓ 約 前 =
opened.	
Offline editing, and project	🖹 ╘ 🗎 🛞 🗉 🛧 🕇 🗊 🗊 =
opened.	
Online monitoring, and PLC is	🗎 🔚 📄 🗇 🔶 🗍 🐺 🖘 🧊 🖛
running	
Online monitoring, and PLC	🗎 🔚 🖹 🔍 🕕 🛧 🖟 🗊 🗊 =
stops running	

Table 2: Quick Toolbar display status

Function	Description	Detailed Introduction
Open new project	Create a new project for executing the	Please refer to Section 4.1
	editing.	
Open project	Open previously written project for	Please refer to Section 4.8
	executing the editing.	
Save project	Save currently edited project to disk.	Please refer to Section 4.4
Run (F9)	Run PLC	Please refer to Section 11.5

Stop Run	Stops running PLC	Please refer to Section 11.5
(Shift+F9)		
Upload	Upload project from PLC to software	Please refer to Section 11.3
Download	Download currently edited project to	Please refer to Section 11.4
	PLC	
Clear data	Clear PLC data	Please refer to Section 1.6
PLC status	Display current PLC status	Please refer to Section 11.7
Self-defined quick	The user may define its own quick	
toolbar	toolbar	

Table 3: Quick toolbar function introduction

3-3 Interface Outlook Setting

This function provides a number of software outlook interfaces for users to execute the adjustment according to their own demand.



Fig. 11: Interface outlook setting options

	Preview									
	Project Designer	취 해 ㅋ PLC View	Tools			UperLog	jic (B e ta)			Offline Edit - 🗆 × ^ Options Help +
	Device IO Configuration Memory View	Read-Only S Register Cont System Configu	figuration	odbus Device I Allocation	Descrete Register Allocation	Main Program - F Ladder Di		ole Status	Comme	nts Tags Project Motion
		□ X Main_unit1	×							ToolBox
	 ✓ iii Untitled [ME3C6-1616] > ⅔ System Configuration 	NOOO							A 1	> Basic > Timer/Counter
	Ladder Diagram Komment									> Output Operation > Set/Reset
	> छ Tag द् Status Page	N001								> SFC
	📈 Data Chart								1	Arithmetic Logic Operation
	> 📹 Motion > 📑 Table Edit	N002								Compare Data Movement
Office color										> Shift/Rotate
		N003								Code Convert Flow Control
										> PID Control
		N004								> I/O Cumulative Timer
										> Watch Dog Timer
		N005								High Speed Timer/Counter Report Printing
										Ramp/Soak
		N006								> Table Manipulation
										Matrix Manipulation NC Positioning
		N007								> Interrupt Control
		N007								> Floating point number
	S Overwrite NO	R:1 C:1 U:0	F:40959 S:A (Do	c U:0 F:32767)						 Others Instruction Motion
		R:1C:1 U:0	F:40959 S:A (Do	c U:0 F:32767)		UperLogi	ic (Beta)			
		R1 C1 U0	Tools erver Mc	₩.	Pescrete Register Allocation	Main Program • P	Sub Program - Edi	le Status t∙ Page∙		Motion Offline Edit + + + + + + + + + + + + + + +
	Project Designer Project Designer Device IO Configuration Momory View	R:1 C:1 U:0	Tools erver Mc iguration , ration	Toootice [escrete Register	Main	Sub Program - Edi	le Status t∙ Page∙	Commer Commer	Offline Edit - - × • Options Help • 1 • • • • Options Help • 1 • • • • Tags • • • • • Tags Project Motion Motion
	Project Management	R1 C1 U0	Tools erver Mc iguration , ration	Toodbus Device [escrete Register	Main Program • P	Sub Program - Edi	le Status t∙ Page∙	Commer Commer	Motion Offline Edit Offline Edit Options Help Tag Tag Project Motion Fasic Basic
	Project Management	R1 C1 U0	Tools erver Mc iguration , ration	Toodbus Device [escrete Register	Main Program • P	Sub Program - Edi	le Status t∙ Page∙	Commer Commer	> Motion Offline Edit - □ × Poptions Help • j Tag Project Motion FoolBox
	Project Designer Project Designer Device IO Configuration Memory View Project Management View Project Management View Project Management View Project Management System Configuration Signature System Configuration Signature Comment	R1 C1 U0	Tools erver Mc iguration , ration	Toodbus Device [escrete Register	Main Program • P	Sub Program - Edi	le Status t∙ Page∙	Commer Commer	Metion Offline Edit Offline Edit Offline Edit Options Help Tag Tag Project Metion FooBox Basic Timer/Counter Output Operation Set/Reat
	Project Management Configuration Memory View Project Management View Project Management Control Mana	R1 C1 U0	Tools erver Mc iguration , ration	Toodbus Device [escrete Register	Main Program • P	Sub Program - Edi	le Status t∙ Page∙	Commer Commer	Motion Offline Edit Options Help Options Help Options Help Options Project Motion FooBox Sec Timer/Counter Output Operation Set/Reat SFC Arithmetic
	Project Management Project Designer Device IO Configuration Memory View Allocation Project Management Project Management Project Management Project Management Project Management Status Page Comment Status Page Data Chart Status Page Data Chart Status Page Motion	R1 C1 U0	Tools erver Mc iguration , ration	Toodbus Device [escrete Register	Main Program • P	Sub Program - Edi	le Status t∙ Page∙	Commer Commer	Motion Offline Edit Options Options Options Options Ings Project Motion FoolBox Basic Timer/Counter Output Operation Set/Rest SFC Arithmetic Logic Operation
- atek dark	Project Designer Project Designer Device IO Configuration Allocation Project Management Project Manag	Rel Col US Rel Col US Read-Only System Configure System Configure N000 N001	Tools erver Mc iguration , ration	Toodbus Device [escrete Register	Main Program • P	Sub Program - Edi	le Status t∙ Page∙	Commer Commer	Motion Offline Edit Options Options Help Options Help Motion Tags Project Motion Motion Collars Easic TererCounter Output Operation Set/Reset SFC Arithmetic Logic Operation Compare Data Movement
	Project Management Project Designer Device IO Configuration Memory View Allocation Project Management Project Management Project Management Project Management Project Management Status Page Comment Status Page Data Chart Status Page Data Chart Status Page Motion	Rei Cai Uo	Tools erver Mc iguration , ration	Toodbus Device [escrete Register	Main Program • P	Sub Program - Edi	le Status t∙ Page∙	Commer Commer	Motion Offline Edit Offline Edit Options Help Tag Project Motion FoolBox Easic Timer/Counter Output Operation Set/Reset SFC Anthmetic Logic Operation Compare
	Project Management Project Designer Device IO Configuration Memory View Allocation Project Management Project Management Project Management Project Management Project Management Status Page Comment Status Page Data Chart Status Page Data Chart Status Page Motion	Rel Col US Rel Col US Read-Only System Configure System Configure N000 N001	Tools erver Mc iguration , ration	Toodbus Device [escrete Register	Main Program • P	Sub Program - Edi	le Status t∙ Page∙	Commer Commer	Motion Offline Edit Offline Edit Options Help Options Help Options Help Options Help Options
	Project Management Project Designer Device IO Configuration Memory View Allocation Project Management Project Management Project Management Project Management Project Management Status Page Comment Status Page Data Chart Status Page Data Chart Status Page Motion	Rai Cai Uo PLC View PLC View Read-Only S Register Configur System Configur System Configur N000 N001 N002 N003	Tools erver Mc iguration , ration	Toodbus Device [escrete Register	Main Program • P	Sub Program - Edi	le Status t∙ Page∙	Commer Commer	Motion Offline Edit
	Project Management Project Designer Device IO Configuration Memory View Allocation Project Management Project Management Project Management Project Management Project Management Status Page Comment Status Page Data Chart Status Page Data Chart Status Page Motion	Rei Cai Uo	Tools erver Mc iguration , ration	Toodbus Device [escrete Register	Main Program • P	Sub Program - Edi	le Status t∙ Page∙	Commer Commer	Motion Offline Edit - - Options Help Options Help Options Help Options Help Options Help Options Help Options Help Options Help Options Help Options Help Options Hotion
	Project Management Project Designer Device IO Configuration Memory View Allocation Project Management Project Management Project Management Project Management Project Management Status Page Comment Status Page Data Chart Status Page Data Chart Status Page Motion	Rai Cai Uo PLC View PLC View Register Configu System Configu N000 N001 N001 N003 N003 N003	Tools erver Mc iguration , ration	Toodbus Device [escrete Register	Main Program • P	Sub Program - Edi	le Status t∙ Page∙	Commer Commer	Motion Offline Edit Offline Edit Options Help Options Help Options Options
	Project Management Project Designer Device IO Configuration Memory View Allocation Project Management Project Management Project Management Project Management Project Management Status Page Comment Status Page Data Chart Status Page Data Chart Status Page Motion	Rai Cai Uo Comparison of the second	Tools erver Mc iguration , ration	Toodbus Device [escrete Register	Main Program • P	Sub Program - Edi	le Status t∙ Page∙	Commer Commer	Motion Offline Edit Options Options Options Help Options Options Help Options Help Options Options Help Options Options Help Options Options Options Help Options Options Options Options Options Help Options Options Options Options Options Options Options Help Options
	Project Management Project Designer Device IO Configuration Memory View Allocation Project Management Project Management Project Management Project Management Project Management Status Page Comment Status Page Data Chart Status Page Data Chart Status Page Motion	Rai Cai Uo PLC View PLC View Register Configu System Configu N000 N001 N001 N003 N003 N003	Tools erver Mc iguration , ration	Toodbus Device [escrete Register	Main Program • P	Sub Program - Edi	le Status t∙ Page∙	Commer Commer	Metion Offline Edit Options Help Project Motion recellox Set/Reat Se
	Project Management Project Designer Device IO Configuration Memory View Allocation Project Management Project Management Project Management Project Management Project Management Status Page Comment Status Page Data Chart Status Page Data Chart Status Page Motion	Rai Cai Uo PLC View PLC View Register Configu System Configu N000 N001 N001 N003 N003 N003	Tools erver Mc iguration , ration	Toodbus Device [escrete Register	Main Program • P	Sub Program - Edi	le Status t∙ Page∙	Commer Commer	Metion Offline Edit Offline Edit Offline Edit Offline Edit Options Help * 1 Opt
Fatek dark color	Project Management Project Designer Device IO Configuration Memory View Allocation Project Management Project Management Project Management Project Management Project Management Status Page Comment Status Page Data Chart Status Page Data Chart Status Page Motion	Rai Cai Uo PIC View PIC View Register Configu X Main_uniti N000 N001 N001 N003 N003 N004 N005	Tools erver Mc iguration , ration	Yesting Contraction Allocation	Allocation	Main Program • P	Sub Program - Edi	le Status t∙ Page∙	Commer Commer	Motion Offline Edit Offline Edit Options Help * Tag Project Sec Tag Project Sec
	Project Management Project Designer Device IO Configuration Memory View Allocation Project Management Project Management Project Management Project Management Project Management Status Page Comment Status Page Data Chant Status Page Data Chant	Rai Cai Uo PIC View PIC View Register Configu X Main_uniti N000 N001 N001 N003 N003 N004 N005	Tools erver Mc iguration , ration	Yesting Contraction Allocation	Allocation	Main Program • P	Sub Program - Edi	le Status t∙ Page∙	Commer Commer	Metion Offline Edit
	Project Management Project Designer Device IO Configuration Memory View Allocation Project Management Project Management Project Management Project Management Project Management Status Page Comment Status Page Data Chant Status Page Data Chant	Rei Cri Uo Rei Cri View PLC View Register Configure System Configure N000 N000 N003 N000 N003 N000 N003 N000 N003 N000 N003	Tools erver Mc iguration , ration	Yesting Contraction Allocation	Allocation	Main Program • P	Sub Program - Edi	le Status t∙ Page∙	Commer Commer	Metion Offline Edit Options Help * Options Help * Options Help * Tag project Weltion Tag project Weltion Tag project Weltion Tag project Weltion Set/Rest Sec Arithmetic Logic Operation Set/Rest Sec Arithmetic Logic Operation Shift/Rotate Code Convert Flow Control PD Control To Camualetive Timer High Speed Timer/Counter High Speed Timer/Counter Report Printing Ramp/Sak Communication Table Manjulation Metrix Manjulation NC Positioning Set Communication Set Communication Table Manjulation NC Positioning Set Communication Table Manjulation NC Positioning Set Communication Set Communication Table Manjulation NC Positioning Set Communication Table Manjulation NC Positioning Set Communication Set Set Communication Set Communication Set Communication Set Communication Set Communication Set Set Communication Set Se

	Project Designer PL) 🧊 ∓ .C View Tools		UperLogic (Beta)		Offline Edit - 🗆 ×
	- <u>w</u>	Read-Only Server Register Configuration System Configuration	Modbus Device Descrete Register Allocation Allocation	Main Sub Program - Program - Ladder Diagram Table	Commer • Commer	nts Tag
	Project Management	X Main_unit1 ×				ToolBox
Fatek light color	Project Management (₩3C4-516) > ∰ Untile (M3C4-516) > ∰ System Configuration > ∰ Gomment > ∰ Gomment > ∰ Gomment > ∰ Status Page ∭ Otato Chart > ∰ Motion > ∰ Table Edit	Main_unit × Main_unit × N000 N001 N002 N003	· · ·			Basic Timer/Counter Output Operation Set/Reset SFC Arithmetic Logic Operation Compare Data Movement Shir/Rotate Code Convert Flow Control PID Control
		N004 N005				Watch Dog Timer High Speed Timer/Counter Report Printing Ramp/Soak Communication
		N006 N007				NC Positioning Interrupt Control

Table 4: Interface outlook format preview

3-4 Ribbon Tag Page

This function is designed to organize the created commands in a "tag" group, and each group comprises the required commands. Each application program corresponds to the related tag group in order to demonstrate the functions that will be provided by the program. Its purpose is allowing the user to search and use the functions of the application program more easily, as per the tag categorization indicated in the figure below.

3-4-1 Project

This tag page is mainly used to set the overall information of the project such as memory configuration and security.

💶 🗈 🖬 🗧 🖉 🗄 🛧 🛊 📾 🚳 =		UperLogic (Beta)	Offline Edit - 🗖 ×
Project Designer PLC View Tools			🔺 Options Help 🕶 🛔
👪 🐁 🔍 🛤 🍵 🕷	🖷 🖷 📠	🗟 🛍 😵 🧧	⊑≜ ♠
Device IO Configuration Memory Read-Only Server Modbus Device View Allocation Register Configuration Allocation	Descrete Register Main Sub Table Allocation Program - Program - Edit -	Status Comments Tag Security Project	
System Configuration	Ladder Diagram Table	Status Page Comment Tags Project	Motion

Fig. 12: Project tag page

Туре	Function	Description	Detailed Introduction
System configuration	Device View	The equipment required for planning and checking current status of PLC.	Please refer to Section 10

	I/O Configuration	Set the I/O status	Please refer to
			Section 5.1
	Memory Allocation	Check current memory	Please refer to
		configuration	Section 5.2
	ROR Register	Check and edit the read-only	Please refer to
		Register.	Section 5.3
	Server Configuration	Set the connection between PLC	
		and server	
	Modbus Device	Check and edit the settings of	Please refer to
	Allocation	PLC Register and Modbus	Section 5.4
		address.	
	Main Program	Add or revise Master Program	Please refer to
Ladder			Section 6.1
diagram	Sub Program	Add or revise main sub-program	Please refer to
			Section 6.1
Data Table	Table Edit	Set required tables	Please refer to
			Section 7
Status Page	Status Page	Check current status of PLC	Please refer to
Status Fage		Register	Section 12.3
Comment	Comments	Set and edit the comment	Please refer to
Description			Section 8
	Security	Edit PLC security related setting.	Please refer to
			Section 13
	Project Setup	Edit the project attribute related	Please refer to
		setting.	Section 4.7
Project	Discrete Register	Check contact and register	Please refer to
FIOJECI	Allocation	related information	Section 5.3
	Project information	Set project name and	Please refer to
		information	Section 4.2
	Option	Set project automatic backup	Please refer to
			Section 4.3
Motion	Motion Network	Edit motion network related	Please refer to
control		setting	Section 9.1

Motion Axis	Edit motion axis related setting	Please refer to
		Section 9.2
Motion Point	Edit the motion point related	Please refer to
	setting	Section 9.3
Motion Flow	Edit the motion process related	Please refer to
	setting	Section 9.4
Motion Sync Control	Edit the motion synchronization	Please refer to
	related setting	Section 9.5
Motion Param	Edit the motion network related	Please refer to
Mapping	setting	Section 9.6

Table 5: Setting project tag page

Туре	Function	Description	Detailed
			Introduction
	Device View	The equipment required for	Please refer to
		planning and checking current	Section 10
		status of PLC.	
	I/O Configuration	Set the I/O status	Please refer to
			Section 5.1
	Memory Allocation	Check current memory	Please refer to
		configuration	Section 5.2
System	ROR Register	Check and edit the read-only	Please refer to
Configuration		Register.	Section 5.3
	Server Setting	Set the connection between	Please refer to
		PLC and server	Section 5.4
	Communication Setting	Check and edit PLC	Please refer to
		communication-related	Section 5.5
		settings	
	Information of contacts	Check the information of	Please refer to
	and registers	contacts and registers	Section 5.3
	Main Program	Add or revise Main Program	Please refer to
Drogram Unit			Section 6.1
Program Unit	Sub-program	Add or revise Sub-program	Please refer to
			Section 6.1

-	Function	Description	Detailed
Туре			Introduction
	Interrupt Sub-program	Add or revise Interrupt Sub-	Please refer to
		program	Section 6.6
	Function Module	Add or revise Function Module	Please refer to
	Program	Program	Section 6.7
Data Table	Data Table	Set required tables	Please refer to
			Section 7
Status Daga	Status Page	Check current status of PLC	Please refer to
Status Page		Register	Section 12.3
Comment	Comments	Set and edit the comment	Please refer to
Description			Section 8
	Security	Edit PLC security related	Please refer to
Droject		setting.	Section 13
Project	Project Setup	Edit the project attribute	Please refer to
		related setting.	Section 4.2
	Motion Network	Edit motion network related	Please refer to
		setting	Section 9.1
	Motion Axis	Edit motion axis related	Please refer to
		setting	Section 9.2
	Motion Point	Edit the motion point related	Please refer to
		setting	Section 9.3
Motion	Motion Flow	Edit the motion process	Please refer to
Control		related setting	Section 9.4
Control	Motion	Edit the motion	Please refer to
	Synchronization	synchronization related	Section 9.5
		setting	
	Motion Parameter	Edit the motion parameter	Please refer to
	Table	related setting	Section 9.6
	Motoin Recipe	Edit the motion recipe related	Please refer to
		setting	Section 9.7

3-4-2 Design

This tab page is mainly used to edit the related design of the ladder diagram and the motion flow block program.

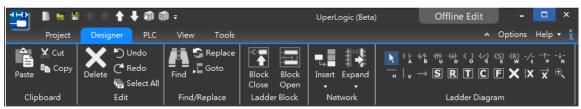


Fig. 13: Designing tag page

Туре	Function	Description	
Clip book	Paste	Paste the copied or clipped object	
	Cut	Cut the selected object	
	Сору	Copy the selected object	
Edit	Delete	Delete the selected object	
	Undo	Restore to previous status	
	Redo	Cancel the restore	
	Select All	Select all objects	
Find/Replace	Find	Search object in Ladder Diagram	
	Replace	Search and replace corresponding object	
	Goto	To specific ladder program network bar	
Ladder Block	Block Close	Close ladder block	
	Block Open	Open ladder block	
Network	Insert	Insert network in upper or lower side	
	Expand	Compress or expand the network	
Ladder	Cursor Arrow	Return to the mouse status where object is not	
Diagram		being selected	
	A contact	Constant open contact	
	B contact	Constant close contact	
	TU contact	Create a pulse wave when contact is energized	
		(0→1).	
	TD contact	Create a pulse wave when contact is closed $(1 \rightarrow 0)$.	
	Coil	Send computation result to the coil.	
	Inverse Coil	Send computation result back to coil	
	Set Coil	Set the coil.	

	Reset Coil	Clear the coil.
	Inverse	Execute reverse phase for node status.
	TU Power Flow	Retrieve upper differential for node status
	TD Power Flow	Retrieve lower differential for node status
	Horizontal Short	Add horizontal line in Ladder Diagram
	Vertical Short	Add vertical line in Ladder Diagram
	Horizontal Long	Add long horizontal line in Ladder Diagram
	Set	Set all bits for each point or Register (set as 1).
	Reset	Clear all bits from each point or Register (set as 0).
	Timer	General Timer command
	Counter	General Counter command
	Function	Set corresponding Function command
	Cursor Delete	Delete object from Ladder Diagram
	Delete Vertical	Delete vertical line from Ladder Diagram
	Short	
	Delete Horizontal	Delete horizontal line from Ladder Diagram
	Long	
	Zooming	Open the table setting corresponding to application
		command
Motion Process	Finish	Finish motion control
	Branch Selection	Select the corresponding branch
	Horizontal Branch	Simultaneous branching
	Coverage	Make motion process branches converge
	Point Reset	Set the reset process
	Position Control	Set the positioning control process
	Speed Control	Set speed control process
	Torque Control	Set torque control process
	Standby	Set standby process
	Sub-process	Set up Sub-process
	Page Skipping	Skip to other process
	Synchronizing	Set synchronizing control process
	Control	
	Computation	Execute computing

Table 6: Setting tag design page

3-4-3 PLC

↑ ↓ @ @ = UperLogic (Beta) Offline Edit H × E Project Designer View Tools Options Help • N. 5 -Q • 📬 ò ×0 2 EA -1111 -Syntax Check Online Upload Download Online Status Data Motion Connection Editing Ŵ Monitor Page 🗸 Chart Chart 🗸 Parameter Syntax Check PLC Operation Mode Monitor Connect Others

This tag page is mainly used for editing the Ladder Diagram related design.

Fig. 14: PLC	tag page
--------------	----------

Туре	Function	Description	Detailed introduction	
PLC	Run PLC	Run PLC	Please refer to Section 11.5	
	Stop PLC	Stop running PLC	Please refer to Section 11.5	
	Trial Run	Test project while editing online	Please refer to Section	
			11.10	
	Discard	Abandon the action of online editing	Please refer to Section	
	Change		11.10	
Operation	Upload	Upload project from PLC to software	Please refer to Section 11.3	
	Download	Download currently edited project to PLC.	Please refer to Section 11.4	
Syntax Check	Syntax Check	Check if syntax error exists in Ladder	Please refer to Section 6.4	
		Diagram		
Mode	Offline Edit	Edit when not connected with PLC.	Please refer to Section 11.1	
	Online	Edit when connected with PLC.	Please refer to Section 11.2	
	Monitor			
Monitor	Status Page	Check current status of PLC Register	Please refer to Section 12.3	
	Data Chart	The Trend Curve used for checking the		
		change of each Register.		
	Motion Chart	Check current status of motion control	Please refer to Section 9.1	
Connect	Connection	Set up PLC connection method and relevant	Please refer to Section 11.1	
	Parameter	parameters		
Others	Quick Control	Set up PLC-related operation in quicker way		
	PLC Setting	Set up PLC-related setting	Please refer to Section 11.8	
	Clear PLC	Clear PLC data	Please refer to Section 11.6	
	PLC Status	Display current PLC status	Please refer to Section 11.7	

Table 7: Setting PLC tag page

3-4-4 Inspection

This tag page is mainly used for editing the Ladder Diagram related design.

		• • • •	- A A A	Uperl	ogic (Beta)	Offline Edi	it –	×
	Project	Designer	PLC Vi	ew Tools			 Options 	Help 🔹 🧎
Projec Tree	t Tool Modu Box List		E ♥ Cross	 ✓ Program Unit Comment ✓ Register V. ✓ Network Comment ✓ Element Comment 	Diggest		s ₂ • ¶×	
	Proje	ct Windows		Comment	Font	Wind	dow	

Fig. 15: Inspection tag page

Туре	Function	Description	Detailed introduction
Project Window	Project	Display or hide project	Please refer to Section 3.5
	Management	management window.	
	Tool Box	Display or hide toolkit	Please refer to Section 3.6
	Module List	Display or hide module list	Please refer to Section 10.2
	Memory Position	Display or hide the position of memory	Please refer to Section 3.5
	Crosstab Searching	Display or hide crosstab searching	Please refer to Section 3.5
Comment	Program Comment	Display or hide program comment	Please refer to Section 6.1.5
	Network Comment	Display or hide network	Please refer to Section 6.2.5
		comment	
	Component	Display or hide component	Please refer to Section 8.3
	Comment	comment	
	Register Value	Display or hide Register data	
Font	Font size	Set font size for Ladder	
		Diagram	
Window	Cascade	Display window overlapping	Please refer to Section 6.2.1
	Tile Horizontal	Display entire window array	Please refer to Section 6.2.1
	Switch Window	Quick switch to corresponding window	Please refer to Section 6.2.1
	Close All	Close all windows	Please refer to Section 6.2.1

Table 8: Setting inspection tag page

3-4-5 Tools

This tag page is mainly used for editing the Ladder Diagram related design.

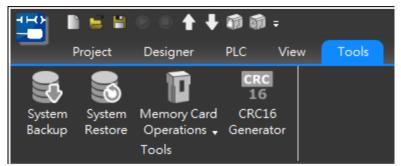


Fig. 16: Tool tag page

Туре	Function	Description	Detailed
туре		Description	introduction
Tools	System Backup	Set up and save system project	Please refer to
		related backup	Section 14.2
	System Restore	Read originally saved system	Please refer to
		backup data	Section 14.2
	Memory Card	Execute memory cartridge related	Please refer to
	Operations	operation	Section 14.3
	CRC16 Generator	System will calculate and produce	Please refer to
		the checking value automatically	Section 14.4

Table 9: Setting tool tag page

3-5 Project Window

3-5-1 Project Management

Such function allows the user to organize regularly used functions into a tree diagram and then display it in the left-hand side Project Management window. By clicking the respective function setting tag under the Project Management, it also allows the user to open the required window in quicker way. For example, click the "IO Configuration" and the relevant setting window will pop up.

Project Designer	↓ 前 前 = PLC View Tool	s			UperLogic (Be	eta)		
Device IO Configuration Mem View Alloca	ory Read-Only Server	tion Allocation	escrete Register Allocation	Sub Ta ogram , E	able Status Page ↓ Status Page	Comments Comment	Tag Tags	Security Proj Security Proj Setu Project
Project Management	🕒 🗙 Main_unit1 ×							
 Intitled [ME3C6-1616] System Configuration Ladder Diagram Comment 	NOOD					·		
> 🐝 Tag 🖷 Status Page 📈 Data Chart	N001							·
> 📹 Motion > 🗃 Table Edit	N002							
	N003							
	N004							
	NO05							
						_	_	
20 Overw		U:0 F:40959 S:A (Doc U	:0 F:32767)					

Fig. 17: Project management window

Туре	Description	Detailed
		introduction
System	Check Register related setting	Please refer to
Configuration		Section 5
Program Unit	Check Main Program and sub-	Please refer to
	program	Section 6.2
Comment	Manage the comment deployed in	Please refer to
Description	the Ladder Diagram	Section 8
Status Page	Monitor current status of Register	Please refer to
		Section 12.3

Chapter 3 Introduction of UperLogic

Run Chart	Monitor the trend graph of	Please refer to
	individual register changes	Section 6.2.1
Motion Control	Set the motion control related	Please refer to
	parameters.	Section 9
Data Table	Set up various tables	Please refer to
		Section 7

Table 10: Setting project management window

3-5-2 Tool Box

For easier operation by users, normal commands are categorized for organizing in the toolkit. By clicking $[View] \rightarrow [Tool Box]$ in the function toolbar, the user will be allowed to open the Tool Box command window.

Project Designer	↓ 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		UperLogic (Beta)		Offline Edit - C ×
Project Tree Box List Address Project Windows	✓ Cross		ue Biggest Small Large Tiny Medium Font	Cascade Tile Horizonta	Switch Close Windows All dow
Project Management	Main_unit1 ×			1	olBox 🗳 🖉
 Winthed (ME265-1616) System Configuration System Configuration Comment Comment Comment Status Page Data Chart Motion Table Edit 	N000 N001 N002 N003		· · ·	· · · · · · · · · · · · · · · · · · ·	Basic Timer/Counter Output Operation Set/Reset SFC Arithmetic Logic Operation Compare Data Movement Shift/Kotate Code Convert Flow Control PID Control J/D
	N004 N005				Cumulative Timer Watch Dog Timer High Speed Timer/Counter Report Printing Ramp/Soak Communication
	N006			D D	Table Manipulation Matrix Manipulation NC Positioning Interrupt Control
🦉 Overwrite NC	•	(Doc U:0 F:32767)		► ►	Floating point number Others Instruction Motion

Fig. 18: Tool Box window

For the introduction of the functions in the tool box, please refer to the relevant manuals.

3-5-3 Module List

Click [View] \rightarrow [Module List] in the function toolbar, the following module management webpage appears, as shown in the figure below:

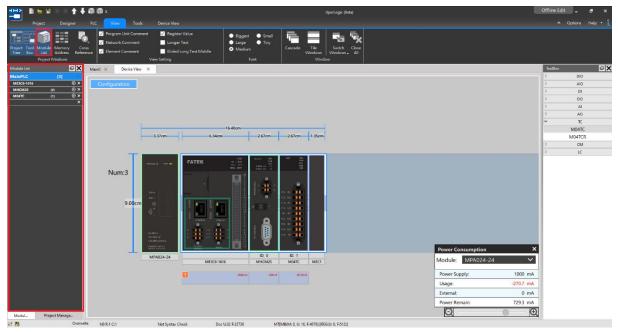


Fig. 19: Module List

Please refer to Section 10-2 for detailed description.

3-5-4 Position of Memory

When there are too many components used in the project, it is impossible for the user to fully remember which components or functions use which resources, but through this function, the user can clearly see which registers are used and the corresponding registers; therefore, users can plan the resources in the project more efficiently.

As shown in the figure below, red represents the used registers, and green represents the unused registers. Double-click the list item with the left mouse button to open the corresponding function window.

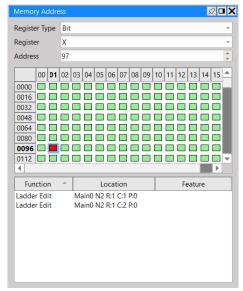


Fig. 20: Position of memory

3-5-5 Crosstab Searching

Through this function, users can quickly query the location, characteristics, functions and other information of registers or tags, and use the filtering function to further search for registers or tags with specific conditions. Double-click the list item with the left mouse button to open the corresponding function window.

Register/Tag 🔍	Туре	Function	Location	Feature
X97	1Bit	Ladder Edit	Main0 N2 R:1 C:1 P:0	
X97	1Bit	Ladder Edit	Main0 N2 R:1 C:2 P:0	

Fig. 21: Crosstab Searching

3-6 Webpage Configuration Management

In addition to displaying the window list currently opened, the user may also open the designated window or execute the arraying. When opening several windows, the user may arrange the display windows according to personal operating habitude.

Project Designer Pl	LC View	Tools					oper	Logic (Beta)						Offline Edit - 🗆 ^ Options Help
ce IO Configuration Memory W Allocation	Read-Only Register C System Conf	Configuration	odbus Device Des Allocation	crete Register Allocation		rogram 🗸	Table Statu Edit - Page Table Status P	us Commen	ts Tag S	ecurity Proj Sett Project	ject N	lotion Motion M		on Motion Sync Motion Param / • Control • Mapping
ect Management 🛛 🗖	X Main_ur	nit1 ×											Too	IBox
Unitited [ME3C6-1616] System Configuration Ladder Disgram Comment Status Page Status Page	N000	Column S	5	All	anary DecimalF		123 3.14 nsigned	C X	• ••••	-	port			Basic Timer/Counter Output Operation Set/Reset SFC Arithmetic Logic Operation
📨 Data Chart 📹 Motion	N002	Name	Status	Data	Comment	Name	Status	Data	Comment	Name	s 🔺		Þ	Compare Data Movement
' 📷 Table Edit	N003													Shift/Rotate Code Convert Flow Control PID Control
	N004													PID Control I/O Cumulative Timer Watch Dog Timer
	N005													High Speed Timer/Counter Report Printing Ramp/Soak
	N006	-												Communication Table Manipulation
			nge0								Þ			Matrix Manipulation NC Positioning Interrupt Control
	N007						L							Floating point number Others Instruction
	4													Others Instruction Motion

Fig. 22: Webpage management

For example, the user may drag the window of the opened monitoring page to the desired position, release the mouse and then the user will be allowed to change the window arraying pattern.

w Allocation	System Config	onfiguration	Modbus Device D Allocation	escrete Register Allocation		Sub Program - Diagram	Table S Edit - F	tatus age - Comm us Page Comm	ents Tag	Security Proj • Setu Project	ect Motion	Motion M		tion Motion Sync Motion Param w 🗸 Control 👻 Mapping
t Management 🛛 🖳	X Main_uni	t1 ×											То	olBox
Untitled [ME3C6-1616]	N000													Basic Timer/Counter
 Ladder Diagram Comment Tag 	N001													Output Operation Set/Reset
Status Page Status Page StatusPage0														SFC Arithmetic Logic Operation
🖉 Data Chart 📹 Motion	N002													Compare Data Movement
able Edit	N003												Þ	Shift/Rotate Code Convert
														Flow Control PID Control
	N004													I/O Cumulative Timer
													▼ Þ	Watch Dog Timer
	4						_		_				_	High Speed Timer/Counte
	Status Pag	ge	_	_	-	-	-	_	-	_	_	Q	× >	Report Printing Ramp/Soak
	Name	Status	Data	Comment	Name	Status	Data	Comment	Name	Status	Data	Comment		Communication
	Name	Status	Data	Comment	ivame	Status	Data	Comment	IName	Status	Data	Comment	- P	Table Manipulation Matrix Manipulation
													P	
													P	NC Positioning
														Interrupt Control
								-					P	Floating point number
								-					P	Others Instruction
													-	Motion
	4							_				_		
	StatusPac								_					

Fig. 23: Changing window arraying pattern

3-7 Quick key

Click [Project] \rightarrow [Project] \rightarrow [Quick Key] to view the shortcut keys provided, and also allow users to define familiar quick keys.

		Offline Edit	-	8
			Options	Help ⁻
Options			? >	<
ieneral Hotkey File				
Function		Hotkey	^	
> Project				
Function Manual	F1			
Special Manual	F2			
> File				
New	Ctrl+N			
Open	Ctrl+O			
Save	Ctrl+S			
Print	Ctrl+P			
> Design				
Find	Ctrl+F			
Replace	Ctrl+R			
	Ctrl+G			
Goto				
Goto > PLC				

Fig. 24: Quick Key

Туре	Function	Quick key
Project	Function Manual	"F1"
	Special Manual	"F2"
File	New	Ctrl+N
	Open	Ctrl+O
	Save	Ctrl+S
	Print	Ctrl+P
Design	Find	Ctrl+F
	Replace	Ctrl+R
	Goto	Ctrl+G
PLC	Run	F9
	Stop	Ctrl+F9

	Trial Run	F10
	Discard Change	Shift+F10
	Upload	F11
	Download	Ctrl+F11
	Offline Editing	Ctrl+F12
	Online Monitoring	F12
	Online Editing	Shift+F12
Other	Syntax Check	F8
	Register Content	F7
	Options	Ctrl+F8
	Ribbon Collapse	Ctrl+F1

Table 11: Quick key list

4

Project Management

<u>4-1</u>	<u>Open a New Project</u>	3-2
<u>4-2</u>	Project Setup	3-4
<u>4-3</u>	Automatic project backup	3-7
<u>4-4</u>	Save Projects	3-8
<u>4-5</u>	<u>Save a New Project</u>	3-9
<u>4-6</u>	Project Content Import and Export	3-10
<u>4-7</u>	Open Old Projects	3-16
<u>4-8</u>	Project History	3-16
<u>4-9</u>	Print	3-19

Chapter 1

This section describes how to open and save the project as well as certain relevant setting in order that the user may quickly control over the method in using the required functions.

4-1 Open a New Project

Create a new project to edit the controller program.

First, click the upper-left [File] and then click [New], or click the [New] in Quick toolbar, or you may press [Ctrl+N] to open a new project directly.

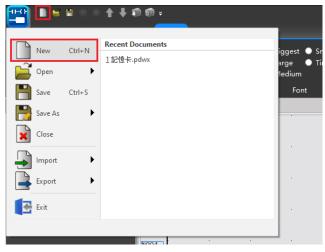


Fig. 25: Open new project

After that, the [Project Information] window appears as per the figure below. After completing the setting, click [OK] key to open the new project.

Project Informa	tion ? ×
Project Name Description	Untitled
Model Series Model Name	M Series ME3C6-1616T
Model Name	Program capacity 40K Words, 16 points 24VDC digital input (all high-speed 200KHz), 16-point transistor output (all high- speed 200KHz), 2 RS485 ports, 1 USB Type-C Port, 1 Micro-SD card slot, 1 Ethernet port, 1 physical Run/Stop switch, 2 channels 12-bit analog input, 1 EtherCAT port(16 Axes x E- CAM).
	OK Cancel

Fig. 26: Creating new project

Function	Description
Project	Please define the project name for the convenience of file management
Name	in the future.
Description	The lists the descriptive text relating to the project.
Series	Based on the series that will be actually needed, select a corresponding
	series with the scroll-down menu.
Model No.	Based on the model that will be actually needed, select a corresponding
	model with the scroll-down menu. After that, the program will display the
	specifications and the description of such model at the lower side
	automatically.
Perpetual	If the PLC is provided with a perpetual calendar, then RTC will be able to
Calendar	count the time correctly under PLC energizing or shutdown condition.
	The time figures provided by such calendar shall comprise the following
	seven time-value data: week, year, month, day, hour, minute and second.
	With the perpetual calendar clock, it allows the system to carry out 24-
	hour control continuously. It not only helps the control system coordinate
	with people's daily life automatically but also elevates the level of
	automatic control and the efficiency is therefore intensified. When using
	this column, please check if the PLC is provided with such perpetual
	calendar function.
Program	To change the language of the editing project, or can choose to edit
Language	through Ladder or ST.

Table 12: New project opening related setting

4-2 Project Setup

The project can modify and view project information, model, history and capacity by clicking [Project Setup] \rightarrow [Project Information] on the function bar as shown below:

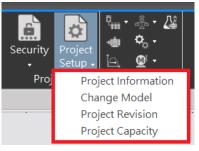


Fig. 27: Project Setup

Function	Description
Project Information	Please define the project name to facilitate future file management.
Change Module	Optionally list the explanatory text for this project.
Project Resume	According to the drop-down list, select a corresponding series
	according to the series actually used.
Project Capacity	Display the current project program and data usage.

4-2-1 Project Information

Click [Project Information] and then the below window appears. Users can edit project name and description through project information.



Fig. 28: Project Information

4-2-2 Change Module

Click [Change Model] to see the following screen. Users can select the series and model of the project.

👔 Change PLC Mod	el	?	\times
Model Series	M Series		*
Model Name	ME3C6-1616		-
	 Program capacity 40K Words (80 KBytes), 16 points 24VDC digital input (all high-speed HSCx8), 16-point transistor output (all high-speed 20 HSPSOx4), 2 RS485 ports, 1 USB Type-C Port, 1 Micro-St 1 Ethernet port(Modbus User-Defined: Master 1 physical Run/Stop switch, 2048 points DIO, 256 points AIO, 2 channels analog input, 1 EtherCAT port(16 axes, Helical interpolatio CAM). Calendar 	0KHz, D card sl er/Slave) 12-bit	ot,
	ОК	Cance	el

Fig. 29: Change PLC Module

4-2-3 Project History

Click [Project History] and you will see the following screen. Users can log in the history and write comments, and then restore the project to the original version when necessary.

=	🙄 Revision List			?	Х
	Register Restore	Delete			
	Date	Version	Comment		
1	8/4/2023 5:47 PM	0.9.1			
2	8/4/2023 5:48 PM	0.9.1			
3	8/4/2023 5:49 PM	0.9.1			
	1		[Clo	se

Fig. 30: History List

4-2-4 Project Capacity

Click [Project Capacity] and you will see the following screen. Users can clearly know the usage distribution of each part of the project through the bar graph.

Project Capacity		? >
Program Area		U:0 F:4096
	0.00%	
Unit Area		U:263 F:997
	2.57%	
Comment Area		U:32 F:3273
	0.10%	
Data Area		U:42 F:52424
	0.01%	
Motion Axis		U:0 F:1
	0.00%	
Motion Point		U:0 F:102
	0.00%	
Motion Flow		U:16 F:407
	0.39%	
Motion Register		U:0 F:51
	0.00%	
		Close

4-3 Automatic Project Backup

To protect the newly edited project from losing due to unexpected contingencies, it allows the user to execute the automatic backup related setting action by clicking the [Project] \rightarrow [Options] \rightarrow [File] in the tag page.

💾 Options		?	×
General Hotkey File			
Automatic Backup			
✓ Backup file every	1min ‡		
Backup file upper limit	10		
Backup file if I close file without savi	ing		
Backup file during trial run			
Backup directory	C:/Users/fatek028/Documents/FATEK/UperLogic/ba	ckup	
	C:/Users/fatek028/Documents/FATEK/UperLogic/ba	ckup]
	C:/Users/fatek028/Documents/FATEK/UperLogic/ba	Cancel	

Fig. 31: File Processing

Function	Description		
Backup Interval	Automatically back up projects based on set intervals. The time		
	interval of automatic backup can be set from 1 to 999 minutes,		
	and automatic backup will be enabled when checked.		
Backup file limit	Set the upper limit of automatic backup files for the same project,		
	and the setting range is 1 to 99.		
	For example, if the project file name is "Untitled", and the file		
	limit is 5, it will be automatically backed up		
	"(\$autosaved_0) Untitled" ,		
	"(\$autosaved_1) Untitled" ,		
	"(\$autosaved_2) Untitled" ,		
	"(\$autosaved_3) Untitled" ,		
	"(\$autosaved_4) Untitled", it will be overwritten from		
	"(\$autosaved_0) Untitled" in the future.		

Backup file if I close	When the user has edited the project but closes the file without
file wothour saving	saving, checking this option will automatically back up the current
	project.
	For example, if the project file name is "untitled",
	"(\$unsaved) untitled" will be automatically backed up.
Backup files during	When the user uses the trial run function during online editing,
trial running	checking this option will automatically back up the current project.
	For example, if the project file name is "untitled",
	"(\$unsaved) untitled" will be automatically backed up.
Backup Directory	The location of the above backup files can be set.
Advanced Backup	When the file version is updated, use the new version program to
	start the file, and the program will automatically back up the old
	version of the file to the backup location.
	For example, the current project file name is "untitled", the file
	version is 1009, and the new version of the program is 1011, and
	"(\$1)untitled" will be automatically backed up when the project
	is opened.
	This function is always enabled, there is no off setting.

4-4 Save the Project



Click the upper-left [File] and then click [Save Project] or click [Save project] in Quick toolbar, or you may press [Ctrl+S] key to save the project directly and it is intended to save the project on the disk. You may use such function to save the revised project content on the disk.

4-5 Save a New Project

Click the upper-left "File" and then click "Save project as." If change will be required for the content of the opened project, you may save the revised project content as another project name in order to save it on the disk.

You may also point the cursor at [Save As] in the [File] and then the window will show detailed items of the project being newly saved. In the meantime, the [Save As] also comprises the following two modes and they are [Save As] and [Save As to PLC]. Described below is the difference between both.

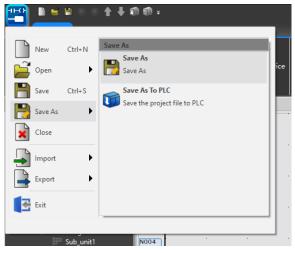


Fig. 32: Saving a new project (Save As)

Mode	Description
Save As	You may save the revised project content as another project
	name and then store it on the disk.
Save As To	Same as [Download], you may download the project to PLC
PLC	directly after setting up the [Online Parameter].

Table 13: Two modes of "Save As"

4-6 Project Content Import and Export

The project content import and export function shall include [Comment], [Ladder Diagram], [Status Page], [Table] and [Motion]. Click [File] \rightarrow [Export] or [Import] in function toolbar and the desired function will be displayed. Described below are relevant details:

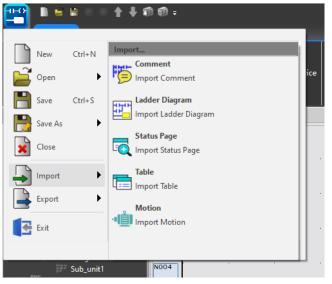


Fig. 33: Project Import

1. Comment:

• Export: Click [File] → [Export] → [Comment] in function toolbar and the [Comment Export] window will appear. The exported file is presented in text file format and its sub-file title is coded as "txt."

🛓 Comment Export		?	×
File			
File Name			≧
Field			
Comment	Description		
	ок (Car	ncel

Fig. 34: Comment Export

Import: If the text file contains the export comment, click [File] → [Import] → [Comment] in function toolbar and the [Comment Import] window will appear. Select text file and then execute the importing procedure:

🚽 Comment Import		?	×
File			
File Name			=
Field			
Comment	Description		
	ОК (Car	ncel

Fig. 35: Comment Import

2. Ladder Diagram

• **Export:** If you need to copy Network N001 of Project-1 to Project-2, execute according to the following step. First, open Project-1 and then highlight Network N001, as per the figure below:

Main_unit1 ×		
N000 X1	Y	0
		,
	EN T10 100 TUP-	

Fig. 36: Highlighting N001

Next, click [File] \rightarrow [Export] \rightarrow [Ladder Diagram] in function toolbar and the [Save As]

dialog box will be created. After inputting the file name, press [Save] to complete the exporting procedure.

📰 Export Ladder Dia	gram				×
$\leftarrow \rightarrow \checkmark \uparrow$	🚞 > Desktop > UperLogic	~	C Search U		م
Organize 👻 Nev	w folder			∎・	?
合 Home	Name	Date modified	Туре	Size	
> 🥧 028 - Persona	1	No items match your search			
	-				
🥅 Desktop	*				
	*				
Documents	*				
🔀 Pictures	*				
🕐 Music	*				
File name:					~
	LDRX (*.ldrx)				~
 Hide Folders 			Sa	/e Cancel	



 Import: Open the project. Move the cursor to the position where the network will be inserted and then click [File] → [Import] → [Ladder Diagram] in function toolbar:

Select the file to be inserted and then press [Start] to complete the importing procedure.

😁 Import L								
$\leftarrow \rightarrow$	~ 1	、 <mark> </mark> ,	Desktop > UperLogic		~ C			
Organize	▼ Ne	w folder				E	- 🗌	
合 Но	me		Name	Date modified	Туре	Size		
> 📥 028	8 - Person	al	LADDER.Idrx	8/4/2023 5:59 PM	LDRX File		1 KB	
	wnloads cuments tures isic							
		File name:	LADDER.Idrx			LDRX (*.ldrx)		
						Open	Can	cel

Fig. 38: Importing Ladder Diagram

- 3. Status Page:
 - Export: Click [File] → [Export] → [Status Page] in function toolbar and the [Status Page Export] window will appear. In [Status Page List], select "Status Page 1" and then press [Export] button for saving it as "spf" sub-file to complete the Status Page exporting procedure.

볼 Status Page I	xport		?	×
-Status Page List				
Name	Item Count			
		ОК	Can	cel

Fig. 39: Status Page Export

Import: Click [File] → [Import] → [Status Page] in function toolbar and the [Status Page Import] window will appear. Select the file name of the Status Page that will be imported. Click [Status Page] in the list and then press [Import] button to complete the importing procedure. Open the [Status Monitor] window of this project and you will see the newly added Status Page.

🚽 Status Page Imp	ort		?	Х
File				
File Name				=
Status Page List				
Name	Item Count			
		ОК	Car	ncel

Fig. 40: Status Page Import

4. Export Table

Export: Click [File] → [Export] → [Table] in function toolbar and the [Table Export] window will appear.
 In [Table List], select the table that will be exported. Press [Export] button and then save it as "tab" sub-file to complete the table exporting procedure.

	Table Export				?	×
_ ·	Table List					
	Name	Start Address	End Address	Allocated Size		
				ОК	Cano	:el

Fig. 41: Table Export

Import: Click [File] → [Import] → [Table] in function toolbar and the [Table Import] window will appear. In [Table List], select the table that will be exported and then press [OK] button to complete the table importing procedure.

Table List				
Name	Start Address	End Address	Allocated Size	
₩ <mark>"</mark> 1	R10	R10	Dynamic Allocation	

Fig. 42: Table Import

5. Motion

Export: Click [File] → [Export] → [Motion] in function toolbar and the [Motion] window will appear.
 Press [Export] button and then save it as ".fmprj" sub-file to complete the Motion Control exporting procedure.

📟 Export Motion Set	tting			×
$\leftrightarrow \rightarrow \checkmark \uparrow$	> Desktop > UperLogic	~ C		م
Organize 👻 Ne	w folder			目 - 🥐
合 Home	Name	Date modified Type	Size	
> 📥 028 - Persona	al	No items match your search.		
🥅 Desktop	*			
	*			
Documents	*			
Pictures	*			
🕖 Music	*			
File name:	untitled			~
Save as type:	Fatek Motion Project(*.fmprj)			~
 Hide Folders 			Save	Cancel



• Import: Click [File] → [Import] → [Motion] in function toolbar and then select the file that will be imported to complete the Motion Control importing procedure.

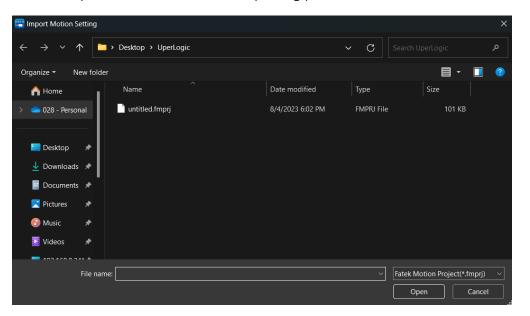


Fig. 44: Importing Motion

4-7 Open Old Projects

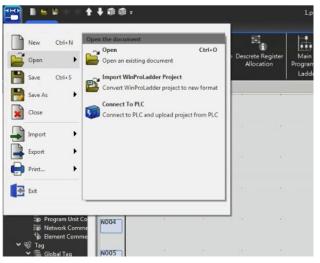
edited project.

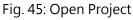
Click the upper-left [File] \longrightarrow [Open] or click [Open] of the quick toolbar and you may open the edited preject

By pointing the cursor at [Open] in [File], the system will display detailed items of the project that will be opened. The project opening can be achieved with any of the following three options: [Open], [Import WinProladder Project] or [Connect To PLC].

With the [Import WinProladder Project], it allows the user to easily convert the project being edited in "WinProladder" to "UperLogic" project for use. By simplifying the complicated rewriting procedure, the efficiency of project conversion is therefore enhanced. Attention should be paid to confirming the project content after conversion, some register definitions and functions are not fully compatible.

Provided below is the detailed description of the aforesaid three options.





Mode	Description
Open Project (Ctrl+O)	Open the existing project.
Import WinProladder	Open the project (.pdw) being edited in
Project	WinProladder. After being converted, the user
	needs to confirm the content of the project;
	however, such function is not fully compatible.

Connect to PLC	Same as the [Upload] function. After setting up the
	[Online Parameter], the user will be allowed to read
	the project from the PLC.

Table 14: Three modes of Open Project

4-8 Project History

Provides users with the functions of registering, replying, and deleting project revision records, and the project revision records will exist in the project file (*.pdwx). When PLC is in the state of "Offline Editing", select the tab page [Project] \rightarrow [Project Settings] \rightarrow [Project History].

-	Revision List			? ×
	Register Restore	Delete		
	Date	Version	Comment	
1	8/4/2023 5:47 PM	0.9.1		
2	8 📇 Revision Inform	nation	? ×	
	Revision No.	3		
	Date	8/4/2023 5:49 P	M	
	Version	0.9.1		
	Comment		OK Cancel	
				Close

Fig. 46: Project History

模式	說明
Login	After clicking [Login], the log-in window will display the history
	number, login time, program version and provide users with the option
	to edit the notes of the history. After confirming, the history will be
	registered, and the upper limit is 100. If the current project is an
	unsaved project, the user will be prompted to save the current project.
Restore	Select the project history you want to restore, click [Restore], and the
	project will be restored to the state of the history.
Delete	Select the project history to be deleted, and click [Delete] to delete the
	history.

3-18

4-9 Print

The function of print includes [Print...], [Print RTF File], [Print Setup]. Click the upper-left [File]

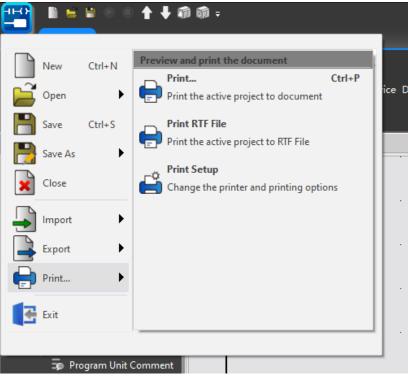


Fig. 47: Print

Description
Set the format to be printed and the content to be printed
The selected print file will be converted into RTF format
You can modify the related settings of the printer

Table 14: The three modes of Print

4-9-1 Print...

After clicking [Print...] or press [Ctrl+P], the screen will be shown as below. Users can select the items which they want to print. And use [Move UP] or [Move Down] to change the display order. Users can also use the right-side function [Preview], [Page Setup], [Printer Setup] for setting.

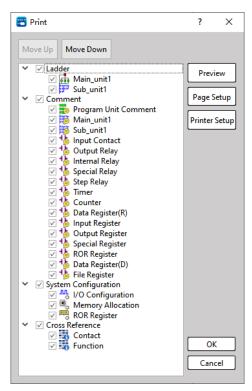


Fig. 48: Print

[Preview]:

Users can preview the completed print through "Print Preview".

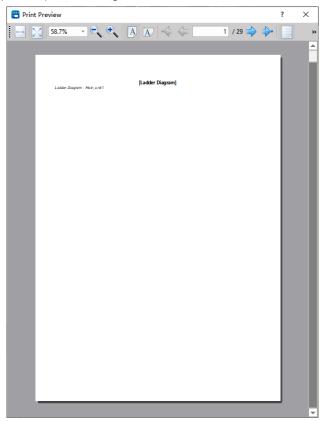


Fig. 49: Print Preview

[Page Setup]:

Users can modify related settings such as paper size, orientation, and borders through [Page Setup].

Page Setup				×
	¹ Classicalities 1 Maintenanou 1 Maintenanou 1 Maintenanou 1 Maintenanou 1 Maintenanou 1 Classicalitation 1 Maintenanou 1 Maintenan	pendi Itana Wangpanan en The Managimenge II.1 eng H nauto Rese form and Itana Ali Japa Wangpanan en The Managimenge II.1 eng H nauto Rese form		
Paper				
Size: A4				•
Source:				v
Orientation	Margins	(millimeters)		
Portrait	Left	16	Right	16
C Landscape	Top:	16	Bottom:	16
			ОК	Cancel

Fig. 50: Page Setup

[Printer Setup]:

Same as 4-9-3 [Printer Setup]. Users can set the printer to be used and related settings here.

Printing from Win32 application Print		0
Printer		
Microsoft Print to PDF V		
Orientation		
🗅 Portrait 🗸		
Print to file		
Stores printing output to a file	No preview availab	
Pages		e
Pages All pages The whole document	no preven availab	e
All pages		e
All pages The whole document		e
All pages The whole document		e
All pages The whole document		e

Fig. 51: Printer Setup

4-9-2 Print RTF File

Click [Print RTF File] to show a page almost same as [Print....]. Users can select the items which they want to print, and use [Move UP] or [Move Down] to change the display order.

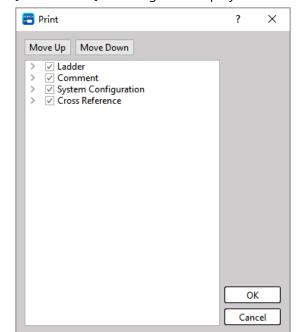


Fig. 52: Print RTF File

4-9-3 Print Setup

Users can set the printer to be used and related settings are shown below:

Printing from Win32 application Print					~
Printer					
Microsoft Print to PDF ~					
+ Add a printer					
Orientation					
🗅 Portrait 🗸					
Print to file Off					
Stores printing output to a file		No рі	review availabl	e	
Pages					
All pages The whole document					
Let the app change my printing preference	25	Print	t	Car	ncel

Fig. 53: Print RTF File

5

System Parameters

<u>5-1</u>	I/O Configuration	3-24
<u>5-2</u>	Setting up the Number of Component Memory	3-31
<u>5-3</u>	Setting up the Content of Read-only Register	3-34
<u>5-4</u>	Server Configuration	3-45
<u>5-5</u>	Communication Configuration	3-45

<u> A</u> Danger

- 7. When installing or removing the M-series CPU modules and various expansion modules or the equipment connected to it, all power must be turned off, otherwise it may cause electric shock or wrong action, resulting in death or serious personal injury and damage to the machine equipment.
- 8. Before the installation and wiring construction is completed, do not tear off the dust-proof paper on the PLC cooling hole, so as to prevent the drilling iron filings or wiring scraps from falling into the PLC during construction, causing fire, failure or malfunction.
- 9. After confirming that the installation and wiring are all completed, remember to tear off the abovementioned dustproof paper to avoid poor heat dissipation of the PLC, resulting in fire, failure or malfunction.

This section describes the system related parameters that will be required for setting up the content of I/O configuration, memory configuration and read-only Register.

5-1 I/O Configuration

I/O configuration provides configuration enablement and adjustment of high-speed counters, interrupts, outputs and inputs. Execute the function bar [Project] \rightarrow [I/O Configuration], or click [Test Example] \rightarrow [System Configuration] \rightarrow [I/O Configuration] in the project management window: **High-Speed Counter**.

Different modules have different numbers of high-speed counters, HSC0~3 provide 6 counting modes:

- 1. Single-phase independent up-counting high-speed counter U
- 2. Single-phase independent up-counting high-speed counter U*2
- 3. Single-phase relative up/down high-speed counter P/R
- 4. Bidirectional correlation high-speed counter A/B
- 5. Bidirectional correlation high-speed counter A/B*2
- 6. Bidirectional correlation high-speed counter A/B*4

Some modules of HSC4~7 only provide A/B*4, and all modules provide software masking and clearing.

📇 I/O Configuration			?	×
High Speed Counter	Output Setup Input Set	n		۵
 Input 		·		
X0 HSC0.PLS		SC2 HSC3 HSC4 HSC5 HSC6 HSC7		
X1 HSC0,DIR	B HSC Configuration	1		
X2 HSC0,MSK	Mode	P/R		
X3 HSC0,CLR				
X4 Undefined				
X5 Undefined	Pulse(PLS)	xo		
X6 Undefined X7 Undefined	Direction(DIR)	X1		
X8 Undefined	· · ·			
X9 Undefined	Mask(MSK)	X2		······
X10 Undefined	Clear(CLR)	Х3		
X11 Undefined	▹ HSC Polarity			
X12 Undefined	Mask Signal	Normal		
X13 Undefined	Clear Signal	Normal		
X14 Undefined X15 Undefined		Normal		
> Output	Counter Signal	Normai		
/ Output	HSC Data Length			
	Data Length	32-Bit Counter		
I/O Check		ОК	Car	icel

Fig. 54: High-Speed Counter

Item		說明
HSC	Up (UP)/Down (DN)	Sets the selection of the counting input of the high
Configuration	Pulse/Direction	counter.
	A-Phase / B-Phase	
	Mask (MSK)	Sets the selection for mask input.

HSC PolarityMask SignalWhen the input signal is 1, the counter will be blocked and will not count, and the internal state will remain unchanged. When the signal returns to 0, the counter will work properly.HSC PolarityMask SignalAble to set the normal phase or negative phase of the clear input.Clear SignalAble to set the normal phase or negative phase of the clear input.Clear SignalThe input signal can be set as normal counting or reverse counting.HSC Data LengthProvides two modes "16-bit counter" and "32-bit counter" to choose from.
Image: High stateunchanged. When the signal returns to 0, the counter will work properly.Clear (CLR)Sets the selection to clear the input. When the input signal is 1, the current count value temporary register inside the counter will be cleared to 0 and cannot count. The counter will not start counting from 0 until the signal returns to 0.HSC PolarityMask SignalAble to set the normal phase or negative phase of the mask input.Clear SignalAble to set the normal phase or negative phase of the clear input.Counter SignalThe input signal can be set as normal counting or reverse counting.HSC Data LengthProvides two modes "16-bit counter" and "32-bit
will work properly.Clear (CLR)Sets the selection to clear the input. When the input signal is 1, the current count value temporary register inside the counter will be cleared to 0 and cannot count. The counter will not start counting from 0 until the signal returns to 0.HSC PolarityMask SignalAble to set the normal phase or negative phase of the mask input.Clear SignalAble to set the normal phase or negative phase of the clear input.Counter SignalThe input signal can be set as normal counting or reverse counting.HSC Data LengthProvides two modes "16-bit counter" and "32-bit
Clear (CLR)Sets the selection to clear the input. When the input signal is 1, the current count value temporary register inside the counter will be cleared to 0 and cannot count. The counter will not start counting from 0 until the signal returns to 0.HSC PolarityMask SignalAble to set the normal phase or negative phase of the mask input.Clear SignalAble to set the normal phase or negative phase of the clear input.Counter SignalThe input signal can be set as normal counting or reverse counting.HSC Data LengthProvides two modes "16-bit counter" and "32-bit
When the input signal is 1, the current count value temporary register inside the counter will be cleared to 0 and cannot count. The counter will not start counting from 0 until the signal returns to 0.HSC PolarityMask SignalAble to set the normal phase or negative phase of the mask input.Clear SignalAble to set the normal phase or negative phase of the clear input.Counter SignalThe input signal can be set as normal counting or reverse counting.HSC Data LengthProvides two modes "16-bit counter" and "32-bit
HSC PolarityMask SignalAble to set the normal phase or negative phase of the mask input.Clear SignalAble to set the normal phase or negative phase of the clear input.Counter SignalThe input signal can be set as normal counting or reverse counting.HSC Data LengthProvides two modes "16-bit counter" and "32-bit
HSC PolarityMask SignalAble to set the normal phase or negative phase of the mask input.HSC PolarityMask SignalAble to set the normal phase or negative phase of the mask input.Clear SignalAble to set the normal phase or negative phase of the clear input.Counter SignalThe input signal can be set as normal counting or reverse counting.HSC Data LengthProvides two modes "16-bit counter" and "32-bit
from 0 until the signal returns to 0.HSC PolarityMask SignalAble to set the normal phase or negative phase of the mask input.Clear SignalAble to set the normal phase or negative phase of the clear input.Counter SignalAble to set the normal phase or negative phase of the clear input.Counter SignalThe input signal can be set as normal counting or reverse counting.HSC Data LengthProvides two modes "16-bit counter" and "32-bit
HSC PolarityMask SignalAble to set the normal phase or negative phase of the mask input.Clear SignalAble to set the normal phase or negative phase of the clear input.Counter SignalThe input signal can be set as normal counting or reverse counting.HSC Data LengthProvides two modes "16-bit counter" and "32-bit
mask input. Clear Signal Able to set the normal phase or negative phase of the clear input. Counter Signal The input signal can be set as normal counting or reverse counting. HSC Data Length Provides two modes "16-bit counter" and "32-bit
Clear Signal Able to set the normal phase or negative phase of the clear input. Counter Signal The input signal can be set as normal counting or reverse counting. HSC Data Length Provides two modes "16-bit counter" and "32-bit
clear input. Counter Signal The input signal can be set as normal counting or reverse counting. HSC Data Length Provides two modes "16-bit counter" and "32-bit
Counter SignalThe input signal can be set as normal counting or reverse counting.HSC Data LengthProvides two modes "16-bit counter" and "32-bit
HSC Data Length Provides two modes "16-bit counter" and "32-bit
HSC Data Length Provides two modes "16-bit counter" and "32-bit
counter" to choose from.
For example: if the temporary register for HSC0 storing
the count value is DR35280, if "32-bit counter" is
selected, DR35280 will be used as the current count
value register of the high-speed counter; if "16-bit
counter" is selected, R35280 is still the current count
value register of the high-speed counter. But R35281
will be used by the system as a 16-bit loop counter.

The inputs of the counting mode are interdependent. Except "U", which only has a single input, they must be used in pairs. For example, when "X4" is selected in the "A-Phase" field, "B-Phase" will automatically use "X5". The input selections of "Mask" and "Clear" also need to be paired, but you can choose to use only "Mask" or "Clear". In order to achieve optimal benefits, the input points are configured as shown in the table below:

		Input Point						
	Up	Pulse	A-Phase	Down	Direction	B-Phase	Mask	Clear
	(UP)			(DN)			(MSK)	(CLR)
HHSC0	XO		NA	Х	1	X2, X4,	X3, X5,	
HHSC1	X2		INA	Х	3	X6, X8,	X7, X9,	

Chapter 5 System Parameters

HHSC2	X4	X5	X10,	X11,
HHSC3	X6	X7	X12,	X13,
HHSC4	X8	X9	X14	X15
HHSC5	X10	X11		
HHSC6	X12	X13		
HHSC7	X14	X15		

Table 15 Configuration of input points

5-1-2 Interrupt Signal Configuration

The interrupt means that the PLC will send an interrupt request to the CPU immediately when the demand for immediate response occurs during the normal sequential execution of the scan cycle. After the CPU receives the interrupt request, it immediately stops the scanning work being executed, and executes the "interrupt service routine" first. After the task is completed, return to the unfinished scanning task. This page is used to set the use and trigger conditions of the input interrupt.

	Y	ו 			
igh Speed Counter Interru	upt Output Setu	ip Input Setu	up		
Input	Item	Usage	dge Triggerin		
X0 INT0,Pos. Edge X1 INT1,Neg. Edge	▷ Interrupt				
X2 INT2,Both Edge	INT0 (X0)	Enable	Positive Edge		
X3 Undefined	INT1 (X1)	Enable	Negative Ed		
X4 Undefined X5 Undefined	INT2 (X2)	Enable	Both Edge		
X6 Undefined	INT3 (X3)	Disable	Positive Edge		
X7 Undefined	INT4 (X4)	Disable	Positive Edge		
X8 Undefined X9 Undefined	INT5 (X5)	Disable	Positive Edge		
X10 Undefined	INT6 (X6)	Disable	Positive Edge		
X11 Undefined X12 Undefined	INT7 (X7)	Disable	Positive Edge		
X12 Undefined X13 Undefined	INT8 (X8)	Disable	Positive Edge		
X14 Undefined	INT9 (X9)	Disable	Positive Edge		
X15 Undefined Output	INT10 (X10)	Disable	Positive Edge		
Output	INT11 (X11)	Disable	Positive Edge		
	INT12 (X12)	Disable	Positive Edge		

Fig. 55: Interrupt setting

Item	Description
Usage	Set to enable or disable the interrupt function.
Edge Trigger	Set trigger conditions.
	[Positive Edge] Input from 0 to 1
	[Negative Edge] Input from 1 to 0
	[Positive and negative edges] trigger when input changes

5-1-3 Output Signal Configuration

It is used to set the pulse form of output signal, output polarity and output power-off hold and other configurations.

۳ High Speed Counter Inte	errupt Output Setup In	X but Setup	ć
 > Input > Output Y0 PSO0,PLS Y1 PSO0,DIR Y2 PSO1,UP Y3 PSO1,DN Y4 PSO2,A Y5 PSO2,B Y6 Undefined Y7 Undefined Y8 Undefined Y9 Undefined Y10 Undefined Y11 Undefined Y12 Undefined Y13 Undefined Y13 Undefined Y14 Undefined Y13 Undefined Y14 Undefined Y14 Undefined Y15 Undefined 	Output Axes		4
	Total	4 Axes	
	» HSPSO		
	PSO0 (Y0-Y1)	Y0=PLS Y1=DIR	
	PSO1 (Y2-Y3)	Y2=UP Y3=DN	
	PSO2 (Y4-Y5)	Y4=A Y5=B	
	PSO3 (Y6-Y7)	Not Used	
	▷ Output Polarity		
	Y0-Y1 Output	Normal	
	Y2-Y3 Output	Normal	
	Y4-Y5 Output	Normal	
	Y6-Y7 Output	Normal	
	Retentive Output Co	il	
	Select All		
	YO		
4	Y1		
	Y2		
	Y3		
	Y4		
	Y5		
	Y6		
	Y7		

Fig. 56 Output Setting

Item	Description			
High-Speed Pulse	Set the output mode of high-speed pulse output. Divided into			
Output	four modes			
	1. Pulse (PLS) / Direction (DIR)			
	2. Up (UP) / Down (DN)			
	3. A-Phase / B-Phase			
	4. Single Point Pulse.			
Output Polarity	Select normal output or reversed output.			
Output Latched	When checked, it means that when the power is turned on			
	again, the output will keep the original output value.			

If not using the HSPSO function, the Y0–Y15 external output points of M-PLC will be corresponding to the status of Y0–Y15 output relays in the PLC. If the HSPSO is implemented, then the system will switch the Y0–Y15 external output points directly to the HSPSO output circuit in ASIC; therefore, it is irrelevant to Y0–Y15 relays in PLC.

Listed below are the signal details and the optional output modes of the output points at the respective axis of M-PLC. The "high-speed pulse output" can be set according to the method indicated in the table below:

Axis No.	External	Output Mode				
	Output Point	PLS/DIR	UP/DN	A/B-Phase	Single Point PLS	
PSO 0	YO	Y0= PLS	Y0= UP	Y0=A	Y0= PLS	
	Y1	Y1= DIR	Y1= DN	Y1=B		
PSO 1	Y2	Y2= PLS	Y2= UP	Y2=A	Y2= PLS	
	Y3	Y3= DIR	Y3= DN	Y3=B		
PSO 2	Y4	Y4= PLS	Y4= UP	Y4=A	Y4= PLS	
	Y5	Y5= DIR	Y5= DN	Y5=B		
PSO 3	Y6	Y6= PLS	Y6= UP	Y6=A	Y6= PLS	
	Y7	Y7= DIR	Y7= DN	Y7=B		
PSO 4	Y8	Y8= PLS	Y8= UP	Y8=A	Y8= PLS	
	Y9	Y9= DIR	Y9= DN	Y9=B		
PSO 5	Y10	Y10= PLS	Y10= UP	Y10=A	Y10= PLS	
	Y11	Y11= DIR	Y11= DN	Y11=B		

Chapter 5 System Parameters

Axis No.	External	Output Mode				
	Output Point	PLS/DIR	UP/DN	A/B-Phase	Single Point PLS	
PSO 6	Y12	Y12= PLS	Y12= UP	Y12=A	Y12= PLS	
	Y13	Y13= DIR	Y13= DN	Y13=B		
PSO 7	Y14	Y14= PLS	Y14= UP	Y14=A	Y14= PLS	
	Y15	Y15= DIR	Y15= DN	Y15=B		

Table 16: Output mode setting table

5-1-4 Input Signal Configuration

For many high-speed applications, in addition to using the interrupt input method to prevent signal omission, the input points included in the host can also be set as capture inputs to capture their fleeting signals. This page is used to set its captured input configuration.

High Speed Counter Interrupt Output Setup Input Setup V Input Item Mode Time Frequency X0 Undefined X0 Digital Filter V V X1 Undefined Group0 (X0-X3) Frequency 3 ms 1.8MHz X2 Undefined Group1 (X4-X7) Time 3 ms 460KHz X3 Undefined Second Input V V V X6 Undefined V V V V V X6 Undefined V	I/O Configuration					?	×
X0 Undefined Image Image <t< td=""><td>· · · · · · · · · · · · · · · · · · ·</td><td>Cutput Setup</td><td>k etup</td><td></td><td></td><td></td><td>ć</td></t<>	· · · · · · · · · · · · · · · · · · ·	Cutput Setup	k etup				ć
	 Input X0 Undefined X1 Undefined X2 Undefined X3 Undefined X4 Undefined X5 Undefined X6 Undefined X7 Undefined X8 Undefined X9 Undefined X10 Undefined X10 Undefined X11 Undefined X12 Undefined X13 Undefined X14 Undefined X15 Undefined 	Item ▷ Digital Filter Group0 (X0-X3) Group1 (X4-X7) ▷ Force Run Input Usage ▷ Captured Input Select All X0 X1 X2 X3 X4 X5 X6	Mode Frequency Time X2 V2	3 ms	1.8MHz		

Fig. 57: Input Setting

Item	Description
Input Filter Value	The filter settings are divided into 4 groups (X0~X3),
	(X4~X7), (X8~X11), (X12~X15), and the filter conditions can
	be set to time or frequency: 7 options such as 28KHz to
	1.8MHz can be set when the frequency is used as the
	condition; 3 to 15 milliseconds can be set when the time is
	used as the condition.
Forced Operation	Set the point of forced operation input point.
Input Point	
Captured Input	Check to set it as the input point to be captured.
Point	

5-2 Setting up the Number of Component Memory

When M-PLC leaves the factory, proper arrangements have been made in advance for the allocation of retentive and non-retentive coils or registers, timers, counters, and read-only registers. In most applications, the factory settings do not need to be changed, but in order to adapt to various special or complex applications, in addition to the factory settings, UperLogic also provides the function so that users can set them according to their needs.

Click [Project] \rightarrow [Memory Allocation] in function toolbar or double clicking \rightarrow [System Configuration] \rightarrow [Memory Allocation] in the project window and then the memory allocation setting window will appear:

Memory Allocation			22 8
Item	Totals	Number	Range
Retentive Internal Relay	9120	600	M8520 - M9119
Retentive Step Relay	3104	500	S2604 - S3103
1ms Timer		256	T0 - T255
10ms Timer	1024	256	T256 - T511
100ms Timer	1024	256	T512 - T767
1 s Timer	1	256	T768 - T1023
Retentive 16-bit Counter	1024	140	C0 - C139
Retentive 32-bit Counter	256	40	C1024 - C1063
Retentive Data Register	15000	3000	R0 - R2999
Read-Only Register	4096	0	None
Default			OK Cancel

Fig. 58: Memory Allocation window

When restarting following the outage or switch PLC from STOP to RUN, the non-retentive relay or the Register will be cleared as "0", but the retentive relay will maintain its original (before outage or under STOP status) status. Described below are relevant details:

Item	Description
Retentive Internal	[Total] Displays the total number that can be set as retentive type
Relay	[Quantity] The quantity to be set as retentive type
	[Range] Displays the range after setting
Retentive Step	[Total] Displays the total number that can be set as retentive type
Relay	[Quantity] The quantity to be set as retentive type

	[Range] Displays the range after setting
Time Base of	The timer is divided into four time bases of 1 ms, 10 ms, 100 ms and
Timer	1 s, and the four time bases share the total number.
	[Total] Displays the total number of timer
	[Quantity] The quantity to be set for each time base
	[Range] Displays the range of each time base setting
Retentive 16-bit	[Total] Displays the total number that can be set as retentive type
Counter	[Quantity] The quantity to be set as retentive type
	[Range] Displays the range after setting
Retentive 32-bit	[Total] Displays the total number that can be set as retentive type
Counter	[Quantity] The quantity to be set as retentive type
	[Range] Displays the range after setting
Retentive Data	[Total] Displays the total number that can be set as retentive type
Register	[Quantity] The quantity to be set as retentive type
	[Range] Displays the range after setting
Read-Only	[Total] Displays the total number that can be set as read-only register
Register	[Quantity] The quantity to be set as read-only register
	[Range] Displays the range after setting
Retentive Input	Set all output registers as retentive type or non-retentive type
Register	
Default Value	Restore to factory settings

After the setting of the memory allocation window is completed, the system will display the [Discrete & Register Allocation] window to provide the user with an overview of the complete allocation status, as shown in the figure below:

Туре	Item	Range	Amount
X	Input Contact	X0 - X1023	1024
Y Y	Output Relay	Y0 - Y1023	1024
M	Internal Relay (Non-Retentive)	M0 - M8519	8520
M	Internal Relay (Retentive)	M8520 - M9119	600
M	Special Relay	M9120 - M29599	20480
S S	Step Relay (Non-Retentive)	SO - S2603	2604
S	Step Relay (Retentive)	S2604 - S3103	500
σT	1ms Timer	T0 - T255	256
T	10ms Timer	T256 - T511	256
. Т	100ms Timer	T512 - T767	256
Τ	1 s Timer	T768 - T1023	256
C C	16bit Counter (Retentive)	C0 - C139	140
C C	16bit Counter (Non-Retentive)	C140 - C1023	884
32 C	32bit Counter (Retentive)	C1024 - C1063	40
32 C	32bit Counter (Non-Retentive)	C1064 - C1279	216
R	Data Register (Retentive)	R0 - R2999	3000
R	Data Register (Non-Retentive)	R3000 - R34767	31768
R	Input Register	R34768 - R35023	256
R	Output Register	R35024 - R35279	256
R	Special Register	R35280 - R43223	7944
R	ROR Register		0
n R	Data Register (Retentive)	R43224 - R47319	4096
B D	Data Register (Retentive)	D0 - D11999	12000
F	File Register (Retentive)	F0 - F32767	32768

Fig. 59: Discrete and register allocation window

5-3 Setting up the Content of Read-Only Register

The configurable range of read-only registers is R43224~R47319 (4096 in total), and the range not planned as read-only registers can be used as general registers, which are retentive types. The content set as read-only registers will be stored in the project, so when the project is downloaded to the PLC, if there are read-only registers specified in the project, these read-only registers will be used when the PLC starts content as the initial value.



Click [Project] \rightarrow Register [ROR Register] in function toolbar or double clicking [Test Example] \rightarrow [System Configuration] \rightarrow [ROR Register] in the project window. If the ROR range is not set, the following window will appear first to prompt the setting. When the setting is confirmed, it will automatically jump to the memory allocatoin window in Section 5.2 to provide the user with the set amount.

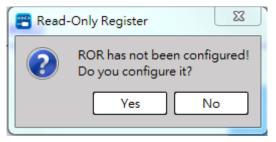


Fig. 60: Setting up read-only Register

The ROR window provides users with setting ROR data, comments and instructions, and can synchronize the Register value and ROR value.

📇 Read-Only Re	gister			?	×
Import Export	Restore Register	EE R→ ROR ROR→Re			
Name	Status	Data	Comment	Description	^
R43224	DEC	22136			
R43225	DEC	22136			
R43226	DEC	4660			
R43227	DEC	84			
R43228	DEC	69			
R43229	DEC	75			
R43230	DEC	0			
R43231	DEC	0			
R43232	DEC	0			
R43233	DEC	0			
R43234	DEC	0			
R43235	DEC	0			
R43236	DEC	0			-
4					

Fig. 61: Read-only Register

Item	Description
Export/Import	Notes and description of export/import
Restore Old Value	Restore the data to the one just entered the ROR window
Register→ROR	Synchronize general register value to read-only register
ROR → Register	Synchronize read-only register value to general register

5-4 Servo Configuration

Provides users with the settings related to the server on the PLC.

Click [Project] \rightarrow [Servo Configuration].

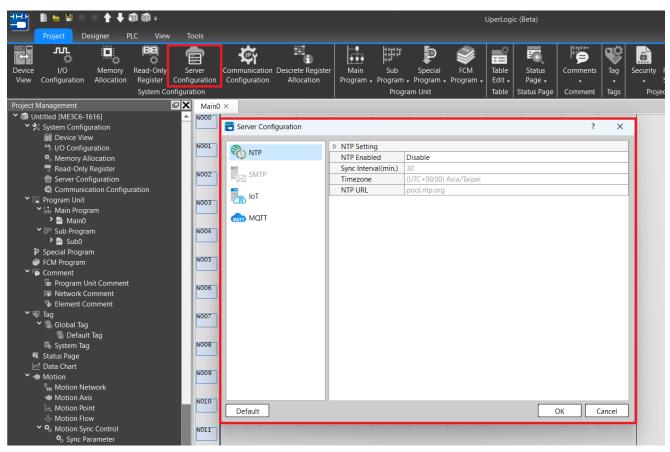


Fig. 62: Server Configuration

Users can apply the communication settings to configure NTP, SMTP, IoT and MQTT.

5-4-1 Network Time Protocols (NTP)

Provides users to set NTP parameters on PLC.

Click [Project] \rightarrow [Servo Configuration] \rightarrow [NTP].

Chapter 5 System Parameters

Server Configuration				?	×
	NTP Setting				
K NTP	NTP Enabled	Disable			
SMTP	Sync Interval(min.)	30			
SMTP	Timezone	(UTC+08:00) Asia/Taipei			
ioT	NTP URL	pool.ntp.org			
MQTT					
Default			OK	Cano	:el

Fig 63: Setting NTP

5-4-2 IoT

Provides users with setting the IoT parameters on the PLC. When monitoring or editing online, the HWID of the PLC can be viewed and copied.

```
Click [Project] \rightarrow [Servo Configuration] \rightarrow [IoT]
```

Server Configuration			?	×
R NTP	HWID iMonitor Status	Offline		
	 iMonitor Status iMonitor Setting 	Offline		
SMTP	Enable/Disable	Disable		
Page IoT	Server	fatekcloud.net		
	Password			
MQTT	P GPS Setting			
	Enable/Disable	Disable		
	Туре	Static		
	Base Register			
	GPS Format	DD		
	Latitude	N 0°		
	Longtitude	E 0°		
Default		ОК	Ca	ncel

Fig. 64: Setting IoT

 \times

5-4-3 MQTT

MQTT is a communication protocol designed for IoT, characterized by simplicity and lightness. It is suitable for applications in environments with limited hardware resources and network bandwidth, and can meet the needs of remote monitoring and data exchange.

The mechanism of message transmission is publish/subscribe model, and each message must be identified by a topic name. The client is the publisher and the subscriber, the Publisher publishes a message with a topic, and the Subscriber subscribes to a topic; the server side is a Broker, which is responsible for receiving the publisher's message and forwarding it to Subscribers for the corresponding topic.

Provides users with setting the MOTT parameters on the PLC

📰 Server Configuration		? >
R NTP	Server Publish Subscribe	
	NQTT Server Setting	
SMTP	Enable/Disable Disable	
	Hostname/IP	
ioT	Port 1883	
	Client ID	
MQTT	P Credential Setting	
	Enable/Disable Disable	
	Username	
	Password	
	TLS/SSL Setting	
	Enable/Disable Disable	
	Certificate Mode One-way Authentication	
	Select Server CA	Select
	Select Client CA	Select
	Select Private Key	Select
	▷ Connect Setting	
	Retery Interval(sec.) 5	

Click [Proje

Fig. 65: Setting MQTT

Page	Property	Description
	Enable/Disable	This is the main switch of the MQTT function. Only after enabling it can you set the detailed fields, as well as related topic publishing and topic subscription.
MQTT Server Configuration	Host (IP or URL)	Set the Broker host address, you can fill in the IP or URL.
	Port No.	Set the connecting port of Broker. The default is 1883.
	Client ID	Client-specific identification code
	Enable/Disable	Enable/Disable authentication
Authentication	User Name	Input Broker-specified user name.
	Password	Input the password specified by the Broker, and it will be kept secret in cipher text after entering.
	Enable/Disable	Enable/Disable TLS/SSL
	Identification Mode	One-way and two-way identification are optional.
TLS/SSL Configuration	Select Server Certificate	Use server authentication. Import the required documents.
	Select Client Certificate	Use client authentication. Import the required documents.
	Select Private Key	Use client authentication. Import the required private key.
Connection Setting	Reconnection Interval (seconds)	The interval between reconnections if the MQTT connection is disconnected, in seconds.

📇 Server Configuration								?	×
The NTP	S	Server Publi	sh Subscrib	e					
		Add	Delete	Edit	E	xport		Impo	ort
SMTP		Name	Topic	Send Mode	Retain	QoS	D	ata Form	at
IoT	1	name0	topic0	Period	false	2	Raw	Data	
MQTT									
Default						ОК		Can	cel

Topic Publishing

You can click [New] above to add a new theme, click the [Delete] button to delete the selected theme, click [Edit] or double-click the item in the theme list to edit the selected theme. If there is an existing theme in the theme list project, you can click [Export] to export all theme data into a CSV file in a specific format, and click [Import] to import a CSV file in a specific format to directly update the theme table.

Te	opic Pub	lish					?		×
Bas	sic								
Na	ime	name1							
То	pic	topic1							
٦S	end Mod	le							
	 Period Trigge 		rval 5 seconds	*					
	Retain	QoS 2	•	Data Fo	ormat	Raw D	ata 🔹	r	
	taltem Se b. of Data	etting altems 1 🗘							
		Name	Data Type	A	ddress		Ler	ngth	
1	Datalter	m0	Bit	Y0			1		
				1					
					0	K		ance	

Page	Property	Description
	Name	Set the name of the topic, which can be used as a description
	Торіс	The topic used by MQTT to send messages. (Note: #, + are wild characters and cannot be used)
Basic	Sending Mode	Cyclic: Send messages periodically, and you can set the interval in seconds.
		Value change trigger: A message will be sent only when the value of the data item changes.
	Keeping Message	Determines whether MQTT messages should be kept on the server. If checked, the server will save the subject message. Afterwards, if there are new subscribers, or

		previously disconnected subscribers reconnect, they will receive the latest reserved message.
	QoS	 Set the Quality of Service of MQTT, which is divided into three levels: Grade Description 0: The message is sent only once, delivery is not guaranteed, and will not be repeated. 1: The message delivered at least once, guaranteed delivery, may be repeated. 2: The message is delivered exactly once, and it is guaranteed to be delivered and will not be repeated.
	Data Format	Raw Data
	Number of Data Item	Sets the number of data items for this topic.
	Name	The name of the data item cannot be blank, and each item name must be unique, and the item name can be entered directly.
Data Item Setting	Data Type	There are [bit], [16-bit BCD number], [16-bit integer], [16- bit positive integer], [32-bit BCD number], [32-bit integer], [32-bit positive integer], [32-bit floating point] and [Ascii] can be selected.
	URL	According to the data type, the user can set the address of each data item.
	Length	Users can determine the address length of this data item.

Topic Subscription

📇 Server Configuration						? ×
The NTP	Server Pu	blish	Subscribe			
	Add	Del	ete	Edit	Export	Import
SMTP	Name	Т	iopic C	QoS	Data For	mat
loT	1 name0	topic	0 2	Raw Da	ta	
Default					ОК	Cancel
Topic Subscribe				?	×	
Basic			_			
Name name0 Topic topic0			- 11			
	Data Format Ra	aw Data	•			
		an bata				
DataItem Setting No. of DataItems 1 🗘						
Name	Data Tura		Idross	Length	-	
1 Dataltem0	Data Type Bit	Y0	ldress	1		
					-	
			OK	Cancel		

Page	Property	Description
	Name	Set the name of the topic, which can be used as a description
	Торіс	The topic used by MQTT to send messages. (Note: #, + are wild characters and cannot be used)
Basic	QoS	Set the Quality of Service of MQTT, which is divided into three levels: Grade Description 0: The message is sent only once, delivery is not guaranteed, and will not be repeated. 1: The message delivered at least once, guaranteed delivery, may be repeated. 2: The message is delivered exactly once, and it is guaranteed to be delivered and will not be repeated.
	Data Format	Raw Data or JSON
	Number of Data Item	Sets the number of data items for this topic.
	Name	The name of the data item cannot be blank, and each item name must be unique, and the item name can be entered directly.
Data Item Setting	Data Type	There are [bit], [16-bit BCD number], [16-bit integer], [16- bit positive integer], [32-bit BCD number], [32-bit integer], [32-bit positive integer], [32-bit floating point] and [Ascii] can be selected.
	URL	According to the data type, the user can set the address of each data item.
	Length	Users can determine the address length of this data item.

5-5 Communication Configuration

It allows the user to configure the corresponding relationship between Register address and Modbud address in PLC.

Click [Project] \rightarrow [Communication Configuration]

Communication Configure	ration			?	×
Ethernet Port	▷ IP Setting				
	DHCP	Disable			
📑 Serial Port	IP Address	192.168.2.4			
Modbus Device	Subnet Mask	255.255.255.0			
Allocation	Gateway	192.168.2.1			
	DNS Server				
	Primary Server	1.1.1.1			
	Secondary Server	8.8.8.8			
	> FATEK Protocol Port				
	Primary Port	501			
	Secondary Port	501			
	Modbus Protocol Port				
	Primary Port	502			
	Secondary Port	502			
Default			ОК	Can	cel

Fig. 66: Communication Configuration

Users can use communication settings to configure Ethernet, serial port and Modbus addresses.

5-5-1 Ethernet Port

The parameter allowing users to set up the network port on PLC.

Click [Project] → [Communication Configuration] → [Ethernet Port Setting]

Ethernet Port Setting	8 ×	Ethernet Port Setting
General Service		General Service
Enable DHCP		FATEK Protocol Port
-IP Address		Primary Port 501
IP Address	192 . 168 . 0 . 91	
Subnet Mask	255 . 255 . 255 . 0	Secondary Port 501
Gateway	192 . 168 . 0 . 1	Modbus Protocol Port
DNS Server		Primary Port 502
Primary Server	1 . 1 . 1 . 1	Secondary Port 502
Secondary Server	8.8.8.8	
		OK Cancel
	OK Cancel	UK Cancel

Fig. 67: Setting network station number

Page	Property	Description
	Enable DHCP	Enable/disable dynamic host setting protocol
	IP address	Setting network address
General	Subnet mask	Setting subnet mask
Centerdi	Preset gate	Setting preset gate
	Regular server	Setting regular DNS server
	Other	Setting other DNS server
	Main connection port	Setting regular network connection port for FATEK communication protocol
Convice	Other connection port	Setting fixed network connection port for FATEK communication protocol
Service	Main connection port	Setting regular network connection port for Modbus communication protocol
	Other connection port	Setting fixed network connection port for Modbus communication protocol

Table 17: Setting Network Station Number Table

3-1-1 Serial Port

Provides users with setting the parameters of the serial port on the PLC.

 $Click [Project] \rightarrow [Communication Configuration] \rightarrow [Serial Port]$

Protocol Parameter Se	etting - Port 1 ?			
Protocol	FATEK Protocol 🔹			
Baudrate	9600 -			
Parity	Even *			
Data Bits	8 -			
Stop Bits	1 -			
Reply Delay (ms)	0 2			
Transmission Delay (ms)	0 2			
Receive Timeout (ms)	0 2			
Without checking of station number				

Fig. 68: Setting serial port parameter

頁面	屬性	敘述
	Basic Settings_Baud Rate	Setting Baud Rate
	Basic Settings _ Check bit	Setting Check bit
	Basic Settings _Data bit	Setting Data bit
	Basic Settings _Stop bit	Setting Stop bit
	Basic Settings _ Response Delay Time (ms)	Setting Response Delay Time
Port1 Port2	Basic Settings _Sending Delay Time (ms)	Setting Sending Delay Time
	Basic Settings _ Response error time out (ms)	Setting Response error time out
	Advanced Settings _Check Station No.	Whether to check the station number
	Advanced Settings_ Communication Protocol	Setting Communication Protocol
Station No.	Station No. Setting	Scope: 0-254

Table 18: Serial port parameter setting

5-5-3 Modbus Device Allocation

It allows the user to configure the corresponding relationship between Register address and Modbud address in PLC.

Click [Project] → [Communication Configuration] → [Modbus Device Allocation]

😬 Modbus Device Allocation					2 S
Item	Start Address	Start Modbus Address	Totals		Usage
S Coils Setting					
Discrete Output [Y]	0	00001	1024	[FATEK] Y0-Y1023	⇔ [Modbus] 000001-001024
Discrete Input [X]	0	10001	1024	[FATEK] X0-X1023	⇔ [Modbus] 010001-011024
Discrete Internal Relay [M]	0	20001	29600	[FATEK] M0-M29599	⇔ [Modbus] 020001-049600
Discrete Step Relay [S]	0	50001	3104	[FATEK] S0-S3103	⇔ [Modbus] 050001-053104
Status of Timer [T]	0	54001	1024	[FATEK] T0-T1023	⇔ [Modbus] 054001-055024
Status of Counter [C]	0	56001	1280	[FATEK] C0-C1279	⇔ [Modbus] 056001-057280
> Holding Registers Setting					
Data Register [R]	0	00001	47320	[FATEK] R0-R47319	⇔ [Modbus] 400001-447320
Data Register [D]	0	48001	12000	[FATEK] D0-D11999	⇔ [Modbus] 448001-460000
Current Value of Timer [T]	0	60001	1024	[FATEK] T0-T1023	⇔ [Modbus] 460001-461024
Current Value of 16-bit Counter [C]	0	62001	1024	[FATEK] C0-C1023	⇔ [Modbus] 462001-463024
Current Value of 32-bit Counter [C]	1024	64001	256	[FATEK] C1024-C1279	⇔ [Modbus] 464001-464512
Default					OK Cancel

Fig. 69: Modbus address preset configuration

The preset configuration enables all of the Register addresses on PLC to communicate with the Modbus address. If the user wishes to reduce the number of Register used for communicating with Modbus address or to change the corresponding address, then the user may edit its own configuration type.

			Usage
1023	00001	1024	The range is not usable and overlapping!
0	10001	1024	[FATEK] X0-X1023 ⇔ [Modbus] 010001-013
0	20001	29600	[FATEK] M0-M29599 ⇔ [Modbus] 020001-049
0	50001	3104	[FATEK] \$0-\$3103 ↔ [Modbus] 050001-053
0	00401	1024	The range is overlapping!
58	00405	1280	The range is not usable and overlapping!
0	00001	47320	[FATEK] R0-R47319 ⇔ [Modbus] 400001-447
0	48001	12000	[FATEK] D0-D11999 ⇔ [Modbus] 448001-460
0	60001	1024	[FATEK] T0-T1023 ⇔ [Modbus] 460001-463
er [C] 0	62001	1024	[FATEK] C0-C1023 ⇔ [Modbus] 462001-463
er [C] 1024	64001	256	[FATEK] C1024-C1279 ⇔ [Modbus] 464001-464
	0 0 0 0 58 0 0 0 0 0 0 0 0 0	0 10001 0 20001 0 50001 0 00401 58 00405 0 00001 0 00001 0 60001 0 60001 eer [C] 0	0 10001 1024 0 10001 1024 0 20001 29600 0 50001 3104 0 00401 1024 58 00405 1280

Fig. 70: Displaying setting error

If the address created by the user is incorrect, then the system will indicate the incorrect portion in red letter and will also display the error message.

Туре	Description					
Item	Explain the type of the contact that will be listed in this column.					
Home address	Create the home address that	t will correspond to the contact or				
	the Register (preset as zero).					
Modbus home	Create the Modbus home ad	dress that will correspond to the				
address	contact or the Register.					
Sum	Create the Modbus sum (pres	set as maximum value) that will				
	correspond to the contact or	the Register.				
Servicing status	Under normal condition, it di	splays the Modbus address status				
	that will correspond to the co	ontact or the Register. If the setting				
	is wrong, then it will display t	he corresponding error.				
	Error message	Description				
	Is such scope overlapped?	Modbus address is overlapping.				
	Such scope cannot be	The contact or the Register				
	used!	address is wrongly created or				
		exceeds the scope.				
	Such scope cannot be	Modbus address is overlapped.				
	used and is overlapped!	In the meantime, the contact or				
		the Register address is wrongly				
		created or exceeds the scope.				

Table 19: Items required for Modbus address configuration

6

Creating Program

6-1	Main Program and Sub-program Unit Management	
	Ladder Diagram	
	Structured Text (ST)	
	Step Ladder Instruction Description	
	 Syntax Check	
	Interrupt Program	
	Function Module Program	

<u> A</u> Danger

- 1. When installing or removing the M-series CPU modules and various expansion modules or the equipment connected to it, all power must be turned off, otherwise it may cause electric shock or wrong action, resulting in death or serious personal injury and damage to the machine equipment.
- 2. Before the installation and wiring construction is completed, do not tear off the dust-proof paper on the PLC cooling hole, so as to prevent the drilling iron filings or wiring scraps from falling into the PLC during construction, causing fire, failure or malfunction.
- 3. After confirming that the installation and wiring are all completed, remember to tear off the abovementioned dustproof paper to avoid poor heat dissipation of the PLC, resulting in fire, failure or malfunction.

This section describes the program creating procedure that will be required for editing the Ladder Diagram.

6-1 Main Program and Sub-Program Unit Management

The editing window is divided into Master Program Field and Sub-program Field. It presents orderly organized program architecture for users to carry out the editing and the checking more easily. Both units are operated in the same way. Described below is the operation procedure of each program unit:

6-1-1 Creating new program unit

During the planning, the programs can be categorized for editing in order to present orderly organized program architecture. With such kind of program unit adding function, a well-defined architecture will be presented when planning the program.

You may click [Project] \rightarrow [Ladder Diagram] \rightarrow [Main Program] \rightarrow [Right mouse button] \rightarrow [Main Program Add] in project management toolbar, or you may select [Main Program Add] from the scroll-down menu in function toolbar icon.

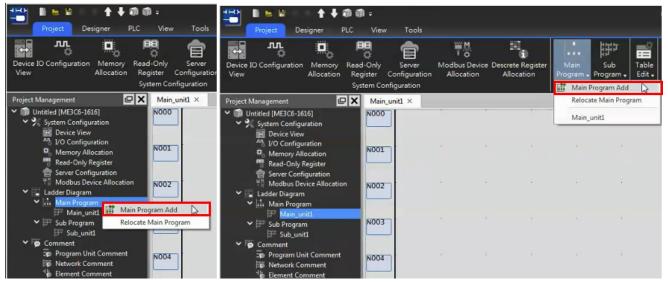


Fig. 71: Add Main Program Unit

6-1-2 Deleting program unit

If the created program unit is no longer required, you may delete it with the program unit deleting function. In this case, you may move the cursor to the unit tag and then click the right mouse button \rightarrow [Delete] and then such program unit will be deleted.

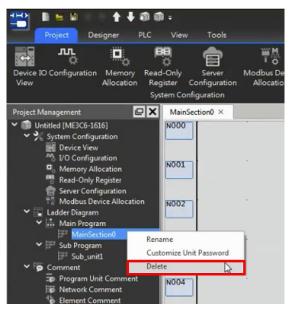


Fig. 72: Deleting program unit

6-1-3 Program unit relocating sequence

You may click [Project] \rightarrow [Ladder Diagram] \rightarrow [Main Program] \rightarrow [Right mouse button] \rightarrow [Relocate Main Program] in project management toolbar, or you may select [Relocate Main Program] from the scroll-down menu in the toolbar icon.

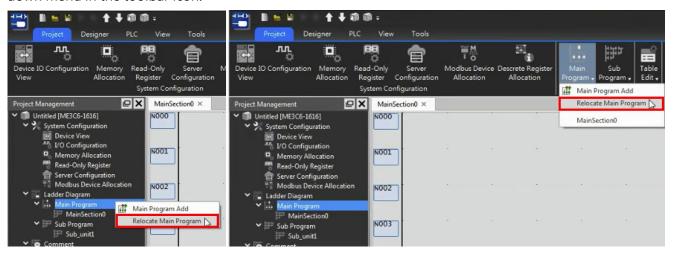


Fig. 73: Relocating Master Program Unit

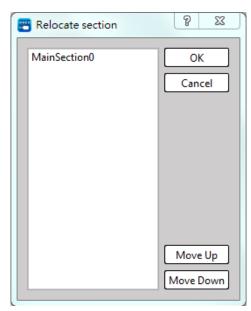


Fig. 74: Relocating Master Program Unit_2

Press [OK], and you may change the array of the program unit in the project window.

The [Relocate Main Program] of Sub-program can be adjusted in the same way as the Main Program. In this case, simply select the function from the Sub-program.

6-1-4 Changing program unit name

After creating the program unit name, you may change the program unit name. Click [Test Example] \rightarrow [Ladder Diagram] \rightarrow [Main Program] \rightarrow [Main Section] in project management window and then press the right mouse button \rightarrow [Rename]:

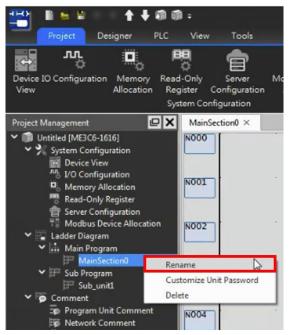


Fig. 75: Changing program unit name

6-1-5 Inputting program unit comment

If several program units are to be processed, it will be required to create a comment for the respective program unit for the convenience of checking and changing later on.

Inputting comment operation method in dedicated Comment Field

Click [Project] \rightarrow [Comment] \rightarrow "Program section" \rightarrow "Double-click left mouse button" in function toolbar, or you may click toolbar icon and then the [Program Unit Comment] input field will appear.

T → 1 → 1 → 1 → 1 → 1 → 1 → 1 → 1 → 1 →		pals			UperLogic (Be	zta)	
Device IO Configuration Memory Read View Allocation Reg Sys	H-Only Sen gister Configurat	ver Modbus Device uration Allocation	e Descrete Register Allocation	Main Sub Program - Program Ladder Diagram	Table Status Edit - Table Status Table Status Page -	Comments	Comment
Project Management	MainSection0	2.	• •		4	 Network Corr Element Com Clean All Con 	ment
해 I/O Configuration 다 Memory Allocation 편 Read-Only Register	N001	Program Unit Commen Program Unit MainSection0	t	Comment	×		
 Server Configuration Modbus Device Allocation Ladder Diagram Main Program 	N002	Sub_unit1					
	N003						
Program Unit Comment	N004						

Fig. 76: Program unit comment

Input the comment text. Press [OK] and the comment will be displayed at the topmost side of such Ladder Diagram.

🔛 🗈 🖻 🖉 🖉 🛉 🖡 🗊 🚳 =			UperLogic (Beta)		Offline Edit - 🗆 ×
Project Designer PLC View	Tools				🔺 Options Help 🕇 🧎
, 명 문	💼 🎬	H H		💖 💼 🗟 🖬 🧃	i 🗛 🖧 💇
Device IO Configuration Memory Read-Only View Allocation Register C	Server Modbus Device Desc		Table Status Comments		tion Motion Motion Motion Sync Motion Param xis Point Flow - Control - Mapping
System Conf		Ladder Diagram		Tags Project	Motion
Project Management 🛛 🗶 MainSe	action0 ×				
Untitled [ME3C6-1616] System Configuration Device View N: 1/0 Configuration	N000 Comment				<u></u>
Memory Allocation Read-Only Register					
Server Configuration					
✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ Main Program ✓ ✓ ✓ MainSection0					
Comment Program Unit Comment N003					

Fig. 77: Displaying comment at topmost side of Ladder Diagram

Operation method for inputting comment by selecting Single Program Unit

In the Ladder Diagram program field, click the right mouse button and the function menu will appear for selecting the desired [Network Comment] function:

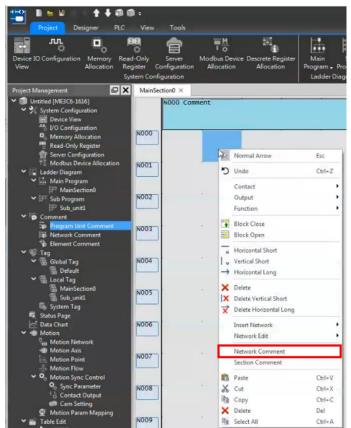
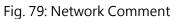


Fig. 78: Adding unit network comment

You may click [Project] \rightarrow [Comment] \rightarrow [Network Comment] in function toolbar and the program comment input field representing the respective unit will appear.

Project Designer PLC		ools			UperLogic (Be	a)	_	_
Device IO Configuration Memory Read View Allocation Re	d-Only Se	uration Allocation	ce Descrete Register Allocation	Main Program - Pro Ladder Diag	ole Status it - Page -	Comments	Tag Tag	Security Project Setup
Project Management	MainSection	0 ×					ork Comme	141
• 1 Untitled [ME3C6-1616]	NO	00 Comment	•		 ÷ .	15 Eleme	nt Comme	ent
 System Configuration Device View 						d Clean	All Comme	ent
™ I/O Configuration					 			
P. Memory Allocation	N000							
Read-Only Register								
To Modbus Device Allocation	N001							
Ladder Diagram								
✓ I Main Program IIII MainSection0								
✓ [™] Sub Program	N002							
^{jjii} Sub_unit1								
 Comment Program Unit Comment 	NODE	-	2 - 2 -		¥.			



Press [OK] to complete the inputting of network comment.

Network Comm	ent	🖉 🗖 🗙
MainSection0	Sub_unit	1
Ladder N	o	Comment

Fig. 80: Inputting network comment

Press [OK] and the comment will be displayed at upper side of the program.

	Network	Comment te	est						
N002	мо — -				•	EN	18.AN 5a:		-D=0-
							sb:	R1	
							D :	R2	
		•		•					

Fig. 81: Displaying comment at upper side of the program

6-2 Ladder Diagram (LD)

The most essential part of such application program is the compilation of the Ladder Diagram related program. For this purpose, it also provides the well-organized window in order to display relevant messages. Described below is its operation method:

6-2-1 Display elements

Window operation

It provides a number of window-based ladder program pictures for showing the programs being created for different sections at the same time for users to execute the compare, copy and edit functions.

1. Creating multi-ladder window

Each project comprises Master Program Section and Sub-program Section in which, each section will be allowed for adding the desired program tab, as per the figure below. By clicking "Switch page" in the "Tab," it allows the user to switch between the program section of each page.

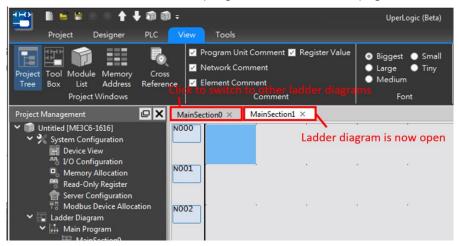


Fig. 82: Creating multi-ladder window

2. Arraying of ladder window

• Arraying of cascade display:

Click [Window] \rightarrow [Cascade]

Project Designer PLC	Ì∓ View Too	ols	_		
Project Tool Module Memory Cros Tree Box List Address Referen Project Windows	Networ	m Unit Comment ☑ Register Value rk Comment it Comment Comment	 Biggest Small Large Tiny Medium Font 	Cascade Tile Horizontal Windo	Switch Close Windows All
Project Management	MainSection0	× MainSection1 ×			
V i Untitled [ME3C6-1616]	MainSectio	on0			
 System Configuration Device View 	N000				
パロトロ I/O Configuration ■。Memory Allocation		MainSection1			
🖷 Read-Only Register	N001	N000			
會 Server Configuration 問 Modbus Device Allocation					
Y 🔛 Ladder Diagram		N001			
✓ I Main Program III MainSection0	N002	NUOI			
₩ MainSection1					
🖽 Sub_unit1	N003	N002			
 Comment Program Unit Comment 					
Network Comment	N004	N003			
⁻¹ ∲ Element Comment ✔ ∜ Tag					
🗸 🖀 Global Tag	N005	N004			
🖀 Default 🗸 🖀 Local Tag					

Fig. 83: Cascade window

• Arraying of tile horizontal display:

Click [Window] → [Tile Horizontal]

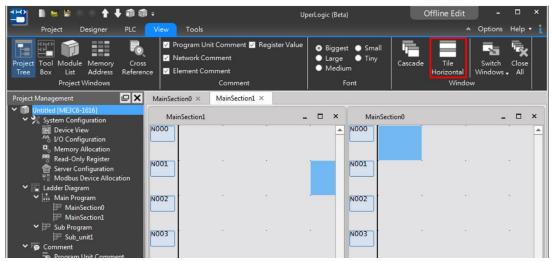


Fig. 84: Tile Horizontal display

6-2-2 Component operation

Click [Designer] \rightarrow [Ladder Diagram] in function toolbar, and the component items from A Contact to vertical line will be displayed. Indicated in the figure below is the arraying method of the respective contact component in the company panel, as below:

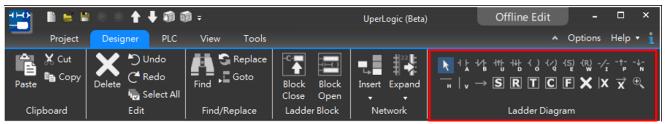


Fig. 85: Ladder Diagram component operation

Select the contact component that will be imported. Drag such component to Ladder Diagram program section and it will be displayed. Described below is the operation procedure:

Input contact component

Click [Designer] \rightarrow [Component Panel] \rightarrow [A Contact]



You may also move the cursor to the Ladder Diagram program section and then click the right mouse button and the Pop-up Menu will appear as the figure below. After that, select [Contact] \rightarrow [A Contact]:

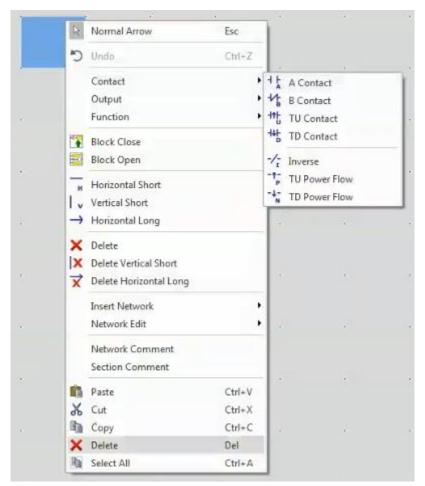


Fig. 86: Inputting contact component

Click the desired input position in the Ladder Diagram program section, and the [Element Edit] box will appear:

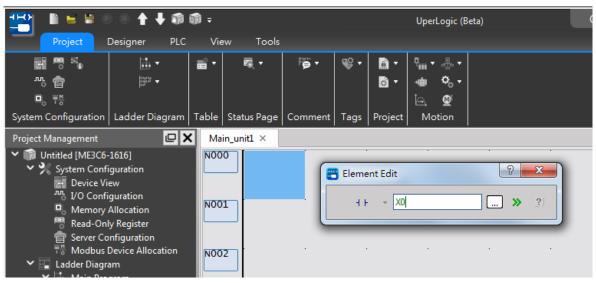
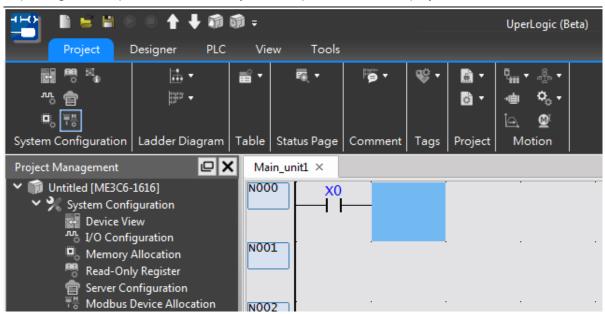


Fig. 87: Inputting component number



After inputting "X0", press "ENTER" key and the picture will be displayed as below:

Fig. 88: Complete component inputting

Next, move the cursor to the input position in the Ladder Diagram program field. After that, click the left mouse button once and then input "AX0" or "X0A" with keyboard and the figure above will appear.

In the meantime, press "Shift" + "A" keys to show the webpage where A Contact component will be displayed in program section only without inputting the component number, as per the figure below:

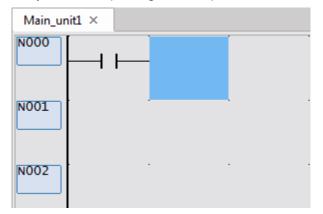


Fig. 89: Page without inputting component number

Changing the type or the number of contact component

To change the type of the contact component being entered, select the contact type to be changed; for example, select B Contact from the component panel, and then click the left button on the contact component to be modified in the ladder diagram program section, and the input number box of the B contact element will appear.

To change the component number, move the cursor to the component to be changed in the program section and then enter the new number or press "SPACE" key to show the edit window. After that, input the new number as per the figure below.

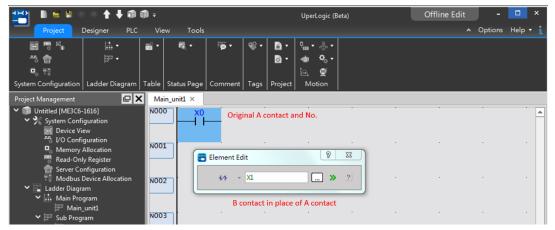


Fig. 90: Component number changing method

You may also key the number in the "Element Edit" box at B Contact, such as "X1". After that, the "X0" of the original A Contact will be revised as "X1" of B Contact.

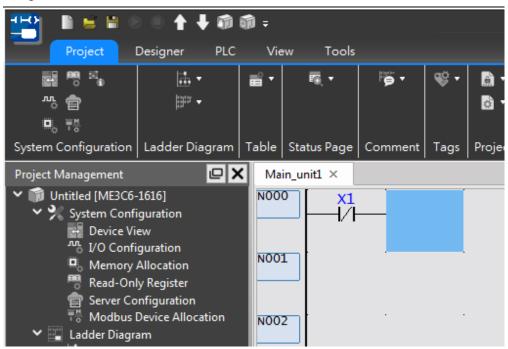


Fig. 91: Component number changing result

Deleting contact component

In component panel, you may select deletion icon **Delete** or move the cursor to the Ladder Diagram program section. Next press the right mouse button to display the Pop-up Menu where you will be allowed to select the [Delete] function. At this time, the cursor serves as the deleting function; or you may

click [X1] of B Contact component and then press "Delete" key on the keyboard and "X1" will be deleted.

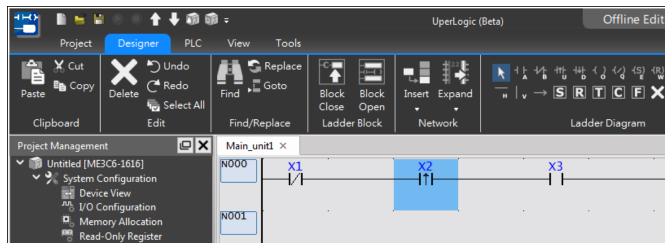
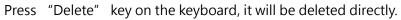


Fig. 92: Selecting the component to be deleted



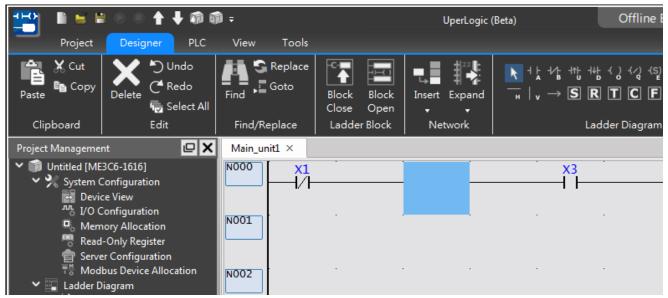


Fig. 93: Deleting component by clicking Delete

6-2-3 Operating by instructions

The UperLogic also provides convenient function instruction set. You may select the required instruction by clicking [Check] \rightarrow [ToolBox] \rightarrow [Set/Reset] \rightarrow [Timer/Counter] \rightarrow [Function Instruction] in function toolbar and drag the module to the configuration position by clicking the left mouse button. In the meantime, you may also click the component panel icon **SRTCF** which can be used as the function instruction option.

Project Designer PLC View Tools	^	Options Help 🕶 🖠
🔽 📅 📲 🗖 Vrogram Unit Comment 🗹 Register Value 💿 Biggest 💿 Small 🖷 🔩 🗸		
Project Tool Module Memory Cross Tree Box List Address Reference Project Windows Comment Font Window	2.	
Project Management 🛛 🗶 Main_unit1 × 4.	ToolBo	× 🛛 🗠 🗙
✓ ✓ ✓ Multitled [ME3C6-1616] ✓ ✓ ✓ ✓ <	⊳ 3•. T C	Basic Timer/Counter
Memory Allocation Read-Only Register Server Configuration	D D	Output Operation Set/Reset
™ Modbus Device Allocation ✓ Image: State of the s		SFC Arithmetic Logic Operation
✓ Main_Program Image: Sub Program N003 Image: Sub_unit1 N003		Compare Data Movement Shift/Rotate

Fig. 94: Dragging Function instruction

After releasing the left mouse button, the function instruction will appear. After inputting the parameter setting, press [OK] to complete the configuration.

■ = ■ ○ ○ ♠ ↓	· 🏟 🦚 =	UperL	ogic (Beta)	Offline Edit
Project Designer	PLC View Tools			 Optio
Project Tool Module Memory Tree Box List Address	Cross Reference		 ● Biggest ● Small ● Large ● Tiny ● Medium 	
Project Windows		Comment	Font	Window
Main_unit1 ×				
N000 X1	· ·		EN-	1000 TUP-

Fig. 95: Completing component dragging

Input Function instruction

If users want to use different function instructions, for example, when setting a fixed time timer, it is necessary to control the timing start, when the timing ends, and how much value the timing accumulates, etc., the operation steps can refer to the following instructions:

To set up a fixed-time Timer between X1 contact and Y0 output, you may input the Function instruction to carry out the setting:

	1 🖬 🖬 🗵 🗎 🕇	🕈 🛍 🛍 =		UperL	ogic (Beta)	Offline Edit	- 🗆 ×
	Project Designer	PLC View	w Tools				🔺 Options Help 🕶 🖠
Project Tree	Tool Module Memor Box List Addres Project Windows	y Cross s Reference	 Program Unit Comment Network Comment Element Comment Comment 	Register Value	 Biggest ● Small Large ● Tiny Medium Font 	Window	
Main_u	nit1 ×			, ,			
N000		·			· ·	·	Y0 ▲
N001							
N002			32 bits (Alt+D) Pu		ок .		
N003			T (.001S) _	Help .		
N004			PV:	· · · · · · · · · · · · · · · · · · ·			

Fig. 96: Setting by inputting Function instruction

You may click [Designer] \rightarrow [Ladder Diagram] \rightarrow select timer function icon from component panel in function toolbar. At this time, the cursor is serving as the Timer. In the Ladder Diagram program section, click the space between X1 and Y0 and the "Timer" Function instruction setting dialog box will appear.

In the Ladder Diagram program section, you may also click the space between X1 and Y0 and then press "Shift" + "T" quick keys and the "Timer" Function instruction setting dialog box will appear:

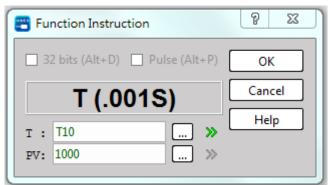


Fig. 97: "Timer" Function instruction setting dialog box

Key "T10" in "T" column and key "1000" in "PV" section to complete the fixed-time setting for the Timer:

Project Desig	aner PLC Vi	Uperl	.ogic (Beta)	Offline Edit	– □ × Options Help • 1
Project Tool Module Me	Idress Reference	 Program Unit Comment Z Register Value Network Comment Element Comment Comment 	 Biggest ● Small Large ● Tiny Medium Font 	Vindow	
Main_unit1 ×	· ·	· · · · ·	EN-	- I I-I	UP()

Fig. 98: Completing the fixed-time setting for Timer

Deleting functional component

You can select the delete icon in the component panel, or click the right button in the ladder diagram program section to display the Pop-up menu to select the [Delete] function, and the cursor represents the delete function; or directly click the function component, and then press the keyboard "Delete" key, you can also delete it directly

6-2-4 Network operation

In the Ladder Diagram program section, the network is an essential element that is designed with a variety of operation methods. Described below is the network operation method in the program section.

Copying single network

Point the cursor at the network to be copied. For example, network "N009" per the figure below:



Fig. 99: Replicating single network

Press the right mouse button to show the Pop-up Menu and then select [Copy] or press "Ctrl" + "C" quick key and then execute the copy instruction. Next, press the right mouse button to show the menu for selecting [Paste]; or press "Ctrl" + "V" quick key to execute the paste command. In this way, it allows the user to complete the single network copying:

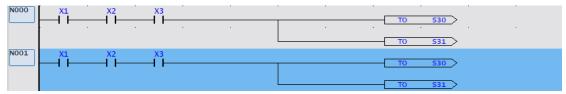


Fig. 100: Complete the copying of single network

Copying multiple networks

To copy the connected networks coded in N001 to N003, the user may use the mouse to scroll the selected N001 to N003 or press "Shift" key and then click Network N001 to N003, as per the figure below:

N000	
N001	<u>TO</u> X4
N002	FROM 530 TO 532
	FROM 531 TO 533

Fig. 101: Copying multiple networks

Execute the copying and pasting actions to complete the copying of networks that are connected with each other. To copy the non-connected networks such as N001, N003 and N005, highlights Network N001 with mouse, press "Ctrl" simultaneously and then highlights N003 and N005 to achieve the following result:

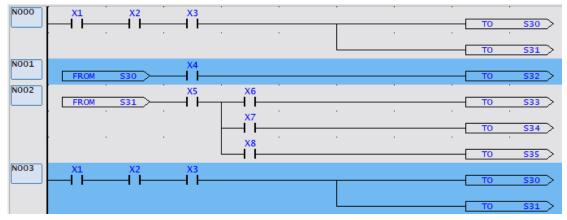


Fig. 102: Completing the copying of multiple networks

Execute the copying and pasting steps to complete the non-connected network copying.

Copying the network between different projects

First, open the UperLogic application program and then open Project-1 file. Likewise, open the UperLogic application program again and then open Project-2 file. In this way, you will be allowed to open two units of UperLogic application program windows. In Project-1, highlight Network N001 and press the right mouse button to show the Pop-up Menu and then select [Copy] or press "Ctrl" + "C" quick keys to copy the desired network. Next, move the cursor to the pasting position in Project-2 and then press the right mouse button to show Pop-up Menu. Next, select [Paste] or press "Ctrl" + "V" quick key to paste the network. In this way, it allows the user to complete the copying of network between different projects.

Deleting network

Highlight the Network Number to be deleted and then click [Designer] \rightarrow [Delete] in function toolbar, or press "Delete" quick key and it will be deleted directly.

Editing network lines and rows

In the Ladder Diagram, the program section is composed of multiple Network Numbers. Through the lines and rows of the Network Number, an orderly configured program is presented that will be easier for maintenance. Further, other functions are also designed for the network lines and rows to achieve more convenient and quicker program compilation. Described below is the operation method of these functions:

Expand network to 22 lines

If multiple contacts are created that will be insufficient for the original 11 lines in the network, it can be expanded to 22 lines. By doing so, move the cursor to the network where 11 lines will be expanded to 22 lines and then click [Designer] \rightarrow [Network] \rightarrow [Expand to 22 lines] in function toolbar; or you may press the right mouse button to show Pop-up Menu and then click [Edit Network line/row] \rightarrow [Expand to 22 lines].

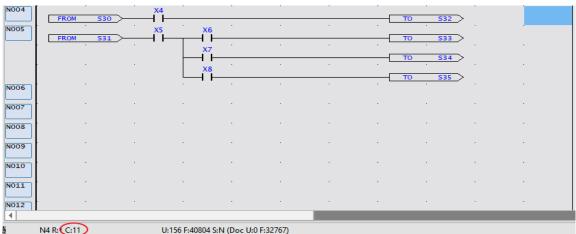


Fig. 103: Before expanding to 22 lines

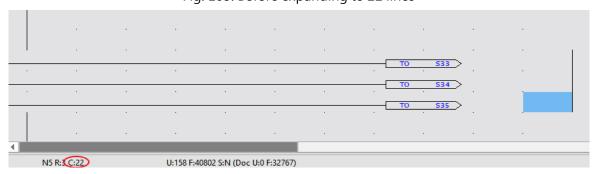
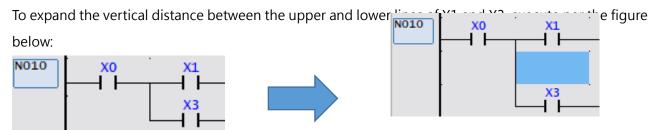


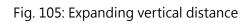
Fig. 104: After expanding to 22 lines

Compressing network to 11 lines

Move the cursor to the network where 22 lines will be compressed to 11 lines and then click [Designer] \rightarrow [Network] \rightarrow [Compress to 11 lines] in function toolbar; or you may press the right mouse button to show Pop-up Menu and then click [Edit Network line/row] \rightarrow [Compress to 11 lines].

Vertical expanding





Click X3 with cursor:

Click [Designer] \rightarrow [Expand Network] \rightarrow [Vertical Expand]; or press the right mouse button to show Popup Menu and then click [Edit Network line/row] \rightarrow [Vertical Expand] to complete the vertical expanding.

Vertical compressing

To compress the vertical distance between the upper and lower lines of X1 and X3, execute per the figure below:

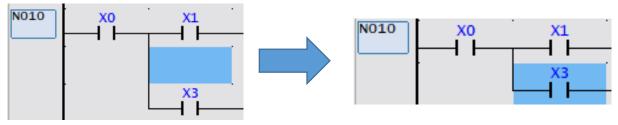


Fig. 106: Compressing vertical distance

Then the cursor clicks the blank row to be compressed between X1 and X3:

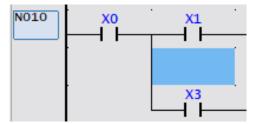


Fig. 107: Clicking the empty rows to be compressed

Click [Designer] \rightarrow [Expand Network] \rightarrow [Vertical Compress]; or press the right mouse button to show Pop-up Menu and then click [Edit Network line/row] \rightarrow [Vertical Compress] to complete the vertical compressing.

Horizontal expanding

To expand the distance between X0 and X3:

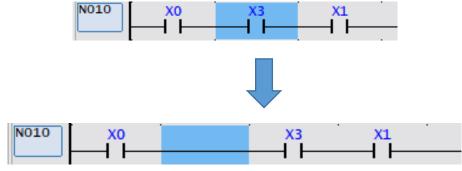


Fig. 108: Expanding horizontal distance

Click [Edit] \rightarrow [Expand Network] \rightarrow [Horizontal Expand] in function toolbar; or press the right mouse button to show Pop-up Menu and then click [Edit Network line/row] \rightarrow [Horizontal Expand] to complete the horizontal expanding.

Horizontal compressing

To compress the distance between X0 and X3:

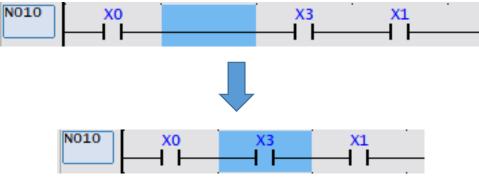


Fig. 109: Compressing horizontal distance

Click [Edit] \rightarrow [Expand Network] \rightarrow [Horizontal Compress] in function toolbar; or press the right mouse button to show Pop-up Menu and then click [Edit Network line/row] \rightarrow [Horizontal Compress] to complete the horizontal compressing.

Inserting empty network

To insert an empty network in the upper side of Network N012, execute the following procedure: In the Ladder Diagram program section, move the cursor to any component contact of N012 and then press the right mouse button to show Pop-up Menu. Next, click [Insert Empty Network] \rightarrow [Upper Insert]; or you may press the right mouse button of Network N012 to show Pop-up Menu and then click [Insert Empty Network] \rightarrow [Upper Insert]; or click [Designer \rightarrow [Insert Network] \rightarrow [Upper Insert]; or press "Shift" + "Insert" quick keys and then Network N012 will become an empty network. In the meantime, the content of original Network N012 will change to Network N013.

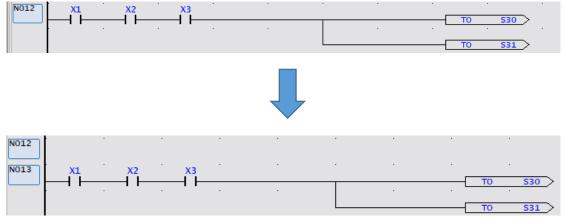


Fig. 110: Inserting empty network

Searching network

To search Network N001 of the intended program unit, click [Designer] \rightarrow [Go To]; or press "Ctrl" +

"G" quick keys to show the following window:

💾 Go To	8 23
Program Unit	
Main_unit1 Sub_unit1	
Network Number 5	
ОК	Cancel

Fig. 111: Searching network

Taking the searching of Network N005 in [Main_unit1] for example:

In [Program Unit List], highlights [Main_Unit-1] and then enter "5" in [Network Number] column to represent N005. Next, press [OK] button and the cursor will move to the Network Number position to be searched.

Main_unit1									
N000	×1 −	•				EN-	10 100		Y0 ▲
N001						. L]	
N002									
N003			. .						
N004			. ,	. ,					
N005									
N006									

Fig. 112: Moving to the Network Number position to be searched

6-2-5 Editing comment

To input the network comment for Network N012, move the cursor to N12 or any component and then press the right mouse button to show Pop-up Menu. Next, click [Network Comment] and the network comment input section will appear:

🖀 Network Comment	9	X
N012 Network Comment		
Note Network Comment		
		_
01	K Ca	ncel

Fig. 113: Network comment input section

Input "N012 Network Comment." Press [OK] button and you will see that the keyed comment is displayed in the previous line of the existing Network N012:

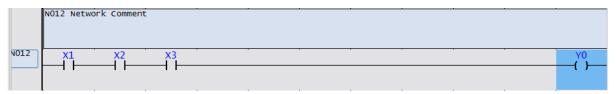


Fig. 114: Displaying comment in previous line of Network Number

In the meantime, you may double click [Project] \rightarrow [Comment] \rightarrow [Network Comment]; or in project window, double clicking \rightarrow [Comment Description] \rightarrow [Network Comment] to show all of the Network Numbers. Find out N012 by scrolling down the menu and then double clicking on the empty comment section and the network comment input empty section will appear:

1 100	×			and		
a	Network Comment		8	2 - X		
-1-	Main_unit1 Sub_u Ladder No	Comm	ant .			
	Cadder No	Com	ient			
	N0006			- 81		
	N0007			- 81		
	N0008					
	N0009					
	N0010					
	N0011					
	N0012	N012 Network Comment		_		
		N012 Network Comment				
			13			
		OK Linefeed: Alt+Enter	Cancel			
NO.	12 Network Com				 	
┡	X1 X2				 	
		X3				Y

Fig. 115: Adding network comment

Input "N012 Network Comment" and then press [OK] button to complete the network comment inputting.

6-3 Structured Text (ST)

In addition to the most basic editing of ladder diagram programs, UperLogic also provides a structured document programming language (Structured Text), whose syntax is similar to Pascal. Through this syntax, it is convenient to perform complex logic and calculations that are more difficult to edit than ladder diagrams. Commonly used programs and circuits can also be edited through Function Block (FB) is created for repeated use. Its operation method is introduced as follows:

6-3-1 Display Composition

Window Operation

Provides a multi-window ladder program page, which can display programs in different sections at the same time for comparison, copying and editing.

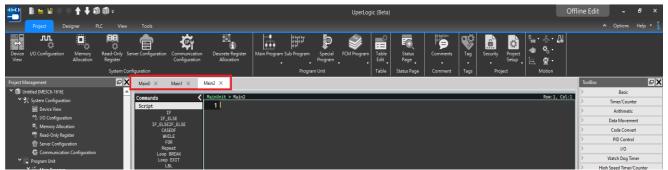


Fig. 116: List of programs in use

6-3-2 Commands Operation

[Commands] on the left side of the ST window will provide users with corresponding commands, which are divided into three categories: Script, Toolbox and FCM:

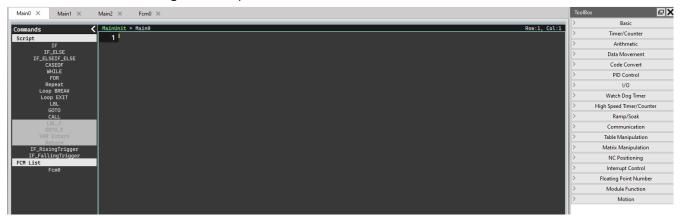


Fig. 117: ST commands operation

Double-click the command you want to use or enter it directly on the screen to use it. The following is the operation instruction:

Script :

Users can write programs through the instructions here. For example, after double-clicking the IF, the screen will display the corresponding specifications, and use () to prompt the user to fill in the information here. If the user already understands, you can also directly enter the corresponding command.

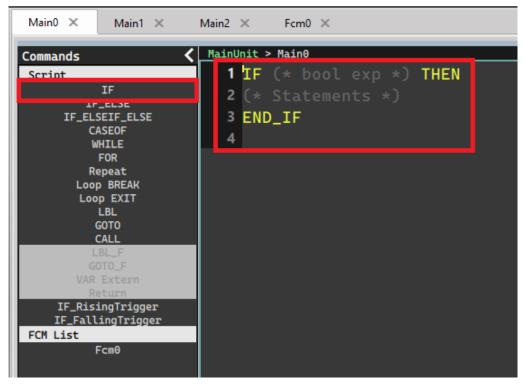


Fig. 118: Syntax hints comments

ToolBox :

Users can edit the project through the written program, and the function here will be similar to the Ladder command. The method of use is the same as that of ToolBox. For example, after double-clicking Timer, the corresponding specification will be displayed on the screen, and () will be used to prompt the user to fill in the information here. If the user already understands it, he can also directly enter the corresponding command.

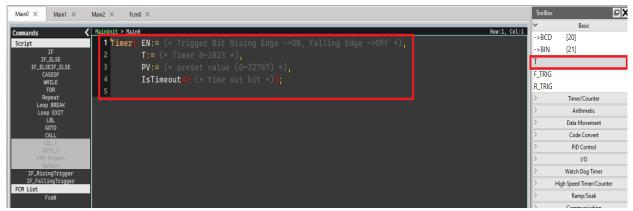


Fig. 119: Function hint comments

FB :

Users can use the function blocks written in the function block program to edit the project.

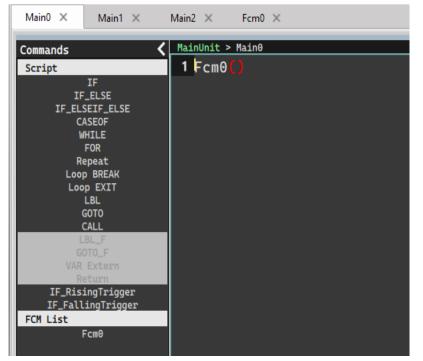


Fig. 120: Using Function Block

For the interface operation of the function block, please refer to Chapter 6-7.

6-4 Step Ladder Instruction Description

6-4-1 Instruction-based operation

The main purpose is to achieve higher program readability, easier maintainability and updating, as well as more reliable software quality. Aiming at the sequential control of mechanical action process, the software is designed for combining the widely accepted Ladder Diagram language under the support of step-based execution command. To operate, click [Designer] \rightarrow [Ladder Diagram] \rightarrow [Function Lookup] or press "F" quick key; or in Ladder Diagram program field, press the right mouse button to show Pop-up Menu and then click [Function Lookup] \rightarrow [Function Lookup]. In the Ladder Diagram program section, click the position where step instruction will be conveyed and all types of function instructions will appear. Under type item, select [SFC instruction] and the right-side Function Name will show the following four step instructions, i.e., "STP," "FROM," "TO" and "STPEND," as per the figure below:

P Function Lookup						
Function Name Function Description	STP n STE	P instruction				
Function Category	SFC	· · · · · · · · · · · · · · · · · · ·				
Function Name	ID	Description				
STP		STEP instruction				
STPEND		STEP end				
то		STEP divergence				
FROM		STEP covergence				
		OK Cancel				

Fig. 121: SFC instructions

For its operation instructions, please refer to Chapter 8 of the M-PLC instruction application manual:

6-5 Syntax Check

After inputting the ladder program, the system will be allowed for executing the syntax check to help you find out program errors. To execute, click [PLC] \rightarrow [Syntax check] in function toolbar to show the error statistic list resulting from the syntax check:

💾 Syntax Check	22 S
Error	0
Warning	3
	ОК

Fig. 122: Syntax check

The system will list all errors under the program section. In the error section, double clicking any item in error section and the program section will show the error component block, as per the figure below:

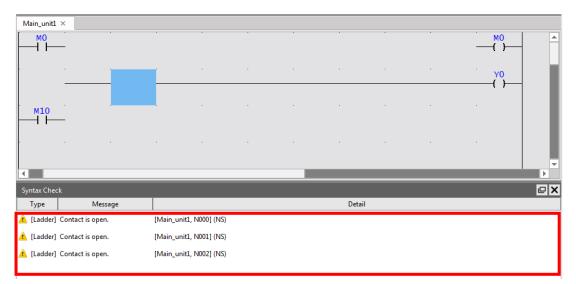


Fig. 123: Error displaying resulting from syntax check

6-6 Interrupt Program

UperLogic classifies related interrupt programs and motion control subroutines here, which is convenient for users to use and design. For example, to add an interrupt program, you only need to add and select the interrupt type, instead of defining the interrupt program through the command Label 65 and the end of RTI like Winproladder. In addition to the ladder LD language, programmers can also write special program logic through ST. Each special type of program is unique and cannot be repeated.

No.	Interrupt Source	Priority	Interrupt Label	Condition	Note		
17	Hardware Time Tick	3	STM0I	Interval from 1ms~9ms	Tick unit 1ms		
18	-	3	STM1I	Interval from 1ms~9ms			
19	-	3	STM2I	Interval from 1ms~9ms			
20	-	3	STM3I	Interval from 1ms~9ms			
21	-	3	LTM0I	Interval from 10ms~60000ms	Tick unit 10ms		
22		3	LTM1I	Interval from 10ms~60000ms			
23	-	3	LTM2I	Interval from 10ms~60000ms			
24		3	LTM3I	Interval from 10ms~60000ms			
33	HSC	2	HSC0I	Interval from HSC0 to (CV=PV)			

6-6-1 Types of Interrupt Program

34		2	HSC1I	Interval from HSC1 to (CV=PV)	
35		2	HSC2I	Interval from HSC2 to (CV=PV)	
36		2	HSC3I	Interval from HSC3 to (CV=PV)	
37	_	2	HSC4I	Interval from HSC4 to (CV=PV)	
38		2	HSC5I	Interval from HSC5 to (CV=PV)	
39		2	HSC6I	Interval from HSC6 to (CV=PV)	
40		2	HSC7I	Interval from HSC7 to (CV=PV)	
25	HST	1	HSTOI	Interval from HST0 to (CV=PV)	Tick uint 100us
26		1	HST1I	Interval from HST1 to (CV=PV)	
27		1	HST2I	Interval from HST2 to (CV=PV)	
28		1	HST3I	Interval from HST3 to (CV=PV)	
29			HST4I	Interval from HST4 to (CV=PV)	Not supported yet
30			HST5I	Interval from HST5 to (CV=PV)	Not supported yet
31			HST6I	Interval from HST6 to (CV=PV)	Not supported yet

Chapter 6 Creating Program

32			HST7I	Interval from HST7 to (CV=PV)	Not supported yet
1	Build-in Digital	2	X0+I (INT0+)	X0 positive edge trigger	The software high speed counter HSC4~HSC7 can be
2	Inputs	2	X0-I (INT0-)	X0 negative edge trigger	assigned as the trigger source of any interrupt X0~X15. Therefore, the
3		2	X1+I (INT1+)	X1 positive edge trigger	interrupt priority of the software high speed
4		2	X1–I (INT1-)	X1 negative edge trigger	counter depends on
5	_	2	X2+I (INT2+)	X2 positive edge trigger	the priority of X0~X15.
6	-	2	X2–I (INT2-)	X2 negative edge trigger	
7		2	X3+I (INT3+)	X3 positive edge trigger	
8		2	X3–I (INT3-)	X3 negative edge trigger	
9		2	X4+I (INT4+)	X4 positive edge trigger	
10		2	X4-I (INT4-)	X4 negative edge trigger	
11		2	X5+I (INT5+)	X5 positive edge trigger	
12		2	X5–I (INT5-)	X5 negative edge trigger	
13		2	X6+I (INT6+)	X6 positive edge trigger	

14	_	2	X6-I (INT6-)	X6 negative edge trigger	
15		2	X7+I (INT7+)	X7 positive edge trigger	
16		2	X7-I (INT7-)	X7 negative edge trigger	
41	External Module Event		COCPUI	Event from Co- processor (e.g., EtherCAT motion controller)	
42	~		LHMI	Event form left-side high-speed module	
43			RHM0I	Event form Right-side high-speed module 1	
44			RHM1I	Event form Right-side high-speed module 2	
45			RHM2I	Event form Right-side high-speed module 3	
46			RHM3I	Event form Right-side high-speed module 4	
47			RHM4I	Event form Right-side high-speed module 5	
48			RHM5I	Event form Right-side high-speed module 6	

꽵 New Program Uni	t	?	×
Program Unit Name	STM0I		
Language	Ladder (LD)		Ŧ
Program Type	Interrupt		*
Interrupt Type	STM0I		-
	Hardware Time Tick 0: Interval from 1ms~9ms.		
	ОК	Cancel	

Fig. 124: Select interrupt program type

6-6-2 Types of motion program

No.	Motion Source	Priority	Motion Label	Condition	Note
49	Motion Control	1	MSR	Synchronous Motion Parameter Program	

꽵 New Program Uni	t	?	×
Program Unit Name	MSR		
Language	Ladder (LD)		Ŧ
Program Type	Motion Sync		-
Task Type	MSR		*
	Motion Data Synchronous Routine.		
	ОК	Can	cel

Fig. 125: Select motion program type

MSR can be regarded as the continuous PLC program flow after the action of the continuation of the motion process. It is used as the planning of synchronous motion parameters to avoid the running time difference between the PLC program and the motion process. Designers can synchronize motion parameters in the MSR program to output to PLC registers or output Y contacts in real time, ensuring that the output of motion control will not be affected by the existing PLC program logic. For more details, please refer to the chapter on motion control.

6-6-3 Add special program

Click [Project] \rightarrow [Program Unit] \rightarrow [Special Program] \rightarrow [Add Special Program] with the mouse; or right-click [Add Special Program] in the project management window [Special Program] to create a new special program:

置 New Program Uni	t	?	\times
Program Unit Name	STMOI		
Language	Ladder (LD)		-
Program Type	Interrupt		-
Interrupt Type	STM0I		-
	Hardware Time Tick 0: Interval from 1ms~9ms.		
	ОК	Cance	

Fig. 126: Add special program unit

Program Unit Name:

Will be automatically generated by the system, and will have the same name as the interrupt or motion control type.

Language:

Users can choose whether this special program unit is edited using ladder diagram or ST programming language.

Interrupt Type:

Usera can choose the type of the interrupt program, and each interrupt type can only create one program unit, which cannot be created repeatedly.

6-6-4 Adjust Interrupt Program

Click [Project] \rightarrow [Program Unit] \rightarrow [Interrupt Program] \rightarrow [Adjust Interrupt Program]; or right-click [Adjust Interrupt Program] in the project management window [Interrupt Program] to adjust the interrupt program order of sorting:

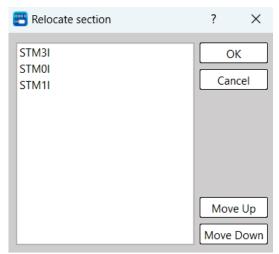


Fig. 127: Adjusting Interrupt Program

6-6-5 Call Interrupt Program

The calling of the interrupt is not by using software instructions, but by sending an interrupt signal to the CPU through the hardware circuit, and the CPU recognizes the name of the interrupt and automatically jumps into the interrupt subroutine and marks it with the interrupt name.

6-7 Function Module Program

FCM can package highly repetitive or special application program flow, which can be easily called repeatedly during program editing, significantly simplifying and speeding up PLC programming, and helping to avoid errors and repetitive editing and debugging. Furthermore, a library of functions commonly used by programmers is established to facilitate future reuse in different projects.

6-7-1 Add Function Module Program

Click [Project] \rightarrow [Program Unit] \rightarrow [Function Module Program] \rightarrow [Add FCM Program] with the mouse; or right-click [Add FCM Program] in the project management window [Function Module Program], you can add new function module program:

Anguage Ladder (LD) CM Description 3 unber of Input 3 unber of Output 3 unber of Parameters 3 ✓ Return Value Variable 1 VAR_SIG_IN 2 VAR_SIG_IN IN1 Bool IM0 2 VAR_SIG_IN IN2 Bool	
unber of Input 3 unber of Output 3 unber of Parameters 3 ✓ Return Value Variable 1 VAR_SIG_IN EN Bool IM0 2 VAR_SIG_IN IN1 Bool IM1	
unber of Input 3 unber of Output 3 unber of Parameters 3 PReturn Value Variable Mode Name Data Type Internal Register 1 VAR_SIG_IN EN Bool IM0 2 VAR_SIG_IN IN1 Bool IM1	
unber of Output 3 unber of Parameters 3 ✓ Return Value Variable 1 VAR_SIG_IN EN Bool IM0 2 VAR_SIG_IN IN1 Bool IM1	
Mode Name Data Type Internal Register 1 VAR_SIG_IN EN Bool IM0 2 VAR_SIG_IN IN1 Bool IM1	
Mode Name Data Type Internal Register 1 VAR_SIG_IN EN Bool IM0 2 VAR_SIG_IN IN1 Bool IM1	
Mode Name Data Type Internal Register 1 VAR_SIG_IN EN Bool IM0 2 VAR_SIG_IN IN1 Bool IM1	
I VAR_SIG_IN EN Bool IM0 2 VAR_SIG_IN IN1 Bool IM1	
2 VAR_SIG_IN IN1 Bool IM1	er
2 VAR SIG IN IN2 Bool IM2	
4 VAR_SIG_OUT OUTO Bool IM8	
5 VAR_SIG_OUT OUT1 Bool IM9	
6 VAR_SIG_OUT OUT2 Bool IM10	
7 VAR_PARA_IN PA0 16Bit-Int ID0	
8 VAR_PARA_IN PA1 16Bit-Int ID2	
9 VAR_PARA_IN PA2 16Bit-Int ID4	
10 VAR_RETURN RET Bool IM11	

Fig. 128: Add Function Module Program

Program Unit Name:

Users can define the name of the desired program unit at the time of creation, and this name will be used when calling this function block program when other program units are programmed.

Language:

Users can choose whether to use the ladder diagram or ST programming language to edit the interrupt program unit.

Function Module Description:

Users can define the required program unit descriptions by themselves.

Input Numbers:

Users can set the quantity to be input, the minimum is 1 and the maximum is 8. The first group of input names is fixed as EN, and the remaining 7 groups of input names can be edited by the user.

	Mode	Name	Data Type	Internal Register
	VAR_SIG_IN	EN	Bool	IMO
	VAR_SIG_IN	IN1	Bool	IM1
3	VAR_SIG_IN	IN2	Bool	IM2
1	VAR_SIG_IN	IN3	Bool	IM3
	VAR_SIG_IN	IN4	Bool	IM4
5	VAR_SIG_IN	IN5	Bool	IM5
,	VAR_SIG_IN	IN6	Bool	IM6
3	VAR_SIG_IN	IN7	Bool	IM7



Output Numbers:

Usera can set the quantity to be output, the minimum is 0 and the maximum is 8. Users can edit the name of the output by themselves.

	Mode	Name	Data Type	Internal Register
1	VAR_SIG_IN	EN	Bool	IMO
2	VAR_SIG_OUT	OUT0	Bool	IM8
3	VAR_SIG_OUT	OUT1	Bool	IM9
4	VAR_SIG_OUT	OUT2	Bool	IM10
5	VAR_SIG_OUT	OUT3	Bool	IM11
6	VAR_SIG_OUT	OUT4	Bool	IM12
7	VAR_SIG_OUT	OUT5	Bool	IM13
8	VAR_SIG_OUT	OUT6	Bool	IM14
9	VAR_SIG_OUT	OUT7	Bool	IM15

Fig. 130: FCM output variables

Parameter Numbers:

The user can set the number of parameters required by the function module, the minimum is 0, and the maximum is 12. Users can define the mode, name and data type of parameters by themselves, which will be explained one by one below:

	Mode	Name	Data Type	Internal Register
1	VAR_SIG_IN	EN	Bool	IMO
2	VAR_PARA_IN	PA0	16Bit-Int	ID0
3	VAR_PARA_IN	PA1	16Bit-Int	ID2
4	VAR_PARA_IN	PA2	16Bit-Int	ID4
5	VAR_PARA_IN	PA3	16Bit-Int	ID6
6	VAR_PARA_IN	PA4	16Bit-Int	ID8
7	VAR_PARA_IN	PA5	16Bit-Int	ID10
8	VAR_PARA_IN	PA6	16Bit-Int	ID12
9	VAR_PARA_IN	PA7	16Bit-Int	ID14
10	VAR_PARA_IN	PA8	16Bit-Int	ID16
11	VAR_PARA_IN	PA9	16Bit-Int	ID18
12	VAR_PARA_IN	PA10	16Bit-Int	ID20
13	VAR_PARA_IN	PA11	16Bit-Int	ID22

Fig. 131: INOUT parameters of function block

Mode

Users can choose the mode of this parameter as input (IN), output (OUT), or output-input (INOUT). When IN is selected, the value of the parameter before entering FCM will be inherited, and the change in FCM will be ignored after the function block is terminated.

When selecting OUT, the value of the parameter before entering the FCM will be ignored, and if the value is changed, it will be output to the designated register.

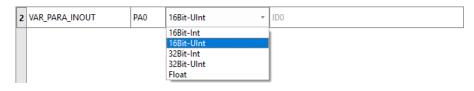
When INOUT is selected, it will have both the characteristics of IN and OUT, inherit the value of the parameter before entering FCM, and retain the changes in FCM.

Name

Users can define the name of the parameter by themselves.

• Data Type

Users can select the data type of the parameter as 16Bit-Int, 16Bit-UInt, 32Bit-Int, 32Bit-UInt or Float.





Return Value

After checking, the return value and the specified register will be output. It is mainly used in ST language.

6-7-2 Adjust Function Module Program

Click the function bar [Project] \rightarrow [Program Unit] \rightarrow [FCM Program] \rightarrow [Adjust FCM Program] with the mouse; or right click [Adjust FCM Program] in the project management window [FCM Program] to adjust the FCM program order of sorting:

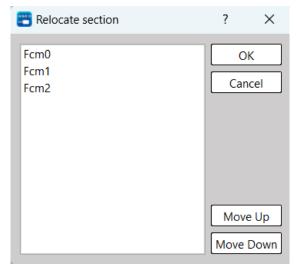


Fig. 133: Adjusting FCM Program

7

Creating Tables

<u>7-1</u>	Table Management	
	Link Table	
	Servo Parameter Table	
7-4	Servo Program Table	
7-5	General Purpose Link Table	
	Register Table	
7-7	Modbus Master Table	

<u> A</u> Danger

- 1. When installing or removing the M-series CPU modules and various expansion modules or the equipment connected to it, all power must be turned off, otherwise it may cause electric shock or wrong action, resulting in death or serious personal injury and damage to the machine equipment.
- 2. Before the installation and wiring construction is completed, do not tear off the dust-proof paper on the PLC cooling hole, so as to prevent the drilling iron filings or wiring scraps from falling into the PLC during construction, causing fire, failure or malfunction.
- 3. After confirming that the installation and wiring are all completed, remember to tear off the abovementioned dustproof paper to avoid poor heat dissipation of the PLC, resulting in fire, failure or malfunction.

This section describes how to set up the reports, link parameters and command tables. Through the userfriendly interface, it minimizes the complicated procedure when operated by the user. Provided below is the operation method of the respective table.

7-1 Table Management

7-1-1 Adding New Table

To add a table, please select [Table Edit] \rightarrow [OOOO Table] \rightarrow [New OOOO Table] in the project window, or select [Project] \rightarrow [Table Edit] \rightarrow [New OOOO Table], as shown below:

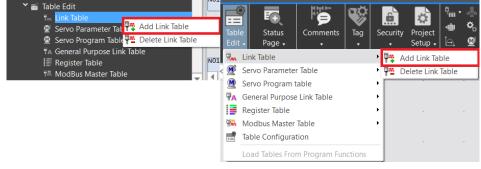


Fig. 134: Adiing a new table

After clicking [New OOOO Table], the table editing window will pop up allowing users to create table properties.

📇 Table Edit		?	×			
Properites						
Table Type	Normal Link Table		-			
Table Name	Link Table					
Start Address	R1600					
Table Capacity	Dynamic Allocation					
	 Fixed Length 					
Load Table From ROR						
Load Table From PLC						
Description						
	ОК	Can	cel			

Item	Description
Туре	The subcategory of the table, which varies from data table to data table.
Name	The name of the table
Start Address	The starting address to use for this table, which can be entered as a
	register or a label.
Length	The length used by the table data; the unit is a word group.
Table Capacity	Choose whether you want to dynamically adjust the table capacity or a
	fixed capacity limit:
	• Dynamic Allocation: Edit length changes with form content
	• Fixed length: Edit length must not exceed configured length
Load Table From PLC	To load corresponding link tables from PLC.
Load Table From ROR	To load corresponding link tables from ROR.
Description	Provides users the description of editing tables

7-1-2 Table Edit

After adding a table, you will enter the table data window. In addition, you can enter the table editing window from [Table Edit] \rightarrow [OOOO Table] \rightarrow [Name] in the project window, or click [Project] \rightarrow [Table Edit] \rightarrow [OOOO Table] \rightarrow [Name].

Users can edit the command details for this form in this window.

📰 Normal	Link Tab	le-[Link Tab	le]				?	\times
Calculator	Ö _o Setup	Monitor	T	oolbar	Section			
Commands								
				Add	Delete	Move Up	Move	Down
Command	Slave	Master Dat	a	Slave Data	a Data Size	Operat	tion	
					T	able Data	Sect	ion
Allow: 3316						Position: R1600		

Function		Description
Toolbar Section	Calculator	Calling the easy-to-use calculator installed in the
		Windows.
	Setting	Calling the table edit window. It allows the user to
		rename the table or change the home address of
		such table.
	Monitor	The execution status of form commands can be
		monitored. The monitoring content depends on
		different form types, and the content will be
		described in detail in subsequent chapters.
		This function is only supported online and can be
		used by calling the Zooming function on the ladder
		diagram.
Table Data Section	ו	Table data editing section, the content depends on
		different form types, and will be described in detail
		in subsequent chapters.
Status Section	Allow	The display table property is set to dynamic
		allocation or fixed length, and the maximum length
		is marked; the unit is a word group.
	Used	Displays the length of the table command currently
		used, and the unit is a word group.
	Position	Displays the address range currently used by table
		commands.

7-1-3 Rename

To change the name of the table, please select the table [Name] to be modified in [Table Edit] \rightarrow [OOOO Table] in the project window, select [Rename] from the right-click menu or use the shortcut key "F2" to edit the name. In addition, you can directly enter the form editing window and change the name through editing properties.

7-1-4 Delete Table

To delete a table, please select [Table Edit] \rightarrow [OOOO Table] in the project window, and select [Delete OOOO Table] from the right-click menu, or [Project] \rightarrow [Table Edit] \rightarrow [Delete OOOO Table] in the execution function bar, as shown in the figure below:

 ✓ a Table Edit ✓ Link Table ✓ Add Link Table ✓ Servo Paramet ✓ Delete Link Table ✓ Servo Program 		Tab Edit	e Status	Comments	Tag	Security	/ Project Setup +	u, e 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
TA General Purpose Link Table		₩ 	Link Table			• 🗛 /	Add Link Ta	ble
Register Table		< 💇	Servo Parameter	r Table		ı س	Delete Link	Table
穏 ModBus Master Table	Ŧ	<u></u>	Servo Program t	table		+		
		۳A	General Purpose	e Link Table		+		
			Register Table			+		
		¶ <mark>M</mark>	Modbus Master	Table		+		
			Table Configurat	tion				
		_	Load Tables From	m Program Fur	nctions			

After the delete table window appears, select the table you want to delete and confirm. You can delete multiple selections.

😬 Delete Table	?	×
servo_parm_table	0	к
	Car	icel

7-1-5 Table Configuration Adjustment

Uperlogic provides a table overview function, which can be used to determine whether the addresses used in the tables overlap to avoid misuse during program execution. To use this function, please select [Table Configuration Adjustment] from the right-click menu in [Table Edit] in the project window, or [Project] \rightarrow [Table Edit] \rightarrow [Table Setting Adjustment] in the execution function bar.

Name	Start Address	End Address	Allocated Size	Setup
A gp_link_table_1	R1000 [gplink_md1_saddr]	R1011	Dynamic Allocation	Edit
A gp_link_table_2	R1300	R1307	Dynamic Allocation	Delete
M modbus_table	R1200 [mdbus_saddr]	R1216	Dynamic Allocation	Advanced
normal_link_table	R1600 [nlink_saddr]	R1614	Dynamic Allocation	
reg_table	R5001	R5006	Dynamic Allocation	
servo_parm_table	R800 [mparam_saddr]	R823	Dynamic Allocation	
🗕 servo_prog_table	R900 [mprog_saddr]	R937	Dynamic Allocation	
lessage Range check OK!				

Item	Description				
Table	Display the basic properties of all tables of the current project.				
	If the start address is marked with [OOO], it means that the address				
	uses a label as the start address.				
Configuration	Enter the table editing window to modify the properties of the table				
Edit	Enter the table data window to modify the table data.				
Delete	Delete the selected table.				
Write to PLC	Write the current project table data to PLC.				
Table Comparison	Compare the data in the current project table with the data in the PLC				
	register.				
Message	Shows whether the addresses currently used between tables have				
	overlapping ranges.				

7-2 Link Table

The main purpose of the link table is to facilitate users to fill in the data content of the communication command FUN151 CLINK. The [General Online Table] category corresponds to MD0. For other descriptions of corresponding commands, please refer to the advanced manual.

7-2-1 Table Value

The table data section of [General Online Table] is as shown in the figure below. Users can edit individual commands of [General Online Table] through simple operations, and the content corresponds to the command Start Register (SR) on FUN151.

-Co	ommands —							
				A	dd		Move Up	Move Down
	Command	Slave	Master Data		Slave Data	Data Size	Opera	ation
1	Read	255	X100	<-	X200	1	Bit Operation	
2	Write	1	R500	->	R500	10	Word Operatic	on

The operation description is shown as below:

Item			Description					
	New		After clicking, a row of commands will be added in the					
			editing section for users to edit.					
	Delete		After clicking, delete the command currently selected by					
			the user, and multiple selections can be deleted.					
	Move Up	lp	After clicking, move the command currently selected by					
Operation			the user up one column.					
Operation	Move D	own	After clicking, move the command currently selected by					
			the user down one column.					
	Diabt	Cut	After clicking, cut the command currently selected by the					
	Right- Click Copy		user, and multiple selections can be cut.					
			After clicking, copy the command currently selected by the					
	Menu		user, multiple selections can be copied •					

Paste	After clicking, paste the command previously copied or cut by the user.
Insert	After clicking, insert a row of commands at the selected position in the editor for users to edit.
Delete	After clicking, delete the command currently selected by the user, and multiple selections can be deleted.
Move Up	After clicking, move the command currently selected by the user up one column.
Move Down	After clicking, move the command currently selected by the user down one column.

The command data content is shown as below:

Item		Description						
	No.	Display the command information of the Nth.						
	Command	Edit this command action as [Read] or [Write]						
Slave Data Master Data		Edit the station number of the slave station to communicate.						
		Edit the data starting address of the Master station.						
	Slave Data	Edit the data starting address of the Slave station.						
Data Size		The data size of such command						
	Operation	Display this command as [Bit Operation] or [Word Group Operation]						

7-2-2 Table Monitoring

The monitoring of [General Online Table] is as shown in the figure below. Users need to be online and call the Zooming function on FUN151 to use it. The content corresponds to the command operation start register (WR) on FUN151.

Chapter 7 Creating Tables

### -	Normal Link Table-[normal_link_table] ? ×										
Ca	alculator Setup Monitor										
Commands Add Delete Move Up Move Down											
	Command	Slave	Master Data		Slave Data	Data Size			Operation		
1	Read	255	X100	<-	X200	1	Bit Ope	ration			
2	Write	1	R500	->	R500	10	Word O	perati	on		
AI	low: 33168 w	ords(A	Auto)	Used	d: 15 words			Positic	on: R1600 - R16	514	
Re	esult										
	Туре		Value				Descr	iption			
Re	sult Code	00	Н	Tra	insaction Suc	ess					
Se	quence No.	01	1H								
St	Station Number 01H										
Сс	ommand Coc	le 02	Н								
									ОК	Ca	incel

Item	Description					
Result Code	Shows the operating result.					
	00H: Normal					
	Other values: Error					
Operation No.	Indicates that the Nth transaction is in operation.					
Station No.	Indicates the station number of the slave station currently in					
	communication.					
Command	40H: Read slave PLC system status.					
Code	44H: Read the status of multiple consecutive single points of the slave PLC.					
	45H: Write the state of multiple consecutive single points of the slave PLC.					
	46H: Read the status of multiple consecutive registers of the slave PLC.					
	47H: Write the status of multiple registers in the slave PLC.					

7-3 Servo Parameter Table

The main purpose of the servo parameter table is to facilitate the user to fill in the data content of the positioning program parameter setting command FUN141 MPARA. For the description of the corresponding command, please refer to the advanced manual.

7-3-1 Table Value

The table data section of [Servo Parameter Table] is as shown in the figure below, users can edit individual parameters of [Servo Parameter Table] through simple operations, and the content corresponds to the command start register (SR) on FUN141.

-Parameter Setting									
R800	0	Unit	2: Combine	٠	R813	10	+Movement Compensation	1Ps	*
R801	1	Pulse/Rev. (16Bit)	3000	÷	R814	11	-Movement Compensation	1Ps	*
DR802	2	Distance/Rev.	3000	*	R815	12	Deceleration Time	1ms	*
R804	3	Minimum Unit	3	*	R816	13	Interpolation Time Constant	500ms	÷
DR805	4	Maximum Speed	200000	*	DR817	14	Pulse/Rev. (32Bit)	5	÷
DR807	5	Start/End Speed	142	* *	R819 LB	15-	0DOG Input	Open • 1	‡ [X1]
R809	6	Creep Speed	1001	*	R819 HB	15-	1Stroke Input	Open - 2	Ĵ [X2]
R810	7	Backlash Compensation	1Ps	* *	R820 LB	15-	2PG0 Input	Negative Edge 🔹	3 🗘 [X3]
R811	8	Acc./Dec. Time	6000ms	*	R820 HB	15-	3CLR Output	Used - 4	‡ [Y4]
R812 LB	9-(Direction Control	1: Down	*	DR821	16	Machine Zero Point	1Ps	*
R812 HB	9-1	1Zero Return Direction	0: Up (Right)	٠	R823	17	PG0 Count	2	÷

Fig. 135: Editing Servo Parameter Table

Parameter	Item	Description
0	Unit Setting	The unit used for the travel and speed settings used
		in the program.
		When the setting value is 0, the unit is mm, Deg, Inch,
		which is called the mechanical unit.
		When the setting value is 1, the unit is Pulse, which is
		called the motor unit.
		When the setting value is 2, the setting value is in
		mm, Deg, Inch, and the speed setting is in Pulse,
		which is called compound unit.
1	Ps/Rev	The number of pulses (A) required for one revolution
		of the motor.
		The range is $1 \sim 65535$ Ps/Rev (when it is above
		32767, set it with decimal positive number)
		When parameter 14 = 0, take parameter 1 as Ps/Rev.

		When para	meter 14	≠ 0, take	parameter	14 as	
		Ps/Rev.					
2	μM/Rev	The distance (B) driven by the motor for one					
		revolution.					
		The range i	s 1 ~ 9999	99 µM/Re	ev (mDeg/R	ev, 0.1	
		mInch/Rev).				
3	Min. Setting Unit	Setting	Mecha	nical/Com	pound	Motor	
		Value	Unit			Unit	
			mm	Deg	Inch	Ps	
		0	x1	x1	x0.1	x1000	
		1	x0.1	x0.1	x0.01	x100	
		2	x0.01	x0.01	x0.001	x10	
		3	x0.001	x0.001	x0.0001	x1	
4	Max. Speed Setting	Motor and	compoun	d unit: 1-9	921600 Ps/S	Sec	
		Mechanical unit: 1-153000 (cm/Min, x10 Deg/Min,					
		Inch/Min),					
		but the maximum frequency can not be greater than					
		921600 Ps/Sec.					
5	Start/Stop Speed	Motor and compound unit: 1-921600 Ps/Sec •					
		Mechanical unit: 1-15300 (cm/Min, ×10 Deg/Min, Inch/Min), but the maximum frequency can not be					
		Inch/Min),	but the m	aximum fr	equency ca	an not be	
		greater tha	n 921600	Ps/Sec •			
6	Return-to-origin	Motor and compound unit: 1-65535 Ps/Sec					
	Deceleration Speed	Mechanica	l unit: 1-1	5300 (Cm/	'Min, x10 D	eg/Min,	
		Inch/Min)					
7	Gear Backlash Correction	Setting sco					
	Value	When walk	5		alking dista	ance will	
		automatically add this value •					
8	Acceleration and	Setting sco					
	Deceleration Time Setting	The time re	•				
		from rest to					
		decelerate					
		parameter deceleratio		paramete	er is used as	ธแต	
		deceleratio	in ume.				

9-0	Direction of Operation	When the setting value=0, forward pulse output, the
		current Ps value will increase; the reverse pulse
		output, and the current Ps value will decrease.
		When the set value=1, the forward pulse output and
		the current Ps value will decrease; the reverse pulse
		output and current Ps value will increase.
9-1	Return-to-origin	When the set value=0, the return-to-origin direction
	Direction	is the current Ps value plus the upward direction (the
		origin is on the right).
		When the setting value=1, the return-to-origin
		direction is the current Ps value minus downward
		direction (the origin is on the left).
10	Forward Revolution	When outputting forward revolution pulse, this value
	Movement Correction	will be automatically added as the moving distance;
	Value	the range is -32768 - 32767 Ps.
11	Compensation Value of	When switching to pulse wave output, this value will
	Reverse Movement Value	be automatically added as the moving distance; the
		range is -32768 - 32767 Ps.
12	Deceleration Time Setting	The range is 0-30000 ms.
		When parameter 12=0, parameter 8 is used as the
		deceleration time.
		When parameter $12 \neq 0$, parameter 12 is used as the
		deceleration time.
13	Interpolation	It is used to set the time required to accelerate from
	Acceleration/Deceleration	stillness (speed = 0) to the working frequency during
	Time Setting	linear interpolation motion; this time is also used for
		deceleration and stop control; the range is 0-30000
		ms.
14	Ps/Rev	The range is 0 to 1999999.
		y as parameter 14 = 0, take parameter 1 as Ps/Rev.
		y as parameter 14 \neq 0, take parameter 14 as Ps/Rev.
15-0	Proximity DOG Input	Can set [Normally Open], [Normally Closed] or [Not
	Contact Setting	Used] input contact; contact number is X0-X15.

15-1	Stroke Limit Input Contact	Can set [Normally Open], [Normally Closed] or [Not
	Setting	Used] input contact; contact number is X0-X125.
15-2	Zero-Point Signal PG0	You can set [Upper Edge Count], [Lower Edge Count]
	Input Contact Setting	or [Not Used] input contact; the contact number is
		X0-X15.
15-3	Zero-Clear Signal CLR	You can set [Use] or [Not Used] output contact; the
	Output Contact Setting	contact number is Y0-Y23.
16	Mechanic Original-Point	The range is -999999-999999 Ps.
	Position Value	
17	Zero-Point Signal	The range is 0-255 Count.
	Numbers	

7-3-2 Table Monitoring

No monitoring function is provided to [Servo Parameter Table].

7-4 Servo Program Table

The main purpose of [Servo Program Table] is to facilitate the user to fill in the data content of the singleaxis high-speed pulse output command FUN140 HSPSO. For the description of the corresponding command, please refer to the advanced manual.

7-4-1 Table Value

The table data section of [Servo Program Table] is as shown in the figure below, users can edit individual commands of [Servo Program Table] through simple operations, and the content corresponds to the command start register (SR) on the FUN140.

-Co	ommands					
			Add	Delete	Move Up	Move Down
	Speed	Movement Action	Wait		Go To	
1	SPD 1	DRV, ADR, +, 20, Ut	WAIT TIME, 1000	GOTO NEXT		
2	SPD 1	DRV, ADR, +, 30, Ut	WAIT TIME, 500	GOTO NEXT		
3	SPD 1	DRV, ADR, -, 30, Ut	WAIT, X0	GOTO NEXT		
4	SPD 1	DRV, ADR, -, 20, Ut	WAIT, X1	GOTO 1		

Fig. 136: Setting Servo Program Table

The operation description is shown as below:

ltem			Description		
	New		After clicking, a row of commands will be added in the		
			editing section for users to edit.		
	Delete		After clicking, delete the command currently selected by		
			the user, and multiple selections can be deleted.		
	Move Up		After clicking, move the command currently selected by		
Operation			the user up one column.		
Operation	Move D	own	After clicking, move the command currently selected by		
			the user down one column.		
	Right-	Cut	After clicking, cut the command currently selected by the		
	Click		user, and multiple selections can be cut.		
		Сору	After clicking, copy the command currently selected by the		
	Menu		user, multiple selections can be copied $ \circ $		

Paste	After clicking, paste the command previously copied or cut
	by the user.
Insert	After clicking, insert a row of commands at the selected
	position in the editor for users to edit.
Delete	After clicking, delete the command currently selected by
	the user, and multiple selections can be deleted.
Move Up	After clicking, move the command currently selected by
	the user up one column.
Move Down	After clicking, move the command currently selected by
	the user down one column.

📇 Servo Pr	? ×	
Speed	1	
Movement	DRV • ADR • + • 20	Ut 👻
Wait	WAIT TIME - 1000	
Go To	NEXT	-
	ОК	Cancel

Command data description is shown as below:

ltem			Description		
			The frequency or speed of the pulse output can be		
	Speed	SPD	directly input to a constant or register (R/D).		
	speed	350	When FUN141 parameter 0=0, it is the speed;		
			When FUN141 parameter 0=1 or 2, it is the frequency.		
			Pulse Output amount.		
	d When FUN141 parameter 0=0 of Inch. There are four instruction operar Operation DRV Select ADR or ABS for posit A. ADR, relative value coord	DRV	When FUN141 parameter 0=1, the unit is Ps;		
			When FUN141 parameter 0=0 or 2, the unit is mm, Deg,		
Command			Inch.		
			There are four instruction operands:		
			• Select ADR or ABS for positioning coordinates:		
			A. ADR, relative value coordinate positioning.		
		B. ABS, absolute value coordinate positioning.			
			• Select '+' or '-' for the operating direction:		
			A. ' + ', forward revolution or count up.		
			B. ' – ', reverse or count down.		

			• The stroke setting value (pulse output value) can be
			directly input to a constant or a temporary register
			(R/D).
			 Stroke setting value resolution Ut or Ps:
			A. For Ut, the resolution is determined by FUN141
			parameter 0, 3.
			B. For Ps, the mandatory resolution is one Ps.
		DRVC	The usage is the same as DRV command.
			As a convenient command for return-to-origin, three
		DRVZ	different methods of return-to-origin, MD0-MD2, are
			provided in total.
			WAIT TIME (unit is 0.01 second) when the pulse output is
		WAIT	completed. When the time is up, the number of steps
	Wait	TIME	indicated by GOTO will be executed; constants or
			registers (R/D) can be input directly.
			WAIT for input contact signal when pulse output is
		WAIT	completed. When the input contact signal is ON, execute
			the steps indicated by GOTO.
		ACT	After the action time described by the pulse output ACT,
			immediately execute the number of steps indicated by
			GOTO; the action time (unit: 0.01 second) can be directly
			input into a constant or register (R/D).
			External trigger command, when the pulse is being
		EXT	output (the number of pulse waves has not been sent), if
			the external trigger signal is activated (ON), it will
			immediately execute the steps indicated by GOTO.
			When the condition of WAIT/ACT/EXT instruction is met,
			use GOTO instruction to describe the number of steps to
			be executed.
	Go To	GOTO	NEXT: To execute the next step.
			• A constant: The number of steps to execute.
			• Register (R/D): The number of steps to be
			executed is stored in the temporary register.
		MEND	Positioning program finished.

7-4-2 Table Monitoring

The monitoring of [Servo Program Table] is shown in the figure below. Users need to be online and call the Zooming function on FUN140 to use it. The content corresponds to the command operation start register (WR) on FUN140.

-	Servo Program Table-[servo_prog_table]								
Cal	Calculator Setup Monitor								
-Co	ommands								
			A	dd		Move Up	Move		
	Speed	Movement Action	Wait			Go To			
1	SPD 1000	DRV, ADR, +, 20, Ut	WAIT TIME, 1000	GOTO NI	EXT				
2	SPD 1000	DRV, ADR, +, 30, Ut	WAIT TIME, 500	GOTO N	EXT				
3	SPD 1000	DRV, ADR, -, 30, Ut	WAIT, X0	GOTO N	EXT				
4	SPD 1000	DRV, ADR, -, 20, Ut	, Ut WAIT, X1 GOTO 1						
	low: 33868 wor	ds(Auto)	sed: 38 words		Positi	on: R900 - R937			
- Re	esult	1							
	Туре	Value			Description	1			
Cu	rrent Step	1							
То	tal Steps	4							
Working Flag 1			Wait for transfer condition						
Working Flag 1			Step Finished(FO I	ON)					
Error Code 0			No error						
						ОК	Ca	ncel	

Item	Description			
Currently	If the command is being executed, the content value is the number of			
Working/Stopping	steps being executed (1~N);			
Steps	If the instruction is not being executed, the content value represents the			
	number of steps currently stopped.			
Total Steps	Steps in total			
Working Flag	Corresponds to flag of WR+1			
	B8 =ON, suspend output.			
	B9 =ON, wait for transition condition.			
	B10=ON, continuous operation (total output stroke is set to 0).			
	B12=ON, pulse output (output indication "ACT").			
	B13=ON, command execution error (output indication "ERR").			

	B14=ON, one-step positioning is completed (output indication	"DN").
Error Code	Error Codes of PSO 0-4	

7-5 General Purpose Link Table

The main purpose of the [General Purpose Link Table] is to facilitate the user to fill in the data content of the communication command FUN151 CLINK, which corresponds to MD1/MD2. For the description of the corresponding command, please refer to the advanced manual.

7-5-1 Table Value

The table data section of [General Purpose Link Table] is as shown in the figure below. Users can edit individual commands of [General Purpose Link Table] through simple operations, and the content corresponds to the command start register (SR) on FUN151.

Parameter							
Mode		Transmit/Re	eceive then recei	ive/transmit			Ŧ
Receive ev	ven with error	r			Start Code	2	
✓ Only one I	byte of data o	occupies in o	ne register		End Code	3	
Commands							
30h,49,50,51,5	2,53,54,55,56						
AU 22760			142		D ::: D4000 D4	044	_
Allow: 33768	words(Auto)	Use	d: 12 words		Position: R1000 - R1	011	
Preview							
Ref	De	cimal	Hexadecimal		String		^
R1001	515	0	203H	• •			
R1002	9	0	009H	• •			
R1003	48	0	030H	. 0.			
R1004	49	0	0031H '1'				
R1005	50	0	032H	' 2'			
R1006	51	0	033H	' 3'			
P1007	50	0	0210	· /·			-
Length: 0		Che	ecksum(BYTE) = (00H	CRC16 = FFH FFH		

The data content description is shown as below:

Item		Description
		[Only sending/receiving messages]
		When MD1 is only sending out messages, the other
	er Communication Mode	party does not respond; when MD2 is only receiving
Parameter		messages, there is no response.
Parameter		[Receive message after sending or Send message
		after accepting]
		MD1 is sending out a message, and then waiting to
		receive a response message from the other party;

		MD2 is receiving a message, and then sending out a
		response message.
	Receive even if a	When checked, the receiving action will be
	communication error	performed whether there is a communication error
	occurs	or not.
	The register uses only one	When checked, one data occupies one register; otherwise, two data temporarily occupy one
	bit of data	register.
	Start Code	Start code describing the message.
	Finish Code	Finish code describing the message.
		Edit the content of the sent or received message.
Command		The editing content can use decimal, hexadecimal
Command		and character strings, and the data must be
		separated by commas or blanks.
Preview		Preview the message content to be sent or received.

7-5-2 Table Monitoring

The monitoring of [General Purpose Link Table] is as shown in the figure below. Users need to be online and call the Zooming function on FUN151 to use it. The content corresponds to the command operation start register (WR) on FUN151.

General Purpose Link Table-[gp_link_table_1] ? X						
alculator Setup Monitor						
Parameter						
Mode	Transmit	t/Receive only				-
Receive even v	with error			Start Code	2	
Only one byte	of data occupies i	in one register		End Code	3	
Commands						
48, 49, 50, 51, 52, 5	53, 54, 55, 56,					
	11					
Allow: 33768 words(Auto) Used: 12 words Position: R1000 - R1011						
L	IS(AULO)	oseu. 12 words			011	
Result		used. 12 words		Л	011	
	Value		Des	cription		
Result		Transaction is suce		л.		
Result Type	Value			л.		
Result Type	Value			л.		
Result Type Result Code	Value			л.		
Result Type Result Code Preview	Value 00H	Transaction is succ		cription		
Result Type Result Code Preview Ref	Value 00H Decimal	Transaction is succ Hexadecimal	cessful	cription		
Result Type Result Code Preview Ref R1000	Value 00H Decimal 0 515	Image: Transaction is succession Hexadecimal 0000H	cessful	cription		

Item	Description
Result Code	Shows the operating result.
	00H: Normal
	Other values: Error

7-6 Register Table

The register table function is mainly to provide users with fast batch writing of register values. Users can pre-plan the register table in the project, write in batches during the download process, or directly write in the new register table through online editing.

7-6-1 Table Value

The table data section of [Register Table] is as shown in the figure below, users can edit individual commands of [Register Table] through simple operations, and plan the register values in advance.

Commands		Add	Delete Move Up Move Down
Ref	Data Type	Data	Description
R5001	WORD(16Bits)	5678H	
R5002	WORD(16Bits)	1234H	
R5003	WORD(16Bits)	' T'	
R5004	WORD(16Bits)	' E'	
R5005	WORD(16Bits)	' к '	
R5006	WORD(16Bits)	0	

Fig. 137: Setting Register Table

The operation description is shown as below:

Item	Item		Description
	New		After clicking, a row of commands will be added in the editing section for users to edit.
	Delete		After clicking, delete the command currently selected by the user, and multiple selections can be deleted.
	Move Up	þ	After clicking, move the command currently selected by the user up one column.
Operation	Move D	own	After clicking, move the command currently selected by the user down one column.
	Diabt	Cut	After clicking, cut the command currently selected by the user, and multiple selections can be cut.
	Right- Click Menu	Сору	After clicking, copy the command currently selected by the user, multiple selections can be copied \circ
	WENU	Paste	After clicking, paste the command previously copied or cut by the user.

	Insert	After clicking, insert a row of commands at the selected
		position in the editor for users to edit.
	Delete	After clicking, delete the command currently selected by
		the user, and multiple selections can be deleted.
	Move Up	After clicking, move the command currently selected by
		the user up one column.
	Move Down	After clicking, move the command currently selected by
		the user down one column.

The command data description is shown as below:

Item		Description		
		The address of the register to be written in batches.		
	No.	Counting from the start address of the table, the No. will be		
	NO.	automatically adjusted as the data type is word group or double		
		word-group.		
	Data Type	Divided into word group (16Bits) and double word-group (32Bits).		
Command		The data to be written into the register can be filled in decimal,		
Commanu	Data	hexadecimal or string.		
		In decimal, just fill in the decimal number, EX: 1234.		
	Dala	For hexadecimal, fill in the hexadecimal number, and fill in 'H' at		
		the last character. EX: 1234H.		
		String, just fill in ASCII characters in the quotation marks, EX: 'By'.		
	Description	Optionally fill in a description for the command.		

7-6-2 Table Monitoring

No monitoring function is provided to [Register Table].

7-7 Modbus Master Table

The main purpose of the [Modbus Master Table] is to facilitate the user to fill in the data content of the communication command FUN150 M-BUS. For the description of the corresponding command, please refer to the advanced manual.

7-7-1 Table Value

The table data section of [Modbus Master Table] is as shown in the figure below, users can edit individual commands of [Modbus Master Table] through simple operations, and the content corresponds to the command start register (SR) on the FUN150.

-C	ommands — —						
			Add		Delete	Move Up	Move Down
	Command	Slave	Master Data		Slave Data	Data Size	Operation
1	Read	1	Y500	<-	100001	5	Bit Operation
2	Read	1	Y501	<-	000002	1	Bit Operation

Fig. 138: Setting Modbus Master Table

The operation description is shown as below:

Item			Description
	New		After clicking, a row of commands will be added in the
			editing section for users to edit.
	Delete		After clicking, delete the command currently selected by
			the user, and multiple selections can be deleted.
Operation	Move Up		After clicking, move the command currently selected by
Operation			the user up one column.
	Move D	own	After clicking, move the command currently selected by
			the user down one column.
		Cut	After clicking, cut the command currently selected by the
			user, and multiple selections can be cut.

Right-	Сору	After clicking, copy the command currently selected by the
Click		user, multiple selections can be copied $ \circ $
Menu	Paste	After clicking, paste the command previously copied or cut
		by the user.
	Insert	After clicking, insert a row of commands at the selected
		position in the editor for users to edit.
	Delete	After clicking, delete the command currently selected by
		the user, and multiple selections can be deleted.
	Move Up	After clicking, move the command currently selected by
		the user up one column.
	Move Down	After clicking, move the command currently selected by
		the user down one column.

The command data content is shown as below:

Item		Description			
	No.	Display the command information of the Nth.			
	Command	Edit this command action as [Read] or [Write]			
	Slave	Edit the station number of the slave station to communicate.			
Data	Master Data	Edit the data starting address of the Master station.			
	Slave Data	Edit the data starting address of the Slave station.			
	Data Size	The data size of such command			
	Operation	Display this command as [Bit Operation] or [Word Group Operation]			

7-7-2 Table Monitoring

The monitoring of [Modbus Master Table] is as shown in the figure below. Users need to be online and call the Zooming function on FUN150 to use it. The content corresponds to the command operation start register (WR) on FUN150.

Chapter 7 Creating Tables

-	Modbus Master Table-[modbus_table] ? X										
Ca	alculator Setup Monitor										
-C	Commands Add Delete Move Up Move Down										
Γ	Command	Slave	Master Data		Slave Data	Data Size		Oper	ation		
1	Read	1	Y500	<-	100001	5	Bit Operation				
2	Read	1	Y501	<-	000002	1	Bit Operation				
AI	low: 33568 v	vords(A	uto)		Used: 17 wo	rds		Position: R1	1200 - R1216		
	esult		,					1			
Γ	Туре		Value	Г			Descrip	ption			
Re	esult Code	00	н	Tra	Transaction is successful						
Se	quence No.	01	н								
St	Station Number 00H										
Сс	Command Code 00H										
									ОК	Cano	:el

ltem	Description
Result	Shows the operating result.
Code	00H: Normal
	Other values: Error
Operation	Indicates that the Nth transaction is in operation.
No.	
Station No.	Indicates the station number of the slave station currently in communication.
Command	01H: Read the status of multiple consecutive single points 0xxxxx of the slave station.
Code	02H: Read the status of multiple consecutive single points 1xxxxx of the slave station.
03H: Read the status of multiple consecutive registers 4xxxxx of the slave st	
	04H: Read the status of multiple consecutive registers 3xxxxx of the slave station.
	05H: Write a single-point 0xxxxx status to the slave.
	06H: Write single register 4xxxxx data to the slave station.
	0FH: Write consecutive multiple single points 0xxxxx status to the slave station
	10H: Write consecutive multiple registers 4xxxxx data

8

Comment and Label Information

<u>8-1</u>	Program Unit Comment	6-2
	Network Comment	
	Element Comment	
	Controlling of Comment Display	
8-5	Label	8-10

Chapter (b

<u>A</u> Danger

- 1. When installing or removing the M-series CPU modules and various expansion modules or the equipment connected to it, all power must be turned off, otherwise it may cause electric shock or wrong action, resulting in death or serious personal injury and damage to the machine equipment.
- 2. Before the installation and wiring construction is completed, do not tear off the dust-proof paper on the PLC cooling hole, so as to prevent the drilling iron filings or wiring scraps from falling into the PLC during construction, causing fire, failure or malfunction.
- 3. After confirming that the installation and wiring are all completed, remember to tear off the abovementioned dustproof paper to avoid poor heat dissipation of the PLC, resulting in fire, failure or malfunction.

This section describes the procedure where the comment function is used to improve the program readability and to facilitate maintenance in the future. Such descriptive comment is also available for components, network or program unit. In the meantime, this section also explains the function designed for hiding or displaying the comment.

8-1 Program Unit Comment

When running several program units, the user will be required to set up the comment for the respective program unit in order that the checking and modification will be executed more easily in the future.

Input descriptive comment for program unit: For detailed operation method, please refer to the description provided in Section 6.1.5: "Input Program Unit Comment."

Modify descriptive comment for program unit: After being imported, the user will be allowed to change the program according to the imported comment or to show the modification field by double clicking the comment text field in the Ladder Diagram program field. In this way, the user will be allowed to change the comment text.

Main_uni	11 ×
	Program Unit Comment
N000	Program Unit Comment
N001	Program Unit Comment
N002	
N003	OK Cancel
N004	

Fig. 139: Program unit comment

8-2 Network Comment

Each program unit comprises several network comments and each of them is designed with the intended function. By using such function with the comment, it will be easier for program modification and maintenance in the future.

8-2-1Operation method for inputting comment in dedicated comment field

Click [Project] \rightarrow [Comment] \rightarrow [Network Comment] in function toolbar, or double clicking [Comment] \rightarrow [Network Comment] in project management window and the [Network Comment] input window will be displayed:

Network Comment	
Main_unit1 Sub_unit1	
Ladder No	Comment
N0000	
N0001	
N0002	
N0003	
N0004	
N0005	
N0006	Network Comment

Fig. 140: Network Comment

The comment input method shall be the same as the operation instructions provided in Section 6.1.5:

"Input Program Unit Comment" . After being imported, press [OK] to complete the comment setting for the network comment.

	Network Co	omment	•	•	•		
N006							

Fig. 141: Inputting network comment

8-2-2 Operation method for inputting comment by selecting Single Solution Network

In Ladder Diagram program section, you may click Network N000 or its component and then press the right mouse button to show Pop-up Menu in order to select the [Network Comment]. By clicking the right mouse button to show the function menu, it allows the user to select [Network Comment] function. At this time, the system will show the network comment input section that represents "Network N000."

💾 Network Comment		? ×
Network Comment		
	OK	Cancel

Fig. 142: Editing network comment

Press [OK] to complete the editing of comment for network comment.

Modifying network descriptive comment

For detailed operation method, please refer to Section 10.1: Section 6.1.5: "Input Program Unit Comment."

Deleting network descriptive comment

For detailed operation method, please refer to Section 10.1: Section 6.1.5: "Input Program Unit Comment."

8-3 Element Comment

The program unit is composed of several network comments where each component is also serving as a single network comment. Under such structure, lots of components exist in each Single Program Unit that it would be required to provide comment description for each component.

8-3-1 Setting Introduction

Click [Project] \rightarrow [Comment] \rightarrow [Element Comment] in function toolbar; or double clicking [Comment] \rightarrow [Element Comment] in project management window and the [Element Comment] input sectoin will be displayed:

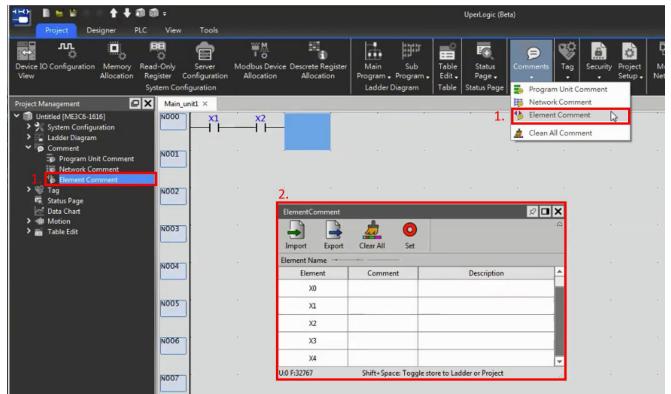


Fig. 143: Element comment

Element Comment_Import:

First select the file that will be imported. Next, select the column item to be imported and then press [OK].

Comment Import	? ×
File	
File Name	2
Field	
Comment	Description
	OK Cancel

Fig. 144: Element comment_import

Element Comment_Export:

First select the file that will be exported. Next, select the column item to be exported and then press [OK].

Comment Export	? <mark>×</mark>
File	
File Name	¥
Field	
Comment	Description
	OK Cancel

Fig. 145: Element comment_export

Element Comment_Clear All:

Delete all of the comment and description currently created.

Element Comment_Element Name:

Executing the GoTo function for entering the selected Register number address automatically.

Component Comment_Set:

📇 Set	? ×
Store	
• Ladder(PLC)	O Project
Range	
Reference	Х -
Start Address	0 ‡
End Address	10 ‡
	OK Cancel

Fig. 146: Element comment_setting

Chapter 8 Comment and Label Information

Туре	Function	Description
Saving	PLC	Save the comment in the PLC and the occupied resources will be
position		displayed at the lower-left corner of "Component comment" window.
	Project	Save the comment in the Project and will not occupy the PLC resources.
Scope	All	Change all components to the selected saving position.
	No.	Select the component number.
	Start address	Select the starting address of the component comment.
	End address	Select the ending address of the component comment.

Table 18: Introduction of items in equipment window

8-3-2 Operation method

ElementComment		\$ 0 X
	🍰 🖸	۵
Import Export	Clear All Set	
Element Name 🖃		
Element	Comment	Description
X0 💿		
X1 o		
X2 0		
ХЗ о		
X4		v
U:0 F:32767	Shift+Space: Tog	gle store to Ladder or Project

Fig. 147: Element comment window

With [Set] or "Shift+Space" quick keys, you may switch the component comment saving position. The red circle at the lower-right side of the component means that the component has been saved in the project instead of downloading to the PLC.

The field display at lower-left side represents the quantity (U) currently used and the remaining quantity (F).

8-4 Controlling of Comment Display

In Ladder Diagram, the program field is used for displaying program unit comment, network comment and component comment, etc. Described below is the operating method designed for displaying or hiding the aforesaid comments:

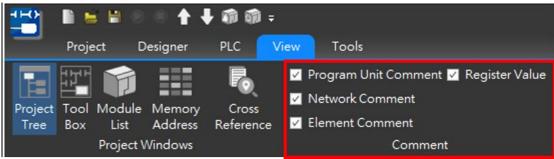


Fig. 148: Comment display

Click [View] \rightarrow [Program Unit Comment] in function toolbar. If the " $\sqrt{}$ " symbol is not marked on the left side of text option, then the comment text will not be displayed at the upper side of the program field in Ladder Diagram. After completing such action, the " $\sqrt{}$ " symbol will appear on the left side of text option.

Such procedure also applies to Element Comment, Network Comment and Register Value.

8-5 Tag

Tags are variables that are specified as arbitrary strings for input, output, and internal data. Tags can be designed to express the logic of the program more clearly through string descriptions. Programs using tags can also easily modify the variable configuration without modifying them one by one. There are three types of UperLogic tags: global tags, regional tags, and system tags.

Item	Description
Global Tag	A tag that can be used by all programs and settings in the
	project, and can be created by oneself.
Regional Tag	The tags used in each program can only be used in such
	program and can be created by oneself.
System Tag	The default label of M-PLC cannot be created by oneself.

8-5-1 Tag Editor

Global tags and regional tags can be edited and exported through the following tag editor. The following describes each function.

Filt	er	Name		•		G O ✓ Show Diagnos	is
		Name	Туре	Address	Length	Comment	Import
1	4	ascii_saddr	16Bit-UInt	R0			Export
2	4	nlink_saddr	16Bit-UInt	RO			
3	0	gplink_md1_saddr	16Bit-UInt	R35280			
4		gplink_md2_saddr	16Bit-UInt	R300			
5		gplink_md4_saddr	16Bit-UInt	R400			
6		gplink_md5_saddr	16Bit-UInt	R500			
7		mparam_saddr	16Bit-UInt	R800			
8		mprog_saddr	16Bit-UInt	R900			
9		mhspso_saddr	16Bit-UInt	R1800			
10		mdbus_saddr	16Bit-UInt	R1200			
11		mdbus_tcp_saddr	16Bit-UInt	R200			
12		hslink_saddr	16Bit-UInt	R1100			
13		fblink_saddr	16Bit-UInt	R1900			
14		reg_saddr	16Bit-UInt	R2000			
15		<add new="" tag=""></add>					

1. Filter Out

According to the category selected by the user to be filtered out and the input content, the tags that will be kept on the screen are determined. Filterable categories include Name, Type, Address, Length, Comments, and None.

Chapter 8 Comment and Label Information

Filt	er Na	ame	-			Show Diagnosis
	Name	Туре	Address	Length	Comment	Import
1	ascii_saddr	16Bit-UInt	RO			Export
2	nlink_saddr	16Bit-UInt	RO			
3	gplink_md1_saddr	16Bit-UInt	R35280			
4	gplink_md2_saddr	16Bit-UInt	R300			
5	gplink_md4_saddr	16Bit-UInt	R400			
6	gplink_md5_saddr	16Bit-UInt	R500			
7	mparam_saddr	16Bit-UInt	R800			
Filte	er Na	me	* gp			Show Diagnosis
Т	Name	Туре	Address	Length	Comment	Import
3	gplink_md1_saddr	16Bit-UInt	R35280			Export
4	gplink_md2_saddr	16Bit-UInt	R300			
5	gplink_md4_saddr	16Bit-UInt	R400			
6	gplink_md5_saddr	16Bit-UInt	R500			

Fig. 149: Filtering out tags

2. Display Diagnosis

When the user checks [Display Diagnosis] on the right, a column will be added in front of the tag name, and the diagnosis result will be represented by an icon. When the icon is double-clicked, the details of the diagnosis window will be displayed.

Filte	er	Name		•			🕒 🕑 🗹 Show Diagnosis	
		Name	Туре	Address	Length	Comment		Import
1	▲	ascii_saddr	16Bit-UInt	RO				Export
2	A	nlink_saddr	16Bit-UInt	RO				
3	0	gplink_md1_saddr	16Bit-UInt	R35280				
4		gplink_md2_saddr	16Bit-UInt	R300				
5		gplink_md4_saddr	16Bit-UInt	R400				
6		gplink_md5_saddr	16Bit-UInt	R500				

Fig. 150: Display diagnostic result

Item	Description
0	Jump to the previous diagnostic result.
•	Jump to the next diagnostic result.
<u> </u>	Indicates that the tag address overlaps with other labels.
	After double-clicking the prompt, the details will be displayed. When
	the user double-clicks the overlapping item, it will directly jump to the
	tag editing page where the item is located. This function can remind
	the designer to avoid reusing the same register location, which may
	lead to program logic malfunction •

	🙄 Overlapping Ra	ange			?	×		
	Address R0							
	The address is ove	rlapping with the f	ollowing items					
	Name	Туре	Address	Location				
	ascii_sadd	16Bit-UInt	RO	Main0 [Local Tag]				
	nlink_saddr	16Bit-UInt	RO	Main0 [Local Tag]				
0	Indicates that the tag address overlaps with a special relay or a special							
	register.							

3. Editing Section

Including table section, button section and right-click menu, details are as follows:

	Name	Туре	Address	Length		Comment		
1	ascii_sadd	16Bit-UInt	RO					Exp
2	nlink_saddr	16Bit-UInt	RO		Cut	CHLV		
3	gplink_md1_saddr	16Bit-UInt	R35280		Cut Copy	Ctrl+X Ctrl+C		
4	gplink_md2_saddr	16Bit-UInt	R300		Paste	Ctrl+V		
5	gplink_md4_saddr	16Bit-UInt	R400		Insert Delete	Del		
6	gplink_md5_saddr	16Bit-UInt	R500		Move Up	Alt+Up		
7	mparam_saddr	16Bit-UInt	R800		Move Down	Alt+Down		

Item		Description			
	Name	Set a tag name, the maximum length is 32 characters. It cannot			
		be pure numbers, registers and reserved words.			
	Туре	Set tag data type, the types are divided into:			
		[Bool]			
		[16Bit-Int]			
Table		[16Bit-UInt]			
		[32Bit-Int]			
		[32Bit-UInt]			
		[Float]			
	Address	Set the register or relay address assigned to the tag.			
	Comment	Set the comment of the tag.			
New		After clicking, a row of tags will be added in the editing section			
		for users to edit.			
Delete		After clicking, delete the tag currently selected by the user, and			
		multiple selections can be deleted.			

Import		After clicking, the tag will be imported after selecting the file.					
		The file extension is *.csv					
Export		After clicking, the tag can be exported after selecting the					
		storage location. The file extension is *.csv					
Cut		After clicking, cut the tag currently selected by the user, and					
		multiple selections can be cut.					
	Сору	After clicking, copy the tag currently selected by the user,					
		multiple selections can be copied •					
	Paste	After clicking, paste the tag previously copied or cut by the					
Right-		user.					
Click	Insert	After clicking, insert a row of tags at the selected position in					
Menu		the editor for users to edit.					
Wiend	Delete	After clicking, delete the tag currently selected by the user, and					
		multiple selections can be deleted.					
	Move Up	After clicking, move the tag currently selected by the user up					
		one column.					
	Move Down	After clicking, move the tag currently selected by the user					
		down one column.					

8-5-2 Global Tag

The global tag editor can be edited through [Tag] \rightarrow [Global Tag] in the project management window or in the function bar [Project] \rightarrow [Tag] \rightarrow [Global Tag].

UperLogic will pre-create a set of [Default Tag] tabs, and users can create global tabs by themselves through [Add Global Tag] and [Delete Global Tag].

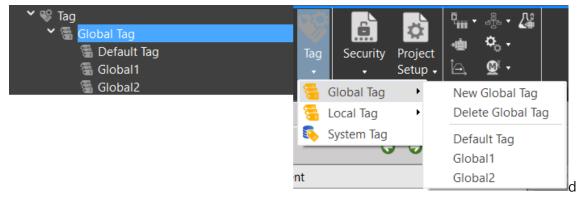


Fig. 151: Global Tags

8-5-3 Regional Tag

The regional tag editor can be edited through [Program Unit] \rightarrow [Arbitrary Program] \rightarrow [Arbitrary Unit] \rightarrow [Regional Tag] in the project management window or in the function bar [Project] \rightarrow [Tag] \rightarrow [Regional Tag].

The regional tag cannot create a page by itself. When creating a program unit, UperLogic will directly generate a page of the regional tag, and its name will directly correspond to the program unit name. The corresponding regional tag can only be used in this program unit. If you need to use it across program units, please select the global or system tag.

The label names of different regional tag pages can be repeated, but cannot be repeated with the global tag name.

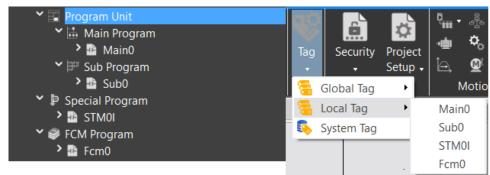


Fig. 152: Regional Tags

8-5-4 System Tag

The list of system tags can be viewed through [Tag] \rightarrow [System Tag] in the project management window or by clicking [Project] \rightarrow [Tag] \rightarrow [System Tag]. The system label is a built-in label, which varies with different models. It is only for viewing, and cannot be added or edited. The name of the system tag must start with \$ font size.

☆ 🗖						System Tag
		٣			SYSTEM	Tag Group
^	Comment	Length	Address	Туре	me	Nar
	0.01S Clock pulse	1	M9127	Bool	01S	CLK_PULSE_0_
	0.1S Clock pulse	1	M9128	Bool	15	CLK_PULSE_0_
	1S Clock pulse	1	M9129	Bool	5	\$CLK_PULSE_1S
	60S Clock pulse	1	M9130	Bool)S	\$CLK_PULSE_60
	Clear Non-Retentive Registers	1	M9125	Bool	TENT_REG	\$CLR_NON_RET
	Clear Non-Retentive Relays	1	M9123	Bool	TENT_RELAY	\$CLR_NON_RET
	Clear Retentive Registers	1	M9126	Bool	REG	\$CLR_RETENT_F
	Clear Retentive Relays	1	M9124	Bool	RELAY	CLR_RETENT_F
	Current scan time	1	R35370	16Bit-UInt	URRENT	SCAN_TIME_C
	Disable/Enable status retentive control	1	M9122	Bool	TUS_RETENT	\$DISABLE_STAT
	Emergency Stop control	1	M9120	Bool	STOP_CTRL	SEMERGENCY_S
	Initial pulse (first scan)	1	M9131	Bool	IIT	\$CLK_PULSE_IN
	Major PLC OS version	1	R35364	16Bit-UInt	MAJOR	\$PLC_OS_VER_N
	Maximum scan time	1	R35371	16Bit-UInt	IAX	SCAN_TIME_M
	Minimum scan time	1	R35372	16Bit-UInt	IIN	SCAN_TIME_M
	Minor PLC OS version (High byte)	1	R35365	16Bit-UInt	MINOR	\$PLC_OS_VER_N
	Model of main unit (Unit ID and model)	1	R35366	16Bit-UInt	IODEL	\$MAIN_UNIT_M
	PLC station number	1	R35363	16Bit-UInt	NUM	\$PLC_STATION_
	PLC working mode	1	M9133	Bool	G_MODE	PLC_WORKING
	Patch PLC OS version (Low byte)	1	R35365	16Bit-UInt	PATCH	\$PLC_OS_VER_P
	Power off counter	1	R35368	16Bit-UInt	COUNTER	\$POWER_OFF_C
s)	Power on I/O service delay time setting (10m	1	R35367	16Bit-UInt	DELAY	\$POWER_ON_D
	Scan clock pulses	1	M9132	Bool	CAN	\$CLK_PULSE_SC
	Stable scan time setting	1	R35373	16Bit-UInt	ETTING	SCAN_TIME_S

Fig. 153: List of System Tags

There are many tag groups in the system tag, users can view the labels of different categories by selecting a tag group.

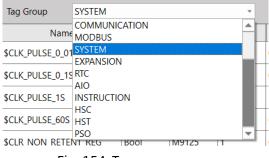


Fig. 154: Tag group menu

8-5-5 Tag Usage

1. Direct Use

During the editing process, the user can directly input the relevant words of the corresponding tag name, and a drop-down menu will appear at this time to prompt possible tags to be used.

Main0 ×			
N000		· · · ·	
N001		· · ·	
N002	Element Edit	? ×	
N003	4 F 👻 🕇		
	Tag0	MO	Global Tag 🔺
N004	Tag1	M1	Global Tag
	Tag2	M2	Global Tag
	Tag3	M3	Global Tag
N005	Tag4	M4	Global Tag
	Tag5	M5	Local Tag
N006	. Tag6	M6	Local Tag
	Tao7	M7	Local Tag 🔽

Fig. 155 Tags

2. Use after processing a new tag

If the user wants to directly create a new tag and use it during the editing process, he can directly enter the name of the new tag and press "Enter", and the system will automatically jump to the registration tag window to allow the user to register a new tag.

Chapter 8 Comment and Label Information

Main0	×			
N000			·	
N001		Í		
N002		Eleme	nt Edit	· · · · · ·
N003		H F	• NewTag	
N004		•		🗃 Register Tag ? X
N005				Tag Information Name NewTag
N006				Position Local Tag (Main0) *
				Data Type Bool 🔹
N007				Туре М 👻
				Address 9
N008				Comment
N009				Open tag page after registering tag OK Cancel

Item	Description
Name	Tag Name
Position	The registration position of the tag, which can be set in the
rosition	global tag tab or the regional tag tab
Туре	Set tag data type, the types are divided into:
	[Bool]
	[16Bit-Int]
	[16Bit-UInt]
	[32Bit-Int]
	[32Bit-UInt]
	[Float]
Address	Set the register or relay address assigned to the tag
Comment	Set the comment of the tag
Open the Tag Page	When checked, it will jump to the tag editor page after the
after Registration	registration is complete.

9

Motion Control

<u>9-1</u>	Motion Network	7-2
<u>9-2</u>	Motion Axis	7-15
<u>9-3</u>	Motion Point	7-17
9-4	Motion Flow	7-20
<u>9-5</u>	Motion Sync Control	7-38
<u>9-6</u>	Motion Param Mapping	7-42
9-7	Motion Recipe	7-43

\Lambda Danger

- 1. When installing or removing the M-series CPU modules and various expansion modules or the equipment connected to it, all power must be turned off, otherwise it may cause electric shock or wrong action, resulting in death or serious personal injury and damage to the machine equipment.
- 2. Before the installation and wiring construction is completed, do not tear off the dust-proof paper on the PLC cooling hole, so as to prevent the drilling iron filings or wiring scraps from falling into the PLC during construction, causing fire, failure or malfunction.
- 3. After confirming that the installation and wiring are all completed, remember to tear off the abovementioned dustproof paper to avoid poor heat dissipation of the PLC, resulting in fire, failure or malfunction.

This section describes the servo and cam related configuration methods. By combining the image-base display and the user-friendly interface, it allows the user to control the setting method more quickly and more efficiently.

To understand the detailed operation method of motion control, please refer to the relevant manuals. Described below is the operation method of different motions.

9-1 Motion Network

After implementing the setting axis in the "Motion Network," the user will be allowed to set the information of the connected slave station (virtual axis).

Setting process:

By clicking [Motion] \rightarrow [Motion Network] \rightarrow "Right mouse button" \rightarrow [Motion Network] in project management row or clicking [Project] \rightarrow [Motion] \rightarrow [Motion Network] \rightarrow [Motion Network], it allows the user to open the [Motion Network] page.



Fig. 156: Motion network setting page

1. Importing ESI file

Import the "EtherCAT" slave station data by clicking "Import ESI file." For details of ESI file, please contact your server dealer.

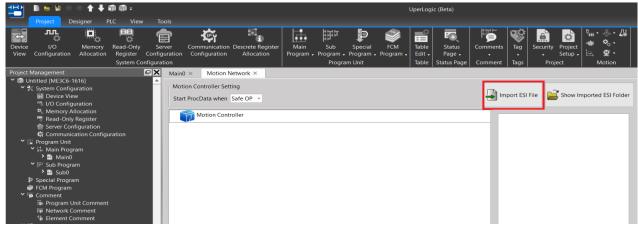


Fig. 157: Importing slave station data

2. Joining slave station

After being imported, the Slave Station Option List will appear. Double-click or scroll down to [Motion Controller] list, and the joining will be allowed.

***** The indicated sequence is the communication sequence.

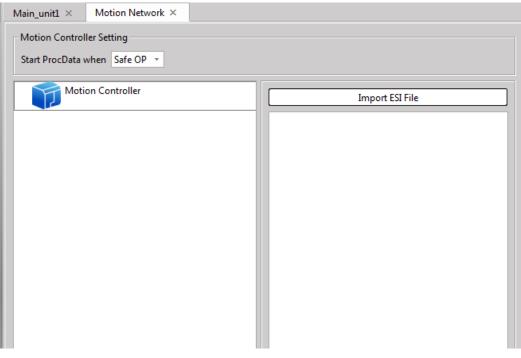


Fig. 158: Communication sequence list

3. Other functions

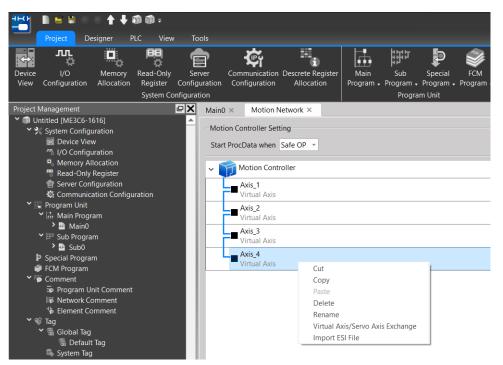


Fig. 159: Other functions

Function	Description
Cut	At the axis that will be cut, click the right mouse button and then select [Cut] in the menu.
Сору	At the axis that will be copied, click the right mouse button and then select [Copy] in the menu.
Paste	At the position that will be pasted, click the right mouse button and then select [Copy] in the menu and you may paste the axis being copied or clipped.
Delete	At the axis that will be deleted, click the right mouse button and then select [Delete] in the menu.
Rename	At the axis that will be renamed, click the right mouse button and then select [Rename] in the menu.
Real Axis-Virtual Axis Conversion	At the axis that will be converted, click the right mouse button and then select [Real Axis-Virtual Axis Conversion] in the menu.

7-4

Import ESI file	At the axis that will be imported, click the right mouse button and then select [Import ESI File] in the menu and you can start the importing.
Change Sequence	Drag the Slave Station to be changed to the intended position.

Parameter

Main0 × Motion Network ×		
Motion Controller Setting Start ProcData when Safe OP 💌	Import ESI File	Show Imported ESI Folder
✓ 🎲 Motion Controller	Device Name	Axis 2
Axis_2	Device Type	SC3 Series Single
F SC3 Series Single Rev:0X0001 SC3 Series Single	Vendor ID	0X0A0E
Axis_1	Product Code	0X534333
Virtual Axis	Revision No	0X0001
Axis_3 Virtual Axis Axis_4 Virtual Axis	RxPDO	0X6040::00 Controlword 0X607A::00 Target Position 0X60FF::00 Target Velocity 0X6071::00 Target Torque 0X6060::00 Mode of Operation 0X6088::00 Touch Probe Function
	TxPDO	0X6041:00 Status Word 0X6064:00 Actual Position 0X606C:00 Velocity Actual Value 0X607:00 Actual Torque 0X6061:00 Mode of Operation Di 0X60FD:00 Digital Inputs 0X603F:00 Error Code 0X6089:00 Touch Probe Status
		PDO Setting

Fig. 160: Parameter setting page

Current fixed PDO setting as below:

PDO Type	ltem	Name				
	0x6040	Controlword				
	0x607A	Target position				
RxPDO	0x60FF	Target velocity				
KXPDO	0x6071	Target Torque				
	0x6060	Mode Of Operation				
	0x60B8	Touch Probe Function				
TxPDO	0x6041	Status Word				
IXF DO	0x6064	Actual Position				

0x606C	Velocity actual value
0x6077	Actual Torque
0x6061	Mode Of Operation Display
0x60FD	Digital inputs
0x603F	Error code
0x60BA	Touch Probe Pos1 Pos Value
0x60BC	Touch Probe Pos2 Pos Value

Table 19: PDO setting table

Currently, the system uses 3 kinds of modes. Listed below are the parameters and the unit required for these modes (DELTA 0x60ff, using 0.1 rpm as the unit).

Index	Sub-Index	Name	Units	Туре	Access	PdoMapping
603Fh	00h	Error code		U16	RO	TxPDO
6040h	00h	Controlword		U16	RW	RxPDO
6041h	00h	Statusword		U16	RO	TxPDO
6062h	00h	Position demand value	pulse	132	RO	TxPDO
6064h	00h	Position actual value	pulse	132	RO	TxPDO
6065h	00h	Following error window	pulse	U32	RW	No
6072h	00h	Max torque	0.1%	U16	RW	RxPDO
6077h	00h	Torque actual value	0.1%	116	RO	TxPDO
607Ah	00h	Target position	pulse	132	RW	RxPDO
6080h	00h	Max motor speed	r/min	U32	RW	RxPDO
60B0h	00h	Position offset	pulse	132	RW	RxPDO
60B1h	00h	Velocity offset	Unit/s	132	RW	RxPDO
60B2h	00h	Torque offset	0.1%	116	RW	RxPDO
60F4h	00h	Following error actual value	Pulse	132	RO	TxPDO
60FDh	00h	Digital inputs		U32	RO	TxPDO

Table 20: Synchronous Cycle Position Control Mode Table

Index	Sub-Index	Name	Units	Туре	Access	PdoMapping
603Fh	00h	Error code		U16	RO	TxPDO
6040h	00h	Controlword		U16	RW	RxPDO
6041h	00h	Statusword		U16	RO	TxPDO
6072h	00h	Max torque	0.1%	U16	RW	RxPDO
6080h	00h	Max motor speed	r/min	U32	RW	RxPDO
60B1h	00h	Velocity offset	Unit/s	132	RW	RxPDO
60B2h	00h	Torque offset	0.1%	116	RW	RxPDO
60FFh	00h	Target velocity	Unit/s	132	RW	RxPDO

Table 21: Synchronous Cycle Velocity Control Mode Table

Index	Sub-Index	Name	Units	Туре	Access	PdoMapping
603Fh	00h	Error code		U16	RO	TxPDO
6040h	00h	Controlword		U16	RW	RxPDO
6041h	00h	Statusword		U16	RO	TxPDO
6071h	00h	Target torque	0.1%	116	RW	RxPDO
6072h	00h	Max torque	0.1%	U16	RW	RxPDO
6080h	00h	Max motor speed	r/min	U32	RW	RxPDO
60B2h	00h	Torque offset	0.1%	116	RW	RxPDO

Table 22: Synchronous Cycle Torque Control Table

9-1-1 Servo Test Run

Click [Motion] \rightarrow [Motion Network] \rightarrow "Right mouse button" \rightarrow [Servo Test Run] in project management row.

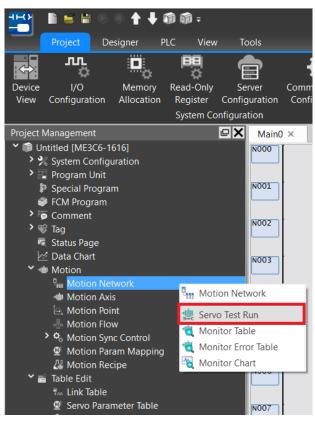


Fig. 161: Servo Test Run

Or you may select [Project] \rightarrow [Motion] \rightarrow [Motion Network] \rightarrow [Servo Test Run] from the menu in function toolbar icon.

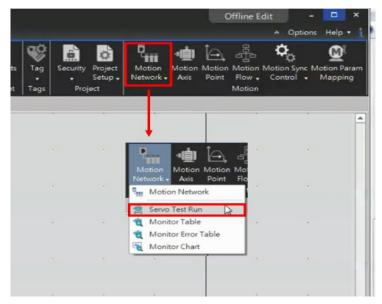


Fig. 162: Servo Test Run

Select the Test Run axis:

🙄 Show Servo Test Run	? ×
Axis_y Axis_x	OK Cancel Firmware Info

Fig. 163: Selecting the Test Run axis

Indicated below is the Test Run page and it comprises three types of control modes (Position, Velocity, Torque):

💾 Motion Te	est Run	? ×	ć
Test Run Axis:	Axis_2	Monitor	ן
Servo Status Axis Status	Servo Off ON Axis Error - No Control	RESET]
Position Co Current F JOG (((Inching)	Position: 0 PLS	STOP	

Fig. 164: Position Control Mode

💾 Motion Te	t Run	? ×
Test Run Axis:	Axis_1	Monitor
Servo Status	Servo Off ON Axis Error -	RESET
Axis Status	No Control	
Position Con	trol Velocity Control Torque Control	
Current V	elocity: 0 PLS/s	
-Velocity Co	ntrol	
Velocity Co	mmand 0 C PLS/s	STOP
Torque Lim	it 0 🗘 %	STOP

Fig. 165: Velocity Control Mode

💾 Motion Te	st Run	? ×	<
Test Run Axis:	Axis_1 (Monitor	
Servo Status	Servo Off ON Axis Error -	RESET]
Axis Status	No Control		
Position Cor Current To Torque Cor Torque Cor	orque: 0 % htrol mmand 0 \$ %	STOP	
Velocity Li	nit 0 ‡ PLS/s		

Fig. 166: Torque Control Mode

9-1-2 Monitor Table

Click [Motion] \rightarrow [Motion Network] \rightarrow "Right mouse button" \rightarrow [Monitor Table] in project management row, or you may select [Project] \rightarrow [Motion Network] \rightarrow [Monitor Table] from the menu in function toolbar icon.

💾 B 🖬 🖬 🛉 🖡 🕸	ញ :					UperLogic (Be	ta)				Offline Ed	lit – 🗆 ×
Project Designer PLC	View Tools											▲ Options Help ▼ 1
Device IO Configuration Memory Re View Allocation R	ad-Only Server Register Configuration System Configuration	Modbus Device Desc	rete Register Jlocation	Main Sub Program • Progra Ladder Diagram	m . Edit .		Comments	Tag Sec Tags	urity Project Setup Project	Motion Network • Axis		Motion Sync Motion Param Control • Mapping
	Aain_unit1 ×	Motion Network \times										
Intitled [ME3C6-1616] System Configuration Ladder Diagram Comment	NOOD									↓ 		<u>^</u>
> ® Tag ⊄ Status Page ⊠ Data Chart ❤ 40 Motion	N002								2		Motion Mo Point Flo ork	
Motion Axis	vo Test Run									Servo Test Rui	· 🔉 .	
 Contact Output Contact Output Contact Output Contact Output Mo 	nitor Table Reported and the second s									Monitor Error		
Motion Param Mapping												

Fig. 167: Motion monitoring table

Provided below is the window showing the opened Motion Monitor Table. If there isn' t any axis in the figure, please set up the axis through [Motion Network].

,			·		
Motion Monitor Table					
	5		-	P	
Item Setting Axis Display Det	ault Items	Exoprt I	moprt Sho	w Address	
Reset Axis Error All Axis 👻					
	Axis_2	Axis_1	Axis_3	Axis_4	
Axis : Command coordinate	0 PLS	0 PLS	0 PLS	0 PLS	
Axis : Command speed	0 PLS/s	0 PLS/s	0 PLS/s	0 PLS/s	
Axis : Current coordinate	0 PLS	0 PLS	0 PLS	0 PLS	
Axis : Feedback speed monitor	0 PLS/s	0 PLS/s	0 PLS/s	0 PLS/s	
Axis : Servo is on	Servo Off	Servo Off	Servo Off	Servo Off	
Axis : Operation ready	Not Ready	Not Ready	Not Ready	Not Ready	
Axis : Axis error in progress	-	-	-	-	
Axis : Axis warning in progress	-	-	-	-	

Fig. 168: Motion Monitor Table

Click [Item Setting], and you may select the object to be monitored.

Filter b	Monitor Item Setting Pilter by: No Filter Select All Deselect All								
	Parameter Name	Туре							
	Unit program number	UINT32							
	Unit program state	UINT16							
	Unit error code	UINT16							
	Current step 1	UINT16							
	Current step 2	UINT16							
	Current step 3	UINT16							
	Current step 4	UINT16							
	Current step 5	UINT16							
	Current step 6	UINT16	Ţ						
	1	OK Cancel	1						

Fig. 169: Selecting the item to be monitored

Click [Axis Display], and you may select the axis to be displayed.

Click [Export] and [Import], and the system will show the setting required for exporting and importing the Motion Monitor Table.

9-1-3 Monitor Error Table

Click [Motion] \rightarrow [Motion Network] \rightarrow "Right mouse button" \rightarrow [Monitor Error Table] in project management row, or you may select [Project] \rightarrow [Motion Network] \rightarrow [Monitor Error Table] from the menu in function toolbar icon.

Motion Error Monitor Table						
I	5) 🔤	🕨 🚽	F		
Item Setting Axis Display)efault	Items Exo	prt Imopr	rt Show Ac	dress	6
Reset Axis Error All Axis 🔹						
		Axis_2	Axis_1	Axis_3	Axis_4	
Axis : Error detail information	1	No Error(No Error(No Error(No Error(
Axis : Error detail information 2	2	No Error(No Error(No Error(No Error(
Axis : Warning detail informati	on 1	No Warn	No Warn	No Warn	No Warn	
Axis : Warning detail informati	on 2	No Warn	No Warn	No Warn	No Warn	
Axis : Axis error in progress		-	-	-	-	
Axis : Axis warning in progress		-	-	-	-	
			1	1	1	1
Motion controller state					4	
Motion controller error code						
Unit program state	(0x0)					

Fig. 170: Motion eroor monitoring table

9-1-4 Monitor Chart

Click [Motion] \rightarrow [Motion Network] \rightarrow "Right mouse button" \rightarrow [Monitor Chart] in project management row, or you may select [Project] \rightarrow [Motion Network] \rightarrow [Monitor Chart] from the menu in function toolbar icon.

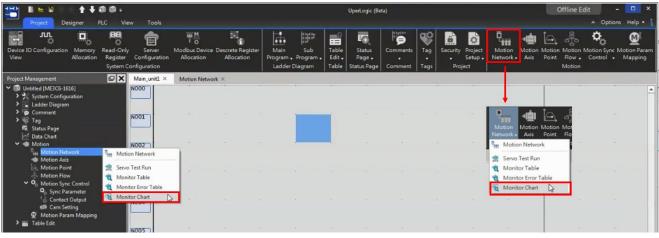


Fig. 171: Motion monitoring chart

Provided below is the window showing the opened Motion Monitor Chart.

Motion M	onitor Cha	rt										A 🗖
			\checkmark	~_+	~~~	2D	-					
Start	Stop	Item Setting	Trigger Setting	Add Chart	Delete Chart	Show 2D Plane	Imoprt	Exoprt	Save As CSV			
Chart Dis	<mark>play Mode</mark> ampling		PC Samplin	a	Dat	a Points: 0			Trigge	red Poir	nt:	
Sampling				¢ ms		200			C	Chart 1		Q
Select Al	I Dese	lect All	Parameter(Ite	em)		100						 Axis 1: Command coordinate Axis 1: Command speed
2 1 2 2	Chart 1 Chart 1	Axis 1: Comm Axis 1: Comm				0						 Axis 1: Current coordinate Axis 1: Feedback speed monitor Axis 2: Command coordinate
2 3 2 4	Chart 1 Chart 1	Axis 1: Current Axis 1: Feedba			3)	-100						 Axis 2: Command coordinate Axis 2: Command speed Axis 2: Current coordinate
2 5 2 6	Chart 1 Chart 1	Axis 2: Comm Axis 2: Comm		· · ·		-200						Axis 2: Feedback speed monitor
7 8	Chart 1 Chart 1	Axis 2: Current Axis 2: Feedba			2	0	1250	2500 Time(m	375 s)	0	5000	

Fig. 173: Motion monitoring page

9-2 Motion Axis

1. Setting process

Click [Project] \rightarrow [Motion] \rightarrow [Motion Axis] in function toolbar, or you may select [Project] \rightarrow [Motion Axis] in project management window and then double click the left mouse button to open the setting page.

↑↓00 UperLogic (Beta) 🗈 🖬 🖻 μţ • ň 問心 **¢**₀ ۳Ą ۳, F. Ø 0 ê. Q. T Γh. Ē ex Motion Axis × d [ME3C6-1616] 🖀 🛐 🌇 Path Object Axis Name Basic Setting Axis Type Encoder Type Incremental Incrementa PLS PLS Unit Decimal Point 1 PLS/Rev Pulse/Revolution 1 PLS/Re Unit Setting Unit/Revolutio Velocity Unit Command Position/sec Co nd Position/se 1.000 1.000 Velocity Gain 0 PLS/s 0 PLS/s Start Velocity Maximun Motor Velocity 1000 PLS/s 1000 PLS/s Default Acceleration 1000 PLS/s² 1000 PLS/s¹ 1000 PLS/s² 1000 PLS/s² Default Deceleration Soft Limit(+) 0 PLS 0 PLS 0 PLS 0 PLS Soft Limit(-) Following Error Wir 0 PLS 0 PLS Following Error Timeout 0 ms 0 ms Pos Done Tolerance 0 PLS 0 PLS Pos Done Check Time 10 ms 10 ms 88 🖪 rite N1 R:1 C:5 U:0 F:40959 S:A (Doc U:0 F:32767)

Fig. 173: Motion axis setting

2. Setting method

After setting adding axis in [Motion Axis], the system will add the desired axis automatically by clicking the table setting directly.

3. Display setting

By clicking [Axis Display Setting], it can be set as displaying the axis for users to create the desired axis more easily.

E	Axis	s Display Setting 🛛 🔋 🔀
	Axis D)isplay:
		Axis Name
	~	Axis_y
1	~	Axis_x
		Select All Deselect All
		OK Cancel

Fig. 174: Axis Display Setting

4. Parameter

Click the corresponding parameter position, and it allows the user to modify the parameter being created for such axis. For detailed description of parameters, please refer to Chapter 4 of Motion Control User Manual.

🖀 🗈 🛍 Path	Object		
		1	2
	Axis Name		
Basic Setting	Axis Type		Se
	Encoder Type	Incremental	Increme
	Unit	PLS	
	Decimal Point		
Unit Catting	Pulse/Revolution	1 PLS/Rev	1 PLS/
Unit Setting	Unit/Revolution		
	Velocity Unit	Command Position/sec	Command Position/
	Velocity Gain	1.000	1.
	Start Velocity	0 PLS/s	0 PL
	Maximun Motor Velocity	1000 PLS/s	1000 PL
	Default Acceleration	1000 PLS/s ²	1000 PL
	Default Deceleration	1000 PLS/s ²	1000 PL
	Soft Limit(+)	0 PLS	0
	Soft Limit(-)	0 PLS	0
Operation Setting	Following Error Window	0 PLS	0
	Following Error Timeout	0 ms	0
	Pos Done Tolerance	0 PLS	0
	Pos Done Check Time	10 ms	10

Fig. 175: Axis Display Setting

9-3 Motion Point

1. Setting process

Click [Project] \rightarrow [Motion] \rightarrow [Motion Point] in function toolbar, or you may select [Project] \rightarrow [Motion Point] in project management window and then double click the left mouse button to open the setting page.

				UperLogi	ic (Beta)			
Project Designer PLC View Tools Device I/O Memory Read-Only Server View Configuration Allocation Register Configuration	Communication Des ion Configuration	crete Register M	ain Sub Speci ram • Program • Progra Program Unit	ial FCM Table m ₊ Program ₊ Edit ₊	Page 🗸	omments Tag	Security Project Project Project	ୟିଲ୍ଲ • ୍ଡ୍ରି • ୍ପ୍ରି ∰ ଦ୍ଧି • ∭ୁ @ୁ • Motion
✓ ⑦ Untitled [ME3C6-1616]	ain0 × Motion Points		aj *		Exoprt	Imoprt 🛛 🏠 Poin	t Preview Chart	ToolBox > > > >
> 🖗 Comment > 💖 Tag	Comment	Operation Mode Unused	Axis	Target Position	Velocity	Acceleration	Deceler	>
 Katus Page ✓ Data Chart ✓	2	Unused Unused						>
º₩ Motion Network ♥ Motion Axis Motion Point	4	Unused						> >
 Motion Flow Ontrol Motion Sync Control Motion Param Mapping 	5	Unused Unused						>
All Motion Recipe ✓ ■ Table Edit Table	7	Unused						>
 Servo Parameter Table Servo Program Table 	9	Unused						>
TA General Purpose Link Table III Register Table TM ModBus Master Table	10 11	Unused Unused						>

Fig. 176: Motion point setting

You may also click [Point Preview Chart] in the working window to open the preview page.

Project Designer PLC	F Tools				UperLogic (Beta)				Offlin	e Edit – 🗗 ^ Options Help
Project Tool Tree Box Module Memory Cross Ref Project Windows	Element Comment	: View Setting	 Biggest Small Large Tiny Medium Font 	Cascade Tile	Windows Windows Window	Close All				
roject Management 🛛 🖾 🗙	Point Setting Preview								🖉 🗆 🕽	ToolBax
1 🗊 Untitled [ME3C6-1616]	Starting Setting				Sub Chart					> Basic
Y System Configuration										> Timer/Counter
Device View	Point No. 1		Even.	cution Calculation	Add	Remove				> Output Operation
ね ₀ I/O Configuration ¹⁰ の Memory Allocation	Start Pos X		Pos A	color carculation	Display	Color	ltem	Y Axis		> Set/Reset
Read-Only Register					Coperf	Color	incini	1 9440		> SFC
Server Configuration	Display Setting									> Arithmetic
Gr Communication Configuration	• 1-Axis O 2-Axis		X Axis_x - Y	 3D trajectory 						> Logic Operation
Y 📑 Program Unit			- 1995 - 1 I							> Compare
🖌 🟥 Main Program	Trajectory									> Data Movement
> 🗈 Main0										> Shift/Rotate
Y ഈ Sub Program				8						> Code Convert
> 🛅 Sub0	475 356 238				100				8	> Flow Control
Special Program FCM Program	E 356				100				100	> PID Control
Comment	¥ 238				50				50	> 1/0
> @ Tag	119									> Cumulative Timer
Status Page	0,	290 580	870	1160	0	25	50	7	100	> Watch Dog Timer
🗠 Data Chart		Time(ns)				Time(ms)			> High Speed Timer/Cou
Y 📹 Motion										> Report Printing
9										> Ramp/Soak
📹 Motion Axis			_				D .	10 mail	literation of the	> Communication
🖳 Motion Point	- <u>*</u> ∎ © ⊃ ≗	Display Setting Display all					Exoprt	lmop	t Point Preview Chart	> Table Manipulation
Motion Flow Motion Sync Control	Point List									> Matrix Manipulation
Motion Sync Control Motion Param Mapping										NC Positioning Interrupt Control
A Motion Recipe	ommer Operatio	on Mode Axis	Target Position	Velocity	Acceleration	Deceleration	Acce. Profile	Arc Mode	Continue Mode	
🖌 📷 Table Edit	1 Single,	ABS M: Axis_x	475 mm	500 mm/s	5000 mm/s ²	5000 mm/s ²	S-Curve Acc.: 100.0 %		Standby: Oms End	Floating Point Numb Module Function
T.m. Link Table	2 Single	ABS M: Axis_x	50 mm	500 mm/s	5000 mm/s ²	5000 mm/s ²	S-Curve Acc.: 100.0 %		Standby: 0ms End	Others Instruction
Servo Parameter Table										> Motion
Servo Program Table	3 Single,	ABS M: Axis_y	85 mm	500 mm/s	5000 mm/s ²	5000 mm/s ²	S-Curve Acc.: 100.0 %		Standby: Oms End	
TA General Purpose Link Table	4 Single	ABS M: Axis_v	5 mm	500 mm/s	5000 mm/s ²	5000 mm/s ²	S-Curve Acc.: 100.0 %		Standby: Oms End	
T표 Register Jable T표 ModBus Master Table									· · · · · ·	

Fig. 177: Motion point preview page

Item	Description
Display Setting	Display all: Display all points (256 points until now) Display continuing point: Display the continuing points only and "Starting point" will be displayed on right-hand side for selection.
Point Preview Chart	Show the window highlighted by upper side yellow box for simulation reference.
Setting Page	From the purple block at upper side of the desired point parameter, select the motion point to be created. After double clicking, you may start setting the point data.

Table 23: Descriptive table of motion Point Preview Chart

2. Setting page parameters

Through the point data setting function, it allows the user to modify the parameter setting of the motion point. For detailed parameter description, please refer to Motion Control User Manual.

Point No 1 Comment	2
Comment	
Operation Mode Arc/ABS	-
Axis Type Axis Path Object	
Axis Setting	
Master Axis 2 Axis_y	
Interpolation Axis Arc 3 Unselected	
Aux Axis Arc 1 Axis x	
Aux Axis	
Motion Setting	
	-
Axis2 OPLS CCW CCW	
	\$
Velocity 10PLS/s	
Acceleration 1PLS/s ² ↓ ↔ 10000ms ↓ Continue	
	- I
	- -
	÷
	-
OK Cance	

Fig. 178: Point Data Setting

3. Point Preview Chart

Click [Point No.] and then select the motion point to be previewed. After setting the [Start Pos], click [Execution Calculation] and the preview map of such motion point will be displayed at the lower side track. For detailed setting, please refer to Motion Control User Manual.

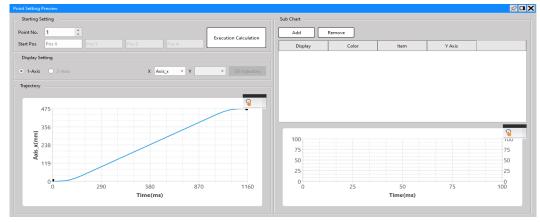


Fig. 179: Point Preview Chart setting

4. Trajectory display control

By clicking the **Q** icon, you may open the scroll-down menu containing the [Trajectory Display Control] option. Indicated in the figure below are the functions.

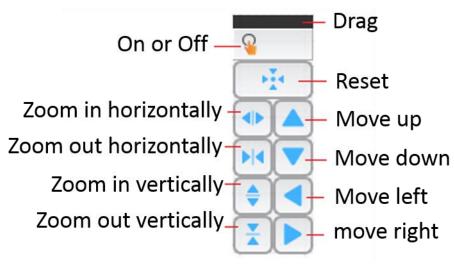


Fig. 180: Trajectory display control

9-4 Motion Flow

1. Setting process

Click [Project] \rightarrow [Motion] \rightarrow [New Motion Flow] in function toolbar, or you may select [Project] \rightarrow

[Motion] \rightarrow [Motion Flow] in project management window and then double click the right mouse button to add new motion flow.

	ា ជា -					UperLogic (B	ta)			Offline E	dit – 🗆 ×
	LC View Tools										🔺 Options Help 🕶 🛔
Device IO Configuration Memory View Allocation	Read-Only Server Register Configuration System Configuration		Descrete Register Allocation	Main Sub Program • Program Ladder Diagram	Table Edit	Status Page • Status Page	Comments	Tag Security Tags Pro	Motion Motion Network - Axis	Motior Point Flow • Motion	
Project Management	Main_unit1	×									
 W Untitled [ME3C6-1616] > System Configuration > Gomment > Gomment > Gomment > Gomment > Gosta Cast Motion Network Motion Network 	N000 N001 N002							•		Flow -	Mation Sync Motion Pa Control - Mappin v Mation Flow
Motion Point Motion Flow Motion Sync Control Ø _b Sync Parameter	🔩 New Motion Flow										8
 Gontact Output Carn Setting 	N004										•

Fig. 181: Adding motion process

In Motion Flow options, click the right mouse button and the flow will be renamed.

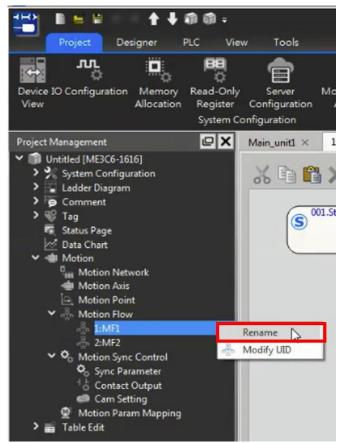


Fig. 182: Renaming motion flow

2. Adding flow block

Description	lcon
Simply drag the right-side toolbox to the preview window.	ToolBox Image ▲ Motion Flow ● End ▲ Select Branch ▲ Parallel Branch ◇ Merge ●> Origin Return ◇ Positioning ◇ Speed Control ▲ Torque Control ●> Standby ●> Goto ◇ Sync Control ●> Calculate ◇> Object Sync
When dragging the block to the window, both will be connected by aligning red box with Node.	Origin Return
After selecting the block, press "F" and you will be allowed to add the imported block.	S 00241122 S SEECT S SPEED S STANDBY S SUBROUTINE S SYNC

Table 24: Flow block adding setting table

3. Deleting flow block

Click block (multiple choices available) and then press "Delete."

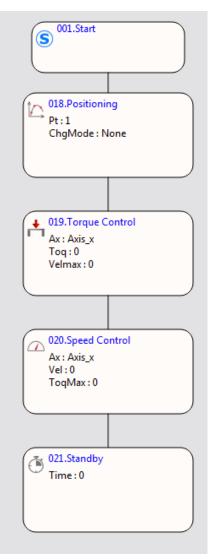


Fig. 183: Deleting flow block

4. Adding link

Press the contact and then drag it to the point to be connected.

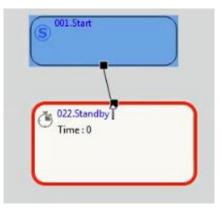


Fig. 184: Adding link for fkow block

5. Deleting link

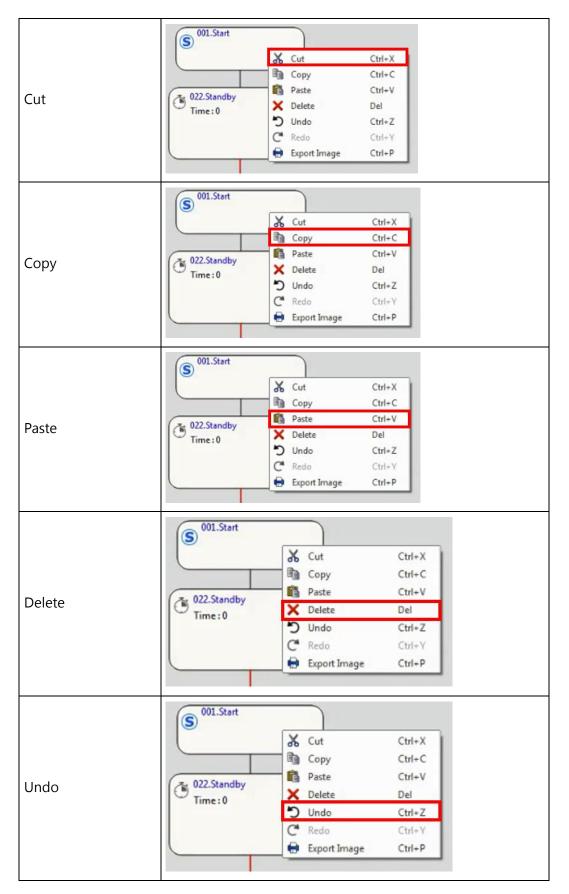
Click the respective line and then press "Delete" and the link will be deleted.

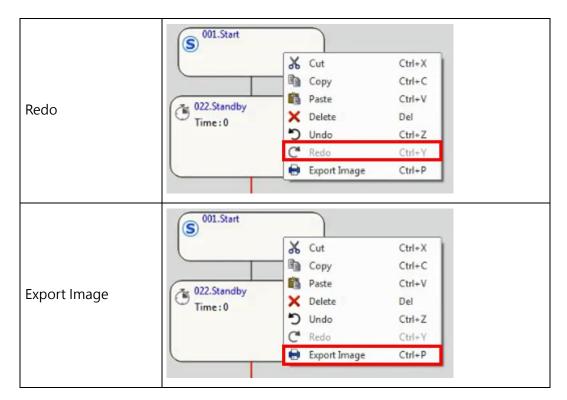
(S ^{001.Start}	
022.Standby)
Time: 0	
	J
023.Speed Control	
Ax : Axis_x	
Vel:0 ToqMax:0	
)

Fig. 186: Deleting flow block link

6. Others

ltem	Description
Show None	Show None Show Info 1 : Mem List Show Long Info 1
Show Comment	Show None Show Comment • Show Info 1
Show Info	Source and the show hore Show Long and Show





Parameter

Flow setting block introduction.

Basic Description

💾 Origin Re	turn Setting No	3 margine	8 22
Block UID:		24	¢
Setting	Comment		
Axis	Setting	1 Axis_x Axis Setting	
🗌 Enal	ole Switch Condition	== •	
	Condition	ОК	Cancel

Fig. 186: Flow block basic description

Action number: The number coded for such action. It represents the ID of the action currently displayed by Register R36884–R36890.

Action setting: The setting page of each action. After completing the action, Register R36891–R36906 will be displayed as "2" (action completed).

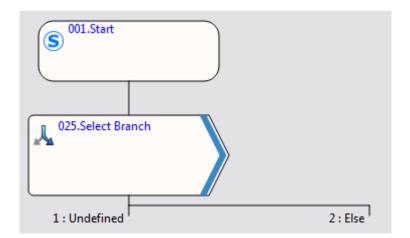
To next action condition: If such function is used, the system will go to next action block after meeting the conditions.

Note: Taking the GoTo for example (presuming the conditions are met \rightarrow No. 1; otherwise \rightarrow No. 3), the system has determined to proceed to next action block (if GoTo No. 1) when completing the current action. If the system has set up the conditions for proceeding to next action block, then the direction will remain unchanged (the system will not GoTo No.3 at this time) even though the system has changed the GoTo conditions again (the conditions for GoTo No. 1 no longer exist).

Start



Select Branch



😁 Selec	t Branch Setting		9 X
Block U	ID:	25	4
Settin	ng Comment		
Brat	nch Count	2	÷
Did.		-	
	Con	dition	
1	Undefined		
2	Else		
		ОК	Cancel

Fig. 187: Selecting branch

After selecting the branch blocks, the system will execute the inspection from left to right in order to execute the first branch that meets the conditions. The rightmost means "ELSE" and the system will execute the process blocks at the rightmost side if failing all of the conditions. Currently, the maximum number has been set up to 16 branches.

Item	Description
Branch Count	Number of branch blocks (1–16)
Condition	Branching execution conditions

Parallel Branch

	026.Parallel B	ranch			
💾 Parallel	Branch Setting				? ×
Block UID:			26		¢
Setting	Comment				
Branch	n Count		2		*
				ОК	Cancel

Fig. 188: Parallel branches

After executing the parallel branch blocks, the system will execute the process blocks according to the quantity set for the branch blocks. Currently, the maximum number has been set up to 16 branches.

Item	Description
Branch Count	Number of branch blocks (1–16)

Merge

V 030.Merge Mode : AND		
😬 Merge Setting		? ×
Block UID:	30	•
Setting Comment		
Merge Count	2	÷
Standby Condition	AND	○ FOR SELECT
Enable Switch Condition	==	•
		OK Cancel

Fig. 189: Merge setting

The selected branches and the parallel branches shall be displayed in pairs. In this case, it means the branch setting is finished.

Item	Description
Merge Count	Composite quantity (1–6)
Standby Condition	 AND: For parallel process FOR SELECT: For block selections

Origin Return

S 031.Orig Ax : Axis	jin Return <u>-</u> x	
Crigin Return Setting		2 ×
Block UID:	31	\$
Setting Comment		
Axis	1 Axis_x Axis Setting	
Enable Switch Condition		
	ОК	Cancel

Fig. 190: Origin Return setting

After selecting the desired axis, the system will execute the Origin Return according to the axis setting pattern.

ltem	Description
Axis	Axis_conveyor

Positioning

033.Positioning	
Pt:1	
ChgMode : None	
1	

Positioning Setting			? <mark>×</mark>
Block UID:		33	*
Setting Commer	nt		
Point		1	÷
	1		
Comment			
Operation Mode	Unused		
Axis			
Target Position	/ Axis_x->0PLS		
Velocity			
Acceleration			.
Change Behavior	Do Nothing		
Change Condition		== 🔻	
Changed Value			
Enable Switch (Condition	== •	
		[OK Cancel

Fig. 191: Positioning setting

Select the parameters of the corresponding points and then start the positioning.

ltem	Description		
Point	The points to be controlled		
Change Behavior	Do Nothing Change Current Coordinates Change Target Position Change Speed Stop after moving for certain distance		

Change Condition	Change the desired parameters after meeting such condition during the positioning process.
	The value to be changed.
Changed	Speed is expressed as single value.
Value	When ticking such alignment point in the coordinates,
	the system will change the axis being used.

Speed Control 034.Speed Control \frown Ax: Axis_x Vel:0 ToqMax:0 📰 Speed Control Setting ? Х * Block UID: 17 Setting Comment Axis_conveyor Axis 1 Velocity Command 0 Command Position/sec ÷ * Torque Limit 0.0% (0 means no limit) Enable Switch Condition Ŧ ... = ОК Cancel

Fig. 192: Speed control setting

Select the corresponding axis and then start the speed control according to the set value.

ltem	Description	
Axis	The axis requiring speed control.	
Velocity Command	The speed to be achieved (min-1)	
Torque limit (0.01%)	Torque limit and "0" means unlimited.	

Torque Control

Ax : Axis_x Toq : 0 Velmax : 0	Control
Torque Control Setting	? ×
Block UID:	35
Setting Comment	
Axis Torque Command	1
Velocity Limit	0 rpm ‡ (0 means no limit)
Enable Switch Condition	
	OK Cancel

Fig. 193: Torque control setting

Select the corresponding axis and then start the torque control according to the set value.

ltem	Description
Axis	The axis requiring speed control.
Torque Command	The torque to be achieved.
Velocity Limit	Speed limit and "0" means unlimited.

Standby

		O37.Standby Time : 0			
Standby Standby	Setting				? ×
Block UID:			37		\$
Setting	Comment				
Waiting	Time		0		\$
Enat	ole Switch Condition		== •		
				ОК	Cancel

Fig. 194: Standby setting

Based on the conditions being created for the mode, GoTo next process block after meeting the intended conditions.

Item	Description
Waiting Time	The created waiting time, expressed in "ms" as the unit.
Enable Switch Condition	Switch conditions

Subroutine

Flow : Undefi	
Subroutine Setting	? ×
Block UID:	38
Setting Comment	
Sub Flow	MF2
Enable Switch Condition	
	OK Cancel

Fig. 195: Subroutine setting

When running to this process block, you may execute other process.

ltem	Description	
Sub-program	Select the process to be executed.	

GoTo

	039.Goto Blk : Undefined	
📇 Goto Setting		? ×
Block UID:	39	\$
Setting Com	ment	
Block	39-Goto()	•
Enable Swit	ch Condition	
	ОК	Cancel

<hr/>

Fig. 196: GoTo setting

When running to this process block, you may execute the GoTo for entering other blocks of this process or finish the process directly.

ltem	Description
Block	Select the process block of this process or finish the process.
Condition	Select the GoTo for entering the created setting block after meeting the conditions.

Synchronization

040.Syn Ax : Ax Mode :	nc tis_x : Enable
Sync Control Setting	? ×
Block UID:	40 \$
Setting Comment	
Axis Mode	1 + Axis_x Enable + Sync Setting
Enable Switch Condition	

Fig. 197: Synchronization control setting

Enable or disable the designated axis synchronization control.

ltem	Description	
Axis	Start or close the synchronized axis.	
Mode	Start or close the synchronization control.	

9-5 Motion Sync Control

Click [Project] \rightarrow [Motion] \rightarrow [Motion Sync Control] in function toolbar and then click the left mouse button to open the scroll-down menu in order to select the page that will be set. You may select the page to be created by clicking [Project] \rightarrow [Motion Sync Control] in project management window.

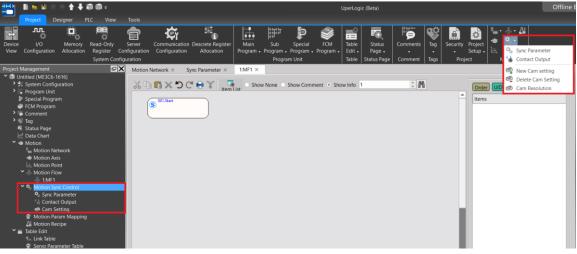


Fig. 198: Motion synchronization setting

9-5-1 Sync Parameter

Click [Sync Parameter] in scroll-down menu of [Motion Sync Control], or you may select [Project] \rightarrow [Motion Sync Control] in project management window. Next, click the left mouse button to open the scroll-down menu to select [Sync Parameter].

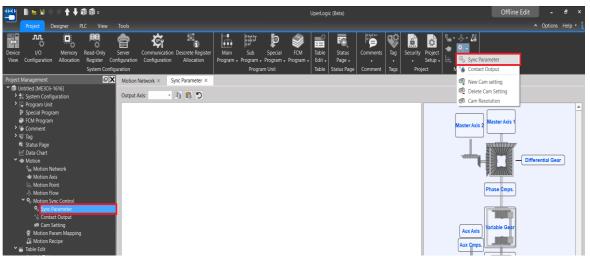


Fig. 199: Synchronize parameter setting

You may use the output axis to select the synchronize parameters of the axis that will be created. You may also use the copy and paste function next to the [Output Axis] for presetting the corresponding setting process. For detailed setting, please refer to Motion Control User Manual.

9-5-2 Contact Output (to be released)

Click [Sync Parameter] in scroll-down menu of [Motion Sync Control], or you may select [Project] → [Motion Sync Control] in project management window. Next, click the left mouse button to open the scroll-down menu to select [Contact Output].

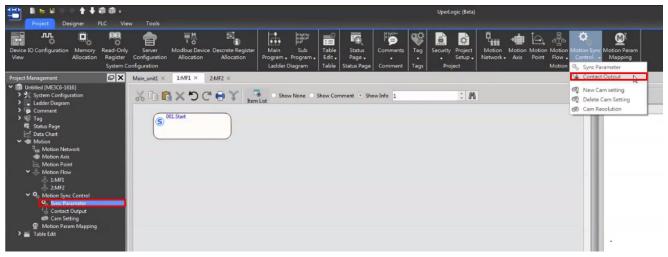


Fig. 200: Contact Output setting

For detailed setting of synchronize contact, please refer to Motion Control User Manual.

9-5-3 Cam setting

Click the scroll-down menu of [Motion Sync Control] and you will be allowed to select the required cam setting. You may also click [Project] \rightarrow [Motion Sync Control] in project management window and then click the right mouse button to open [New Cam setting] in the scroll-down menu.

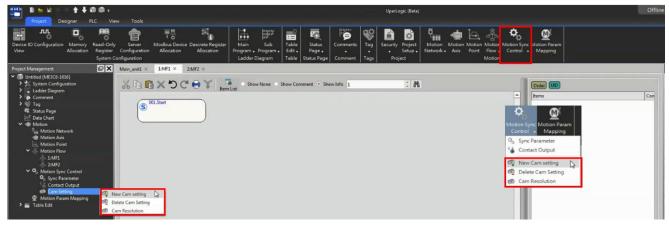


Fig. 201: Cam setting

New Cam setting

Click the scroll-down menu of [Motion Sync Control] and you will be allowed to select [New Cam setting] or you may select [Project] \rightarrow [Motion Sync Control] \rightarrow [Cam setting] in project management window. Next, click the right mouse button to open the scroll-down menu and then select [New Cam setting].

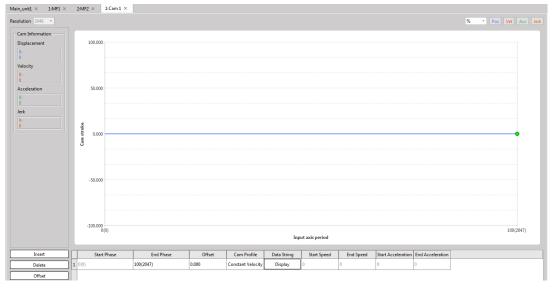


Fig. 202: New Cam setting

Delete Cam setting

Click the scroll-down menu of [Motion Sync Control]. Here, you will be allowed to select [Delete Cam Setting] or you may select [Project] \rightarrow [Motion Sync Control] \rightarrow [Cam Setting] in project management window. Next, click the right mouse button to open the scroll-down menu and then select [Delete Cam Setting].

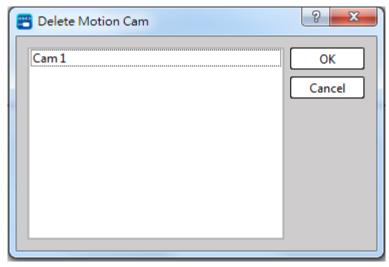


Fig. 203: Delete Cam setting

After being selected, such page will show "Delete Motion Cam" window. Select the cam to be deleted and then press [OK] to delete such cam.

Cam Resolution

Click the scroll-down menu of [Motion Sync Control]. Here, you will be allowed to select [Cam Resolution] or you may select [Project] \rightarrow [Motion Sync Control] \rightarrow [Cam Setting] in project management window. Next, click the right mouse button to open the scroll-down menu and then select [Cam Resolution].

💾 Dialog	8 X
Resolution	2048 -
Max. number of cam data:	16
	OK Cancel

Fig. 204: Cam resolution setting

After being selected, such page will show "Dialog" window. Setting up cam resolution will affect the maximum quantity of the cam that can be added.

9-6 Motion Param Mapping

Click [Project] \rightarrow [Motion] \rightarrow [Motion Param Mapping] in function toolbar. You may also select [Project] \rightarrow [Motion] \rightarrow [Motion Param Mapping] in project management window and then double clicking the pagination function of [Motion Param Mapping].

🏩 🗈 🖌 🕇 🕯	ៅ ថា ÷						UperLogic (Be	ta)				Offline Ec	lit -	- 🗆 ×
Project Designer PL	LC View	w Tools											 Option 	ns Help 🕶 👔
Device IO Configuration Memory I View Allocation	Read-Only Register System Co	Server Configuration	Modbus Device Allocation	Descrete Register Allocation	Main Program - Ladder D	Table Edit • Table	Status Page - Status Page	Comments Comment	Tag S Tags	ecurity Project Setup + Project	Iotion Mot Axis Poi		Viotion Sync Control	Votion Param Mapping
Project Management	eΧ	Main_unit1 $ imes$	1:Cam 1 \times											
 ♥ Untitled [ME3C3-1616] ♥ System Configuration ♥ System Configuration ♥ Tag ♥ Tag ♥ Status Page ✓ Data Chart ♥ Motion ♥ Motion Network ● Motion Asis ● Motion Asis ● Motion Point 		N000 N001 N002												
 ✓ ♣ Motion Flow ♣ 1:MF1 ♣ 2:MF2 ♥ ♥ Motion Sync Control 														
♦ 9 motion sync control ♦ Sync Parameter ♦ Contact Output ♥ I Cam 1 € am 1 ♥ Motion Param Mapping		N004 N005												
> 🗃 Table Edit														

Fig. 205: Motion Param Mapping setting

Function	Description			
Add	Add a new Motion Parameter Table and execute			
	the required setting.			
Delete	Delete old Motion Parameter Table			
Up/Down	Change the sequential address of Motion			
	Parameter Table in Summary Table.			

Regarding the setting details of Motion Parameter Table, please refer to Motion Control User Manual.

9-7 Motion Recipe

Click [Project] \rightarrow [Motion] \rightarrow [Motion Recipe] in function toolbar. You may also select [Project] \rightarrow [Motion] \rightarrow [Motion Recipe] in project management window and then double clicking the pagination function of [Motion Recipe].

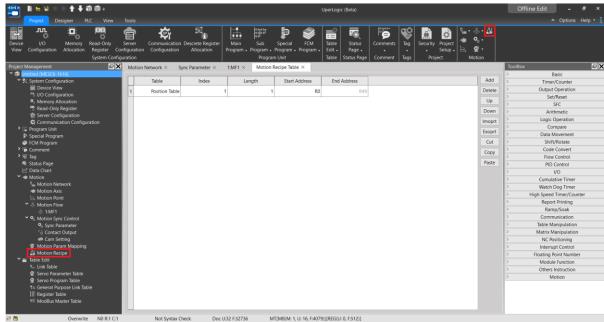


Fig. 206: Motion Recipe setting

Function	Description
Add	Add a new Motion Recipe and execute the required setting.
Delete	Delete old Motion Recipe
Up/Down	Change the sequential address of Motion Parameter Table in Summary Table.
Import/Export	Export or import information from Motion Recipe
Cut	Cut out the selected Motion Recipe information
Сору	Copy selected Motion Recipe information
Paste	Paste the copied or cut Motion Recipe information at the specified location

Regarding the setting details of Motion Recipe, please refer to Motion Control User Manual.

10

Module Configuration

10-1	Creating Module Layout Drawing	
	Module List	
	Device Monitor	
	Power Consumption	
	Module Setting	
	I/O Configuration Status	

<u> A</u> Danger

- 1. When installing or removing the M-series CPU modules and various expansion modules or the equipment connected to it, all power must be turned off, otherwise it may cause electric shock or wrong action, resulting in death or serious personal injury and damage to the machine equipment.
- 2. Before the installation and wiring construction is completed, do not tear off the dust-proof paper on the PLC cooling hole, so as to prevent the drilling iron filings or wiring scraps from falling into the PLC during construction, causing fire, failure or malfunction.
- 3. After confirming that the installation and wiring are all completed, remember to tear off the abovementioned dustproof paper to avoid poor heat dissipation of the PLC, resulting in fire, failure or malfunction.

This section describes the graphical illustration method for helping the user achieve quick and convenient configuration as well as establish the configuration compatible with the PLC application. In the meantime, this section also explains the corresponding information setting instructions. Detailed description will be provided in the paragraph below.

10-1 Creating Module Layout Drawing

Page Display

Click [Project] \rightarrow [Device View] in function toolbar, and the module management page will appear as below:

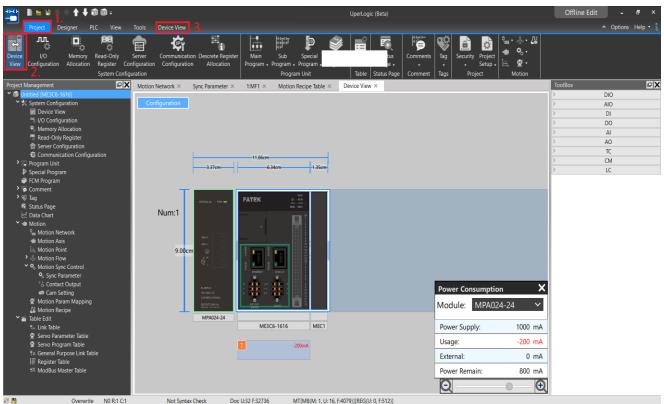


Fig. 207: Module management page

Click the toolbar icon, and you can call out following functions:

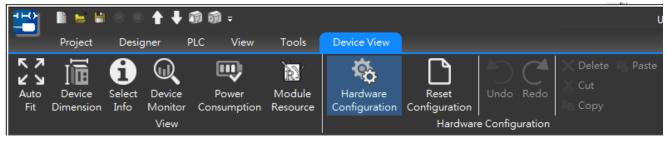


Fig. 208: Related functions of Module management page

Function	Description	Detailed
		introduction
Auto Fit	Compress and expand the module to appropriate	
	position automatically.	
Device	Indicate the dimensions of the equipment.	Please refer to
Dimension		Section 10.1.3
Select Info	Display the information of the selected equipment	Please refer to
	such as ID, firmware version, hardware version, serial	Section 10.1.2
	number and description, etc.	
Device	Display the status of the selected module on the	Please refer to
Monitor	right-hand side.	Section 10.3
Power	Calculate the power consumption status of all	Please refer to
Consumption	components being expanded until now.	Section 10.4
Module	Display the resource occupying status of such	Please refer to
Resource	module at the lower side of the module.	Section 10.1.4
Hardware	Display the module in the toolbox for users to	Please refer to
Configuration	expand the module.	Section 10.1.1
Reset	Reset the module. After being pressed, it will	
Configuration	remove all of the expanded components in the PLC	
	and then return to initial status.	
Undo	Return to the previous step.	
Redo	Redo the next step.	

Table 25: Introduction of equipment window items

10-1-1 Operation setting

First, click [Hardware Configuration]. Next, select the module from the right-side toolbox and then drag it to the PLC module. During the dragging process, the intended configuration position will show yellow, as per the figure below. When the module reaches the rear section of the existing module, it will be placed at the rearmost end of the module automatically. By double clicking the module in the toolbox, the system will add new module to the rearmost end of the module that has been configured.

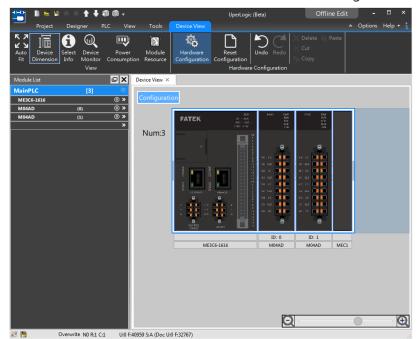


Fig. 209: Dragging the module to the rear section

The user may drag the module for adjusting the position of the added module in order to match with actual PLC configuration pattern.

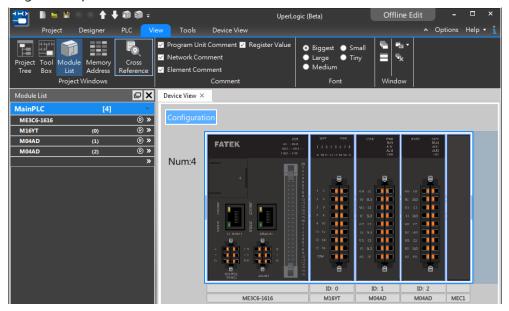


Fig. 210: Dragging module to the space between modules

Caution:

You cannot click [Download] if the expansion module in UperLogic is incompatible with the connected physical module. In this case, you will be allowed to use the uploading function only.

E	Compare			? ×
	Project	Verify	Device	Detail
	📝 🧊 PLC Program	=	PLC Program	Matched
	📝 藸 Expansion Data	=	🙀 Expansion Data	Matched
	🔽 📹 Motion Program	¥	📹 Motion Program	Not matched
		_		
	Select All Clear All		Up	load Download Cancel

Fig. 211: Download remains inactive if incompatible with the module

10-1-2 Module information

Click [Project] \rightarrow [Device View] \rightarrow [Select Info] in function toolbar, and then move the cursor to the target module. Next, click the left mouse button and the window will show the information of the selected module such as version number, number of terminal board point and remark, etc., as per the figure below:

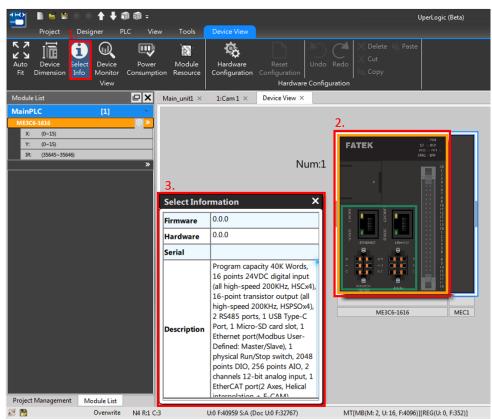


Fig. 212: Module information

10-1-3 Device Dimension

Click [Project] \rightarrow [Device View] \rightarrow [Device Dimension] in function toolbar and the module dimensions will be displayed in the webpage, as per the figure below:

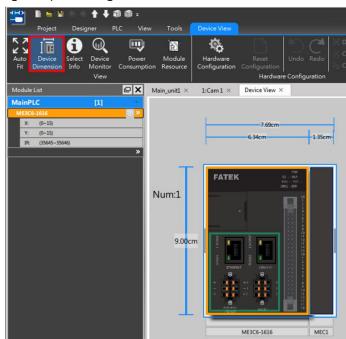


Fig. 213: Module dimensions

10-1-4 Module Resource

Click [Project] \rightarrow [Device View] \rightarrow [Module Resource] in function toolbar and the resource consuming status of each module will be displayed in the webpage, as per the figure below:

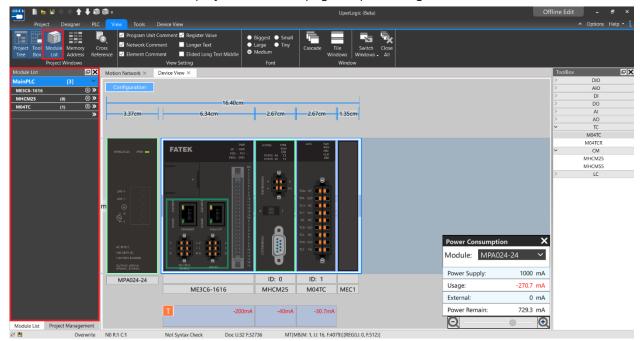


Fig. 214: Module Resource

10-2 Module List

Click [View] \rightarrow [Module List] in function toolbar, and the module management page will be displayed, as per the figure below:

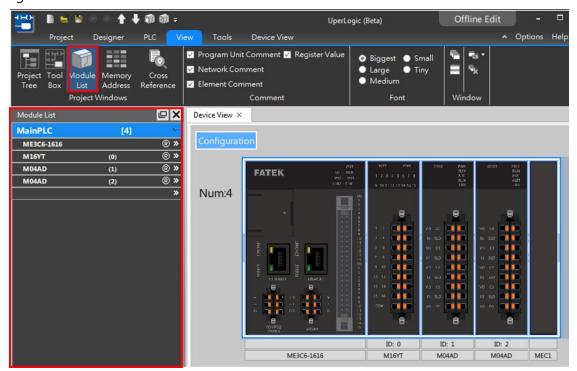


Fig. 215: Module List

The module list will display the module currently installed. When clicking the corresponding module, the module list will also display the module currently selected.

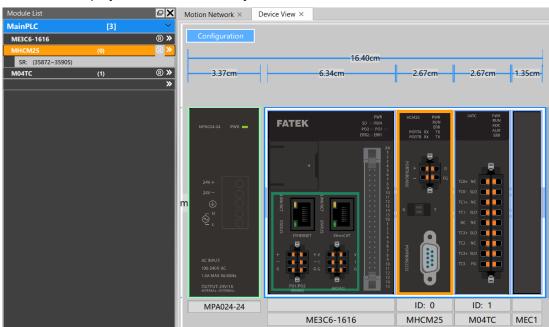


Fig. 216: Selecting module

Click the module in the Module List, and it will show the resource consuming status of the corresponding module.

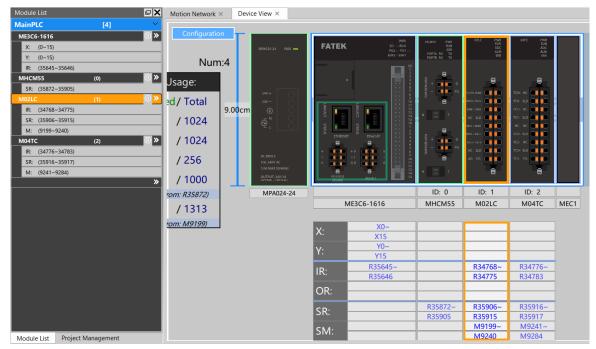


Fig. 217: Module resources in Module List

Based on the sequential order, the Module List will show the name, ID, \mathbb{P}_{and} the module or PLC.

 $[\mathbb{R}]$: To expand or compress the resources items of such module.

[22]: It allows the user to skip to equipment window directly from other page and the system will also mark the selected module automatically.

10-3 Device Monitor

Click [Project] \rightarrow [Device View] \rightarrow [Device Monitor] in function toolbar, and the system will show the rightside device monitoring window:

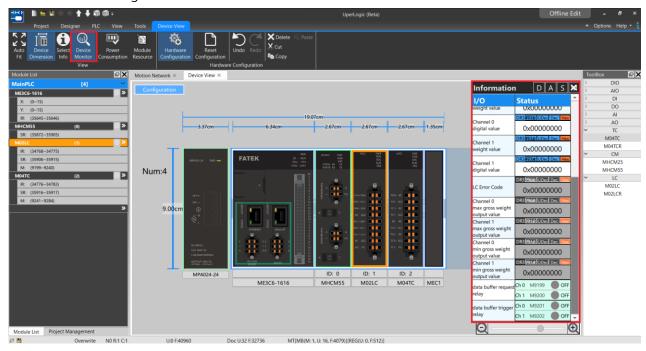


Fig. 218: Device monitoring

In the information, you may select the resource that will be displayed such as "Digital Data," "Logic Data," "Status Data" and "Relay."

10-3-1 Digital Data

When clicking [Digital Data] above [Device Monitor], the Module List will show digital data only. Next, point the mouse at the target value. When the switch is shown in blue as per the figure below, it means the user will be allowed to change the switch of such register.

Information	DA	A S M	X
I/O	Status		^
X0	Enable	OFF	
X1	Enable	OFF	
X2	Enable	OFF	
X3	Enable	OFF	
X4	Enable	OFF	
X5	Enable	OFF	
X6	Enable	OFF	
Х7	Enable	OFF	
X8	Enable	OFF	
Х9	Enable	OFF	
X10	Enable	OFF	
X11	Enable	OFF	
X12	Enable	OFF	
X13	Enable	OFF	
X14	Enable	OFF	
X15	Enable	OFF	
YO	Enable	OFF	
Y1	Enable	OFF	
Y2	Enable	OFF	
Y3	Enable	OFF	
Y4	Enable	OFF	•

Fig. 219: Digital data of device monitoring

10-3-2 Logic Data

When clicking [Logic Data] of the information above [Device Monitor], the Module List will show logic data only. Next, point the mouse at the target value. When the data is shown in blue as per the figure below, it means the user will be allowed to change the switch of such register. In the meantime, it also allows the user to quickly change the value displaying pattern with [Dec] and [Hex] on the right side of the register.

Information	DASM 🗙
I/O	Status
Channel 0 weight value	DR34768 [Float UDec] Dec Hex 0x000000000
Channel 0 digital value	DR34770 Float UDec Dec Hex 0x00000000
Channel 1 weight value	DR34772 Float UDec Dec Hex 0x00000000
Channel 1 digital value	DR34774 [Float UDec] Dec] Hex 0x000000000
digital value	00000000

10-3-3 Status Data

When clicking [Status Data] above [Device Monitor], the Module List will show status data only. If the data is shown in gray as per the figure below, it means the user will not be allowed to change the value of such register. However, the user is still allowed to instantly change the value displaying pattern with [Dec] and [Hex] on the right side of the register.

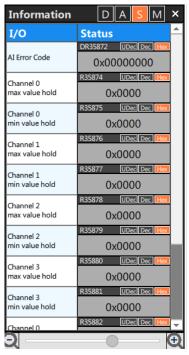


Fig. 221: Status data of device monitoring

10-3-4 Relay

When clicking [Relay] above [Device Monitor], the Module List will show status data only. Next, point the mouse at such value. If the data is shown in blue as per the figure, it means the user will be allowed to change the value of such register; otherwise, it will be impossible to make the change if the register field is shown in gray background.

Information		D	Α	5	5	М	x
I/O	St	atı	JS				1
	Ch ()	/9241	(OFF]
data buffer request	Ch 1	I N	/9242			OFF	
relay	Ch 2	2 N	/19243			OFF	
	Ch 3	S N	/9244			OFF	
	Ch () N	/9245	(OFF]
data huffastrianas rela	Ch 1	I N	/9246			OFF	
data buffer trigger relay	Ch 2	2 N	/9247			OFF	
	Ch 3	S N	/9248			OFF	
	Ch ()	/19249	(OFF	
alarm clear request	Ch 1	I N	/9250			OFF	
relay	Ch 2	2 N	/9251			OFF	
	Ch 3	I N	/9252			OFF	
	Ch ()	/9253	(OFF	
and the second second	Ch 1	I N	/19254			OFF	
upper input limit	Ch 2	2 N	/9255	- (OFF	
	Ch 3	S N	/9256	- (OFF	
	Ch () N	/9257	(OFF	
In the second line in	Ch 1	I N	/9258	(OFF	
lower input limit	Ch 2	2 N	/9259	(OFF	
	Ch 3	s n	/9260			OFF	
	Ch ()	/9261	(OFF	Ŧ

Fig. 222: Status data of device monitoring

10-4 Power Consumption

Click [Device View] \rightarrow [Power Consumption] in function toolbar, the lower-right side will show the power consumption calculation window, as per the figure below:

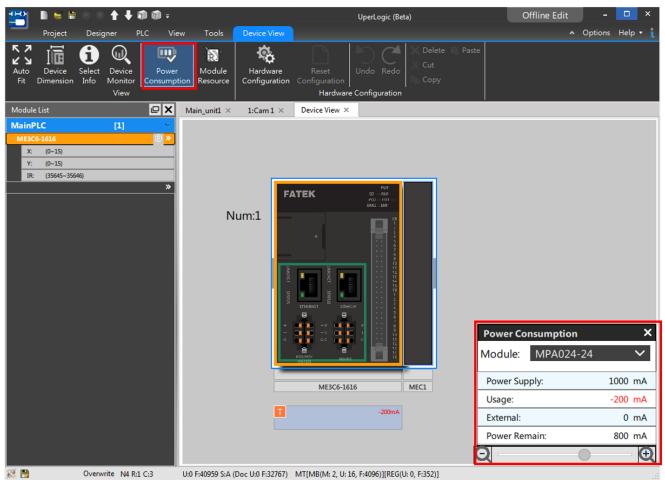


Fig. 223: Power Consumption

Function	Description				
Module	Select the power module that will be used now.				
Power Supply	The power capacity supplied by the power module.				
Usage	Display the total power capacity consumed by all modules currently used.				
External	Display the total power capacity supplied by external power source as				
	estimated by the user.				
Power Remain	Remaining power capacity after deducting the supplied capacity from the				
	power module.				

Table 26: Introduction of detailed power consumption

Additional power will be required for certain modules such as M04DA indicated in the figure. The user may determine if using the power supplied by the host or by the external source. If external power supply will be required, click and set such power as external power supply and then recalculate the

capacity currently required, as per the figure below:

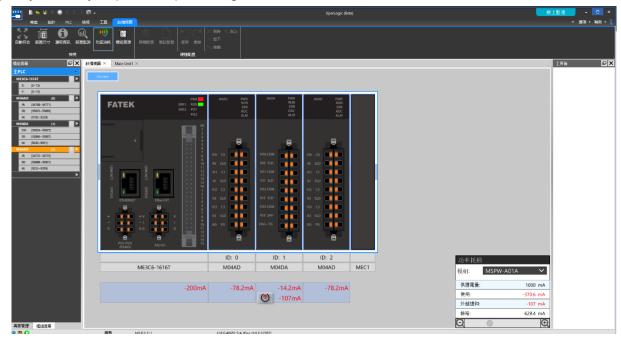


Fig. 224: External power supply

10-5 Module Setting

Double clicking the expansion component with the left mouse button and the corresponding module setting window will pop up. In addition to creating the equipment name and comment, the user is also allowed to set up the module parameters in "Offline Edit" and to calibrate the corresponding module in "Online Monitor."

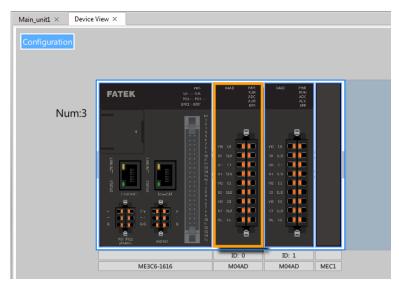


Fig. 225: Setting the module

Although the equipment information of each module may vary in name and description, however same information will be displayed. Indicated below is the introduction of the equipment information related content by using M04TC as the example.

M04TC(M04TC) Configuration	L	
ID	del Name	M04TC 0 4 channel analog inputs.
Harr	nware Version rdware Version ial Number vice Name	Upgrade M04TC
Con	mment	
Import Export		OK Cancel

Fig. 226: Device information (M04TC)

Information	Description
Module name	The name of the module. It is the default value and cannot be edited.
ID	Display present number of the module automatically according to
	the sequence of the string devices.
Description	The functional description of the module. It is A default value and
	cannot be edited.
Firmware Version	By clicking the right-side [Upgrade] button, you may upgrade the
	firmware of all modules installed in the PLC and such function will be
	active only under "Online Monitor."
	Expansion Module Firmware Upgrade
	Firmware Upgrade Select the modules you wish to upgrade and select their fw files. Check All Uncheck All ID Module Cur Ver. Firmware File Select File ID M044DR 1.0.52 Clear I M04DA 1.0.52 Clear All
Hardware Version	Present hardware version of the module. It is a default value that
	cannot be edited.
Serial Number	Present serial number of the module. It is a default value that cannot
	be edited.
Device Name	The user may define the equipment name and then save the
	changed information in the Project.
Comment	The user may define its own comment and then save the changed
	information in the Project.

Table 27: Device Information List

After changing the device name, press [OK] and the changed name will be displayed under such device.



Fig. 227: Changed module name

Each module will be configured to display the content of the corresponding parameters. Provided below is the introduction on how to execute the configuration by using M04TC as the example.

When operated under "Offline Edit," the user may emable or disable the corresponding channel and change the desired parameter. Please refer to the relevant manuals.

Parameter	Ch0	Ch1	Ch2	Ch3
☆ A/D Conversion Setting				
A/D Channel Enable/Disable	Disable	Disable	 Disable 	Disable
A/D Conversion Method	No Average	Disable	No Average	No Average
A/D Conversion Method Set Value	0	Enable	0	0
A/D Conversion Time	Middle Speed			
[∞] Input Signal Range Setting				
Input Signal Range	0V ~ 5V	0V ~ 5V	0V ~ 5V	0V ~ 5V
[∞] Scaling Setting				
Scaling Enable/Disable	Disable	Disable	Disable	Disable
Upper Limit Value	5000	5000	5000	5000
Lower Limit Value	1000	1000	1000	1000
♡ Data Offset Setting				
Data Offset Enable/Disable	Disable	Disable	Disable	Disable
Data Offset Value	0	0	0	0
[∞] Digital Clip Setting				
Digital Clipping Enable/Disable	Disable	Disable	Disable	Disable
[∞] Overflow Underflow Setting				
Overflow Underflow Enable/Disable	Disable	Disable	Disable	Disable
[∞] Alert Output Setting				
Alert Output Enable/Disable	Disable	Disable	Disable	Disable
Upper Upper Limit Value	5000	5000	5000	5000
Upper Lower Limit Value	5000	5000	5000	5000

Fig. 228: Configuration information_offline edit (M04TC)

When the CM Module is under "Office Edit," it allows the user to set up the packet or the table for the corresponding mode. Provided below is the introduction by using MHCM55 as the example.

	Parameter	Port A	Port B		inese .	Parameter	Port A	Port B
Device Informa	♡ Mode Setting		1010	111	Device Informa	♡ Mode Setting		
	Mode	Modbus Master	Modbus Slave	184	Configuration	Mode	User Defined	Disable
Configuration	♡ Communication Setting				Configuration	♡ Communication Setting		
	Baud Rate	9600	9600			Baud Rate	9600	9600
	Data Bit	8	8	11.		Data Bit	8	8
	Parity Bit	Even	Even	11		Parity Bit	Even	Even
	Stop Bit	1	1	111		Stop Bit	1	1
	Modbus Station Address Skip	Disable	Disable	111		Modbus Station Address Skip	Disable	Disable
	Reply Delay Time	0 ms	0 ms	11		Reply Delay Time	0 ms	0 ms
	Send Delay Time	0 ms	0 ms	111		Send Delay Time	0 ms	0 ms
	Send Retry Times	1	1			Send Retry Times	1	1
	Send Retry Interval	0 ms	0 ms			Send Retry Interval	0 ms	0 ms
	Receive Overtime Interval	1000 ms	1000 ms			Receive Overtime Interval	1000 ms	1000 ms
	♡ Master Mode Setting					♡ Master Mode Setting		
	Modbus Mode	RTU	RTU	11		Modbus Mode	RTU	RTU
	Master Table	Master Table	Master Table			Master Table	Master Table	Master Table
	♡ Slave Mode Setting					♡ Slave Mode Setting		
	Modbus Mode	RTU	RTU			Modbus Mode	RTU	RTU
	Slave Map Table		Slave Map Table			Slave Map Table		Slave Map Table
	Slave Station Number	1	1			Slave Station Number	1	1
	♡ User Defined Mode Setting					♡ User Defined Mode Setting		
	User Defined Packet					User Defined Packet	UD Packet	UD Packet
	User Defined Table					User Defined Table	UD Table	UD Table

Fig. 229: Setting parameters for communication module (MHCM55)

Modbus Master Station

After selecting the Modbus Master Station, it allows the user to create the table for the Master Station.

COM0 Master Table					Tan D									
Master Table		Maste	er Table 0 Setti	ng										
Add Delete										Clear	Move Up	Move [Down Add	Delete
No. Description		No.	Description	Disable	Slave Station Number	Read/Write	Register Type	Register Address	R/W Direction	PLC Member	PLC Address	Data Size		
0		0		Enable	1	Read	Coil (0x)	1	->	x	0	1		
		1		Enable	1	Read	Discrete Input (1x)	1	->	х	0	1		
		2		Enable	1	Read	Input Register (4x)	1	->	wx	0	1		
		3		Disable	1	Read	Coil (0x)	1	->	х		1		
													-	
Import Export													ОК	Cancel
	_											_		

Fig. 230: Setting Master Station Table

In the left-side Master Station Table, the user will be allowed to Add (+) or Delete (-) the table and then create its own description for easier identification. After adding the table, the user may add new order in the right-side Master Station Table and then click the corresponding parameter to proceed with the change.

Please refer to the relevant manual for details about setting parameters in the table of the master station.

Modbus Slave Station

COM1 Slave Map Table	Ξ.			1	-			Read Town	-		
Slave Map Table		Slave	Map Table (0 Setting							
				D 11 AU			D + 61				
No.		No.	Register	Register Address	PLC Member	PLC Address	Data Size				
0		0	Coil (0x)	1	х	0	1				
2		<u> </u>									
3											
Import Export										OK	Cance



In the left-side Slave Station Table, select the number that will be edited. After that, you may start setting up the corresponding parameters in the right-side Slave Station Table.

Please refer to the relevant manual for details about setting parameters in the table of the slave station.

User Defined Value

The user defined value comprises two tables and they are User Defined Packet and User Defined Table.

User Defined Packet

Packet Add Delete	_	UD Pa	cket 0 Setting							C	ear Move Up [Move Down Ad	d Delete
o. Description		No.	Element Type	Command	Register Type	Register Action	PLC Member	PLC Address	Data Size	Checksum Type	Checksum Start Index	Checksum Length	Const Value
0		0	Command	SOH	BIT	PUT_1BYTE_TO_1BIT	х	0	1	CRC	0	0	0
		1	Command	ETX	BIT	PUT_1BYTE_TO_1BIT	х	0	1	CRC	0		0
		2	Register	SOH	BIT	PUT_1BYTE_TO_1BIT	х	0	1	CRC	0	0	0
		3	Checksum	SOH	BIT	PUT_1BYTE_TO_1BIT	х	0	1	CRC	0	0	0
		4	Const	SOH	BIT	PUT_1BYTE_TO_1BIT	х	0	1	CRC	0	0	0
		5	Register	SOH	WORD	BYTE_SWAP	wx	0	1	CRC	0	0	0
					5	4				1			

Fig. 232: Setting User Defined Packet

In the left-side User Defined Packet, the user will be allowed to Add (+) or Delete (-) the packet and then create its own description for easier identification. After adding the packet, the user may add new command in the right-side UserDefined Packet and then click the corresponding parameter to proceed with the change.

Please refer to the relevant manual for details about setting parameters in Use Defined Packet.

User Defined Table

2	COM0 UD Table					_	_		And A	T and D		- • ×
	UD Table	11	UD Tal	ble 0 Setting								
L	Add Delete									Clear Move Up	Move Down Add	Delete
L	No. Description		No.	Description	Disable	Packet Mode	TX Packet No.	RX Packet#0 No.	RX Packet#1 No.			
L	0		0		Enable	Send	0	0	0			
			1		Enable	Receive	0	0	0	-		
L			2		Enable	Both	0	0	0			
L			3		Disable	Send	0					
	Import Export										ОК	Cancel

Fig. 233: Setting User Defined Table

In the left-side User Defined Table, the user will be allowed to Add (+) or Delete (-) the table and create its own description for easier identification. After adding the table, the user may add new command in the right-side User Defined Table and then click the corresponding parameter to proceed with the change. Please refer to the relevant manual for details about setting parameters in User Defined Table. When operated under "Online Monitor," the AI, AO, TC and LC modules will be provided with calibration function. Provided below is the introduction by using M04TC as the example.

Device Information	Parameter	Ch0) Ch1	Ch2	Ch3
Server mornation	M04TC(M04TC) Calibration			?	× ible
Configuration Settings	Device: M04TC(M04TC)				
	Channel	Calibratioin Settings			
	Channel 0	Reset to factory setti	ngs	Reset	points
	Channel 1	Offset Calibration		Offset	points
	Channel 2	Gain Calibration		Gain	
					ible
	Channel 3				0.0°C
).0°C
					0.0°C
					50.0°C
					0.0°C
	Check All Uncheck All			Clo	ose %
	Number of Alert Delay	0	0		
	Loop Disconnection Detection	0 sec	0 sec	0 sec	0 sec
	Loop Disconnection Dead Ban		0.0°C	0.0°C	0.0°C
	[∞] Input Calibration Setting				
	Input Calibration Setting			Calibration	
					_
port Export 04TC(M04TC) Configuration		СЫ	Chi	(b2	OK Ca
	Parameter	Ch0	Ch1	Ch2	Ch3
04TC(M04TC) Configurati	Parameter Temperature Unit	Celsius	Celsius	Celsius	Celsius
04TC(M04TC) Configurati	Parameter Temperature Unit Control Method	Celsius ON/OFF Control	Celsius ON/OFF Control	Celsius ON/OFF Control	Ch3 Celsius ON/OFF Control
04TC(M04TC) Configurati	Parameter Temperature Unit Control Method Control Output	Celsius	Celsius	Celsius	Celsius
04TC(M04TC) Configurati	Parameter Temperature Unit Control Method Control Output © Post Processing Setting	Celsius ON/OFF Control Off	Celsius ON/OFF Control Off	Celsius ON/OFF Control Off	Ch3 Celsius ON/OFF Control Off
04TC(M04TC) Configurati Device Informa	Parameter Temperature Unit Control Method Control Output Post Processing Setting Scaling Enable/Disable	Celsius ON/OFF Control Off Disable	Celsius ON/OFF Control Off Disable	Celsius ON/OFF Control Off Disable	Celsius ON/OFF Control Off Disable
04TC(M04TC) Configurati	Parameter Temperature Unit Control Method Control Output Post Processing Setting Scaling Enable/Disable Maximum Scaled Value	Celsius ON/OFF Control Off Disable 100	Celsius ON/OFF Control Off Disable 100	Celsius ON/OFF Control Off Disable 100	Ch3 Celsius ON/OFF Control Off Disable 100
04TC(M04TC) Configuratio	Parameter Temperature Unit Control Method Control Output Post Processing Setting Scaling Enable/Disable Maximum Scaled Value Minimum Scaled Value	Celsius ON/OFF Control Off Disable	Celsius ON/OFF Control Off Disable	Celsius ON/OFF Control Off Disable	Celsius ON/OFF Control Off Disable
04TC(M04TC) Configuratio	Parameter Temperature Unit Control Method Control Output © Post Processing Setting Scaling Enable/Disable Maximum Scaled Value Minimum Scaled Value © Data Buffer Setting	Celsius ON/OFF Control Off Disable 100 0	Celsius ON/OFF Control Off Disable 100 0	Celsius ON/OFF Control Off Disable 100 0	Ch3 Celsius ON/OFF Control Off Disable 100 0
04TC(M04TC) Configuratio	Parameter Temperature Unit Control Method Control Output Post Processing Setting Scaling Enable/Disable Maximum Scaled Value Minimum Scaled Value Value Solab Buffer Setting Data Buffer Points	Celsius ON/OFF Control Off Disable 100 0 600 points	Celsius ON/OFF Control Off Disable 100 0	Celsius ON/OFF Control Off Disable 100 0	Ch3 Cclsius ON/OFF Control Off Disable 100 0
04TC(M04TC) Configuratio	Parameter Temperature Unit Control Method Control Output Post Processing Setting Scaling Enable/Disable Maximum Scaled Value Minimum Scaled Value Data Buffer Points Data Buffer Points Data Buffer Points before Trigger	Celsius ON/OFF Control Off Disable 100 0	Celsius ON/OFF Control Off Disable 100 0	Celsius ON/OFF Control Off Disable 100 0	Ch3 Celsius ON/OFF Control Off Disable 100 0
04TC(M04TC) Configuratio	Parameter Temperature Unit Control Method Control Output Post Processing Setting Scaling Enable/Disable Maximum Scaled Value Minimum Scaled Value Solat Buffer Setting Data Buffer Points Data Buffer Points before Trigger Alert Setting	Celsius ON/OFF Control Off Disable 100 0 600 points 200 points	Celsius ON/OFF Control Off Disable 100 0 600 points 200 points	Celsius ON/OFF Control Off Disable 100 0 600 points 200 points	Ch3 Celsius ON/OFF Control Off Disable 100 0 500 points 200 points
04TC(M04TC) Configuratio	Parameter Temperature Unit Control Method Control Output Post Processing Setting Scaling Enable/Disable Maximum Scaled Value Minimum Scaled Value Data Buffer Points Data Buffer Points Data Buffer Points before Trigger Alert Setting TC Alert Standby Mode Enable/Disable	Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points e Disable	Celsius ON/OFF Control Off Disable 100 0 600 points 200 points Disable	Celsius ON/OFF Control Off Disable 100 0 500 points 200 points Disable	Celsius ON/OFF Control Off Disable 100 0 500 points 200 points 200 points
04TC(M04TC) Configuratio	Parameter Temperature Unit Control Method Control Output Post Processing Setting Scaling Enable/Disable Maximum Scaled Value Minimum Scaled Value Data Buffer Setting Data Buffer Points Data Buffer Points Data Buffer Points before Trigger Alert Standby Mode Enable/Disabl Upper Limit Input Value	Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points e Disable 1350.0°C	Celsius ON/OFF Control Off Disable 100 0 600 points 200 points Disable 1350.0°C	Celsius ON/OFF Control Off Disable 100 0 600 points 600 points Disable 1350.0°C	Ch3 Cclsius ON/OFF Control Off Disable 100 0 Coppoints Coppoints Disable 1350.0°C
04TC(M04TC) Configuratio	Parameter Temperature Unit Control Method Control Output Post Processing Setting Scaling Enable/Disable Maximum Scaled Value Minimum Scaled Value Minimum Scaled Value Data Buffer Points Data Buffer Points before Trigger Alert Setting TC Alert Standby Mode Enable/Disabl Upper Limit Input Value Lower Limit Input Value	Celsius ON/OFF Control Off Disable 100 0 600 points 200 points e P Disable 1350.0°C -100.0°C	Celsius Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points 1350.0°C -100.0°C	Celsius Colvius Off Disable 100 0 600 points 200 points 200 points 1350.0°C -100.0°C	Ch3 Cclsius ON/OFF Control Off Disable 0 600 points 200 points Disable 1350.0°C -100.0°C
04TC(M04TC) Configuratio	Parameter Temperature Unit Control Method Control Output Post Processing Setting Scaling Enable/Disable Maximum Scaled Value Minimum Scaled Value Data Buffer Setting Data Buffer Points Data Buffer Points before Trigger Alert Setting TC Alert Standby Mode Enable/Disabl Upper Limit Input Value Lower Limit Input Value Upper Limit Deviation Value	Celsius ON/OFF Control Off Disable 100 0 600 points 200 points e Disable 1350.0°C -100.0°C 1450.0°C	Celsius Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points 1350.0°C -100.0°C	Celsius Colsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points Disable 1350.0°C -100.0°C	Ch3 Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points 1350.0°C -100.0°C 1450.0°C
04TC(M04TC) Configuratio	Parameter Temperature Unit Control Method Control Output Post Processing Setting Scaling Enable/Disable Maximum Scaled Value Minimum Scaled Value Data Buffer Points Data Buffer Points Data Buffer Points before Trigger Alert Setting TC Alert Standby Mode Enable/Disabl Upper Limit Input Value Lower Limit Input Value Lower Limit Deviation Value Lower Limit Deviation Value	Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points e Disable 1350.0°C -100.0°C 1450.0°C	Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points 1350.0°C -1450.0°C	Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points Disable 1350.0°C -1450.0°C	Ch3 Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points 1350.0°C -100.0°C 1450.0°C
04TC(M04TC) Configuratio	Parameter Temperature Unit Control Method Control Output Post Processing Setting Scaling Enable/Disable Maximum Scaled Value Minimum Scaled Value Data Buffer Setting Data Buffer Points Data Buffer Points before Trigger * Alert Setting TC Alert Standby Mode Enable/Disabl Upper Limit Input Value Lower Limit Deviation Value Upper Limit Deviation Value Upper Limit Deviation Value Upper Limit Deviation Value	Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points 200 points 1350.0°C -100.0°C 1450.0°C 1450.0°C	Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points 1350.0°C -100.0°C -1450.0°C 1450.0°C	Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points 1350.0°C -100.0°C -1450.0°C 1450.0°C	Celsius ON/OFF Control Off Disable 100 0 500 points 200 points 200 points Disable 1350.0°C -100.0°C -1450.0°C 1450.0°C
04TC(M04TC) Configuratio	Parameter Temperature Unit Control Method Control Output Post Processing Setting Scaling Enable/Disable Maximum Scaled Value Minimum Scaled Value Data Buffer Points Data Buffer Points Data Buffer Points TC Alert Standby Mode Enable/Disabl Upper Limit Input Value Lower Limit Deviation Value Upper Limit Deviation Value Upper Limit Deviation Value Upper Lower Limit Deviation Value Dead Band Alert	Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points 200 points 1350.0°C -100.0°C 1450.0°C 1450.0°C 0.0 %	Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points 1350.0°C -100.0°C 1450.0°C 1450.0°C 1450.0°C	Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points Disable 1350.0°C -100.0°C 1450.0°C 1450.0°C 0.0 %	Ch3 Celsius ON/OFF Control Off Disable 100 0 Ch3 0 0 Ch3 0 Ch3 0 Ch3 0 Ch3 0 Ch3 0 Ch3 0 Ch3 0 Ch3 0 Ch3 0 Ch3 0 Ch3 0 Ch3 0 Ch3 0 Ch3 0 Ch3 0 Ch3 0 Ch3 0 Ch4 Ch4 Ch4 Ch4 Ch4 Ch4 Ch4 Ch4 Ch4 Ch4
04TC(M04TC) Configuratio	Parameter Temperature Unit Control Method Control Output Post Processing Setting Scaling Enable/Disable Maximum Scaled Value Minimum Scaled Value Ø Data Buffer Points Data Buffer Points Data Buffer Points before Trigger V Alert Stating TC Alert Standby Mode Enable/Disable Upper Limit Input Value Lower Limit Deviation Value Upper Lower Limit Deviation Value Dead Band Alert Number of Alert Delay	Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points e Disable 1350.0°C -1450.0°C 1450.0°C 0.0 % 0	Celsius Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points 1350.0°C -100.0°C 1450.0°C -1450.0°C 1450.0°C 0.0 % 0	Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points 1350.0°C -100.0°C -1450.0°C -1450.0°C 0.0 % 0	Ch3 Cclsius ON/OFF Control Off Disable 0 600 points 600 points 600 points 1350.0°C -100.0°C -1450.0°C -1450.0°C 1450.0°C 0.0 % 0
04TC(M04TC) Configuratio	Parameter Temperature Unit Control Method Control Output Post Processing Setting Scaling Enable/Disable Maximum Scaled Value Minimum Scaled Value Data Buffer Points Data Buffer Points before Trigger Atert Setting TC Alert Standby Mode Enable/Disabl Upper Limit Input Value Lower Limit Deviation Value Upper Limit Deviation Value Dead Band Alert Number of Alett Delay Loop Disconnection Detection	Celsius ON/OFF Control Off Disable 100 0 600 points 200	Celsius Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points 1350.0°C -100.0°C -1450.0°C -1450.0°C 1450.0°C 0.0 % 0 0 sec	Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points 1350.0°C -100.0°C -1450.0°C -1450.0°C 0.0 % 0 0 0 sec	Ch3 Cclsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points 1350.0°C -100.0°C -1450.0°C -1450.0°C 0.0.9% 0 0 0 sec
04TC(M04TC) Configuratio	Parameter Temperature Unit Control Method Control Output Post Processing Setting Scaling Enable/Disable Maximum Scaled Value Minimum Scaled Value Ø Data Buffer Points Data Buffer Points Data Buffer Points before Trigger V Alert Stating TC Alert Standby Mode Enable/Disable Upper Limit Input Value Lower Limit Deviation Value Upper Lower Limit Deviation Value Dead Band Alert Number of Alert Delay	Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points e Disable 1350.0°C -1450.0°C 1450.0°C 0.0 % 0	Celsius Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points 1350.0°C -100.0°C 1450.0°C -1450.0°C 1450.0°C 0.0 % 0	Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points 1350.0°C -100.0°C -1450.0°C -1450.0°C 0.0 % 0	Ch3 Cclsius ON/OFF Control Off Disable 0 600 points 600 points 600 points 1350.0°C -100.0°C -1450.0°C -1450.0°C 1450.0°C 0.0 % 0

Fig. 234: Module calibration_Online monitor (M04TC)

Click [Calibration] at lower-middle of [Configuration Setting] column, and you can open the calibration window for the corresponding module. First, select the left-side channel that will be calibrated. Next, select the required setting procedure in calibration setting and then you may complete the calibration according to the corresponding steps.

The lower-left side of the module is configured with the export and import options for users to quickly export and import the edited setting result.

Device Informa	Parameter	Port A	Port B
Device Informa	♡ Mode Setting		
Configuration	Mode	User Defined	Disable
	♡ Communication Setting		
	Baud Rate	9600	9600
	Data Bit	8	8
	Parity Bit	Even	Even
	Stop Bit	1	1
	Modbus Station Address Skip	Disable	Disable
	Reply Delay Time	0 ms	0 ms
	Send Delay Time	0 ms	0 ms
	Send Retry Times	1	1
	Send Retry Interval	0 ms	0 ms
	Receive Overtime Interval	1000 ms	1000 ms
	♡ Master Mode Setting		
	Modbus Mode	RTU	RTU
	Master Table	Master Table	Master Table
	♡ Slave Mode Setting		
	Modbus Mode	RTU	RTU
	Slave Map Table	Slave Map Table	Slave Map Table
	Slave Station Number	1	1
	\heartsuit User Defined Mode Setting		
	User Defined Packet	UD Packet	UD Packet
	User Defined Table	UD Table	UD Table

Fig. 235: Export and import of module setting

It should be noted that the file exported by the CM Module from different setting pages shall not be applicable for other purposes. As indicated in the figure below, the file exporting and importing function of the module cannot be used for exporting or importing the User Defined Packet.

	Parameter	Port A	Port B
Device Informa	♡ Mode Setting		
Configuration	Mode	User Defined	Disable
Configuration	♡ Communication Setting		
	Baud Rate	9600	9600
	Data Bit	8	8
	Parity Bit	Even	Even
	Stop Bit	1	1
	Modbus Station Address Skip	Disable	Disable
	Renly Delay Time	0 ms	
	dd Delete Clear	Setting Move Up Move Down	Add Delete
No.	dd Delete Clear		Add Delete

Fig. 236: Incompatible exporting and importing

Copy and Paste

In [Configuration], move the cursor to [Channel] and then click the right mouse button and you will be allowed to execute the copy, paste and reset functions.

Device Informa	Parameter © D/A Conversion Setting	Reset to De Copy	fault Ch1	Ch2	СҺЗ	
	D/A Channel Enable/Disable	Disc Paste		Disable	Disable	
Configuration	♡ Output Signal Range Setting	Func				
	Output Signal Range	0V-10V	0V-10V	0V - 10V	0V-10V	
	♡ Output Hold Function					
	Output Hold Enable/Disable	Disable	Disable	Disable	Disable	
	Output Hold Setting	Clear	Clear	Clear	Clear	
	User-defined Value	16383	16383	16383	16383	
	♡ Slew Rate Setting					
	Slew Rate Enable/Disable	Disable	Disable	Disable 1024000	Disable	
	Slew Rate (steps/sec)	1024000	1024000		1024000	
	Slew Rate	18750-286 mV/100ms	18750.286 mV/100ms	18750.286 mV/100ms	18750.286 mV/100m	
	♡ Scaling Setting					
	Scaling Enable/Disable	Disable	Disable	Disable	Disable	
	Upper Limit Value	6000	6000	6000	6000	
	Lower Limit Value	1000	1000	1000	1000	
	♡ Data Offset Setting				14 14	
	Data Offset Enable/Disable	Disable	Disable	Disable	Disable	
	Data Offset Value	0	0	0	0	
					Marine II.	
	Alarm: Short-circuit	Momentary Mode				
	Alarm: Open-circuit	Momentary Mode				
	♡ Output Calibration Setting					

Fig. 237: Channel' s right mouse button function

Function	Description
Reset to Default	Restore all of the channel settings to initial preset value.
Сору	Copy all settings of the channels currently selected.
Paste	Paste previously copied channel settings.

10-6 I/O Configuration Status

UperLogic adopts the automatic detection mode for the expansion unit. After connecting with the host, UperLogic will automatically read the status of the host and the expansion unit, and at the same time automatically allocate the occupied system resources.

Users can see how many expansion units are connected to the host in [Project] \rightarrow [Device View], and which system resources are occupied by the expansion modules.

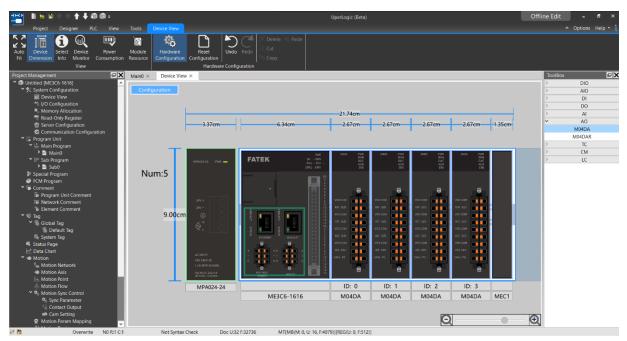


Fig. 238: Device management window

To view the configuration status of the I/O numbering, just click [Device View] \rightarrow [Device Monitor], and then click the relevant module in the working window, and relevant information such as Digital/Analog/Status will be displayed on the right side, which is convenient for users to monitor the reading values and status of each IO more intuitively, as shown in the figure below:

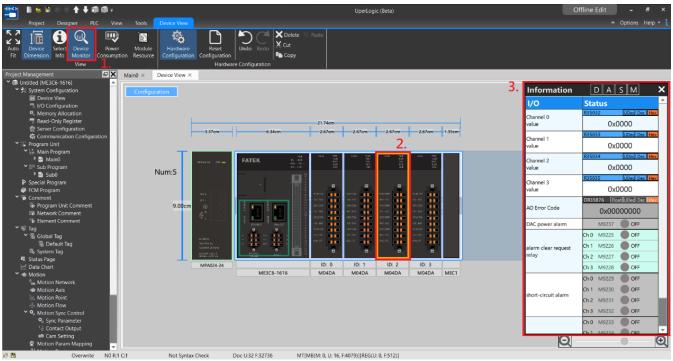


Fig. 239: The right-side display information such as Digital/Analog/Status

11

Communication Function

11-1	Connection	
11-2	Offline Edit	8-5
<u>11-3</u>	<u>Upload</u>	8-5
<u>11-4</u>	Download	8-8
<u>11-5</u>	Run/Stop PLC	8-10
<u>11-6</u>	<u>Clear PLC</u>	
11-7	PLC Status	
11-8	PLC Setting	8-1
<u>11-9</u>	Quick Control	8-3
11-10	Online Edit	8-5

This section describes the operating procedure required for executing the PLC online and offline as well as the PLC program starting and stopping operations. Provided below are detailed operation methods required for executive the respective communication.

11-1 Connection

It allows the user to connect with the PLC function for changing current online parameters and creating online list, etc.

From the function bar [PLC] \rightarrow [Connection Parameter], you can set the default connection parameter, which can be used directly for subsequent connections without additional settings.

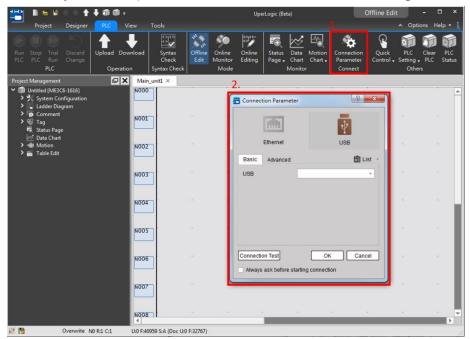


Fig. 240: Connection Parameter

Page	Connection Type	Attribute	Description
		Network Connection	Select the network interface card users want to use.
		Туре	Network online type, in TCP or UDP.
Basic	Ethernet	IP Address	Connected PLC network address
	Communication Por		Connected PLC network port.

		Network Connection Info	Display the current network interface card information.	
		to Search	Search the PLC network address existing on the network.	
	USB	USB	Select the M-PLC USB port that is currently connected to the computer.	
Advanced		Timeout (ms)	PLC response timeout setting, the setting range is 100-30000 ms.	
		Retest Frequency	Communication failure retest time setting, the setting range is 0-10 times	
		Command Delay (ms)	The delay time setting of each communication, the setting range 0-1000 ms.	
Other Settings		Connection List	A list of frequently used connections can be set, and the connection information can be quickly brought in by clicking the drop-down menu option.	
		Connection Test	Use the current parameters to perform a quick connection test to confirm that the connection parameters are valid parameters.	
	Be sure to ask before connecting		When checked, the connection parameter window will be displayed before each connection action. If it is not checked, the previous connection parameters will be used to directly connect.	

Connection List

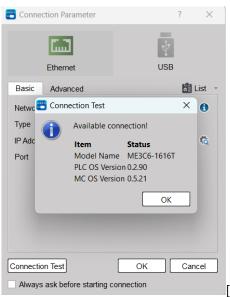
Click [Connection Parameter List] \rightarrow [Connection List] in scroll-down menu and you will be allowed to create the Connection List.

Connection	Parameter	? ×	 Ethern P2_88 P0_169 	
Eth	tvanced Ethernet (192.168.1.107) TCP	USB List P2_88 P0_169 . 4 C	Edit Conr Name Network Type IP Address Port	Po_169 Ethernet (192.168.1.107) TCP 192 168 2 4 501 OK Cancel
				OK Cancel

Fig. 241: Connection Parameter List

Connection Test

Click [Connection Parameter List] \rightarrow [Connection Test] to perform a quick connection test with the current parameter.



11-2 Offline Edit

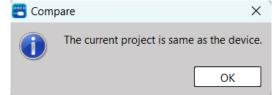
Under PLC online status, click "PLC" \rightarrow "Offline edit" in function toolbar and you will be allowed to execute the offline editing.

11-3 Upload

Such function allows users to upload the PLC project to PC for preparing backup copy or for inspection. The operation process differs depending on whether the project is opened or not, as detailed below:

8-1-1 Upload with Open Project

- 1. Select the tab page [PLC] \rightarrow [Upload], and use the set connection parameters to connect.
- 2. After connecting, compare the currently opened project with the PLC project.
 - A. When the comparison is the same, [The current project matches the connected PLC] will show.

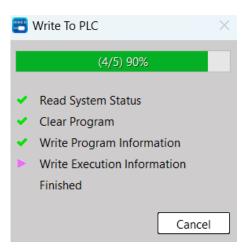


B. When the compare is not matched, a compare window will be displayed to allow the user to select the part to be uploaded.

Compare			? ×
Project	Verify	Device	Detail
 ✓ ● PLC Program ✓ ■ Expansion Data ✓ ● Motion Program 	≠ = =	 PLC Program Expansion Data Motion Program 	
Select All Clear All		Up	load Download Cancel

Fig. 242: Selecting the uploaded data

3. Click [Upload] to start uploading until the progress window is completed.



8-1-2 Upload with Closed Project

- 1. Select the tab page [PLC] \rightarrow [Upload]
- 2. Ask "Do you open the relevan project?"
 - A. Click [Yes] \rightarrow The action is the same as Section 11-3-1.
 - B. Click [No] → The connection parameters will be forcibly asked, and the connection will be performed using the set connection parameters.

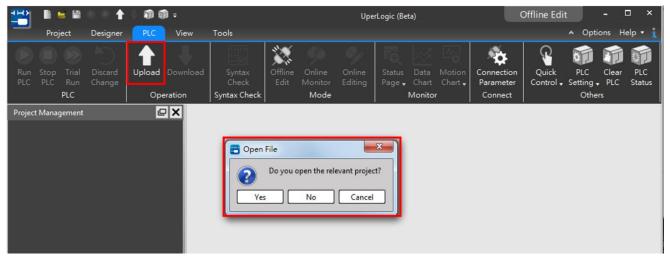


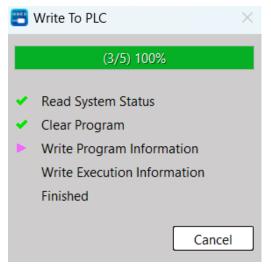
Fig. 243: Opening the relevant project

3. After connecting, the user can choose the data to be uploaded.

📇 Upload	? ×
Project	
📝 🇊 PLC Program	
🔽 🚋 Expansion Data	
🔽 📹 Motion Program	
Select All Clear All	Upload Cancel

Fig. 244: Uploading the data

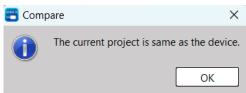
4. Click [Upload] to start uploading until the progress window is completed.



11-4 Download

Such function allows the user to download the PLC project being planned in PC to the PLC.

- 1. Select the tab page [PLC] \rightarrow [Upload], and use the set connection parameters to connect.
- 2. After connecting, compare the currently opened project with the PLC project.
 - A. When the compare is the same, [The current project matches the connected PLC] will show.



B. When the compare is not matched, a compare window will be displayed to allow the user to select the part to be downloaded.

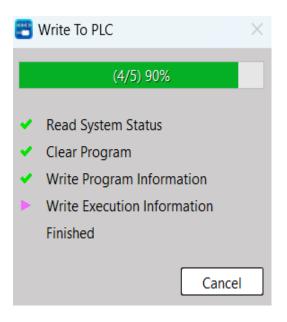
Compare			? ×
Project	Verify	Device	Detail
 ✓ ● PLC Program ✓ ■ Expansion Data ✓ ● Motion Program 		 PLC Program Expansion Data Motion Program 	
Select All Clear All]	Up	load Download Cancel

Fig. 245: Selecting the data to be downloaded

C. If the compare is different, and there are syntax errors or inconsistent modules, only the upload function is provided.

置 Enter Online Mode			?	×			
Select All Clear All							
Project	Verify	Device	Detail				
Program Information	≠	Program Information	Not matched				
Motion Information	≠	Motion Information	Not matched				
Expansion Information	=	Expansion Information	Matched				
🗌 🍯 Comment Information	=	b Comment Information	Matched				
🗌 👕 Server Configuration	=	Server Configuration	Matched				
Communication Configuration	=	Communication Configuration	Matched				
🗌 📑 Table Information	=	📑 Table Information	Matched				
_							
Re-run PLC after the download is complete Upload Download Enter Cancel							

3. Click [Download] to start downloading until the progress window is completed.



11-5 Run/Stop PLC

Run PLC

When operated under online monitoring status, click [PLC] \rightarrow [Run] in function toolbar or you may press

"F9" quick key.



Fig. 246: Running PLC

Stop PLC

When operated under online monitoring status and when PLC is under Running Mode, click [PLC] \rightarrow [Stop] in function toolbar.

	i 🖹 🚔 🗎		1.6	i -	
	Project	Designer	PLC	View	Tools
Run PLC	Stop Trial PLC Run	Discard Change		Download	Syntax Check
	PLC		Ope	eration	Syntax Check

Fig. 247: Stopping PLC

11-6 Clear PLC

When operated under online status, click [PLC] \rightarrow [Clear PLC Data] in function toolbar, and [Clear All (Initialization)], [Clear Program Only], [Clea Registers Only], and [Clear Coils Only] options will appear as below:

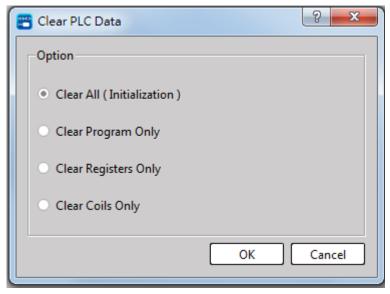


Fig. 248: Clearing PLC data

Function	Description
Clear All	Clear all PLC data and restore factory settings
Clear Program Only	Clear the program data in the PLC, including motion control data.
Clea Registers Only	Reset all register values in the PLC.
Clear Coils Only	Reset all coils in the PLC.

11-7 PLC Status

When operated under online status, click $[PLC] \rightarrow [PLC Status]$ in function toolbar and the data will appear as below:

😬 PLC Status		?	×
Item	Status		
 Serial Number Station Number Main Unit Type Main Unit Status PLC OS Version MC OS Version HW Version SD Card Syntax Check Data Password Program ID PLC ID Upload Protection Calender Total Capacity of Program Used Capacity of Program Free Capacity of Program 	M7LME50F0018 1 ME3C6-1616T Stopped 0.2.90 0.5.21 1 None Correct None None None None None None None Installed 40960 Words (81920 Bytes) 0 Words (0 Bytes) 40960 Words (81920 Bytes)		
MAC Address HWID iMonitor Status	70-01-36-20-00-77 07FAB718-91EA-418A-86B0-9E3A9 Offline)1224AEF	
		ОК	

Fig. 249: PLC status

Function	Description
Station Number	Station number of the connected main unit.
Main Unit Type	Type of the connected main unit.
Main Unit Status	Working status of the connected main unit.
PLC OS Version	Firmware version of the connected main unit.
MC OS Version	Motion control firmware version of the connected main unit.
HW Version	Hardware version of the connected main unit.
Memory Pack	Whether the connected main unit is installed with a memory card.
Syntax Check	Program syntax checking condition of the connected main unit.
Data Password	Whether to set data password on the connected main unit.
Program ID	Whether to set Program ID on the connected main unit.
PLC ID	Whether to set PLC ID on the connected main unit.
Upload Protection	Whether to set upload protection on the connected main unit.

Download Protection	Whether to set download protection on the connected main unit.
Calendar	Whether the connected main unit is installed with RTC.
Total Capacity of Program	Total program capacity of the connected main unit.
Used Capacity of Program	Used program capacity of the connected main unit.
Free Capacity of Program	Free program capacity of the connected main unit.
MAC Address	MAC address of the connected main unit.
HWID	HWID of the connected main unit.
iMonitor Status	The iMonitor status of the connected main unit, including offline,
	online, connecting and error status.

11-8 PLC Setting

11-8-1 PLC ID Setting

When the PLC ID set by the PLC is different from the Program ID, the PLC cannot operate normally. The PLC ID can be set through the execution function bar $[PLC] \rightarrow [PLC Setting] \rightarrow [PLC ID]$. The ID rule is setting with 8 uppercase alphanumeric letters.

PLC ID		9	23
Please enter your new ID.			
New ID			
Confirm ID			
	ок	Can	cel

Fig. 250: Setting PLC ID

11-8-2 RTC Setting

When the PLC is under "Online" and "Run" status, the user will be allowed to click [PLC] \rightarrow [PLC Setting] \rightarrow [RTC]. After that, the following window will appear for the user to set up the perpetual calendar time required for the PLC.

📇 RTC Settir	ng	?	\times
-Current Tim	ie		
Date	8/8/2023		* *
Time	PM 06:02:08		* *
-Setting Tim	e		
🗹 Use Tim	ne of PC		
Date	8/7/2023		* *
Time	PM 05:58:52		*
Setup to PLC	 _	Clo	se

Fig. 251: Setting RTC

Function	Description
Current Time	Date and time of the currently connected main unit.
Setting Time	To set the date and time to the currently connected main unit.
Use Time of PC	When checked, the current computer time will be used as the setting time.
Setup to PLC	When clicked, the setting time will be written directly to the currently
	connected main unit.

11-8-3 Firmware Update

Select the function bar [PLC] \rightarrow [PLC Setting] \rightarrow [Firmware Update], and select the corresponding firmware file and start updating, until the progress window is closed and the prompt window showing the completion of the update is displayed. Wait until the light is displayed normally and then just restart the main unit. The extension of the firmware update file is *.os.



Fig. 252: Firmware Update

11-9 Quick Control

The Quick Control operation is for the convenience of the user. When the connection parameters are set correctly, the PLC can be connected to perform some operations without complete synchronization of data.

		• • •	• 🖬 🗊	Ŧ				Upe	rLogic (Be	ta)		C	Offlin	ne Edit	-	□ ×
-	Project	Designer	PLC	View	Tools									× 0	otions H	ielp 🔹 🛔
Run PLC	Stop Trial PLC Run PLC	Discard Change	Upload D Opera	Jownload Ition	Syntax Check Syntax Check	Offline Edit	Online Monitor Mode	Online Editing	Status Page •		Motion Chart •	Connection Parameter Connect		Uick PLC ntrol Settin Get System	g 🗸 PLC	Status
Project	t Management	'	e	× Main	_unit1 ×									Initialize PLC		NB
	Untitled [ME3C System Cor	figuration		▲ N000		•								Run PLC Stop PLC		
	I/O Con	figuration y Allocation		N001		10	÷2		St.	2				Memory Ca	rd Opera	tion
	📲 Read-O	nly Register			-								8	System Back	up	
		onfiguration s Device Allo		N002			+		2	÷		÷		2		•

Fig. 253: Quick Control

11-9-1 Get System Status of PLC

Under the state of offline edit, when the connection parameters are set correctly, click [PLC] \rightarrow [Quick Control] \rightarrow [Get System Status of PLC] on the function bar to read various information of the PLC under offline conditions, the content is the same as section 11-7.

11-9-2 Initialize PLC

Under the state of offline edit, when the connection parameters are set correctly, click [PLC] \rightarrow [Quick Control] \rightarrow [Initialize PLC] on the function bar to initialize the PLC under offline conditions.

11-9-3 Run PLC

Under the state of offline edit, when the connection parameters are set correctly, click [PLC] \rightarrow [Quick Control] \rightarrow [Run PLC] on the function bar to run PLC under offline conditions.

11-9-4 Stop PLC

Under the state of offline edit, when the connection parameters are set correctly, click [PLC] \rightarrow [Quick Control] \rightarrow [Stop PLC] on the function bar to stop PLC under offline conditions.

11-9-5 Memory Card Opearation

Under the state of offline edit, when the connection parameters are set correctly, click [PLC] \rightarrow [Quick Control] \rightarrow [Memory Card Opearation] on the function bar to configure related PLC settings under offline conditions.

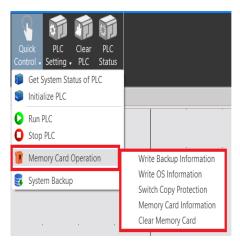


Fig. 254: Memory card configuration

For detailed setting description, please refer to Chapter 14-2.

11-10 Online Edit

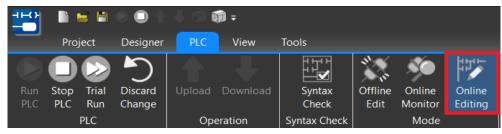
The online editing function can directly change the program and project content on UperLogic page, so that users can make on-site adjustments during the final debugging of the program design.

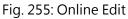
When using the online editing function in the running state of the PLC, if the wrong method was used, it may bring great harm to the device and operators, and users need to carefully check the content during operation.

11-10-1 Starting Online Edit

The process is shown below:

1. Click to execute the function bar [PLC] \rightarrow [Online Edit] when the PLC is connected.





- 2. After connecting, compare the current project with the PLC project.
 - A. If the comparison is the same, skip directly to Step 4 °
 - B. When the comparison is different, the compare window will be displayed to prompt the different parts. Since it is necessary to synchronize the project and PLC data to enter the online editing mode, the user can choose to download the project or upload the PLC data for synchronization.

Select All Clear All			?	×
Project	Verify	Device	Detail	
Program Information	≠	Program Information	Not matched	
Motion Information	=	Motion Information	Matched	
🗌 材 Expansion Information	=	🐳 Expansion Information	Matched	
🔲 😇 Comment Information	=	Comment Information	Matched	
🗌 💼 Server Configuration	=	Server Configuration	Matched	
🔲 🔄 Communication Configuration	=	Communication Configuration	Matched	
Table Information	=	Table Information	Matched	
Re-run PLC after the download is comp	lete	Upload Download E	nter Can	cel

C. When the comparison is different and the syntax check is wrong or the module list is inconsistent, you can only enter the online editing mode after selecting to upload PLC data for synchronization.

置 Enter Online Mode			? ×
Select All Clear All			
Project	Verify	Device	Detail
Program Information	≠	💾 Program Information	Not matched
Motion Information	≠	Motion Information	Not matched
🗌 🐳 Expansion Information	=	Expansion Information	Matched
🗌 🍯 Comment Information	=	b Comment Information	Matched
🗌 💼 Server Configuration	=	👕 Server Configuration	Matched
Communication Configuration	=	Communication Configuration	Matched
🗌 📑 Table Information	=	📑 Table Information	Matched
1			
Re-run PLC after the download is comp	lete	Upload Download Er	ter Cancel

- 3. After clicking the sync direction, wait for the progress window to complete.
- 4. After the synchronization is completed, it will enter the online editing mode and display the PLC status window.

11-10-2 Trial Run

When editing online, the changed part of the project or program will not be written into the PLC immediately, but must be written to the PLC running section through the trial run mechanism to make the current changed part take effect. Click [PLC] \rightarrow [Trial Run] in the function bar to perform a test run on the PLC.

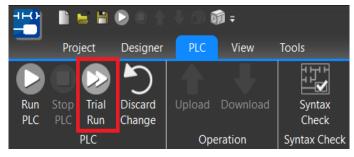
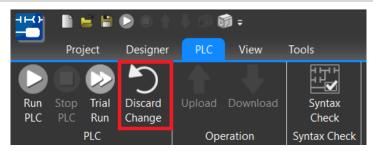


Fig. 256: Trial Run

11-10-3 Discard Change



When editing online, if the debugging result after editing is not as expected, the project can be restored to the previous state through [Discard Change]. This operation only restores the project, if you need to restore the PLC data, you need to perform a trial run again.

Click [PLC] \rightarrow [Discard Change] on the function bar to restore the previous status.

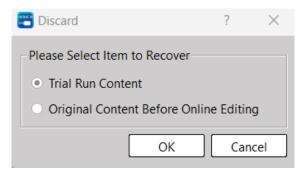
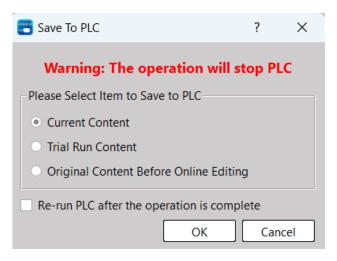


Fig. 257: Discard Change

Function	Description
Content of the	Restore to the content of the project at the time of the
Previous Trial Run	previous trial run.
Content before	Restore to the project content when entering online
Online Editing	editing.

11-10-4 Finishing Online Edit

The debugging content during online editing will only exist in the PLC running section, so when you leave the online editing mode, you need to re-download the current project content to the PLC. Please note: this operation will stop the action. Switching from [Online Edit] to [Offline Edit] or [Online Monitor], the following prompt window will appear, allowing the user to select the data to be stored in the PLC.



Function	Description
Current Content	When the current project content is written to the PLC.
Contents of Previous Trial Run	Restore to the content of the project during the
	previous trial run and write it to the PLC
Content before Online Edit	Restore to the project content when entering online
	editing and write it to PLC
Restart the PLC after the	When checked, restart the PLC after the write to PLC
operation is complete	operation is completed



Monitoring Function

<u>12-1</u>	Displaying Ladder Diagram Status	.9-2
12-2	Status Page	.9-7

Chapter t

\Lambda Danger

- 1. When installing or removing the M-series CPU modules and various expansion modules or the equipment connected to it, all power must be turned off, otherwise it may cause electric shock or wrong action, resulting in death or serious personal injury and damage to the machine equipment.
- 2. Before the installation and wiring construction is completed, do not tear off the dust-proof paper on the PLC cooling hole, so as to prevent the drilling iron filings or wiring scraps from falling into the PLC during construction, causing fire, failure or malfunction.
- 3. After confirming that the installation and wiring are all completed, remember to tear off the abovementioned dustproof paper to avoid poor heat dissipation of the PLC, resulting in fire, failure or malfunction.

This section describes the method of applying user-friendly interface as well as convenient operation and orderly-arranged pages to execute the required monitoring management for the designed functions such as toolbar, project window, status monitoring page and ladder window, etc. The purpose is to provide more convenient operation and well-defined window pages. Introduced below is the respective monitoring operation method.

12-1 Displaying Ladder Diagram Status

For detailed operation procedure, please refer to Section 7.2: "Ladder Diagram."

12-1-1 Monitoring and Debugging

 Save the imported program in the PLC and then click [File] → [Save Project As] → [Save to PLC] in function toolbar. Next, the system will execute the online connection through the created "Online Parameter." After connecting, the window will appear as below:

Project	Verify	Device	Detail
🔽 🇊 PLC Program	=	🗊 PLC Program	Matched
📝 🙀 Expansion Data	=	Expansion Data	Matched
🗹 📹 Motion Program	=	i Motion Program	Matched
Select All Clear All			Download Cancel

Fig. 258: Download setting

If the "Online Parameter" is configured incorrectly or if the online is faulty, then the window will display the corresponding error message.

- After completing the download, click [Online Monitor]. After that, click [PLC] → [Run PLC] in function toolbar; or you may input "F9" quick key to instruct the PLC to start running the program. In the meantime, you may also click [PLC] → [Stop Run] in function toolbar.
 You may also click "Ctrl" + "F9" quick keys to instruct the PLC to stop running the program.
- 3. When running the PLC, the ladder program window will change to the following status:

Chapter 12 Monitoring Function

		0	100	Ŧ				Upe	rLogic (Be	eta)		0	nline Moni	tor	- [□ ×
	Project	Designer	PLC	View	Tools									 Optic 	ons He	elp 🕶 i
Run PLC	Stop Trial PLC Run	Discard Change		Download	Syntax Check	Offline Edit	Online Monitor	Online Editing	E+ Status Page +		Motion Chart •		Quick Control v	Setting 🗸		PLC Status
	PLC		Opera	ation	Syntax Check		Mode			Monitor		Connect		Others		
N001	unit1 ×		·		•	•		•			·	•		Y0 ()		
N002]															
N003]	•						•								

Fig. 259: Running PLC ladder program

The element indicated in the solid line block means it is under conducting state. At this time, you will be allowed to control the ladder program display in order to show the program comment or present Register value in the window page.

The displayed content in the ladder window comprises the following options:

- Program Unit Comment
- Network Comment
- Element Comment
- Register Value
- Font Size

The more the selected options, the more the displayed information; however, less program codes will be covered by the same screen space.

Clicking [View] in function toolbar with mouse and the tick-type menu will appear for selecting the desired option. Such menu will show the aforesaid options and then the user will be allowed to select the desired option by clicking steps. At this time, a tick symbol will appear on the left side of the selected item. Tick again, and this item will return to the unselected status.

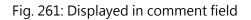
Indicated below is the result after ticking [Element Comment] and [Single Network Comment]:

100			- 🗊 🗊 =		
	Project	Designer	PLC V	liew	Tools
Project Tree	Tool Modu Box List	le Memory Address	Cross Reference	<u>v</u> N	rogram Unit Comment <mark>⊠</mark> Register Value Jetwork Comment Iement Comment
	Proje	t Windows			Comment

Fig. 260: Displaying the comment

As per the figure below, the ticked comment will appear in the comment field after being selected.

			↓ @ @ =		UperLogic (Beta)		Offline Edit	-	□ ×
	Project (Designer	PLC V	iew Tools				Options	Help 🔻 🧎
Project Tree	Box List	Memory Address Windows		Program Unit Comment Register Value Network Comment Element Comment Comment	 ● Biggest ● Small ● Large ● Tiny ● Medium Font 	Cascade Ho	Tile orizontal Windows	Close All	
Main_u	nit1 ×								
N000	MO			· · · · ·			Y0 (}-		
	Network Co	omment T	est						
N001							Y1 ()	_	



Coil enable/disable control:

After completing the "RUN" process, move the cursor to the coil position and then press the right mouse button to show the menu as below:

Main0 ×	1:MF1 \times						
	0 I	· ·	· ·	· ·	· ·	•	Y1 ()
	⊣⊢ Enable ∃⊩ Disable						
N002	-■► On -■► Off						

Fig. 262: Coil enable/disable control

With "Disable" function, the user will be allowed to remove the component from the program control. For example, when "X0" is disabled, its status will not be changed by "X0" status. At this time, you may control its status by clicking [ON] and [OFF] and the disabled element will be indicated in the respective type of symbol. Provided below are the symbols display for "X0" of the "disabled" element:



Fig. 263: Disabling the elememt

4. You will be allowed to start the test with [Status Page]. By doing so, open an empty status monitoring page according to the following procedure:

Cclick [Project] \rightarrow [Status Page] \rightarrow [New Status Page] in function toolbar. You may also double click the icon in project management window with mouse or click the toolbar icon with mouse and then click [New Status Page].

Project	Designer	PLC Vie	w Tools									-
Device IO Configura View	ation Memory Allocatio	n Register	Server Configuration onfiguration	Modbus De Allocatio	rete Register llocation	Main Program - Ladder I	Sub Program • Diagram	Table Edit - Table 25	Status Page -	Comments	Tag	Security Project
Main_unit1 ×									Delete	e Status Page		
000				•	3.							
001					Status Pag		? ×					
002					StatusPag	е 1 рк (Cancel	- ·				
003				*								
004												
005												

Fig. 264: New Status Page

The dialog box will be displayed after completing the aforesaid procedure. In [Status Page Name], import "StatusPage1" and then press [Enter] key to show the window as below:

	F	V		-123	OxFF	123	3.14	S	×		-		
		All	Binary	Decimal	Hexdecimal	Unsigned Decimal	Float	Refresh	Remove	Clear All	Imoprt	Export	
Status	Data		Name	Status	Data	Name	Stat	tus	Data	Name	Status	Da	ta
													Þ
	dd Row (dd Row Element Comment	dd Row Element All Comment	dd Row Element All Binary	dd Row Element All Binary Decimal	dd Row Element All Binary Decimal Hexdecimal	dd Row Element All Binary Decimal Hexdecimal Unsigned Decimal	dd Row Element All Binary Decimal Hexdecimal Unsigned Float	dd Row Element All Binary Decimal Hexdecimal Unsigned Float Refresh	dd Row Element All Binary Decimal Hexdecimal Unsigned Decimal Float Refresh Remove	dd Row Element All Binary Decimal Hexdecimal Unsigned Float Refresh Remove Clear All	dd Row Element All Binary Decimal Hexdecimal Unsigned Float Refresh Remove Clear All Imoprt	dd Row Element All Binary Decimal Hexdecimal Unsigned Decimal Float Refresh Remove Clear All Imoprt Export

Fig. 265: Status Page

How to add Status Page?

To execute, move the mouse cursor to the first empty space in the leftmost [Name] column and then

import "y0-7."

Status Pag		ilement Al	10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Decimal		Insigned Decimal	Float	C Refresh	Remove	Clear All	Imoprt	Export	
Name	Status	Data	Name	Status	Data	Name	Stat	tus	Data	Name	Status	Data	1
y0-7													
											_		
•													

Fig. 266: Adding Status Page

Press [Enter] key. After that, the window will show the number of Y0–Y7 together with the enable/disable and ON/OFF status as well as the present value of the information.

Status Pag	e												2 🗆	I X
		F	V		-123	OxFF	123	3.14	S	×	1	-		
Column Set	Add Row	Element Comment	All	Binary	Decimal	Hexdecimal	Unsigned Decimal	Float	Refresh	Remove	Clear All	Imoprt	Export	
Name	Status	Dat	a	Name	Status	Data	Name	Stat	tus	Data	Name	Status	Data	a 🔺
Y1	ENABLE	OFF	:											
Y2	ENABLE	OFF	:											
Y3	ENABLE	OFF	:											
Y4	ENABLE	OFF	:											
Y5	ENABLE	OFF	:											
Y6	ENABLE	OFF	:											
Y7	ENABLE	OFF	:											
4														► E
StatusPag	e1													

Fig. 267: Monitoring status of Status Page

How to execute Enable/Disable?

To enable/disable the contact or the coil, move the cursor to the corresponding [Status] column and then double clicking the mouse to show enable/disable option. To set its value, move the cursor to the corresponding Information column and then import "0" and "1" values or double clicking the left mouse button to open the [Value Input] column.

As far as the Register is concerned, the [Status] column can be used to control its display format. Currently, the software is provided with five kinds of display formats and they are systems of [Decimal], [Unsigned Decimal], [Binary], [Hexadecimal] and [Float]. To select the desired system, double clicking the [Status] column with the left mouse button to call out the menu. In addition to displaying the element number, the [Number] column can also display the number through the element comment. To execute, press the right mouse button in [Status Page] to call out the pop-up menu or click [Comments] at the top.

12-2 Status Page

12-2-1 Status page management

Click [Project] \rightarrow [Status Page] in function toolbar and then select "StatusPage1" that already exists in the [Status Page Name] column. In project management window, you may also click [Comment Description \rightarrow [Status Page] and then select "StatusPage0" that already exists in the [Status Page Name] column and then the [Status Page] window will appear. All of the existing monitoring names are listed in the widow tab. By clicking such tab, you may switch to the selected tab option and then click [X] icon at upper-right corner to close [Status Page] window.

12-2-2 Operating the monitor point

Definition of monitor point:

In [Status Page], you can double-click the [Name] column with the left button of the mouse to enter a number, such as R1000, indicating that the monitoring point is R1000; or input a range, such as D0-D4, indicating the range of monitoring D0 to D4.

Status Pa	ge												2 🗆	I X
		F	P) 7010	123	DxFF	123	3.14	S	×	1	-		
Column Se	t Add Row	Element Comment	All	Bina	iry Decimal	Hexdecimal	Unsigned Decimal	Float	Refre	sh Remove	Clear All	Imoprt	Export	\sim
Name	Status	Dat	ta	Name	Status	Data	Name	Stat	tus	Data	Name	Status	Data	a 🔺
R1000	DEC	0												

Fig. 268: Definition of monitor point

Deleting the monitor point:

Click the number to be deleted with the cursor and then press [Delete] key and the selected number will be deleted. To delete all points, press [Clear all].

Function	Description
Column Set	Users can display 1-4 field groups according to their
	own needs.
Insert After {Add Row}	Insert a column below the selected field.
Insert Above (Add Row)	Insert a column above the selected field.
Element Comment	Choose whether to show annotations.
All	Click and then choose the data type (binary, decimal),
	the data on the page will all be displayed as the same
	data type.
Binary	Display data in binary

Decimal	Display data in decimal
Hexdecimal	Display data in hexdecimal
Unsigned Decimal	Display data in unsigned decimal
Float	Display data in float point
Refresh	Get the latest information on the elements on the page
Remove Row	Delete the selected row
Delete Content	Delete the selected data
Clear All	Delete all of the data on the page
Import	Import the previous status page data
Export	Export the current status page data

12-2-3 Run Chart

Through the run chart, the Register data can be displayed on the curve graph more intuitively at the same time, which is convenient for users to compare.

Click the function bar [PLC] \rightarrow [Run Chart], click [Project Settings] to select the Register to be viewed, and then click [Start], the data of the Register will be displayed in a line chart.

On the control panel at the upper right of the run chart, operations such as zooming in and zooming out the run chart can be performed; the upper left is the sampling interval, which users can set according to their own needs; the list at the bottom left displays the registers currently being viewed. Check [Hide] to temporarily hide the run chart of the Register.

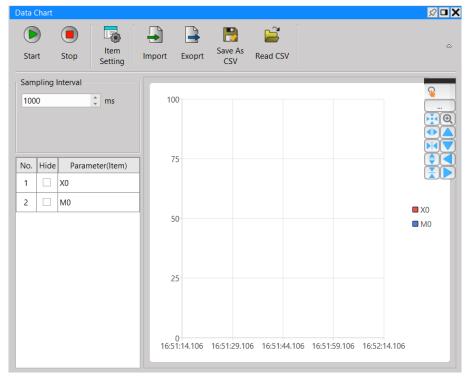


Fig. 269: Run Chart

Function	Description
Start	Start monitoring the configured Register
Stop	Stop monitoring the configured Register
Item Setting	Set the Register position to be monitored
Import	Import the previous run chart
Export	Export the currently written run chart

13

Security

13-1	Program ID	9-2
	Project Password	
	Program Password	
	Program Unit Password	
13-5	Data Password	
13-6	 Download Password	
	Upload Protection	
	Download Protection	

<u> A</u> Danger

- 1. When installing or removing the M-series CPU modules and various expansion modules or the equipment connected to it, all power must be turned off, otherwise it may cause electric shock or wrong action, resulting in death or serious personal injury and damage to the machine equipment.
- 2. Before the installation and wiring construction is completed, do not tear off the dust-proof paper on the PLC cooling hole, so as to prevent the drilling iron filings or wiring scraps from falling into the PLC during construction, causing fire, failure or malfunction.

3. After confirming that the installation and wiring are all completed, remember to tear off the abovementioned dustproof paper to avoid poor heat dissipation of the PLC, resulting in fire, failure or malfunction. In general, the Password is used to protect the intellectual property right of the developed program. In addition to the password, the M-PLC is also designed with additional ID and PLC ID protective measures. This section describes the protective measures such as password as well as program ID and PLC ID in order to intensify the security level in protecting the intellectual properties that are laboriously developed by the respective user.

13-1 Program ID

It helps the user prevent illegal program replication or stealing to achieve the intended protection effect. However, it cannot be used to protect the Hardcopy type of program replication.

The program ID must be identical with the PLC ID, or the PLC will not be functioning as intended. You may open, cancel or change the program ID by clicking [Project] \rightarrow [Security] \rightarrow [Program ID] in the tag page. The password should be presented in capitalized English 8-digit alphanumeric characters (A–Z, 0–9).

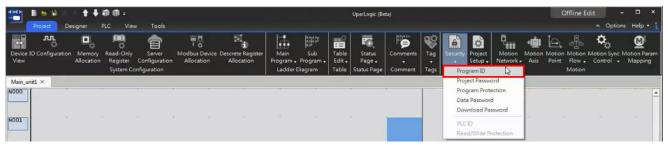


Fig. 270: Editing program ID

13-2 Project Password

It provides the "Encrypt Project File" (*.pdwx) function for users.

You may open, cancel or change the project password by clicking [Project] \rightarrow [Security] \rightarrow [Project

Password] in the tag page. The password should be presented in capitalized English 8-digit alphanumeric characters (a–z, A–Z, 0–9).

	B 🖬 🛱 👘	* + +	ØØ:							UperLogic (Be	ta)					Offlin	e Edit	- 🗆 ×
	Project De	signer	PLC Viev	r Tools													 Option 	ons Help 🔹 👔
Device I View	IO Configuration	Memory Allocation		Server Configuration nfiguration	Modbus Device Allocation	e Descrete Register Allocation	Program -	Sub Program • Diagram	Table Edit • Table	Status Page • Status Page	Comments Comment	Tag • Tags		Project Setup •	Motion Network -		v - Control	Motion Param Mapping
Main_ur	nit1 ×											2.		ect Passwi	148			
N000						3. Project P Please chan To remove	ge your cum	ent password.	ord fileds	empty.	2 ×		Data Down PLC I		Н			
N002						New passwo Confirm pa												÷
N003	•									ок (Cancel							
N004																		

Fig. 271: Project password

13-3 Program Password

It provides the "Encrypt Program" function for users.

You may open the [Program Protection] window by clicking [Project] \rightarrow [Security] \rightarrow [Program Protection] in the tag page. If such window has been created with the protect password already, then you need to input the password beforehand in order to open such window.

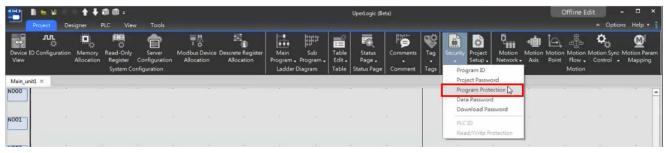


Fig. 272: Program unit password

After clicking, the window will show the "Program Protection Setting" window page.

Program Protection Setting	- ? <u>-</u> ? -	x
Program Protection Password		
Password ••••		
Confirm Password		_
Program Editor		
File Version 0	÷	
🗹 Can Edit		
🗹 Can Copy		
🗹 Can Save		
Program Protection		
	Customize Unit Password	
 Ladder Diagram Main Program 		
🗆 🤔 Main_unit1		
✓ □ ³⁷ Sub Program □ ³⁷ Sub_unit1		
	OK Cancel	

Fig. 273: Program Protection Setting

Туре	Function	Description
Program	Password	Setting new password or changing old password.
Protection	Confirm	The user needs to confirm the imported password again when
Setting	Password	creating new password or changing password.
Program	File Version	Saving currently edited project on the disk.
Editor	Can Edit	After being selected, it allows the user to edit the project.
	Can Copy	After being selected, it allows the user to copy the project.
	Can Save	After being selected, it allows the user to save the project.
Program	Program	Selecting the unit to be protected.
Protection	Protection	
	Password for	
	Target Item	
	Customize	The user may create extra unit password in this column. For
	Unit	detailed password setting method please refer to the
	Password	respective paragraph.

Click [Activate Protection], input password and then press [OK] to complete the program unit password setting.

13-4 Program Unit Password

In customer project applications, programmers want to protect some key program logic or design process, and other basic application parameters are open to end customers to modify. At this time, program unit passwords can be used for hierarchical protection. UperLogic provides users with the function of encrypting program units, which can be used to encrypt individual program organization units, including Main Program/Sub Program/Interrupt Program/Function fast program, which has achieved the effect of protecting intellectual property rights.

Click [Project Management] \rightarrow [Ladder Diagram] \rightarrow [Main Program] and then select the program unit to be encrypted. Next, click the right mouse button \rightarrow [Password Protection] and you will be allowed to set the unit password; or you may click [Project] \rightarrow [Security] \rightarrow [Program Protection] \rightarrow [Customize Unit

Password in tag page and then select ______ of the program unit to execute the encryption setting.

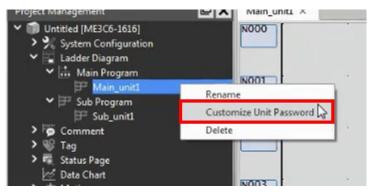


Fig. 274: Program unit password

🙄 Customize Unit Pass	sword	? ×
Activate Protectio	n	
Password		
Confirm Password		
		OK Cancel

Fig. 275: Activate Customize Unit Password

After opening the window, set a password to complete the password setting. The icon of the passwordprotected program changes to in the project management window. To open the program, the password must be entered to view and edit the program content.

Customized Unit Password [Main0]	?	×
Please enter current password.		
••••		
	Ok	

Fig. 276: Input Customize Unit Password

13-5 Data Password

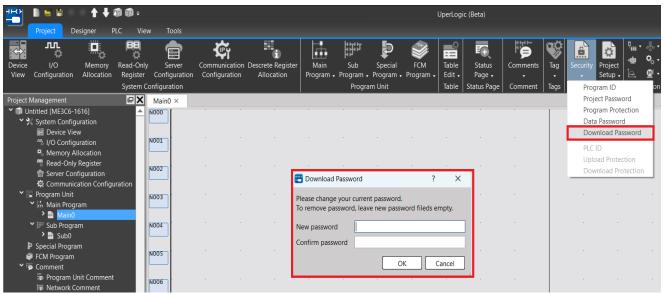
Provide users data password function. For the data that is checked and set with a password, when you click on the data category, you need to enter the data password to access it.

From the tab page [Project] \rightarrow [Security] \rightarrow [Data Password], you can select the data to be protected, and Enable/Cancel/Change the data password. The password should be presented in capitalized English 8-digit alphanumeric characters (a–z, A–Z, 0–9).

👕 Program Protection Setting		?	×
Program Protection Password Password Confirm Passwor			
Program Editor File Version 0 ✓ Can Edit ✓ Can Copy ✓ Can Save Program Protection			*
Program Protection Password for Target Item	Customize Unit Password Enable		
	ОК	Can	cel

13-6 Download Password

Provide users with the function of setting a download password to protect the project from being arbitrarily downloaded to different devices. For projects with a download password set, the correct password must be entered during the download process to continue the download process. From the tab page [Project] \rightarrow [Security] \rightarrow [Download Password], and you can Enable/Cancel/Change the data password. The password should be presented in capitalized English 8-digit alphanumeric characters (a–z, A–Z, 0–9).





13-7 Upload Protection

Provide users with the function of setting upload protection to protect PLC data from being uploaded arbitrarily. For a PLC with upload protection set, the correct password must be entered during the process to continue uploading.

From the tab page [Project] \rightarrow [Security] \rightarrow [Upload Protection], and you can Enable/Cancel/Change the data password. The password should be presented in capitalized English 8-digit alphanumeric characters (a–z, A–Z, 0–9).

13-8 Download Protection

Provide users with the function of setting download protection to protect PLC data from being downloaded arbitrarily. For a PLC with download protection set, the correct password must be entered during the process to continue downloading.

From the tab page [Project] \rightarrow [Security] \rightarrow [Download Protection], and you can Enable/Cancel/Change the data password. The password should be presented in capitalized English 8-digit alphanumeric characters (a–z, A–Z, 0–9).

14

Tools

<u>14-1</u>	System Backup and Restore	9-2
<u>14-2</u>	Memory Card Operations	9-6
<u>14-3</u>	CRC16 Calculator) -11

<u> A</u> Danger

- 1. When installing or removing the M-series CPU modules and various expansion modules or the equipment connected to it, all power must be turned off, otherwise it may cause electric shock or wrong action, resulting in death or serious personal injury and damage to the machine equipment.
- 2. Before the installation and wiring construction is completed, do not tear off the dust-proof paper on the PLC cooling hole, so as to prevent the drilling iron filings or wiring scraps from falling into the PLC during construction, causing fire, failure or malfunction.
- 3. After confirming that the installation and wiring are all completed, remember to tear off the abovementioned dustproof paper to avoid poor heat dissipation of the PLC, resulting in fire, failure or malfunction.

This section describes the auxiliary functions provided by the software for users to check and calculate the corresponding functions more easily.

14-1 System Backup and Restore

This section describes how to execute the Register content backup function and the Register content backup saving function.

14-1-1 System Backup

This function can quickly backup PLC parameters, programs and data to files. Combined with the system restore function, it can be used as an error-prone PLC copy application. The extension of the system backup file is *.fsbx.

The backup process is as follows:

 When operated under "Offline Edit" status, click [Tool] → [System Backup] in function toolbar, as below:

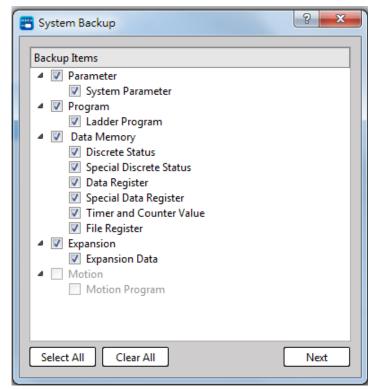


Fig. 278: System backup

Function		Description
Parameter	System Parameter	PLC current connection parameter setting
Program	All Program Units	PLC current complete program data
Data	Discrete Status	PLC current input contact (X), output relay (Y), internal relay
Memory		(M) and step relay (S) values

	Special Discrete	PLC current special relay (M) value
	Status	
	Data Register	PLC current data register (R \cdot D) values
Special Data PLC current input register (R), output register (R),		PLC current input register (R), output register (R), special
Register register (R) values		register (R) values
	Timer and	PLC current timer (T) and counter (C) values
	Counter Value	
	File Register	PLC current file register (F) value
Expansion	Expansion Data	PLC current expansion module setting data
Motion	Motion Program	PLC current motion data

2. If password should be created for such project, then it allows the user to select the intended protection method and add the required password.

=	System Backup
	Protection Type
	No Protection
	PC Locked Protection
	Password Protection
	Previous OK Cancel

Fig. 279: System backup setting

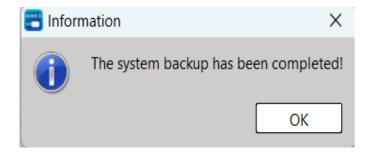
Function	Description	
No Protection	When restoring such backup file, it is not required to input	
	the password and such file will be restored directly.	
PC Locked Protection	When using this backup file to restore, it can be restored	
	directly but only on the currently operating PC, and cannot	
	be restored on another PC. Typically used in factory	
	production situations.	
Password Protection	To restore such backup file, the user needs to input the	
	password in order to restore the backup file.	

3. Users can enter the file name and file comment in the save dialog box, and start the backup after confirmation.

📇 System Backu	p					? <mark>></mark>	3
Look in:	D:\UperLogic			- 0 0	0	🙈 🙂 [
🔊 My Co	Name	Size	Туре	Date Modified		4	
User	assistant 🔋		FileIder	2022/3 05:06			
M Osci	🔒 bearer		FileIder	2022/3 05:07			
	🔋 🐌 doc		FileIder	2022/3 05:06			
	ESIFiles		FileIder	2022/4 09:56			
	🔒 help		FileIder	2022/3 05:06			
	iconengines		FileIder	2022/3 05:07			
	imageformats		FileIder	2022/3 05:07			
	🔒 languages		FileIder	2022/3 05:06			41
	🐌 M2Data		FileIder	2022/4 03:33			
	platforminputcontexts		FileIder	2022/3 05:07			
	platforms		FileIder	2022/3 05:07			
	\mu plugin		FileIder	2022/3 05:06			
	nrintsunnort	 	File Ider	2022/3 05:07			•
File name:						Save	
Files of type:	Fatek System Backup File (*.fsbx)				Ŧ	Cancel	
File Description							.:

Fig. 280: Saving System backup

4. After the progress window ends, it will prompt that the system backup is complete.



14-1-2 System Restore

This function can quickly write the system restore file (*.fsbx) data to the PLC.

The backup process is as follows:

 When operated under "Offline Edit" status, click [Tool] → [System Restore] in function toolbar to select the file to restore, as below:

My Co	Name 🔺	Size	Туре	Date Modified		
	assistant			2022/3 05:06		
👢 User	bearer			2022/3 05:07		
	doc		FileIder	2022/3 05:06		
	ESIFiles		FileIder	2022/4 09:56		
	📗 help		FileIder	2022/3 05:06		
	iconengines		FileIder	2022/3 05:07		
	퉬 imageformats		FileIder	2022/3 05:07		
	퉬 languages		FileIder	2022/3 05:06		
	퉬 M2Data		FileIder	2022/4 03:33		
	platforminputcontexts		FileIder	2022/3 05:07		
	🎍 platforms		FileIder	2022/3 05:07		
	🎍 plugin			2022/3 05:06		
	nrintsunnort		File Ider	2022/3 05:07		
File name:						
Files of type: F	atek System Backup File (*.fsbx)				Ŧ	Cance

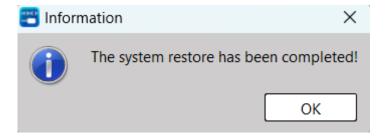
Fig. 281: System restore

2. If the file is protected by a password, a password confirmation dialog box will appear at this time, and the restoration will start after the correct input.

💾 System Backup Password	? ×
Password Input	
	ОК

Fig. 282: Input system restoration password

3. After the progress window ends, it will prompt that the system restore is complete.



14-2 Memory Card Operations

Click [Tool] \rightarrow [Memory Card Operations] in function toolbar to show the following window, as below:

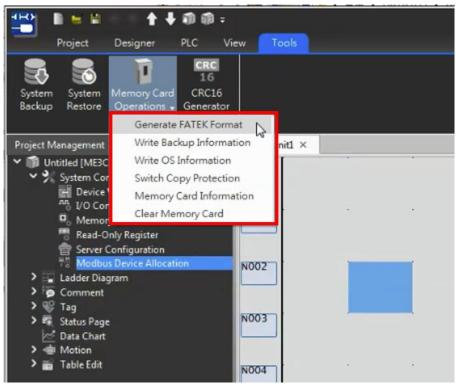


Fig. 283: Memory Card Operations

14-2-1 Write Backup Information

Click [Write Backup Information] and you will see the following screen. Users can perform functions related to memory card backup.

	?	×
← Memory Card Backup Operation		
Please select the operation mode.		
Backup program and register data to memory card Alternative statements of the second statement of the second state		
 Erase backup data from memory card 		
O Disable loading program when power on		
 Enable loading program when power on 		
Next	Ca	ncel

Fig. 284: Memory card backup operation

Function	Description
Backup Program and	This function can replicate the program and register
Register to Memory Card	contents to the memory card. After pressing [Next],
	there will be detailed settings that can be adjusted.
	For detailed functions, please refer to the
	Application manual.
Clear Backup Data in	This function can clear the program or data stored
Memory Card	in the memory card, click [Next] to start the action.
Enter Trial Mode	This function allows the user to choose whether to
	enter the trial modification mode (that is, whether to
	let the program and data in the memory card
	overwrite the program and data in the host). Press
	[Next] to start the action.
Enter Normal Mode	This functoin allows users to choose whether to
	enter normal mode. Press [Next] to start the action.

14-2-2 Write OS Information

Click [Write OS Information] and you will see the following screen. The user can choose to write the update or rescue file of the host or the expansion module. After the import is completed, the corresponding version will be displayed on the OS information side. Please refer to the Application manual for the detailed functions of the OS update and rescue functions of the memory card.

Twite OS Information ?					
Device	• PLC	 Expansion 			
Туре	OS Update	OS Rescue			
OS File					2
OS Information					
PLC OS Version	None				
MC OS Version	None				
			ОК	Can	icel

Fig. 285: Write OS Information

ltem	Description
Device	Select the OS written to the [PC] or [Expansion] device.
Туре	Choose to write the OS for [Update] or [Rescue].
OS Info	Displays the OS version.

	When the user chooses to write "OS Update" in "Expansion", the					
	OS information can be written to multiple firmwares at the same					
	time, as shown in the figure below:					
	OS Information					
	Add Delete					
	Model Name OS Version OS File					
OS File	Select the path of the OS file to be written.					
	When the user chooses to write "OS Update" in "Expanded", this					
	path exists in the OS information.					

14-2-3 Switch Copy Protection

After clicking [Switch Copy Protection], the user can set whether to enable the copy protection of the memory card. After copy protection is enabled, the memory card will be bound to the PC, and the memory card data cannot be transferred to aother PC for use.



Fig. 286: Copy Protection

14-2-4 Memory Card Information

Click [Memory Card Information] and you will see the following screen. Users can check the relevant information of the memory card through the memory card information.

=	Memory Card Information			×
	Item	Status		
	 Total Capacity Available Capacity Memory Card M Copy Protection System Backup System Backup System Backup OS ME3C6-1616 	MFM00 Disabled Exist		
		[ОК

Fig. 287: Memory Card Information

Item	Description			
Capacity	Indicates the full capacity of the memory card.			
Available Capacity	Indicates the available capacity of the memory card.			
Memory Card Type	Indicates the type of the memory card.			
Copy Proyection	Indicates whether to enable copy protection.			
System Backup	Indicates whether there is write backup information.			
System Backup Type	Indicates the model of the write backup.			
System Backup Version	Indicates the firmware and hardware version of the backup.			
PC OS Update/Rescue	Indicates the PC update/rescue firmware and hardware			
Version	version written.			
Expansoin OS	Indicates the Expansionsion update/rescue firmware and			
Update/Rescue Version	hardware version written.			

14-2-5 Clear Memory Card

Click [Clear Memory Card] and you will see the following screen. The user can select the items to be cleared:

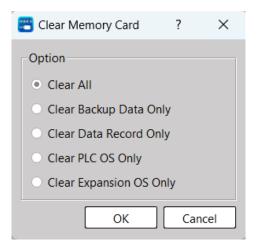


Fig. 288: Clear Memory Card

Function	Description
Clear All	Clear all data on the memory card.
Clear Backup Data	Clear the data backed up in Section 14-2-1.
Clear Information Register	Clear the data register backed up in Section 14-2-1
Clear PLC OS File	Clear the PLC OS files written in Section 14-2-2
Clear Expansoin OS File	Clear the Expansion OS files written in Section 14-2-2

14-3 CRC16 Calculator

The CRC value is generally used to check Communication Protocols. This function allows the system to automatically calculate and generate or inspect the check values after the user enters the data content, which is convenient for planning the packet content when communicating with third-party devices.

Click [Tool] \rightarrow [CRC16 Calculator] in function toolbar to show the following window, as below:

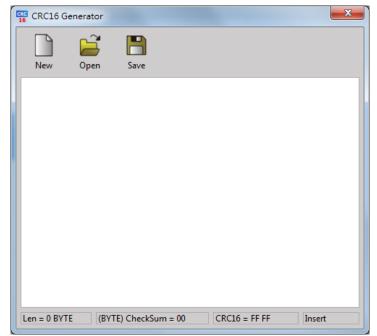


Fig. 289: CRC16 Calculator

After inputting the code to be checked, such function will display the number of bytes (Len) being imported until now and then it will calculate the Checksum value and the CRC16 value automatically. After completing the input, press [Save] for saving as the sub-file named as "txt" text file. In this way, it allows the user to call out the text file by pressing [Open] during the next round of operation without the need of executing input steps once again. Press [New], the input field will be cleared as blank ready for inputting again. Clicking the upper-right [X] icon or [Close], the user will be allowed to close the CRC16 Calculator window.

Appendix 1_Quick Start

This section will guide the user to quickly create the intended project and download it to PLC to run.

- 1. First, download the UperLogic from the website and then start the installation. For detailed installation steps, please refer to Chapter 2.
- Click [UperLogic] to open new project. Next, click [Project] → [Project] → [Options] → [File] in function toolbar and then execute the project backup setting so as to prevent the designed project from losing inadvertently.

Regarding detailed file setting steps, please refer to Chapter 4

💾 🗈 🖬 🛉 🕇 🖬 🚳 =		UperLogic (Beta)	Offlin	ne Edit 1	□ ×
Project Designer PLC \	view Tools			 Options 	Help 🔹 👔
Run Stop Trial Discard PLC PLC Run Change PLC Operati	wnload Syntax Offline Online C Check Edit Monitor B	Online Editing Editing Connection Page - Chart Chart - Monitor		LC atus	
Project Management					
 ♥ Untelled [ME3C6-1616] ♥ System Configuration ■ Device View ** U'O Configuration ♥, Memory Allocation ♥, Memory Allocation ♥ Server Configuration ♥ Server Configuration ♥ Server Configuration ♥ Server Configuration ♥ Comment > ♥ Tag ▼ Status Page ∠ Data Chart > ♥ Weition 	Automatic Bac	every Smin 🗘			4
> 📷 Table Edit	N004	ОКС	ncel		

Fig. 290: Setting backup project

- 3. Open a new Project.
- Click [Designer] → [Ladder Diagram] in function toolbar to create an easy-to-use project.
 For detailed information of Ladder Diagram, please refer to Chapter 6.

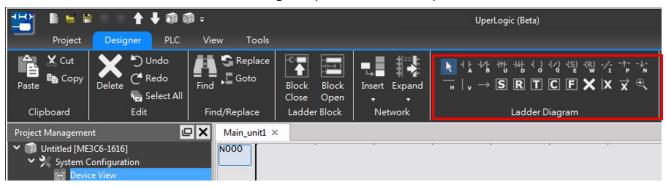
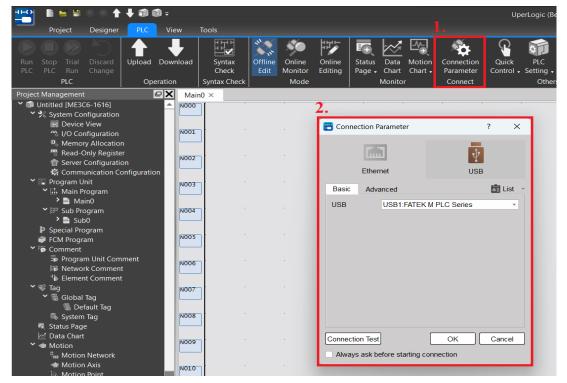


Fig. 291: Creating easy-to-use project

5. After creating the desired project, click [PLC] → [Connection Parameter] in function toolbar to establish the online communication with the PLC. In this example, the online will be established through USB/Type C. Therefore, the user needs to confirm that the PLC is properly connected with the PC with the USB/Type C cable and then check if the communication is correctly established through the online test.



For detailed information of online parameter, please refer to Chapter 11.

Fig. 290: Creating connection

6. After creating the desired connection parameter, click [PLC] → [Operation] → [Download] in function toolbar to download the project to the PLC. Before starting the download procedure, the software will compare the project with the PLC and then tell the user about the difference between both for the user to select the desired download item.

For detailed information of downloading, please refer to Chapter 11.

🏪 🗈 🖻 🗇 🔿 🕇	🕇 🗊 🗊 =			UperLogic	(Beta)	
Project Designer	PLC View	Tools				
Run Stop Trial Discard PLC PLC Run Change PLC	Upload Download	Syntax Check Syntax Check	Offline Edit Monitor Mode		Iotion Connection Parameter Connect	Quick PLC Clea Control , Setting , PLC Others
Project Management		ain_unit1 ×				
Intitled [ME3C6-1616]	<u> </u>		•	· ·		
 System Configuration Device View I/O Configuration Memory Allocation Read-Only Register Server Configuration Modbus Device Allo Ladder Diagram Main_unit1 Sub Program 	n L	22	Compare Project Project PLC Program Comparison Data Public Addition Program	Verify Device # PLC Progr = M Expansion = M Motion Pr		
 Fit Sub Program Sub_unit1 Sobragam Unit Comment Program Unit Comment Network Comment Element Comment Stag 	ment		Select All Clear All]	Upload Down	iload Cancel

Fig. 291: Downloading project to PLC

7. After completing the download process, click [PLC] → [Mode] → [Online Monitor] in function toolbar and you will be allowed to monitor the PLC program operating status. When accessing the [Online Monitor], the system will display the window showing present PLC status for reference by the user. For detailed information of monitoring, please refer to Chapter 12.

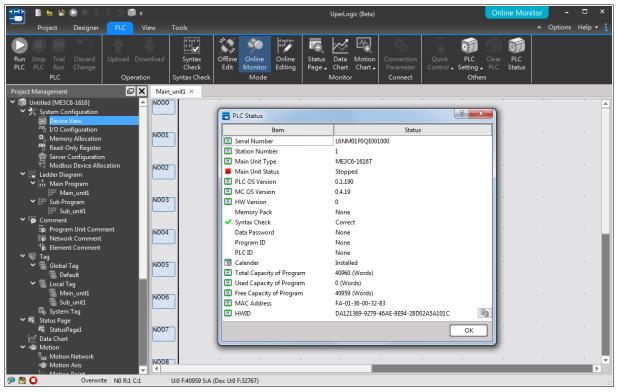


Fig. 292: Online monitoring PLC



 After finishing the "Online Monitor" mode, the user may click the upper-left "File" "Save Project" to finish the online monitoring.
 For detailed project saving steps, please refer to Chapter 4.

9. Now, you have completed the editing of the easy-to-use project.