



# **M-Series PLC Software Interface**

# **User Manual**



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FATEK AUTOMATION CORP.

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# 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 due to the user' s failure in following the operating method originally designed. 3. The malfunction is not due to the reasons of the product. 4. The malfunction is not caused by the modification and the maintenance executed by FATEK. 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.

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

$\triangle$	Caution	Means a potentially dangerous situation that may result in minor or
		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	$\Diamond$	
it is under energized status or it may lead to electrocution injury.		
Do not attempt to touch any terminal or terminal board when the module is under		
energized status, or it may lead to electrocution injury.	$\underline{7}$	
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	<b>A</b>		
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,			
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**

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## \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**

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<u>2-2</u>	Installation Process	.2-2

#### Chapter 24

### \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 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	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.

perLogic - 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, dick Back. Click Cancel to exit the wizard.
stallShield
< 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.

永宏驱动程序安装精灵		7
	欢迎使用永宏驱动程序安装精灵!	
	此精灵将协助您正确安装您的驱动程序。	
EATEK		perLogic - InstallShield Wizard X
AUTOMATION CORP.		Setup Status
		The InstallShield Wizard is installing UperLogic
	要继续,请单击"下一步"。	Instaling
	< 上一步(B) 下一页(N) > 取満	
		InstallS hield
		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.

永宏驱动程序安装精灵	恭喜!!! 您的驱动程序已经安装成功
FATEK AUTOMATION CORP.	此计算机上成功地安装了此驱动程序。
	驱动程序名 状态 ✓ FATEK AUTOMATION C 设备已更新
	< 上一步(B) 完成 取消

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>	<u>Quick Key</u> 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.

3	-	<b>↑ ↓</b> ∅ ∅ =					Up <del>e</del> rLogic (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 Edit - Fable Status Page - Fable Status Page	Comme
Save As	•	4 clink_UPER.pdwx 5 st cool.pdwx 6 FUN151.pdwx 7 fun112.pdwx			1			
Import Export	• •	<u>8</u> fun199.pdwx						
Print	•			×	*		2	•
		N004			•		2	·
		N005			*			•



Function	Description	Detailed introduction		
Open new project	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.

	ñ ñ -			UperLogic (Beta)			Offline Edit – 🗖 ×
Project Designer P	PLC View Tools						🔺 Options Help 🕶 🛓
Device IO Configuration View Allocation	Read-Only Server Register Configuration System Configuration	Modbus Device Allocation	i Descrete Register Allocation	Main Sub Program • Program • Ladder Diagram	Table Status Edit V Table Status Page V Table Status Page	Comment Comment	s Tags Project Motion
Project Management 🛛 🗖	X Main_unit1 ×					To	polBox 🛛 🗠 🗙
Y 🗊 Untitled [ME3C6-1616]	N000	· · ·		•			Basic
> System Configuration						Þ	Timer/Counter
Ladder Diagram						Þ	Output Operation
> P Comment	N001			· ·		· Þ	Set/Reset
Status Dage						Þ	SFC
Data Chart							Arithmetic
>	N002		1.52	· ·			Logic Operation
🕨 📷 🛛 Table Edit						P	Compare
						P N	Data Movement
			· • ·		2		Code Convert
	NUUS					D	Elow Control
						D	PID Control
						P	The 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	🗎 🔚 🛞 🗇 🛧 🕴 🏟 🖬 🗉
opened.	
Offline editing, and project	🖹 🗮 🗎 🗵 🔍 🔶 🛧 🕂 🏟 🟟 🗉
opened.	
Online monitoring, and PLC is	🗎 늘 🗎 🕗 🔍 🕆 🖑 🗊 🧊 =
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

Format	Preview
	Image: Sector of Sector Sec
Office color	Project Management       Imanunit X       ToolBox       Imanunit X         V Mutuled (M320-5165)       N000       Imanunit X       Imanunit X         V System Configuration       Commant       Imanunit X       Imanunit X         V Commant       N001       Selfest       Imanunit X         V System Configuration       N001       Selfest       Imanunit X         V State Page       Data Chart       Selfest       Imanunit X         V Motion       N002       Imanunit X       Imanunit X         N003       Imanunit X       Imanunit X       Imanunit X         N003       Imanunit X       Imanunit X       Imanunit X         N004       Imanunit X       Imanunit X       Imanunit X         N005       Imanunit X       Imanunit X       Imanunit X         N004       Imanunit X       Imanunit X       Imanunit X         N005       Imanunit X       Imanunit X       Imanunit X
Fatek dark color	Image: Designer PLC Vew Tools       Option Holp V         Device ID Configuration       Memory Read-Only Event       Main State         View Configuration       Memory Register       Nodebus Device Becretes Register         View Configuration       Memory Register       Status Register         View Configuration       Register       Main State         View Configuration       Main until X         View Configuration       Main until X         View Content       Nodebus Device Becretes Register         View Configuration       Nodebus Device Becretes Register         View Content

	म 🗈 🖆 🖓 O O 🛧 🖡 🕼	) 🥡 =		UperLogic (Beta)	Offline Edit 🛛 🗖 🗙
	Project Designer PL	C View Tools			⇔ Options Help 🔹 🖠
	Device IO Configuration Memory F View Allocation	tead-Only Server Register Configuration System Configuration	Modbus Device Descrete Register Allocation Allocation	Main Sub Program - Program - Ladder Diagram	us comments Tags Project Motion
	Project Management	K Main_unit1 ×			ToolBox 🗳 🖌
	<ul> <li>Intitled [ME3C6-1616]</li> <li>System Configuration</li> <li>Ladder Diagram</li> <li>Somment</li> </ul>	N000			
	> 😵 Tag a Status Page M Data Chart	NOOI			>         SFC           >         Arithmetic           >         Logic Operation
Fatek light	> 📹 Motion > 📑 Table Edit	N002			Compare     Data Movement     Shift/Rotate
color		N003			Code Convert     Flow Control     BID Control
		N004			VO     Cumulative Timer
		N005			Watch Dog I Imer     High Speed Timer/Counter     Report Printing     Ramp/Soak
		N006			Communication     Table Manipulation     Matrix Manipulation
		N007			NC Positioning     Interrupt Control     Floating point number
					Others Instruction     Motion

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	w Tools															∧ Opt	ons Help	
പ്	•	<mark>اھ</mark>		₩	11 0		Ht.		<b>₽</b>	± ₽ ₽	Ŷ	ê	¢	Q	۰Ů	ÌÐ,		<b>¢</b> _	Ø	
Device IO Configu View	ration Memory Allocation	Read-Only Register	Server Configuration	Modbus Device Allocation	Descrete Register Allocation	Main Program <del>,</del>	Sub Program <del>v</del>	Table Edit <del>•</del>	Status Page <del>,</del>	Comments •	Tag •	Security	Project Setup <del>,</del>	Motion Network <del>•</del>	Motion Axis	Motion Point	Motion I Flow +	Motion Sync Control	Motion Pa Mappir	ram Ig
		System Co	onfiguration			Ladder	Diagram	Table	Status Page	Comment	Tags	Proj	ject				Motion			

Fig. 12: Project tag page

Туре	Function	Description	Detailed Introduction
Suctor	Device View	The equipment required for	Please refer to
sonfiguration		planning and checking current	Section 10
configuration		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
	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 Tabla	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
FIGEC	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

Turne	Function	Description	Detailed
туре			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
Program Unit			Section 6.1
FIOGIAIII UIIIL	Sub-program	Add or revise Sub-program	Please refer to
			Section 6.1

Turne	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 Pago	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	
Project		setting.	Section 13	
FIGEC	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	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 ladde		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		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 7 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.

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.

🏪 🗎 🖬 🔊 (	↑ ↓ \$\$\$ \$\$\$\$ =	UperLogic	(Beta)	Offline Edit	-		×
Project Des	signer PLC <mark>Vi</mark>	ew Tools		^	Options	Help 🔻	
Project Tool Module M Tree Box List A Project Wi	Memory Cross Address Reference ndows	<ul> <li>Program Unit Comment Register Value</li> <li>Network Comment</li> <li>Element Comment</li> <li>Comment</li> </ul>	<ul> <li>O Biggest</li> <li>O Large</li> <li>O Medium</li> <li>Font</li> </ul>	Small <b>F S T</b> Tiny <b>E S</b>			

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	Please refer to Section 3.5
		memory	
	Crosstab Searching	Display or hide crosstab	Please refer to Section 3.5
		searching	
Comment	Program Comment	Display or hide program	Please refer to Section 6.1.5
		comment	
	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	Please refer to Section 6.2.1
		window	
	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

Tupo	Eurotion	Description	Detailed
туре	Function	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	御 諭 = PLC View Tools			UperLogic (Beta)	
Device IO Configuration View Allocation	Read-Only Server Register Configuration System Configuration	Modbus Device Descrete Register Allocation Allocation	Main Sub Program - Program - Ladder Diagram	Table Status Page Comments	Tag Tag Tag Tags Project
Project Management 🗧	Main_unit1 ×				
<ul> <li>Untitled [ME3C6-1616]</li> <li>System Configuration</li> <li>Ladder Diagram</li> <li>Comment</li> <li>Comment</li> <li>Tag</li> </ul>	N000				
<ul> <li>Status Page</li> <li>⊘ Data Chart</li> <li>&gt; ∰ Motion</li> <li>&gt; ≅ Table Edit</li> </ul>	N002				
	N003				
	N004				
	N006				
	N007				
Overwrite	N0 R:1 C:1	J: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

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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.

🔛 🗈 🖻 🔍 🔶 🛉 🗸	<b>₩</b> ∰ =		UperLogic (Beta)	Offline Edit	- 🗆 ×
Project Designer	PLC View Tools			• Op	ptions Help <del>+</del> 🛔
Project Tool Box Ust Address Project Windows	Cross Reference	t Comment <mark>⊍</mark> Register Value nment nment Comment	● Biggest ● Small ● Large ● Tiny ● Medium Font	ade Tile Switch Clos Horizontal Windows All Window	<b>č</b>
Project Management	🕒 🗙 Main_unit1 ×			2. ToolBox	e ×
<ul> <li>Untitled [ME3C6-1616]</li> <li>System Configuration</li> <li>Ladder Diagram</li> </ul>	N000				c ounter peration
<ul> <li>Comment</li> <li>Tag</li> <li>Status Page</li> <li>Data Chart</li> </ul>	NOOI			Set/Re     Set/Re     SFC     Arithm     Logic Ope	set etic
> 🐠 Motion > 📷 Table Edit	N002			Comp     Comp     Data Mov     Shift/Ro	are ement otate
	N003			▷         Code Co           ▷         Flow Co           ▷         PID Cor	nvert ntrol ntrol
	N004			I/O     Cumulative     Watch Dog	e Timer g Timer
	N005			High Speed Tim     Report Pr     Ramp/S	ner/Counter inting Soak
	N006				cation pulation pulation
	N007		· ·	Interrupt C     Floating point     Others Inst     Motic	it number ruction
Overwrite N0	R:1 C:1 U:0 F:40959 S:A (D	oc U:0 F:32767)			

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.

交叉查詢				S 🗖 🗙
X97	搜尋	濾除 暫存器	/標籤 🔻	
暫存器/標籤 ▼	類型	功能	位置	特徵
X97	1Bit	Ladder Edit	主單元— N2 R:1 C:1 P:0	
X97	1Bit	Ladder Edit	主單元— 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.

🔛 🗈 🖻 🖯 🕈 🖣		÷						Upe	rLogic (Beta)					Offlin	e Edit 🛛 –	□ ×
Project Designer		View 1	ools												<ul> <li>Options</li> </ul>	Help 🔻 🧎
Device IO Configuration Memor View Allocatic	ry Read- on Regi Syste	Only Se ster Config em Configura	rver Mo guration tion	dbus Device De Allocation	screte Register Allocation	Main Program - Pi Ladder Dia	Sub rogram •	Table Stat Edit - Pag Table Status i	us Commen Page Commer	nts Tag Se	ecurity Project Project Project	Motion Network •	Motion Motion Axis Point	Motion Ma Flow - C Motion	tion Sync Motion P Control - Mappi	aram ng
Project Management	Θ×	Main_unit1 >	c											ToolBox		Θ×
<ul> <li>Intitled [ME3C6-1616]</li> </ul>		0000											<b>A</b>	Þ	Basic	
> 🧏 System Configuration														Þ	Timer/Counter	
Ladder Diagram			Status Par	ae.							2	X		Þ	Output Operation	n in the second s
> Comment		1001					_			• 0				Þ	Set/Reset	
> 🐨 Tag						0101 4-123	20xFF	123 3.14			→			Þ	SFC	
Status Page				Elemen	All		P	nsigned .		• • • • • •				Þ	Arithmetic	
Data Chart		002	Column Se	Comme	n	inary DecimalF	fexdecimal	Decimal Float	Refresh Kemo	ove Clear All I	imoprt Export			Þ	Logic Operation	
> I Motion	- II	1002	Name	Status	Data	Comment	Name	Status	Data	Comment	Name	s 🔺		Þ	Compare	
> 📷 Table Edit														Þ	Data Movement	
_														Þ	Shift/Rotate	
		N003												Þ	Code Convert	
														Þ	Flow Control	
														Þ	PID Control	
		N004												Þ	1/0	
														P	Cumulative Time	r
														P	Watch Dog Time	r
		1005												P	High Speed Timer/Co	unter
	- II													P	Keport Printing	
														P	Ramp/Soak	
														P	Communication	
		006										<b>_</b>			Table Manipulatio	n
			•									•		P	Matrix Manipulatio	n
			StatusPag	ge0											Inc Positioning	
	2	N007												P	Election point over	
								L						P	Others Instruction	ber
														P	Metion	
		4											Þ	v	Motion	
😥 💾 🛛 Overw	vrite N0	R:1 C:1	U:0	F:40959 S:A (Doc	U:0 F:32767)											

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.

🖺 🖿 🗉 🔹 🕇 🖡								UperLogi	c (Beta)						Offli	ne Edit •	• ×
Device IO Configuration View	Read-Only Register C System Cont	Server Configuration	Modbus Device Allocation	Descrete Register Allocation	Main Program Ladde	Sub • Program • r Diagram	Table Edit • Table	E Status Page + Status Page	Commen Commen	ts Tag • •t Tags	Security Pro Security Project	oject tup • Netwo	n Motion Ma rk Axis Pa	otion oint	Motion M Flow • Motion	lotion Sync Motion Control - Map	Param ping
Project Management	X Main_u	nit1 ×													ToolBox		ΘX
<ul> <li>♥ Untitled [ME3C6-1616]</li> <li>♥ System Configuration</li> <li>&gt; ♥ System Configuration</li> <li>&gt; ♥ Tag</li> <li>♥ Comment</li> <li>&gt; ♥ Status Page</li> <li>♥ Tag</li> <li>&gt; ♥ Motion</li> <li>&gt; ■ Table Edit</li> </ul>	N000 N001 N002 N003 N004														A           B	Basic Timer/Countr Output Operati Set/Reset SFC Logic Operatic Compare Data Moveme Shirt/Rotate Code Conver Flow Contro PID Control DI Control U Comulative Tin	r on it er
								_	_	_				÷	Þ	High Speed Timer/(	er ounter
	<b>6</b> • • • •		_	_	_	_	_								Þ	Report Printin	1
	Status P	age											<u>ل</u>	X	Þ	Ramp/Soak	
														~	Þ	Communicatio	n
	Name	Status	Data	Comment	Name	Status	Dat	a Co	mment	Name	Status	Data	Comment	<b>_</b>	Þ	Table Manipulat	ion
															P	Matrix Manipula	ion
															P	Interrupt Cont	3
															P D	Electing point pu	ohar
															P D	Others Instructi	noei
														- 11	b	Motion	201
		age0												1		mount	
😥 📑 Overwri	te N0 R:1 C:1		U:0 F:40959 S:A (D	oc U:0 F:32767)													

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.

2 選項		? ×	
一般 快捷鍵 檔案			
	快捷鍵		10 I.
♡ 專案			
功能手冊	F1		
特殊手冊	F2		
∂ 檔案			
開新專案	Ctrl+N		
開啟舊檔	Ctrl+O		
儲存專案	Ctrl+S		
Print	Ctrl+P		
▷ 設計			
搜尋	Ctrl+F		
置換	Ctrl+R		
前往	Ctrl+G		
∂ PLC			
執行	F9	T	

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
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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 Informat	ion ? X
Project Name Description	Untitled
Model Series	M Series -
Model Name	ME3C6-1616T *
	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.

👔 變更PLC型號	?	×
系列	M 系列	Ŧ
型號	ME3C6-1616	*
	Program capacity 40K Words (80 KBytes), 16 points 24VDC digital input (all high-speed 200KHz, HSCx8), 16-point transistor output (all high-speed 200KHz, HSPSOx4), 2 RS48 ports, 1 USB Type-C Port, 1 Micro-SD card slot, 1 Ethernet port(Modbus User-Defined: Master/Slave), 1 physical Run/S switch, 2048 points DIO, 256 points AIO, 2 channels 12-bit analog input, 1 EtherCAT port(2 Axes, Helical interpolation + CAM).	5 top • E-
	確定 取消	í

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.

-	履歷清單			?	×
	登錄    還原	刪除			
	日期	版本	註解		
1	2022/12/5 11:01	0.13.69	1		
2	2022/12/5 11:03	0.13.69	2		
3	2022/12/5 11:04	0.13.69	3		
				關閉	]

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.

専案容量		? X
<b>程</b> 式		LI-308 E-40652
12.2-4	0.75%	0.5001.40052
- 程式單元	0.1270	U:271 F:9969
	2.65%	
註解		U:194 F:32573
	0.59%	
資料		U:2059 F:522229
	0.39%	
運動軸		U:0 F:16
	0.00%	
運動點		U:0 F:1024
	0.00%	
運動流程		U:16 F:4079
	0.39%	
運動暫存器		U:0 F:512
	0.00%	

# 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.

2 選項	S 23
一般快捷鍵檔案	
自動備份	
☑ 備份時間間隔	1分 ‡
備份檔案上限	10 ‡
☑ 如果關閉且不儲存,則會備份目前檔	i案
☑ 試運轉時備份檔案	
備份位置	D:/SystemFolder/Documents/FATEK/UperLogic/backup

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 fi				
	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

to save it on the disk.

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

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."

Gomment Export		?	×
File			
File Name			<b>≧</b>
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			<b>=</b>
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_u	ınit1 ×		
N000	X1	YO	
		C.015	
		EN- T10 100 - TUP-	

Fig. 36: Highlighting N001

Next, click [ $\square$  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.

I 通出階階住式 X								×
← → * ↑	> 此电脑	→ 儲存 (E:) → Winprolado	der2 > UperLogic_v0.8.268 > Up	erLogic →				
组织 ▼ 新建文件	<del>1</del> 夹						<b>1</b> 11 <b>-</b>	?
🧊 3D 对象	^ æ	3称	修改日期	类型	大小			^
🔡 视频		bearer	2021/8/16 4:52	文件夹				
▶ 図片		ESIFiles	2021/8/16 10:31	文件夹				
🛗 文档		help	2021/8/16 4:52	文件夹				
🖊 下载		, iconengines	2021/8/16 4:52	文件夹				
♪ 音乐		imageformats	2021/8/16 4:52	文件夹				
		languages	2021/8/16 4:52	文件夹				
		platforminputcontexts	2021/8/16 4:52	文件夹				
		platforms	2021/8/16 4:52	文件夹				
🚍 儲仔 (E:)		plugin	2021/8/16 4:52	文件夹				
🤿 网络		printsupport	2021/8/16 4:52	文件夹				
		qt_import	2021/8/16 4:52	文件夹				
	*	ribbonefa	2021/0/16 4:52	<del>\\</del> ₩				
文件名(N):								~
保存类型(T):	LDR (*.ldr	)						~
▲ 隐藏文件夹						保存(S)	取消	

Fig. 37: Exporting Ladder Diagram

 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.

← → ▼ ↑ → 此电脑 → 儲存 (E) → Winproladder2 → UperLogic_v0.8.268 → UperLogic → ひ ② ② 逆素 "UperLogic" 组织 ▼ 新建文件夹 ● 年存在 ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○
组织 ▼ 新建文件夹 III ▼ III ?
OneDrive <sup>24</sup> <sup>3</sup> <sup>3</sup> <sup>4</sup> <sup>3</sup> <sup>5</sup> <sup>4</sup> <sup>5</sup> <sup>4</sup> <sup>3</sup> <sup>4</sup> <sup>5</sup> <sup>4</sup>
■ 此由脑
ESIFiles 2021/8/16 10:31 文件夹
■ 30 X家 help 2021/8/16 4:52 文件夹
Nupp iconengines 2021/8/16 4:52 文件夹
🔄 <sup>图片</sup> imageformats 2021/8/16 4:52 文件夹
😫 文档 🛛 🗧 languages 2021/8/16 4:52 文件夹
↓ 下载 platforminputcontexts 2021/8/16 4:52 文件夹
♪ 音乐 platforms 2021/8/16 4:52 文件夹
■ igm 2021/8/16 4:52 文件夹
□
SYSTEM (C) qt_import 2021/8/16 4:52 文件夹
▲ 儲存(E:) ribboncfg 2021/8/16 4:52 文件夹
打开(O) 取消

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.

-	🚽 Status Page Export				×
St	atus Page List				
	Name	Item Count			
				Can	col
				Can	

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				<b>=</b>
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 Import				? ×
File File Name: C:	/Users/Tim/Deskto	p/1.tab		Ĕ
Name	Start Address	End Address	Allocated Size	
₩ <mark>.</mark> 1	R10	R10	Dynamic Allocation	
			ОК	Cancel

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.

📰 匯出運動設定							×
← → * ↑	→ 此月	包脑 → SYSTEM (C:) → Wind	lows → System32			♀ 搜索"Syst	
组织 ▼ 新建文(	牛夹						lii 🗾 💡
💻 此电脑		名称	修改日期	类型	大小		
🧊 3D 对象		0409	2021/4/26 23:0	0 文件夹			
📲 视频		AdvancedInstallers	2021/4/26 22:5	9 文件夹			
■ 图片		🚽 AppLocker	2021/4/26 22:5	8 文件夹			
		🚽 ar-SA	2021/6/18 16:04	4 文件夹			
		bg-BG	2021/4/26 23:0	1 文件夹			
× 11385		Bthprops	2021/4/26 22:59	9 文件夹			
		catroot	2021/4/26 22:5	8 文件夹			
桌面	_	Com	2021/5/17 8:40	文件夹			
📇 SYSTEM (C:)		config	2021/4/26 22:5	8 文件夹			
👝 儲存 (E:)		Configuration	2021/4/26 22:5	8 文件夹			
<b>E</b> E##		cs-CZ	2021/4/26 23:0	1 文件夹			
- M#			2021/4/26.22:0	1 +>+++++++++++++++++++++++++++++++++++			
文件名(N):	untitle	d					~
保存类型(T):	Fatek I	Motion Project(*.fmprj)					ý
▲ 隐藏文件夹						保存(S)	取消



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

I		1 31				
📰 匯入運動設定						$\times$
<  <  、  、  、  、  、  、  、  此	电脑 → SYSTEM (C:) → Windows ⇒	> System32 →			螦"System32"	
组织 ▼ 新建文件夹					📰 🔻 🔳	?
▋片資料_20210 ^	名称 ^	修改日期	类型	大小		^
lesson one Drive	0409	2021/4/26 23:00	文件夹			
-	AdvancedInstallers	2021/4/26 22:59	文件夹			
👱 此电脑	AppLocker	2021/4/26 22:58	文件夹			
🧊 3D 对象	ar-SA	2021/6/18 16:04	文件夹			
🚆 视频	bg-BG	2021/4/26 23:01	文件夹			
■ 图片	Bthprops	2021/4/26 22:59	文件夹			
🚆 文档	catroot	2021/4/26 22:58	文件夹			
▲ 下載		2021/5/17 8:40	文件夹			
v 1.200 N ≠±rc	config	2021/4/26 22:58	文件夹			
	Configuration	2021/4/26 22:58	文件夹			
	cs-CZ	2021/4/26 23:01	文件夹			
📥 SYSTEM (C:)	da-DK	2021/4/26 23:01	文件夹			
👝 儲存 (E:)	de-DE	2021/4/26 23:01	文件夹			
Ý		0004/5/47-0-40	<u>~</u>			×
	ร(N):			→ Fatek	Motion Project(*.fmpri	
				打开	f(O)      取消	

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].

, 📇	履歷清	単		8 X
	登録	<b>象</b> 選原		
		日期	版本	註解
1	2	023/3/14 下午 05:30	0.6.73	init
2	2	📰 履歷資訊		? <b>×</b>
		履歷號碼	4	
		日期	2023/3/14 下午 05	31
		版本	0.6.73	
		註解	I	
				確定取消
				關閉
				[]]] 「「」」「「」」「」」「」」「」」「」」「」」「」」「」」「」」「」」「」」」

### 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.

## 4-9 Print

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



Fig. 47: Print

Mode	Description
Print	Set the format to be printed and the content to be printed
Print RTF File	The selected print file will be converted into RTF format
Print Setup	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].

页面设置	×
45K	Numerical and State     1       1     Anno Anno Anno Anno Anno Anno Anno Anno
大小(乙): A4	
来源( <u>S</u> ):	<u>_</u>
方向	_ 页边距(毫米)
○ 纵向(O)	左(L): 16 右(R): 16
C 横向(A)	上(I): 16 下( <u>B</u> ): 16
	确定取消

Fig. 50: Page Setup

### [Printer Setup]:

Same as 4-8-3 [Printer Setup]. Users can set the printer to be used and related settings here.

🖶 打印	×
常规	1
选择打印机	
<ul> <li>➡ Fax</li> <li>➡ Fax</li> <li>➡ Microsoft Print to PDF</li> <li>➡ Microsoft XPS Document Writer</li> <li>➡ OneNote for Windows 10</li> <li>➡ Send To OneNote 2013</li> </ul>	
状态: 就绪 位 <del>置:</del> 留注:	「打印到文件(E)
_ 页面范围	
◎ 全部(L)	份数( <u>C</u> ): 1
<ul> <li>○ 选定范围(□)</li> <li>○ 当前页面(□)</li> <li>○ 西田(○)</li> <li>○ 1</li> </ul>	□ 自动分页( <u>0</u> )
输入页码或页面范围。如,5-12	11 22 33
	打印(2) 取消 应用(A)

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.

💾 Print		?	×
Move Up	Move Down		
> ✓ Lad > ✓ Con > ✓ Syst > ✓ Cros	der nment em Configuration ss Reference		
			ĸ
		Car	ncel

Fig. 52: Print RTF File

### 4-9-3 Print Setup

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



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 組態												l	2 2	x
	₩	Y <del>)</del>	_ <b>X</b> ⊷											۵
高速計數器	中斷	輸出設定	輸入設定	Ê										
⊿ 輸入			HSC0	HSC1	HSC2	HSC3	HSC4	HSC5	HSC6	HSC7				
X0 HSC	0,脈波 0. 东南		> HSC	目態										
X2 HSC	0,51词 0,遮没		模式		P/R									
X3 HSC	0,清除					+1 -1								
X4 未定:	義				P 🛃									- 11
X6 未定	義		<b>新新会社</b>											-1
X7 未定	義		100xx50		70									-1
X8 未定	義		万回		X1									
X9 未定	義		遮沒		X2									
X10 未定	義		清除		X3									- 11
X11 未定 X12 未定	義		8 HSC	國性設定										
X13 未定	義		遮沒讀	汛號	正相									
X14 未定	義		清除讀	孔號	正相									
X15 未疋: ▶ 輸出	获		計數論	汛號	正相									
			▷ HSCP	内容長度設定										
			長度		32位:	元計數器								
											_			
1/0檢查											西面	定 [	取消	

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.

		When 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.				
	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 Polarity	Mask Signal	Able to set the normal phase or negative phase of the				
		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 Leng	gth	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	X0			NIA	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.

💾 I/O 組態				? 🗾 🏹
1111 1111 1111 1111 1111 1111 11111 1111	★ 設定 輸入設定			۵
▲ 輸入	項目	使用情形	邊緣觸發	
X0 INT0,正縁 X1 INT1,負緣	▷ 中斷			
X2 INT2,正負緣	INT0 (X0)	啟用	正緣	
X3 未定義 X4 未完義	INT1 (X1)	啟用	負緣	
X4 未定我 X5 未定義	INT2 (X2)	啟用	正負緣	
X6 未定義	INT3 (X3)	禁用	正緣	
X7 未定義 V2 土完 <del>素</del>	INT4 (X4)	禁用	正緣	
X9 未定義	INT5 (X5)	禁用	正緣	
X10 未定義	INT6 (X6)	禁用	正緣	
X11 未定義 X12 丰定義	INT7 (X7)	禁用	正緣	
X13 未定義	INT8 (X8)	禁用	正緣	
X14 未定義	INT9 (X9)	禁用	正緣	
X15 未定義 ▷ 輸出	INT10 (X10)	禁用	正緣	
* 1930FT	INT11 (X11)	禁用	正緣	
	INT12 (X12)	禁用	正緣	
	INT13 (X13)	禁用	正緣	
	INT14 (X14)	禁用	正緣	
	INT15 (X15)	禁用	正緣	
I/O檢查				確定取消

Fig. 55: Interrupt setting

ltem	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.

🚰 I/O 組態 🔹 🔹 💽 🔤 🛃							
1111 · · · · · · · · · · · · · · · · ·	<ul><li>出設定 輸入設定</li></ul>			۵			
▶ 輸入 ▲ 輸出	▷ 高速脈波輸出	1		<b>▲</b>			
Y0 PSO0,脈波	PSO0 (Y0-Y1)	Y0=脈波 Y1=方向					
Y1 PSO0,方向	PSO1 (Y2-Y3)	Y2=上數 Y3=下數					
Y2 PSO1,上數	PSO2 (Y4-Y5)	Y4=A相 Y5=B相					
Y3 PSOI, P数 Y4 PSO2_A相	PSO3 (Y6-Y7)	Y6=脈波					
Y5 PSO2,B相	PSO4 (Y8-Y9)	不使用					
Y6 PSO3,脈波	PSO5 (Y10-Y11)	不使用					
Y/ PSO3,未使用 V8 未定義	PSO6 (Y12-Y13)	不使用					
Y9 未定義	PSO7 (Y14-Y15)	不使用					
Y10 未定義	▷ 輸出極性						
Y11 未定我 Y12 未定義	Y0-Y1 輸出	正相					
¥13 未定義	Y2-Y3 輸出	倒相					
Y14 未定義 V15 未定義	Y4-Y5 輸出	正相					
	Y6-Y7 輸出	倒相					
	Y8-Y9 輸出	正相					
	Y10-Y11 輸出	倒相					
	Y12-Y13 輸出	正相					
	Y14-Y15 輸出	倒相					
	♡ 輸出停電保持						
	全選						
	YO						
	Y1						
<b>↓</b>	Y2			-			
I/O檢查			確定	取消			

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= <b>PLS</b>
	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= <b>PLS</b>
	Y11	Y11= DIR	Y11= DN	Y11=B	
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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= <b>PLS</b>	
	Y13	Y13= DIR	Y13= DN	Y13=B		
PSO 7	Y14	Y14= PLS	Y14= UP	Y14=A	Y14= <b>PLS</b>	
	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.

💾 I/O 組態					? ×
「たいです。     「にいです。     「にいです。     「にいです。     「にいです。     「にいです。     「にいで	· · · · · · · · · · · · · · · · · · ·				۵
▲ 輸入	項目	棋式	時間	頻率	<b>▲</b>
X0 未定義 X1 未定義	▷ 輸入濾波數值設定				
X2 未定義	群組0 (X0-X3)	頻率	3 毫秒	1.8MHz	
X3 未定義	群組1 (X4-X7)	時間	3 毫秒	460KHz	
X4 禾疋莪 X5 未定義	群組2 (X8-X11)	頻率	3 毫秒	28KHz	
X6 未定義	群組3 (X12-X15)	時間	15 毫秒	460KHz	
X7 未定義	▷ 強制運轉輸入點設定				
X8 木疋我 X9 未定義	使用情形	X10			
X10 未定義	▷ 捕捉式輸入點設定				
X11 未定義 X12 土定義	全選				
X12 未定義 X13 未定義	X0	$\checkmark$			
X14 未定義	X1	~			
X15 未定義	X2	<ul> <li>Image: A start of the start of</li></ul>			
	Х3	<ul> <li>Image: A start of the start of</li></ul>			
	X4				
	X5				
	Хб				
	X7				
1/0檢查				確定	取消

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			8	23
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		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)	S0 - S2603	2604
S S	Step Relay (Retentive)	S2604 - S3103	500
TO T	1ms Timer	T0 - T255	256
T T	10ms Timer	T256 - T511	256
T T	100ms Timer	T512 - T767	256
T	1 s Timer	T768 - T1023	256
688 C	16bit Counter (Retentive)	CO - C139	140
688 C	16bit Counter (Non-Retentive)	C140 - C1023	884
C 222 C	32bit Counter (Retentive)	C1024 - C1063	40
688 C	32bit Counter (Non-Retentive)	C1064 - C1279	216
HB R	Data Register (Retentive)	R0 - R2999	3000
HB R	Data Register (Non-Retentive)	R3000 - R34767	31768
B R	Input Register	R34768 - R35023	256
BB R	Output Register	R35024 - R35279	256
se R	Special Register	R35280 - R43223	7944
BAR R	ROR Register		0
BAR R	Data Register (Retentive)	R43224 - R47319	4096
DB D	Data Register (Retentive)	D0 - D11999	12000
FB 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.

📇 唯讀暫存器					? <mark>-</mark> ×	
	・ し し の 復 舊 値	■ ■ ■ 暫存器→ROR ROR→書	百存器			
名稱	狀態	資料	註解	說明	暫存器數值	
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				•

#### 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] → [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].

📰 伺服器設定			?	×
(Participation)	▷ NTP設定			
	時間同步啟用	停用		
	同步週期(分鐘)	30		
SMIP	時區	(UTC+08:00) Asia/Taipei		
loT	NTP伺服器位址	pool.ntp.org		
ΜΩΤΤ				
予頁言受		確定	<b>D</b>	消

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]
```

🙄 伺服器設定			? ×
NTP.	HWID		
	iMonitor狀態	育能泉	
SMTP	啟用/停用	停用	
loT	伺服器	fatekcloud.net	
<u>"(19)</u>	密碼 D GPS設定		
	啟用/停用	停用	
	模式設定	靜態	
	起始暫存器 GDS終計		
	緯度	N 0°	
	經度	E 0°	
預設		 `````````````````````````````	定 取消

Fig. 64: Setting IoT

#### 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 MQTT parameters on the PLC

🙄 伺服器設定			?	×
		<u>~ 83~788</u>		
NTP	<b>PD版态 王</b> 證發佈 · ·	王进訂閱		
	▷ MQTT伺服器設定			
SMTP		[ [ [ [ [ ]		
	主機(IP或網域名稱)			_
	埠號	1883		
	Client ID			
	▷ 身分驗證			
MQII	啟用/停用	關閉		
	使用者名稱			
	密碼			
	➢ TLS/SSL 設定			
	啟用/停用	關閉		
	認證模式	單向驗證		
	選擇伺服器憑證		選擇	
	選擇客戶端憑證		選擇	
	選擇私鑰		選擇	
	▷ 連線設定			
	重試間隔(秒)	5		
預設		確定	取i	肖

Click [Project]  $\rightarrow$  [Servo Configuration]  $\rightarrow$  [MQTT]

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.

🖀 伺服器設定							?	×
	伺服器 主題發神	布 主題訂閱						
	新增	刪除	編輯		ž	出	匯入	
SMTP	名載	主題	<b>發送棋式</b>	汛息保留	QoS	ī	資料格式	
	1 name0	topic0	週期式	false	2	Raw Data		-
IoT								
預設						確定	[ 取)	ğ

#### **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.

-	主題發布						? ×
基	本						
名	稱	name1					
±	题	topic1					
	發送棋式						
	<ul> <li>週期式</li> </ul>	時間間隔	5秒 🗘				
	○ 數值變化	觸發					
	訊息保留	Qos	5 2 ·	ji ji	群格式 Raw	Data	•
數	據項目設定						
數	據項目數量	1 0					
		名稱	數據類型	位	址		長度
1	Dataltem0		Bit	Y0		1	
					確定		取消

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	<ul> <li>Set the Quality of Service of MQTT, which is divided into three levels:</li> <li>Grade Description</li> <li>0: The message is sent only once, delivery is not guaranteed, and will not be repeated.</li> <li>1: The message delivered at least once, guaranteed delivery, may be repeated.</li> <li>2: The message is delivered exactly once, and it is guaranteed to be delivered and will not be repeated.</li> </ul>
	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

(	2 伺	服器設定									?	×
	æ			伺服器 主題發布	主題訂閱							
	<b>A</b> (			新增	刪除		編輯		匯出		匯	λ
		SMTP		名稱	主題	QoS			資料格	д		
	i	🔊 loT		1 name0	topicU	2 R	aw Data					
		MQTT										
	7	痛診							ſ	確定		10%
	■ 並 基 名 注 Qo 動 。	E題訂閱 本 解 name0 題 topic0 oS 2 ~ 家項目設定		資料格式 Raw Da	sta ×			?	×			
	9993	☞児日剱車 │	2 1 v	#1+5+5+5=1					-			
	1	Dataltom	名稱		(立) (文)	lt –	1	長度	-			
						確	ŧ	取消				
ALC: NOT THE OWNER OF THE OWNER OWNER OF THE OWNER OWNE OWNER OWNE												

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	<ul> <li>Set the Quality of Service of MQTT, which is divided into three levels:</li> <li>Grade Description</li> <li>0: The message is sent only once, delivery is not guaranteed, and will not be repeated.</li> <li>1: The message delivered at least once, guaranteed delivery, may be repeated.</li> <li>2: The message is delivered exactly once, and it is guaranteed to be delivered and will not be repeated.</li> </ul>		
	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]

💾 通訊設定		? 💌		
	▷ IP設定			
「「「「」」「「「」」「「」」「「」」「」」「」「」」「」」「」」「」」「」」	動態(DHCP)	禁用		
	IP 位址	192.168.2.4		
■ ■ ● 列埠設定	子網路遮罩	255.255.255.0		
	預設閘道	192.168.2.1		
Modbus 位址配置	➢ DNS 伺服器			
	慣用伺服器	1.1.1.1		
	其他伺服器	8.8.8		
	▷ 永宏通訊協定			
	主要埠號	501		
	次要埠號	501		
	➢ Modbus 通訊協定			
	主要埠號	502		
	次要埠號	502		
預設值		確定 取消		

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	102 169 0 01	Primary Port 501
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

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
	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
Sonvico	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 2 🛛 🗙		
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			- 8.		8	23			
Item	Start Address	Start Modbus Address	Totals		Usa	ge			
⊘ Coils Setting									
Discrete Output [Y]	0	00001	1024	[FATEK] Y0-Y1023	⇔	[Modbus] 0	00001-0	01024	
Discrete Input [X]	0	10001	1024	[FATEK] X0-X1023	⇔	[Modbus] 0	10001-0	11024	
Discrete Internal Relay [M]	0	20001	29600	[FATEK] M0-M29599	⇔	[Modbus] 0	20001-0	49600	
Discrete Step Relay [S]	0	50001	3104	[FATEK] S0-S3103	⇔	[Modbus] 0	50001-0	53104	
Status of Timer [T]	0	54001	1024	[FATEK] T0-T1023	⇔	[Modbus] 0	54001-0	55024	
Status of Counter [C]	0	56001	1280	[FATEK] C0-C1279	⇔	[Modbus] 0	56001-0	57280	
8 Holding Registers Setting		·							
Data Register [R]	0	00001	47320	[FATEK] R0-R47319	⇔	[Modbus] 40	00001-4	47320	
Data Register [D]	0	48001	12000	[FATEK] D0-D11999	⇔	[Modbus] 44	48001-4	60000	
Current Value of Timer [T]	0	60001	1024	[FATEK] T0-T1023	⇔	[Modbus] 4	50001-4	61024	
Current Value of 16-bit Counter [C]	0	62001	1024	[FATEK] C0-C1023	⇔	[Modbus] 4	52001-4	63024	
Current Value of 32-bit Counter [C]	1024	64001	256	[FATEK] C1024-C1279	⇔	[Modbus] 4	54001-4	64512	
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.

1	Modbus Device Allocation			2 23							
	Item	Start Address	Start Modbus Address	Totals	Usage						
	> Coils Setting										
	Discrete Output [Y]	1023	00001	1024	The range is not usable and ove	erlapping!					
	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] SO-S3103 ↔	[Modbus] 050001-053104					
	Status of Timer [T]	0	00401	1024	The range is overlapping!						
	Status of Counter [C]	58	00405	1280	The range is not usable and ove	erlapping!					
	> 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] CO-C1023 ↔	[Modbus] 462001-463024					
	Current Value of 32-bit Counter [C]	1024	64001	256	[FATEK] C1024-C1279 ⇔	[Modbus] 464001-464512					
	Default					OK Cancel					

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 add	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.						
		<u> </u>						

Table 19: Items required for Modbus address configuration

# 6

# **Creating Program**

6-1	Main Program and Sub-program Unit Management	
6-2	Ladder Diagram	
6-3	Structured Text (ST)	
6-4	Step Ladder Instruction Description	
6-5	Syntax Check	
6-6	Interrupt Program	
6-7	Function Module Program	

#### \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 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.

	Ìi∓ View Tool				Upe	rLogic (Beta)		
Device IO Configuration Memory Read View Allocation Re Syst	H-Only Server gister Configura tem Configuration	Modbus Device tion Allocation	Descrete Register Allocation	Main Sub Program - Program Ladder Diagram	Table Stat	EG Status Page - tus Page	Program Unit Comment	Project Setup
Project Management	MainSection0 ×	rogram Unit Comment	*	24. <sup>-</sup>	20		Network Comment Element Comment Clean All Comment	
<ul> <li>Memory Allocation</li> <li>Read-Only Register</li> <li>Greve Configuration</li> <li>To Modbus Device Allocation</li> <li>✓ Ladder Diagram</li> </ul>	NOOZ	Program Unit MainSection0 Sub_unit1		Comment				
<ul> <li>V iiii Main Program</li> <li>Iiii MainSection0</li> <li>✓ Iiii Sub Program</li> <li>Iiiii Sub_unit1</li> <li>✓ Sub comment</li> </ul>	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.

	i) =	~ .				_	ι	UperLogic (Be	ta)					Offline Ed	it -		×
Device IO Configuration Memory Real View Allocation Real	view Ci ad-Only egister C	Server onfiguration	Modbus Device Allocation	Descrete Register Allocation	Main Program	Sub Program •	Table Edit	E Status Page -	Comments	Tag	Security Project	Motion M Network	Iotion Mation Axis Point	Motion M Flow •	fotion Sync M Control	Iotion Para Mapping	m
s:	ystem Conf	iguration			Ladder	Diagram	Table 9	Status Page	Comment	Tags	Project			Motion			
Project Management	MainSe	ction0 ×															
<ul> <li>Untitled [ME3C6-1616]</li> <li>System Configuration</li> <li>Device View</li> <li>1/O Configuration</li> </ul>		N000 Com	ient														^
<ul> <li>Memory Allocation</li> <li>Read-Only Register</li> <li>Server Configuration</li> <li>Modulus Device Allocation</li> </ul>	NOOO																
<ul> <li>✓ III Ladder Diagram</li> <li>✓ III Main Program</li> <li>III Main Section0</li> </ul>	NUOI																
<ul> <li>✓ I<sup>™</sup> Sub Program</li> <li>I<sup>™</sup> Sub_unit1</li> <li>✓ I<sup>™</sup> Comment</li> </ul>	N002																

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	ta)								
Device IO Configuration Memory View Allocation Sy	d-Only Server gister Configuration stem Configuration	Modbus Device Allocation	Descrete Register Allocation	Main Program - Pro Ladder Diag	Sub gram • Edit • Table	Status Page • Status Page	Commen	ts Tag	Security Project Setup mment
Project Management	MainSection0 ×						10 Netv	vork Comme	nt 🕞
<ul> <li>Untitled [ME3C6-1616]</li> </ul>	N000 Com	ment	· ·			•	15 Elem	ent Comme	nt
<ul> <li>System Configuration</li> <li>Device View</li> </ul>							🛕 Clea	n All Comme	nt
1/0 Configuration	10000		6						
Memory Allocation	NUUU								
Server Configuration									
To Modbus Device Allocation	N001		÷						
Ladder Diagram									
Main Section0									
Sub Program	N002								
F <sup>PP</sup> Sub_unit1									
Program Unit Comment	N003				1				



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

Network Comm	ent	A 🗖 🖉
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 test	t						
						<b>.</b>	 			
	NU02					 	 -EN-	18.AN 5a:	RO	-D=0-
								sh·	P1	
			•		l			55.		
								D :	R2	
I							. (			

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	) = View Tools				
Project Tool Module Memory Cross Tree Box List Address Referen Project Windows	<ul> <li>✓ Program U</li> <li>✓ Network Co</li> <li>✓ Element Co</li> </ul>	nit Comment 🗹 Register Value omment omment Comment	<ul> <li>● Biggest ● Small</li> <li>● Large ● Tiny</li> <li>● Medium</li> <li>Font</li> </ul>	Cascade Tile Horizontal Wind	Switch Close Windows All
Project Management	MainSection0 $\times$	MainSection1 ×			
Villed [ME3C6-1616]	MainSection0				
<ul> <li>System Configuration</li> <li>Device View</li> </ul>	N000				
<sup>An</sup> I/O Configuration					
Read-Only Register		MainSection1			
Server Configuration	N001 N00	00			
To Modbus Device Allocation					
Main Program	N002 N00	01			
MainSection0					
✓ III Sub Program					
F <sup>TT</sup> Sub_unit1	N003 N00	02			
<ul> <li>Comment</li> <li>Program Unit Comment</li> </ul>					
P Network Comment	N004 N00				
1 i Element Comment ✓ © Tan					
🗸 🖫 Global Tag					
🖀 Default	N005 N00	04			

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.

🏪 🗈 🖻 🖻 🕘 🛉 🖡 🖚	<b>(</b> ) =	UperLogic (Beta)	Offline Edit	- 🗆 ×
Project Designer PLC	View Tools		^	Options Help 🕶 🛔
Project Tool Box Project Windows	oss rence Zelement Comment Zelement Comment Zelement Comment Comment	egister Value ● Biggest ● Small ● Large ● Tiny ● Medium Font	Window 2,	
Project Management	K Main_unit1 ×	4.	ToolBo	× 🛛 🗠 🗙
<ul> <li>With Untitled [ME3C6-1616]</li> <li>System Configuration</li> <li>Device View</li> <li>1/0 Configuration</li> </ul>	NOOO		▲ 3. T	Basic Timer/Counter
Be Configuration     Bead-Only Register     Bead-Only Register     Server Configuration	NOO1	Left click and drag h	ière	Output Operation Set/Reset
<ul> <li>Modbus Device Allocation</li> <li>Ladder Diagram</li> <li>Main Program</li> </ul>	N002			Arithmetic Logic Operation
⊯™ Main_unit1 ❤ ⊯™ Sub Program ⊯™ 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.

10	🗈 🖬 (	• • <b>•</b> •	🖡 🗊 🗊 =			UperL	ogic (Beta)		Offline	Edit	
_	Project	Designer	PLC 🔽	iew Tools							Option
Project Tree	Tool Module Box List	e Memory Address	Cross Reference	<ul> <li>✓ Program Unit</li> <li>✓ Network Con</li> <li>✓ Element Com</li> </ul>	t Comment <mark>⊠</mark> Reg nment nment	ister Value	● Biggest ● Sma ● Large ● Tiny ● Medium	all 🖷	₽. P×		
	Project	t Windows			Comment		Font	V	/indow		
Main_un	nit1 ×										
N000 N001	×1 1		·		· · ·		EN-	0015 T10	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:

100	1 1 2 2 0 1	🕈 🗊 🗊 =		UperL	ogic (Beta)	Offline Edit	- 🗆 ×
	Project Designer	PLC Vie	ew Tools				🔹 Options Help 🕶 📋
Project Tree	Tool Module Memor Box List Address Project Windows	Cross Reference	<ul> <li>Program Unit Comment</li> <li>Network Comment</li> <li>Element Comment</li> <li>Comment</li> </ul>	Register Value	<ul> <li>● Biggest ● Small</li> <li>● Large ● Tiny</li> <li>● Medium</li> <li>Font</li> </ul>	Window	
Main_u	nit1 ×						
N000		•				· · · · · · · · · · · · · · · · · · ·	Y0 •
N001				 ?		•	
N002			. 32 bits (Alt+D) Pu	lse (Alt+P)	OK .		
N003			T : T PV:	*)	telp .		
N004							

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:

Eunction Instruction	8 22
32 bits (Alt+D) Pulse (Alt+P)	ОК
T (.001S)	Cancel
T : T10 »	Help
PV: 1000 >>	

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:

💾 🗎 🖬	🗎 🕒 🗎 🛉	🖡 🗊 🗊 =		UperL	ogic (Beta)	Offline Edit	-	□ ×
Proje	t Designer	PLC V	iew Tools				Options	Help 🔹 i
Project Tool Tree Box	Module Memory List Address	Cross Reference	<ul> <li>✓ Program Unit Comment</li> <li>✓ Network Comment</li> <li>✓ Element Comment</li> </ul>	Register Value	<ul> <li>● Biggest ● Small</li> <li>● Large ● Tiny</li> <li>● Medium</li> </ul>	∎ %		
	Project Windows		Comment		Font	Window		
Main_unit1 ×								
N000	1 			· · ·	EN-	1000	-TUP	Y0 ▲ -{ }

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	
	<u>TO 531</u>
N001	K4         TO \$32
N002	X5         X6           FROM         S31         TO         S33

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	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_ur	nit1 ×							
N000	X1					0015	•	Y0 🗖
					EN	т10	1000	٦ <i>٢</i>
N001					 _			
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		

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				al main ai		
1.	Vetwork Comment		8			
	Main_uniti Sub_u	niti				
	Cadder No	Comm	ent	- 11		
	N0006			- 81		
	N0007			- 81		
	N0008					
	N0009					
	N0010					
	N0011					
	N0012	N012 Network Comment		_		
		N012 Network Comment				
			D3			
		Unafeed: AltaEnter	Cancel			
NO.	12 Network Com	nent			 	
	XI X/	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, System and FB:

STX ×	
Commands	主單
Script	1
IF	
IF_ELSE	
IF_ELSEIF_ELSE	
CASEOF	
WHILE	
FOR	
LBL	
GOTO	
CALL	
LBL_F	
GOTO_F	
System	
Timer	
Counter	
R_TRIG	
F_TRIG	
ToBCD [20]	
ToBIN [21]	
SUM [24]	
MEAN [25]	
ABS [28]	
LCNV [33]	
FB	
Fun0	

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

#### System :

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 Script. 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.

STX ×				
Commands	主單元0(0)	主單元1(1)	主單元2(2)	Fun0(Fu345)
Script	1 Fun0	0		
IF	2			
IF_ELSE				
IF_ELSEIF_ELSE				
CASEOF				
WHILE				
FOR				
LBL				
GOTO				
GOTO F				
System				
Timer				
Counter				
R_TRIG				
F_TRIG				
ToBCD [20]				
ToBIN [21]				
SUM [24]				
MEAN [25]				
FR				
Fun0	_			

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:

💾 Function Lookup	🖥 Function Lookup								
Function Name Function Description	STP 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:

E	Syntax Check	8 23	J
	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	HSCOI	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

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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 phonty of X0~X13.
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	

📰 新増程式單	元		?		×
程式單元名稱	STM0I				
語言	階梯圖 (LD)				Ŧ
程式類型	中斷				-
中斷類型	STM0I				Ŧ
	硬件時間 0:間隔1ms~9ms.				
		確定	]	取消	

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	MCCI	Synchronous Motion Parameter Program	

💾 新増程式單	元		?	×
程式單元名稱	MCCI			
語言	階梯圖 (LD)			-
程式類型	運動控制			-
任務類型	мссі			-
	同步運動参數程式			
		確定	取消	

Fig. 125: Select motion program type

MCCI 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 MCCI 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:

📰 新増程式單	元		?	×
程式單元名稱	STM0I			
語言	階梯圖 (LD)			Ŧ
程式類型	中斷			
中斷類型	STMOI			*
	硬件時間 0: 間隔1ms~9ms.			
		確定	取消	¥

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:

- 4/3					
印元	星元名稱 Fun0				
ŧ	階梯圖 (LD)				
能功					
八要					
出象	11日 3 11日 2				
ग्रस					
齼쀐					
	模式	名稱	資料類型	內部暫存器	
1	VAR_SIG_IN	EN	Bool	IMO	
2	VAR_SIG_IN	IN1	Bool	IM1	
3	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.

建設				
	模式	名稱	資料類型	內部暫存器
1	VAR_SIG_IN	EN	Bool	IMO
2	VAR_SIG_IN	IN1	Bool	IM1
3	VAR_SIG_IN	IN2	Bool	IM2
4	VAR_SIG_IN	IN3	Bool	IM3
5	VAR_SIG_IN	IN4	Bool	IM4
6	VAR_SIG_IN	IN5	Bool	IM5
7	VAR_SIG_IN	IN6	Bool	IM6
8	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.

Γ	變數				
		模式	名稱	資料類型	內部暫存器
	1	VAR_SIG_IN	EN	Bool	IMO
	2	VAR_SIG_OUT	OUTO	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:

	模式	名稱	资料類型	內部暫存器
1	VAR_SIG_IN	EN	Bool	IM0
2	VAR_PARA_INOUT	PA0	16Bit-UInt	ID0
3	VAR_PARA_INOUT	PA1	16Bit-UInt	ID2
4	VAR_PARA_INOUT	PA2	16Bit-UInt	ID4
5	VAR_PARA_INOUT	PA3	16Bit-UInt	ID6
6	VAR_PARA_INOUT	PA4	16Bit-UInt	ID8
7	VAR_PARA_INOUT	PA5	16Bit-UInt	ID10
8	VAR_PARA_INOUT	PA6	16Bit-UInt	ID12
9	VAR_PARA_INOUT	PA7	16Bit-UInt	ID14
10	VAR_PARA_INOUT	PA8	16Bit-UInt	ID16
11	VAR_PARA_INOUT	PA9	16Bit-UInt	ID18
12	VAR_PARA_INOUT	PA10	16Bit-UInt	ID20
13	VAR_PARA_INOUT	PA11	16Bit-UInt	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.

2	VAR_PARA_INOUT	PA0	16Bit-UInt -	ID0
			16Bit-Int	
			16Bit-UInt	
			32Bit-Int	
			32Bit-UInt	
			Float	

Fig. 132: Data type

#### 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	
7-2	Link Table	
7-3	<u>Servo Parameter Table</u>	
7-4	Servo Program Table	5-5111
7-5	General Purpose Link Table	
7-6	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:

<ul> <li>✓ 副 資料表格</li> <li>● 通訊命令表格</li> <li>● 伺服参数表格</li> <li>● 伺服命令表格</li> <li>● 伺服命令表格</li> </ul>	₩ 新培 ₩ 刪約	曾通訊命令表格 新通訊命令表格		資料表格	<b>₽</b> + 監視頁	に 主解 ・	<b>议</b> 標籤	し 安全	● 事案設定 ●	運動
TA	er表格		NO1(	<ul> <li>● 通訊:</li> <li>● 通</li> <li>● 伺服:</li> <li>● 伺服:</li> </ul>	命令表格 參數表格 命令表格		Ϋ́́́́́,	新増 通言 刪除 通言	R命令表格 R命令表格	
			•	₩A 泛用該 ● 括存認	通訊表格 器表格	主体				
· ·			•	₩ Mod	Dus Master 設定調整	করোল				

Fig. 134: Adiing a new table

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

=	表格編輯		?	x
	- 届性			
	表格類別	一般連線表格		*
	表格名稱	連線表格		
	起始位址	R1600		
	編輯長度	15		
	表格容量設定	● 動態配置		
		○ 固定配置長度		
	□ 從 ROR 載入資	料		
	□ 資料從 PLC 載	λ		
	說明			
		確定	取;	消

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.

🙄 一般連線表格-[連線表格]			? ×
計算機 設定 📱	三 工具列區 3.		
_命令			
	新增删除	上移	下移
命令 僕站 主站資料	僕站資料 資料長度	操作	
		表格資	料區
設定:動態配置[34768]字組	資料長度:1字組	配置位置: R0 - R0	
	狀態列區	確定	取消

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	1	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:

<ul> <li>✓ 副 資料表格</li> <li>● 調節金表核</li> <li>● 伺服参数表材</li> <li>● 伺服命令表材</li> <li>● 伺服命令表材</li> </ul>	新增 通訊命令表析 刪除 通訊命令表格		資料表格	<b>正</b> 監視頁 ▼	に 注解 ・	₩ 標籤 ▼	安全 ・	● 専案設定 ▼	【 運動
TA 泛用通訊表格 ■ 暫存器表格 TM Modbus Master表	長格	N	₩ 通訊6 ● 伺服き	於令表格 診敷表格		in the second s	新増 通訊 刪除 通訊	R命令表格 R命令表格	
			<ul> <li>□ 10 km</li> <li>□ 10 km</li></ul>	□マ衣伯 風訊表格 器表格		•			
· ·			₩ Modi 記表格調	bus Master 设定調整	表格				

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

💾 刪除表格	? ×
servo_parm_table	確定
	取消

#### 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.

ŤA	gp_link_table_1	R1000 [gplink_md1_saddr]	R1011	動態配置	編輯
ŤA	gp_link_table_2	R1300	R1307	動態配置	
Ť <u>M</u>	modbus_table	R1200 [mdbus_saddr]	R1216	動態配置	寫入至 PLC
Щ.	normal_link_table	R1600 [nlink_saddr]	R1614	動態配置	表格比對
	reg_table	R5001	R5006	動態配置	
M	servo_parm_table	R800 [mparam_saddr]	R823	動態配置	
M	servo_prog_table	R900 [mprog_saddr]	R937	動態配置	
和息	· · 图檢查正確!				

ltem	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.

Ê	命令	<u>के</u> —							
						新增	刪除	上移	下移
		命令	僕站	主站資料		僕站資料	資料長度	操作	
1		賣取	255	X100	<-	X200	1	位元操作	
2	3	寫入	1	R500	->	R500	10	宇組操作	
Γ									

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		After clicking, move the command currently selected by		
Operation			the user up one column.		
Operation	Move Down		After clicking, move the command currently selected by		
			the user down one column.		
	Diaht	Cut	After clicking, cut the command currently selected by the		
	Click		user, and multiple selections can be cut.		
	Monu	Сору	After clicking, copy the command currently selected by the		
	WEITU		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.

#### 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]		
Data	Slave	Edit the station number of the slave station to communicate.		
	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]		

#### 7-2-2 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.

=	🖀 一般連線表格-[normal_link_table]							
計算機         設定         監視								
	命令 —				新增	一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一	上移	下移
	命令	僕站	主站資料		僕站資料	資料長度	操作	
	1 讀取	255	X100	<-	X200	1	位元操作	
	2 寫入	1	R500	->	R500	10	字組操作	
	設定: 動態配置[33168]字組 資料長度: 15 字組 配置位置: R1600 - R1614							
ľľ	類	別		値				
	結果碼 00H		00H	傳輸(交易)成功				
	運作序號		01H	01H				
	站號		00H	00H				
	命令碼		00H					
							確定	取消

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.

参數設定									
R800	0	單位設定	2: 複合 🔹	R813	10	正轉移動量補正值	1Ps		*
R801	1	脈波數/轉 (16Bit)	3000 ‡	R814	11	反轉移動量補正值	1Ps		*
DR802	2	移動量/轉	3000 ‡	R815	12	減速時間設定	1ms		*
R804	3	最小設定單位	3 *	R816	13	補間加減速時間設定	501ms		*
DR805	4	最高速度	200000 ‡	DR817	14	脈波數/轉 (32Bit)	5		*
DR807	5	起始/結束速度	142 ‡	R819 LB	15-	0近點 DOG 輸入接點	常閉 - 1	Ĵ [X1]	
R809	6	原點復歸減速速度	1001 ‡	R819 HB	15-	1行程極限輸入接點	常閉 * 2	‡ [X2]	
R810	7	齒輪間隙補償值	1Ps ‡	R820 LB	15-	2零點信號 PG0 輸入接點	下緣計數 - 3	‡ [X3]	
R811	8	加減速時間設定	6000ms ‡	R820 HB	15-	3歸零清除信號 CLR 輸出接點	使用 👻 4	¢ [Y4]	
R812 LB	9-	0運轉方向	1: Down 👻	DR821	16	機械原點位置值	1Ps		*
R812 HB	9-	1原點復歸方向	0: Up (右) ×	R823	17	零點信號數	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 parameter $14 \neq 0$ , take parameter 14 as					
---	---------------------------	---	------------	-------------	---------------	-------------	--
		Ps/Rev.					
2	μM/Rev	The distance (B) driven by the motor for one					
		revolution.					
		The range is	1~9999	99 µM/Re	v (mDeg/R	ev, 0.1	
		mlnch/Rev).					
3	Min. Setting Unit	Setting Mechanical/Compound 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 o	compoun	d unit: 1-9	21600 Ps/S	Sec	
		Mechanical	unit: 1-15	53000 (cm	/Min, x10 E	Deg/Min,	
		Inch/Min),					
		but the max	imum fre	quency ca	n not be gi	reater than	
		921600 Ps/S	Sec.				
5	Start/Stop Speed	Motor and o	compoun	d unit: 1-9	21600 Ps/S	Sec •	
		Mechanical	unit: 1-1	5300 (cm/l	Min, ×10 D	eg/Min,	
		Inch/Min), b	out the m	aximum fr	equency ca	n not be	
		greater than 921600 Ps/Sec •					
6	Return-to-origin	Motor and o	compoun	d unit: 1-6	5535 Ps/Se	ec	
	Deceleration Speed	Mechanical	unit: 1-1	5300 (Cm/	Min, x10 D	eg/Min,	
		Inch/Min)					
7	Gear Backlash Correction	Setting scop	be: 0-327	67 Ps			
	Value	When walkii	ng in reve	erse, the w	alking dista	ance will	
		automatical	ly add thi	s value •			
8	Acceleration and	Setting scop	be: 0-300	00 ms °			
	Deceleration Time Setting	The time rep	presents t	he one re	quired to a	ccelerate	
		from rest to	maximur	n speed (p	oarameter 4	l), or	
		decelerate f	rom maxi	imum spee	ed to rest. V	When	
		parameter 1	.2=0, this	paramete	r is used as	the	
		deceleratior	n time.				

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.

-fi	i\$		新增	刪除	上移	下移
Ε	速度	運轉	等待		跳至	
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:

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		
	Move Up		the user, and multiple selections can be deleted.		
Operation			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.

💾 伺服命令	
速度	1
運轉	DRV • ADR • + • 20 Ut •
等待	WAIT TIME - 1000
跳至	NEXT *
	確定 取消

Command data description is shown as below:

Item			Description			
	Creard		The frequency or speed of the pulse output can be			
			directly input to a constant or register (R/D).			
	Speed	Jr D	When FUN141 parameter 0=0, it is the speed;			
			When FUN141 parameter $0=1$ or 2, it is the frequency.			
	Operation	DRV	Pulse Output amount.			
			When FUN141 parameter 0=1, the unit is Ps;			
Command			When FUN141 parameter 0=0 or 2, the unit is mm, Deg,			
			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			
		TIME	indicated by GOTO will be executed; constants or			
			registers (R/D) can be input directly.			
		WAIT	WAIT for input contact signal when pulse output is			
			completed. When the input contact signal is ON, execute			
			the steps indicated by GOTO.			
	Wait	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			
		EVT	output (the number of pulse waves has not been sent), if			
		EXI	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,			
		GOTO	use GOTO instruction to describe the number of steps to			
	Go To		be executed.			
			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.

	ſ	司服命令表格-[s	ervo_prog_table	]					? ×
	[ 計		E 監視						
[	命	·숙			新增			上移	下移
		速度	運轉		等待			跳至	
	1	SPD 1	DRV, ADR, +, 2	20, Ut	WAIT TIME, 1000	GOTO NEX	Г		
	2	SPD 1	DRV, ADR, +,	30, Ut	WAIT TIME, 500	GOTO NEX	г		
	3	SPD 1	DRV, ADR, -, 3	0, Ut	WAIT, X0	GOTO NEX	г		
	4	SPD 1	DRV, ADR, -, 2	0, Ut	WAIT, X1	GOTO 1			
	設 設	定: 動態配置[338	868]字組	資料	長度: 38 字組		配置位	立置: R900 - R93	7
F	運	算結果							
		類別	數值			រ័ <del>រ</del>	明		
	目	前工作或停…	1						
	總	步數	4						
	錯	誤碼	0	無鉤	誤				
				-					
L									
								確定	取消

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.

參數									
通訊棋式		傳出後接收訊息 或接收	收後傳出訊息		*				
即使發生建	□ 即使發生通訊錯誤皆接收 起始碼 2								
· · · · · · · · · · · · · · · · · · ·									
- <del></del>									
비가국									
3011,43,30,31,31	30h,49,50,51,52,53,54,55,56,								
設定:動態配置	[33768]字組	資料長度:12字	ゴ目	配置位置: R100	0 - R1011				
預覽									
編號	+	進制 十六進制	ij 🛛	字串	<b>A</b>				
R1000	1	0001H							
R1001	515	0203H							
R1002	9	0009H							
R1003	48	0030H	' O'						
R1004 49		0031H	'1'						
R1005	50	0032H	' 2'						
R1006	51	0033H	' 3'						
01007	50	002411	1.40		<b>v</b>				
資料長度:0		總和值(位元組)	) = 00H	CRC16 = FFH F	FH				

The data content description is shown as below:

Item		Description
		[Only sending/receiving messages]
	Communication Mode	When MD1 is only sending out messages, the other
Darameter		party does not respond; when MD2 is only receiving
Parameter		messages, there is no response.
		[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;
	hit of data	otherwise, two data temporarily occupy one
	DILOI UALA	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
		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.

💾 泛用通訊表格-[g	p_link_table_1]				? <mark>×</mark>
計算機         設定	□ 三 三 監視				
参數					
通訊模式	傳出後接	收訊息 或 接收後傳	印出訊息		-
□ 即使發生通訊	錯誤皆接收			起始碼	2
☑ 暫存器只使用·	一個位元組的資料			結束碼	3
命令					
30h,49,50,51,52,53	,54,55,56,				
設定: 動態配置[33]	768]字組 👔	資料長度:12字組		配置位置: R1000 -	R1011
運算結果					
類別	數值		ì	兌明	
結果碼	00H	傳輸(交易)成功			
損党 (696		1.2-349-0-0		合中	
新用型元 1000	丁進利	〒八進制		子中	
R1000	1	UUUIH			
R1001	515	0203H			
R1002	9	0009H	1.1		
R1003	48	0030H	' 0'		
R1004	49	0031 H	11		
資料長度:0	ŝ	<b>昭和值(位元組) = 00</b>	н	CRC16 = FFH FFH	

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.

命令 ———	新增	刪除	上移下移
編號	數據類型	資料	說明
R5001	字組(16Bits)	5678H	
R5002	字組(16Bits)	1234H	
R5003	字組(16Bits)	' T'	
R5004	字組(16Bits)	' E'	
R5005	字組(16Bits)	' K'	
R5006	字組(16Bits)	0	
	·		·

Fig. 137: Setting Register 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.
	Move Up		After clicking, move the command currently selected by
Operation			the user up one column.
Operation	Move Down		After clicking, move the command currently selected by
			the user down one column.
	Right- Click	Cut	After clicking, cut the command currently selected by the
			user, and multiple selections can be cut.
		Сору	After clicking, copy the command currently selected by the
	IVICITU		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.

#### 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	Data	The data to be written into the register can be filled in decimal,			
Commanu		hexadecimal or string.			
		In decimal, just fill in the decimal number, EX: 1234.			
		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.

Ē	命	숲							
		,		[	希	所增		上移	下移
		命令	僕站	主站資料		僕站資料	資料長度	操(	乍
	1	讀取	1	Y500	<-	100001	5	位元操作	
	2	讀取	1	Y501	<-	000002	1	位元操作	

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 Down		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.

E	🖀 Modbus Master 表格-[modbus_table]										
	[ 計	<b>二</b> ::: !算機	¥ ≣	)。 定	呈						
	俞	\$ 				新增			上移		下移
		命令	僕站	主站資料	84	僕	沾資料	資料長度		操作	
	1	讀取	1	Y500	<-	100	001	5	位元操作		
	2	讀取	1	Y501	<-	000	002	1	位元操作		
	設.	定 <b>:</b> 動態	歸置[	33568]字	組 資	料長周	<b>度: 17</b> 字	組	配置位置	: R1200 -	R1216
	運	算結果	:								
		類	別		數值				說明		
	結	果碼		00H			傳輸 <mark>(</mark> 3	交易)成功			
	運	作序號		01H							
	站	號		00H							
	命	会碼		00H							
									確定		取消

Item	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 station.
	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
8-2	Network Comment	6-3
8-3	Element Comment	6-5
8-4	Controlling of Comment Display	6-8
8-5	Label	8-10

Chapter (d

#### <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_un	it1 ×
	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 Com	ment	
Main_unit1	Sub_unit1	
Ladder	No	Comment
N000	0	
N000	1	
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			S 🔽	٢.
Network Comment				
		ОК	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	<b>2</b>
Field	
Comment	✓ Description
	OK Cancel

Fig. 144: Element comment\_import

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#### 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	S ×
File	
File Name	<b>¥</b>
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	? <mark>×</mark>
Store	
<ul> <li>Ladder(PLC)</li> </ul>	O Project
Range	
Reference	X -
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

ElementCor	nment			20×
-		<u></u>	0	۵
Import	Export	Clear All	Set	
Element Nar	ne 🔸		-	
Eleme	nt	Commen	t	Description
X0	0			
X1	0			
X2	0			
Х3	0			
X4				<b>•</b>
U:0 F:32767		Shift+Space	e: Togg	le 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.

ltem	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.

濾附	2	名稱	*			G O ☑ 顯示診斷	
		名稱	類型	位址	長度	註解	新增
1	۸	ascii_saddr	16Bit-UInt	R0			刪除
2	۸	nlink_saddr	16Bit-UInt	R0			匯入
3	0	gplink_md1_saddr	16Bit-UInt	R35280			匯出
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			

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.

濾降	余 名稱	•			□ 顯示診斷	
	名稱	堡族	位址	長度	註解	新増
1	ascii_saddr	16Bit-UInt	RO			刪除
2	nlink_saddr	16Bit-UInt	R0			匯入
3	gplink_md1_saddr	16Bit-UInt	R35280			匯出
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			
濾降	余 名稱	* gp			□ 顯示診斷	
	名稱	類型	位址	長度	註解	新增
3	gplink_md1_saddr	16Bit-UInt	R35280			刪除
4	gplink_md2_saddr	16Bit-UInt	R300			匯入
5	gplink_md4_saddr	16Bit-UInt	R400			匯出
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.

濾险	ŝ	名稱	*			0 0	) 🔽 顯示診斷	
		名稱	類型	位址	長度	註解		新增
1	۸	ascii_saddr	16Bit-UInt	RO				刪除
2	A	nlink_saddr	16Bit-UInt	RO				匯入
3	0	gplink_md1_saddr	16Bit-UInt	R35280				匯出
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 。

#### Chapter 8 Comment and Label Information

	📰 重墨範圍			? X	
	位址 R0				
	「クジリ項目的加工工工工	22 (11) (11) (11) (11) (11) (11) (11) (1	位地	位果	
	Tag0	16Bit-UInt	R0	11日 11日 11日 11日 11日	
			10		
	ascii_saddr	16Bit-UInt	RO	損設標鐵 [全域標籤]	
0	Indicates that	the tag addr	ess 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:

名稱	類型	位址	長度		註解	新增
ascii_saddr	16Bit-UInt	RO				刪除
nlink_saddr	16Bit-UInt	R1600	剪下(	trl+X		匯入
gplink_md1_saddr	16Bit-UInt	R1000	複製(	trl+C		匯出
gplink_md2_saddr	16Bit-UInt	R300	- 貼上 (	trl+V		
gplink_md4_saddr	16Bit-UInt	R400	- 抽人    除 [	el		
gplink_md5_saddr	16Bit-UInt	R500		lt+ 上鍵		
mparam_saddr	16Bit-UInt	R800	下移 4	lt+下键		
	ascii_saddr nlink_saddr gplink_md1_saddr gplink_md2_saddr gplink_md4_saddr gplink_md5_saddr mparam_saddr	ascii_saddr 16Bit-UInt nlink_saddr 16Bit-UInt gplink_md1_saddr 16Bit-UInt gplink_md2_saddr 16Bit-UInt gplink_md4_saddr 16Bit-UInt gplink_md5_saddr 16Bit-UInt mparam_saddr 16Bit-UInt	Article     Article     Article       ascii_saddr     16Bit-UInt     R0       nlink_saddr     16Bit-UInt     R1600       gplink_md1_saddr     16Bit-UInt     R1000       gplink_md2_saddr     16Bit-UInt     R300       gplink_md4_saddr     16Bit-UInt     R400       gplink_md5_saddr     16Bit-UInt     R500       mparam_saddr     16Bit-UInt     R800	ascii_saddr 16Bit-UInt R0	ascii_saddr 16Bit-UInt R0 第下 Ctrl+X gplink_md1_saddr 16Bit-UInt R1000 類比 Ctrl+V gplink_md2_saddr 16Bit-UInt R300 描述 Ctrl+V gplink_md5_saddr 16Bit-UInt R400 描述 Del gplink_md5_saddr 16Bit-UInt R500 扩移 Alt+上键 mparam_saddr 16Bit-UInt R800	ascii_saddr 16Bit-UInt R0

ltem		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	mport After clicking, the tag will be imported after selecting the f			
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		
Pight		user.		
Click	Insert	After clicking, insert a row of tags at the selected position in		
Мерц		the editor for users to edit.		
IVIEITU	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].

<ul> <li>✓ 響 標籤</li> <li>✓ 響 全域標籤</li> <li>● 預設標籤</li> <li>● 全域1</li> <li>● 全域2</li> </ul>	損                 損              ↓             ↓
	등 區域標籤 ▶ 删除全域標籤
	➡ 系統標識 預設標籤
	全域1
	全域2

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.

🙄 系統標籤						?	×
標籤組	SYSTEM			*			
名	稱 🔺	類型	位址	長度	註解		
\$CLK_PULSE_0_0	1S	Bool	M9127	1	0.01S Clock pulse		
SCLK_PULSE_0_1	S	Bool	M9128	1	0.1S Clock pulse		
SCLK_PULSE_1S		Bool	M9129	1	1S Clock pulse		
SCLK_PULSE_605	5	Bool	M9130	1	60S Clock pulse		
SCLK_PULSE_INI	т	Bool	M9131	1	Initial pulse (first scan)		
SCLK_PULSE_SC	AN	Bool	M9132	1	Scan clock pulses		
SCLR_NON_RETE	ENT_REG	Bool	M9125	1	Clear Non-Retentive Registers		
SCLR_NON_RETE	ENT_RELAY	Bool	M9123	1	Clear Non-Retentive Relays		
SCLR_RETENT_R	EG	Bool	M9126	1	Clear Retentive Registers		
SCLR_RETENT_R	ELAY	Bool	M9124	1	Clear Retentive Relays		
\$CPU_ABNL_WA	RNING	Bool	M9134	1	System Abnormal Warning		
\$CPU_ERROR		16Bit-UInt	R35360	1	System error indication		
\$CPU_STATUS		32Bit-UInt	DR35361	1	System status indication		
\$DISABLE_STATU	S_RETENT_CTRL	Bool	M9122	1	Disable/Enable status retentive control		
SEMERGENCY_S	TOP_CTRL	Bool	M9120	1	Emergency Stop control		
SMAIN_UNIT_M	ODEL	16Bit-UInt	R35366	1	Model of main unit (Unit ID and model)		
\$PLC_OS_VER_M	IAJOR	16Bit-UInt	R35364	1	Major PLC OS version		
\$PLC_OS_VER_M	IINOR	16Bit-UInt	R35365	1	Minor PLC OS version (High byte)		
\$PLC_OS_VER_P	ATCH	16Bit-UInt	R35365	1	Patch PLC OS version (Low byte)		
SPLC_STATION_N	NUM	16Bit-UInt	R35363	1	PLC station number		
SPLC_WORKING	_MODE	Bool	M9133	1	PLC working mode		
SPOWER_OFF_C	OUNTER	16Bit-UInt	R35368	1	Power off counter		
SPOWER_ON_DE	LAY	16Bit-UInt	R35367	1	Power on I/O service delay time setting (10ms)		
SCAN_TIME_CU	JRRENT	16Bit-UInt	R35370	1	Current scan time		
\$SCAN_TIME_M	AX	16Bit-UInt	R35371	1	Maximum scan time		
\$SCAN_TIME_MI	N	16Bit-UInt	R35372	1	Minimum scan time		
SCAN_TIME_SE	TTING	16Bit-UInt	R35373	1	Stable scan time setting		

#### 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.



#### 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.

000		•			•	
001						
002	■ 編號輸入		?	×		
003	H F	<ul> <li>▼</li> <li>Tad0</li> </ul>	»	2 	· ·	
_ (	-	Tagi		M1	全域標籤	
04	•	Tag2		M2	全域標籤	
		Tag3		M3	全域標籤	
		Tag4		M4	全域標籤	
05		Tag5		M5	區域標籤	
		Тадб		M6	區域標籤	

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.

主單元	) ×		
N000			
N001			
N002	📰 編號輸入		? X
N003	++ -	NewTag	» <u>?</u>
N004	8	註冊標籤	? <b>×</b>
N005		標籤資訊 名稱	NewTag
N006		位置 數據類型	Le项標籤(王単元0) ▼ Bool ▼
N007		親型 位址	9
N008		註解 註冊標籤後打	1開標籤頁
N009			確定取消

Item	Description
Name	Tag Name
Position	The registration position of the tag, which can be set in the
FOSICION	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**

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#### \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.

💾 🗈 🛎 🖻 🛛 🛧 🖡 📾 🚳 =		UperLogic (Beta)	Offline Edit - 🗆 ×
Project Designer PLC \	View Tools		A Options Help - 1
Device IO Configuration Memory Read-O View Allocation Registr System	nly Server Modbus Device Descrete R er Configuration Allocation Allocation	pister Main Sub Table Status Comments Tag Scurity Inder Diagram Table Status Program Program Program Program Tags Proje	Project Return t Notion Motion Motion Motion Motion Sync Motion Param Notion t Notion t Notion Motion Motion Motion Motion Sync Motion Param Film - Control - Mapping Notion
Project Management	Main_unit1 × Motion Network ×		
<ul> <li>Untitled [ME3C6-1616]</li> <li>System Configuration</li> <li>Ladder Diagram</li> <li>Comment</li> </ul>	Motion Controller Setting Start ProcData when Safe OP ×		
> 😵 Tag 🖙 Status Page	Motion Controller		Import ESI File
<ul> <li>Data Chait</li> <li>Motion</li> <li>Motion Network</li> <li>Motion Nais</li> <li>Motion Flow</li> <li>South Motion Plan</li> <li>South Parameter</li> <li>Contast Output</li> <li>Cara Setting</li> <li>Motion Param Mapping</li> <li>Table Edit</li> </ul>	•		

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.
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

		匯入ESI檔案
	設備名稱	Axis_x
		Delta ASDA-A2-E EtherCAT(CoE) Dri
Axis_tiyeut ASDA-A2-E CoE Drive Rev:0X2040608	製造商ID	0X01DD
Axis_x	產品編號	0X10305070
ASDA-A2-E CoE Drive Rev:0X2040608	版本號	0X2040608
Axis_y ASDA-A2-E CoE Drive Rev:0X2040608	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 0X6077::00 Actual Torque 0X6061::00 Mode of Operation Displ 0X60FD::00 Digital Inputs 0X603F::00 Error Code 0X608A::00 Touch Probe Pos1 Pos Vi

Fig. 160: Parameter setting page

Current fixed PDO setting as below:

PDO Type	ltem	Name				
	0x6040	Controlword				
	0x607A	Target position				
<b>ByRDO</b>	0x60FF	Target velocity				
KXPDO	0x6071	Target Torque				
	0x6060 0x60B8	Mode Of Operation				
		Touch Probe Function				
	0x6041	Status Word				
	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	? <mark>×</mark>
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):

置 Motion Te	est Run	? ×
Test Run Axis:	Axis_2	Monitor
Servo Status Axis Status	Servo Off ON Axis Error - No Control	RESET
Position Con Current P JOG ( ( ( ) Inching	Image: Non-State     Test Point       Image: Non-State     Image: Non-State       Image: Non	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	CTOD
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	trol Velocity Control Torque Control	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.

📲 BEE 🛉 🕈 🖬 🚳 -			UperLogic (Bet	a)		Offline Edit - 🗆 ×
Project Designer PLC View Tools						🔺 Options Help 🕶 👔
Device IO Configuration Memory Read-Only Server View Allocation Register Configuration	Modbus Device Descrete Register Allocation Allocation	Main Sub Program • Program • Ladder Diagram	Table Status Edit • Page • Table Status Page	Comment Tags Project	roject etup • t	Lion Motion Sync Motion Param How  Control  Mapping Motion
Project Management 🖉 🗙 Main_unit1 ×	Motion Network ×					
Untitled (ME3C6-1616)     System Configuration     Ladder Diagram						
> @ Comment > @ Tag @ Status Page Inf Date Chart					Motion Network Axis Po	tion Mo bint Flc
Motion Network					Motion Network	
Motion Point     Servo Test Run     Motion Flow     Ontion Sync Contr     Ontion Sync Contr     Ontion Sync Contr     Ontion Sync Contr					Monitor Table	le
Contact Output A Monitor Chart Cam Setting Window 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].

運動監視表					X 🗆 🛛
	<b>b</b>		<b>_</b>	Ţ	
項目設定 軸設	定 預設項目	1 匯出	匯入 💡	Show Address	۵
重設軸錯誤 軸	L1 ×				
	軸_1	軸_2	軸_3	<b>車由_4</b>	
軸:指令座標	0.000 deg	0 PLS	0 PLS	0 PLS	
軸:指令速度	0.000 deg/s	0 PLS/s	0 PLS/s	0 PLS/s	
軸:當前座標	0.000 deg	0 PLS	0 PLS	0 PLS	
軸:回授速度監控	0.000 deg/s	0 PLS/s	0 PLS/s	0 PLS/s	
軸:伺服 <mark>O</mark> n	伺服OFF	伺服OFF	伺服OFF	伺服OFF	
軸:動作就緒	未就緒	未就緒	未就緒	未就緒	
軸:錯誤中	-	-	-	-	
軸:警告中	-	-	-	-	
					-

Fig. 168: Motion Monitor Table

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

The Monitor Item Setting							
Filter by: No Filter							
Selec	t 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					
-		OK Cancel					

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.

運動錯誤監視表	Ę				Я 🗖 X		
	<u></u>	) 📑	-	Ţ			
項目設定 軸	設定 預設項	目 匯出	匯入 Sh	ow Address	۵		
重設軸錯誤	車曲_1 - ▼						
	軸_1	軸_2	軸_3	軸_4			
軸錯誤詳細資評	(1 沒有錯誤(0.	沒有錯誤(0	沒有錯誤 <mark>(</mark> 0	沒有錯誤 <b>(0</b>			
軸錯誤詳細資訊	12 沒有錯誤	沒有錯誤	沒有錯誤	沒有錯誤			
軸:警告詳細資評	(1 無警告	無警告	無警告	無警告			
軸:警告詳細資評	12 無警告	無警告	無警告	無警告			
軸:錯誤中	-	-	-	-			
軸:警告中	-	-	-	-			
單元程式狀態	就緒(0×0)						
單元錯誤碼	2 近錯誤碼 0						

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.



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 **¢**<sub>0</sub> ۳Ą ۳, F. Ø 0 ê. T Γh. Ē ð 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/s<sup>2</sup> 1000 PLS/s<sup>1</sup> 1000 PLS/s<sup>2</sup> 1000 PLS/s<sup>2</sup> 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.

Motion Axis $\times$							
🖀 🛱 Path Object							
		1	2				
	Axis Name						
Basic Setting	Axis Type		Servo				
	Encoder Type	Incremental	Incremental				
	Unit	PLS	PLS				
	Decimal Point						
Unit Cattion	Pulse/Revolution	1 PLS/Rev	1 PLS/Rev				
Unit Setting	Unit/Revolution						
	Velocity Unit	Command Position/sec	Command Position/sec				
	Velocity Gain	1.000	1.000				
	Start Velocity	0 PLS/s	0 PLS/s				
	Maximun Motor Velocity	1000 PLS/s	1000 PLS/s				
	Default Acceleration	1000 PLS/s <sup>2</sup>	1000 PLS/s <sup>2</sup>				
	Default Deceleration	1000 PLS/s <sup>2</sup>	1000 PLS/s <sup>2</sup>				
	Soft Limit(+)	0 PLS	0 PLS				
	Soft Limit(-)	0 PLS	0 PLS				
Operation Setting	Following Error Window	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				

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.

	🧊 =							UperLogic (Be	ta)					0	ffline	Edit -	
Project Designer PLC	View	Tools														<ul> <li>Option</li> </ul>	s Help 🕶 🧎
Device IO Configuration Memory Rea View Allocation R	ad-Only legister	Server Configuration nfiguration	Modbus Device Allocation	i Descrete Register Allocation	Main Program - Ladder	Sub Program • Diagram	Table Edit • Table	E+ Status Page ↓ Status Page	Comments Comment	Tag • Tags	Security Pro Security Pro Project	oject Motion Network •	Motion Axis	Motion Point	Motion Flow Motion	n Motion Sync M Control J	Motion Param Mapping
Project Management	₽×	Main_unit1 $ imes$	Motion Point	s ×												ToolBox	е×
<ul> <li>✓ Initited [ME3C6-1616]</li> <li>&gt; System Configuration</li> <li>&gt; Initiate Ladder Diagram</li> <li>&gt; Initiate Comment</li> <li>&gt; Initiate Same</li> </ul>		Point List	° C	Display Setting Displa	ay all 🔹						Exoprt	📲 Imoprt 🛛 🏠	Point Prev	view Charl		Ba     Timer/     Output 0     Set/	sic Counter Dperation Reset
🐔 Status Page			Comment	Operation Mode		Axis		Targe	et Position		Velocity	Acceleratio	n	Dec 📤	1	Arith	metic
📈 Data Chart		1		Unused												Logic O	peration
V III Motion														- 8	i i i i	Con	npare
Motion Network		2		Unused										- 8		Data Mo	ovement
A Motion Point		3		Unused										- 8		Shift/	Rotate
💑 Motion Flow				Descent										- 1		Code C	lonvert
Antion Sync Control		4		Unused										- 8		Flow C	Control
O Sync Parameter		5		Unused										- 8		PID C	ontrol
Contact Output		6		Unused												Cumulat	tive Timer
Motion Param Manning		-		0110300										- 1	1	Watch D	og Timer
> 🖬 Table Edit		7		Unused										- 8		High Speed T	imer/Counter
		8		Unused												Report	Printing

#### Fig. 176: Motion point setting

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



Fig. 177: Motion point preview page

ltem	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 Data Setting	Sugar of					8	23
Point No			1				
Comment							-
Operation Mode			Arc/AE	S			Ŧ
Avis Ture			Avia		O Dath Object		
Axis Type			• AXIS		- Path Object		
Axis Setting			_				
Master Axis			2		Axis_y		
Interpolation Axis Arc			3		Unselected		
Aux Axis			1		<pre>\$ Axis_x</pre>		
Motion Setting				Arc Setting			
Target Position	Axis1(Master)	OPLS	÷	Arc Mode	Radius		-
	Axis2	OPLS	* *	Arc Directtion	• CW	○ ccw	
	Aux Axis	OPLS	*	Arc Radius	OPLS		÷
Velocity	10PLS/s		÷ T				
Acceleration	1PLS/s <sup>2</sup> ‡	↔ 10000ms	*	Continue			
Deceleration	1PLS/s <sup>2</sup>	↔ 10000ms	*	Continuous Point	End		*
Accerlation Profile	T-Curve		Ŧ	Continuous Mode	Standby		-
S-Curve Accerlation %	100%		÷	Standby Time	0ms		÷
S-Curve Decerlation %	100%		÷				
					UK		er

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.

🔛 🗈 🖬 🛉 🕂 🕯	ាតា:					UperLogic (Be	eta)				Offline Ed	dit –	- ×
Project Designer P	LC View 1	lools										<ul> <li>Options</li> </ul>	Help 🔹 👔
Device IO Configuration Memory View Allocation	Read-Only Se Register Config System Configura	nver Modbus Device guration Allocation ation	Descrete Register Allocation	Main Sub Program - Program Ladder Diagram	n • Edit • Table	Status Page • Status Page	Comments	Tag Security Tags Pro	Project N Setup - Ne ject	Notion Motion Motion Motion Motion	Motion Point Flow • Motion	Votion Sync Mo Control •	otion Param Mapping
Project Management	C X Main_u	unit1 ×											
<ul> <li>W Untitled [ME3Gc-1616]</li> <li>&gt; 2 strem Configuration</li> <li>&gt; 4 Lodder Diagram</li> <li>&gt; 9 Comment</li> <li>&gt; 9 Tag</li> <li>≪ Status Page</li> <li>Motion</li> <li>N Motion Network</li> <li>M Motion Axis</li> <li>N Motion Axis</li> </ul>	N000 N001 N002										Motion I Flow -	Addition Sync Mod Control Mod Motion Flow	stion Pa
Motion Flow Sync Control Sync Parameter	New Motion	n Flow											
Motion Param Mapping	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: Constraint of the system         ▲       Motion Flow         ●       End         ▲       Select Branch         ●       Parallel Branch         ●       Origin Return         ●       Origin Return         ●       Speed Control         ●       Torque Control         ●       Standby         ■       Goto         ●       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 002.₩₩ SELECT SPEED STANDBY SUBROUTINE SVINC

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 <sup>001.Start</sup>	
= 022 Standby	)
Time 0	
	J
023.Speed Control	
Ax : Axis_x	
Vei:0 TogMax:0	
	)

Fig. 186: Deleting flow block link

#### 6. Others

ltem	Description
Show None	Show None Show Info 1 Characteria
Show Comment	Show None Show Comment • Show Info 1
Show Info	Image: Show None     Show None     Show Info     1     Image: Show Info       Image: Show Info     Image: Show Info     Image: Show Info     Image: Show Info





#### 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



🖀 Select Branch Setting 🛛 💡 🔀					
Block UID:		ID:	25		÷
Setting Comment					
в	Bra	nch Count	2	÷	
1.	_				
		с	ondition		
	1	Undefined			
	2	Else			
			οκιί	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.

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

## Merge

<b>X</b> 030.Merge Mode : AND		
💾 Merge Setting		8 ×
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.

ltem	Description
Merge Count	Composite quantity (1–6)
Standby Condition	<ol> <li>AND: For parallel process</li> <li>FOR SELECT: For block selections</li> </ol>

# Origin Return

O 031.Origi Ax : Axis	in Return x	
Crigin Return Setting		? ×
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.

Item	Description
Axis	Axis_conveyor

## Positioning

033.Positioning	
Pt:1	
ChgMode : None	
l	J

Positioning Setting			? <mark>x</mark>	
Block UID: 33			*	
Setting Comme	nt			
Point		1	÷	
	1			
Comment				
Operation Mode	Unused			
Axis				
Target Position	/ Axis_x->0PLS			
Velocity				
Acceleration			<b>v</b>	
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.



Fig. 192: Speed control setting

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

Item	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.

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

# Subroutine

Flow : Undefi	ne ined
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.

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

## GoTo

	039.Goto Blk : Undefined	
📇 Goto Setting		? x
Block UID:	39	\$
Setting Comment		
Block 39-Goto() Condition		•
Enable Switch 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

Ax : A Mode	ync Axis_x e : Enable
Sync Control Setting	? ×
Block UID:	40 \$
Setting Comment	
Axis Mode	1 Axis_x Enable * Sync Setting
Enable Switch Condition	== * OK Cancel

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 22
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].

🏪 🗈 🖬 🔍 🕈 🖡 🕯	ាតា:							UperLogic (Bet	ta)				Offline E	dit -	- 🗆 ×
Project Designer Pl	LC View	v Tools												<ul> <li>Option</li> </ul>	ns Help 🕶 į
Device IO Configuration Memory View Allocation	Read-Only Register System Co	Server Configuration	Modbus Device Allocation	Descrete Register Allocation	Main Program Ladder	Sub Program <del>-</del> Diagram	Table Edit • Table	Status Page - Status Page	Comments Comment	Tag Si Tags	ecurity Project Setup Project	Motion Motio Network - Axis	n Motion Motion Point Flow + Motion	Motion Sync Control	Motion Param Mapping
Project Management	e×	Main_unit1 $ imes$	1:Cam 1 ×												
<ul> <li>Untitled [ME3C6-1616]</li> <li>System Configuration</li> <li>Ladder Diagram</li> <li>Comment</li> <li>W Tag</li> </ul>		N000 N001		· ·							÷				-
Status Page     Data Chart     ✓    ✓    ✓    ✓    ✓    Motion     □ <sub>11</sub> Motion Network     ✓    ✓    ✓    ✓    Motion Axis	l	N002													
← Motion Point ✓ ♣ Motion Flow ♣ 1:MF1 ♣ 2:MF2	l	N003													
<ul> <li>♥ Motion Sync Control</li> <li>♥ Sync Parameter</li> <li>↓ Contact Output</li> <li>♥ Image Cam Setting</li> </ul>	l	N004													
Motion Param Mapping		N005													

### 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	
10-2	Module List	
10-3	Device Monitor	
10-4	Power Consumption	
10-5	Module Setting	
10-6	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:

ţ.			<b>↑</b> +						ι
	Project	Desig	gner	PLC View	Tools	Device View			
ドア ビリ Auto Fit	Device Dimension	Select Info	Device Monitor	Power Consumption	Module Resource	Hardware Configuration	Reset Configuration	Undo Redo	Delete Paste Cut Copy
			View				Hardwar	e Configuration	

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	Select Info Display the information of the selected equipment	
	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.

2	Compare			? ×
	Project	Verify	Device	Detail
	📝 🧊 PLC Program	=	🗊 PLC Program	Matched
	📝 材 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,  $\mathbb{P}_{and}$  soft the module or PLC.

[B]: To expand or compress the resources items of such module.

[*I*]: 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 right-side 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.

資訊		D	А	S	Μ		
I/O	狀	ġ,					*
X32	致能	能		關			
X33	致能	挹		關			
X34	致能	Ĕ		關			
X35	羍	能		關		٦	
X36	致能	ЧĽ		關			
X37	致能	КĽ.		闘			
X38	羍	能		關			
X39	致能	挹		關			
X40	致能	Ĕ		闚			
X41	致能	Ľ		闘			
X42	致能	ЧĽ		關			
X43	致能	КĽ.		闘			
X44	皶	Ě		關			
X45	致能	色		關			
X46	致的	Ë		闘			
X47	致能	Ľ		闘			
Y16	致能	ЧĽ		關			
Y17	致能	КĽ.		闘			
Y18	皶	Ě		關			
Y19	致能	挹		關			
Y20	致能	挹		闘			
Y21	致能	能		闚			
Y22	致能	能		闢			
Y23	致能	能		關			
Y24	致能	能		關			
Y25	致的	色		關			
Y26	致的	臣	۲	闚			
Y27	致的	Ľ.		闘			
Y28	致能	Ĕ		關			Ŧ
Θ			-			Ċ	Ð

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.

I/O	狀態 ////////////////////////////////////
Channel 0 value	R34768 [Dig] Hex 0x0000
Channel 1 value	R34769 Dig Hex 0x0000
Channel 2 value	R34770 Dig Hex 0x0000
Channel 3 value	R34771 Dig Hex 0x0000

Fig. 220: Related logic data of device monitoring

### 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.

資訊		DA	S M	
I/O	狀!	<u>8</u>		^
	Ch 0	M9256	OFF	
min. clear request	Ch 1	M9257	OFF	
relay	Ch 2	M9258	OFF	
	Ch 3	M9259	OFF	
difference	Ch 0	M9260	OFF	
	Ch 1	M9261	OFF	
relay	Ch 2	M9262	OFF	
	Ch 3	M9263	OFF	
data buffer request	Ch 0	M9264	OFF	
	Ch 1	M9265	OFF	
relay	Ch 2	M9266	OFF	
	Ch 3	M9267	OFF	
	Ch 0	M9268	OFF	
data buffer trigger	Ch 1	M9269	OFF	
relay	Ch 2	M9270	OFF	
	Ch 3	M9271	OFF	
	Ch 0	M9272	OFF	
alarm clear request	Ch 1	M9273	OFF	
relay	Ch 2	M9274	OFF	
	Ch 3	M9275	OFF	_
	Ch 0	M9276	OFF	
underflow alarm	Ch 1	M9277	OFF	
	Ch 2	M9278	OFF	
	Ch 3	M9279	OFF	
	Ch 0	M9280	OFF	
overflow alarm	Ch 1	M9281	OFF	
overnow diditin	Ch 2	M9282	OFF	
	Ch 3	M9283	OFF	
	Ch 0	M9284	OFF	¥
Θ	-		- 10	Ð
	-			

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) Configura	ition	
Configuration	Model Name ID Description	M04TC 0 4 channel analog inputs.
	Firmware Version Hardware Version Serial Number Device Name	Upgrade M04TC
	Comment	
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
	ID       Module       Cur Ver.       File Ver.       Firmware File       Select File         ID       Module       Cur Ver.       Firmware File       Clear         ID       M04ADR       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.

参數	通道0	通道1	通道2	通道
♡ TC 設定				
TC 通道啟用/詹閉	啟動	關閉	- [\$ <b>\$</b> ]計	關閉
TC 轉換時間	標準	開発		
移動平均數	2	2	2	2
♡ 感測器設定				
感測器種類	±100毫伏	K	K	К
感測器範圍	範圍 1	範圍 1	範圍 1	範圍 1
♡ 功能設定				
溫度單位	攝氏	攝氏	攝氏	攝氏
控制方法	PID 控制	開/開 控制	開/關控制	開/關 控制
控制輸出	保持	阔	時间	1447 1447 1447
♡ 後處理設定				
縮放敏動/開閉	利用	關閉	開閉	關閉
最大標度值	100	100	100	100
最小標度值	0	0	0	0
♡ 數據緩存設定				
數據緩存點數	600 黑占	600 懇占	600 黑占	600 點
觸發前緩存點數	200 點	200 點	200 點	200 點
◇ 警報設定				
警報待機模式啟動	/開閉 啟動	關閉	的明	關閉
上限輸入值	4000	1350.0°C	1350.0°C	1350.0°C
下限輸入值	-1000	-100.0°C	-100.0°C	-100.0°C
上限偏差值	50	1450.0°C	1450.0°C	1450.0°C

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.

MHCM55(MHCM55) Con	iguration		X	MHCM55(MHCM55) Cor	figuration		X
i ana	Parameter	Port A	Port B	in the second se	Parameter	Port A	Port B
Device Informa	♡ Mode Setting			Device Informa	♡ Mode Setting		
	Mode	Modbus Master	Modbus Slave	Configuration	Mode	User Defined	Disable
Configuration	♡ Communication Setting				Communication Setting		
	Baud Rate	9600	9600		Baud Rate	9600	9600
	Data Bit	8	8		Data Bit	8	8
	Parity Bit	Even	Even		Parity Bit	Even	Even
	Stop Bit	1	1		Stop Bit	1	1
	Modbus Station Address Skip	Disable	Disable		Modbus Station Address Skip	Disable	Disable
	Reply Delay Time	0 ms	0 ms		Reply Delay Time	0 ms	0 ms
	Send Delay Time	0 ms	0 ms		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		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 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
Import Export			OK Cancel	Import Export	]		OK Cancel

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					Trans-BR									. 0 %
ſ	Master Table	16	Maste	r Table 0 Setti	ng										
	Add Delete										Clear	Move Up	Move D	own 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	->	х	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	0	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**

8	COM1 Slave Map Table				1	-	1			×
	Slave Map Table	l F <sup>s</sup>	Slave N	Map Table	0 Setting					
il.	No.		No.	Register	Register Address	PLC Member	PLC Address	Data Size		
Ш	0		0	Coil (0x)	1	х	0	1		
L	1									
L	3									
Ш										
Ш										
L										
I	Import Export								OK Cancel	ב

Fig. 231: Setting Slave Station Table

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**

Add Delete	UDI	Packet 0 Setting							CI	ear Move Up	Move Down Ad	d Delete
Io. Description	No	b. 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	ЕТХ	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
				A								

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		_ 0 X
	UD Table	h r'	UD Ta	ble 0 Setting								
	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	-		
			2		Enable	Both	0	0	0			
			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.

		參數	1E	11月10日	通道1		j <u>e</u> 2	通迫3		
		温度單位	攝氏	攝氏		攝氏		攝氏		
📩 配置設定		控制方法	PID 控制	開/開	控制	開/開控制	1	開/開 控制		
ο <del>γ</del> ε		控制輸出	保持	W				M		
	M04TC(	M04TC) Calibration					? ×			
	AD/# 140470							月		
	設備: M04 IC	.(M041C)						-		
		通道	校正設定							
	☑ 通道	<u>å 0</u>	還原工廠設:	定		還原		男占		
	□ 通道	1	偏移重校正	移量校正 偏移 総備校正 伊益						
	通道	12	増益値校正			増益				
		- 4 0	-					ß		
		1.2	-					0.0°C		
								0.0°C		
								0.0°C		
								0.0°C		
	全選						「「「「」	1 %		
		警報組運動	0	0		10				
		迴路斷線檢測	0秒	0秒		0秒		0秒		
		迴路斷線死區	0	0.0°C		0.0°C		0.0°C		
	Sec. 1	輸入校正設定								
mport Exp	port	輸入校正設定 輸入偏移量及增益值	校正			校正	_	確定 <b>取</b> 消		
mport Ex; TC(M04TC) Cont	port figuration	輸入校正設定 輸入偏移量及增益值 Parameter	校正	Сно	Ch	校正 1	Ch2	確定 取消 Ch3		
mport Exp TC(M04TC) Cont Device Informa	port figuration	輸入校正設定 輸入偏移重及增益值 Parameter remperature Unit		Ch0 Celsius	Celsius	校正 11 Cel	Ch2 Isius	確定 取消 Ch3 Celsius		
mport Exp TC(M04TC) Cont Device Informa Configuration	figuration	較入校正設定 較入傳移璽及增益值 Parameter remperature Unit control Method	校正	Ch0 Celsius ON/OFF Control	Celsius ON/OFF C	校正 11 Cel	Ch2 Isius I/OFF Contro	確定 取消 Ch3 Celsius I ON/OFF Contro		
mport Exp TC(M04TC) Cont Device Informa Configuration	figuration	較入校正設定 較入傳移重及增益值 Parameter emperature Unit control Method control Output	校正	Ch0 Celsius ON/OFF Control Off	Celsius ON/OFF C Off	校正 11 Cel Control ON Off	Ch2 Isius J/OFF Contro	確定 取消 Ch3 Celsius ON/OFF Contro Off		
mport Exp TC(M04TC) Cont Device Informa Configuration	figuration	較入校正設定 輸入傳移量及增益值 Parameter emperature Unit control Method control Output Processing Setting	校正	Ch0 Celsius ON/OFF Control Off	Celsius ON/OFF C Off	校正 11 Cel Control ON Off	Ch2 Isius J/OFF Contro	職定 取消 Ch3 Celsius ON/OFF Contre Off		
mport Exp TC(M04TC) Cont Device Informa Configuration	figuration	軸入校正設定 輸入偏移里及増益値 Parameter emperature Unit control Method ontrol Method control Output Processing Setting caling Enable/Disable	校正 	Ch0 Celsius ON/OFF Control Off Disable	Celsius ON/OFF C Off Disable	校正 1 Cel Control ON Off	Ch2 Isius I/OFF Contro f	総定 取消 Ch3 Celsius ON/OFF Contre Off Disable		
TC(M04TC) Cont Device Information	figuration figuration figuration figuration figuration figuration figuration	輸入校正設定 輸入偏移單及增益值 Parameter emperature Unit control Method control Output Processing Setting caling Enable/Disable faximum Scaled Value		Celsius ON/OFF Control Off Disable 100	Celsius ON/OFF C Off Disable 100	校正 11 Cel Control ON Dis 100	Ch2 Isius J/OFF Contro f able	確定 取消 Ch3 Celsius I ON/OFF Contre Off Disable 100		
TC(M04TC) Cont Device Informa Configuration	inguration	輸入校正設定 輸入偏移軍及增益值 Parameter emperature Unit Control Method Control Output Processing Setting caling Enable/Disable Aaximum Scaled Value dinimum Scaled Value		Ch0 Celsius ON/OFF Control Off Disable 100 0	Celsius ON/OFF C Off Disable 100 0	校正 11 Cel Control ON Off Dis 100 0	Ch2 Isius J/OFF Contro f able	確定 取消 Ch3 Celsius OV/OFF Contre OV/OFF Contre Disable 100 0		
mport Exp TC(M04TC) Cont Device Informa Configuration	figuration figuration figuration figuration T C C Post N N Data	輸入校正設定 輸入偏移重及增益值 Parameter emperature Unit control Method control Output Processing Setting caling Enable/Disable Aaximum Scaled Value Jinimum Scaled Value Buffer Setting	校正	Ch0 Celsius ON/OFF Control Off Disable 100 0	Celsius ON/OFF C Off Disable 100 0	校正 11 Cel Control ON Off Dis 100 0	ch2 Isius I/OFF Contro f able	確定 取消 Celsius ON/OFF Contre ON/OFF Contre Disable 100 0		
mport Exp TC(M04TC) Cont Device Informa Configuration	Figuration	輸入校正設定 輸入傳移璽及增益值 Parameter emperature Unit control Method Control Output Processing Setting caling Enable/Disable Aaximum Scaled Value Buffer Setting Data Buffer Points has Puffer Points	·校正	Ch0 Celsius ON/OFF Control Off Disable 100 0	Celsius ON/OFF C Off Disable 100 0	校正 11 Cel Control ON Dis 100 0 5 6000 0	ch2 Isius I/OFF Contro able )	離淀 取消 Celsius Celsius Celsius ON/OFF Contro ON/OFF Contro ON/OFF Contro ON/OFF Contro ON/OFF Contro Celsius		
mport Exp TC(M04TC) Cont Device Informa Configuration	inguration	輸入校正設定 輸入傳移單及增益值 Parameter emperature Unit control Method Control Output Processing Setting caling Enable/Disable Maximum Scaled Value Ainimum Scaled Value Buffer Setting Data Buffer Points Data Buffer Points befor Settion	被正 e Trigger	Ch0 Celsius ON/OFF Control Off Disable 100 0 600 points 200 points	Celsius ON/OFF C Off Disable 100 0 600 points 200 points	校正 1	Ch2 Isius J/OFF Contro able 0 points 0 points	酸定 取消 Celsius Celsius ON/OFF Control Off Disable 100 0 500 points 200 points		
mport Exp TC(M04TC) Cont Device Information	niguration nigur	輸入校正設定 輸入傳移單及增益值 Parameter emperature Unit control Method control Output Processing Setting caling Enable/Disable Maximum Scaled Value dinimum Scaled Value Huffer Setting bata Buffer Points bata Buffer Points befor t Setting C Alert Standby Mode	校正	Ch0 Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points	Celsius ON/OFF C Off Disable 100 0 600 points 200 points 200 points	校正 11 Cel Control ON Dis 100 0 5 600 5 200 Dis	Ch2 Isius I/OFF Control able ) points ) points able	Bit		
mport Exp TC(M04TC) Cont Device Information	niguration niguration ni C C C C C C C C C C C C C C	輸入核正設定 輸入偏移里及增益值 Parameter emperature Unit control Method control Method control Output Processing Setting caling Enable/Disable daximum Scaled Value dinimum Scaled Value dinimum Scaled Value Buffer Setting Data Buffer Points bata Buffer Points bata Buffer Points befor S Setting C Alet Standby Mode Deper Limit Input Value	校正 e Trigger Enable/Disable	Ch0 Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points 200 points	Celsius ON/OFF C Off Disable 100 600 points 200 points Disable 1350.0°C	校正 11 Cel Control ON Dis 100 0 0 0 0 0 0 0 0 0 0 0 0	Ch2 Isius I/OFF Contro able 0 points 0 points able 600°C	離定 取消 をはない たい かい		
mport Exp TC(M04TC) Cont Device Information	riguration Aun → → → → → → → → → →	輸入核正設定 輸入偏移單及增益值 Parameter emperature Unit control Method control Output Processing Setting caling Enable/Disable daximum Scaled Value dinimum Scaled Valu	校正 e Trigger Enable/Disable	Ch0 Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points 200 points 1350.0°C	Celsius ON/OFFC Off Disable 100 0 Celsion Disable 1350.0°C -100.0°C	校正 11 Cel Control ON Dis 100 0 5 6000 5 2000 135 -135	Ch2 Isius //OFF Control // able ) points able 50.0°C	Bit         Bit           Ch3         Ch3           Celsius         ON/OFF Control           OH/OFF Control         Off           I         OH/OFF Control           0         Off           200 points         200 points           I         1350.0°C           -100.0°C         C		
mport Exp TC(M04TC) Cont Device Information	riguration	輸入校正設定 輸入偏移單及增益值 Parameter emperature Unit control Method control Output Processing Setting caling Enable/Disable Aaximum Scaled Value Ainimum Scaled Value Autor State String Data Buffer Points bata Buffer Points	神正 e Trigger Enable/Disable	Ch0 Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points 1350.0°C 1450.0°C	Celsius ON/OFF C Off Disable 100 0 Disable 200 points 200 points 200 points 200 points 1350.0° C -100.0° C 1450.0° C	校正 れ Cel Control OPh Dis 100 0 5 60005 135 135 135 135 135 135 135 13	Ch2 Isius I/OFF Control f able 0 points 0 points able 50.0°C 00.0°C	<ul> <li>第2:1</li> <li>第2:2</li> <li>第2:2</li> <li>Celsius</li> <li>ON/OFF Control</li> <li>Off</li> <li>Off</li> <li>Off</li> <li>0</li> <li>100</li> <li>0</li> <li>0</li> <li>100</li> <li>100</li> <li>100</li> <li>100</li> <li>100</li> <li>100</li> <li>100</li> <li>1450.0°C</li> </ul>		
TC(M04TC) Cont Device Information	port figuration A T C C ♥ Post S N N ♥ Data C C C C C C C C C	輸入校正設定 輸入偏移軍及增益值 Parameter emperature Unit Control Method Control Output Control Output Control Output Control Output Processing Setting Caling Enable/Disable Aaximum Scaled Value I Buffer Setting Data Buffer Points befor t Setting C Alert Standby Mode Ipper Limit Deviation V. ower Limit Deviation V.	校正 e Trigger Enable/Disable	Ch0 Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points 200 points 1350.0°C -100.0°C	Celsius ON/OFF C Off Disable 100 0 600 points 200 points 200 points 1350.0°C -100.0°C 1450.0°C -1450.0°C	校正 11 Cel Control ON Off Dis 0 0 0 0 0 0 0 0 0 0 0 0 0	Ch2 Isius I/OFF Control f able ) points able 50.0°C 0.0°C 50.0°C	<ul> <li>融流&lt;取消</li> <li>取消</li> <li>Ch3</li> <li>Celsius</li> <li>ON/OFF Control</li> <li>Off</li> <li>Disable</li> <li>100</li> <li>0</li> <li>100</li> <li>0</li> <li>0</li> <li>100</li> <li>0</li> <li>100</li> <li>0</li> <li>100</li> <li>1450.0°C</li> <li>1450.0°C</li> </ul>		
mport Exp TC(M04TC) Cont Device Informa Configuration	poort figuration A T C C Post S N N N C C C C C C C C C C C C C	輸入校正設定 輸入偏移軍及增益值 Parameter emperature Unit Control Method Control Output Processing Setting caling Enable/Disable Aaximum Scaled Value Ainimum Scaled Value Buffer Setting Data Buffer Points Data Buffer	校正 e Trigger Enable/Disable alue alue	CH0 Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points 1350.0°C -100.0°C 1450.0°C	Celsius ON/OFF C Off Disable 100 0 Celsius 200 points 200 points 200 points 1350.0°C -100.0°C 1450.0°C 1450.0°C	校正	Ch2 Isius I/OFF Contro f able ) points ) points able 0.0°C 0.0°C 0.0°C 50.0°C	Bits         Bits           Ch3         Ch3           Celsius         ON/OFF Control           ON/OFF Control         Off           Disable         10           100         Off           200 points         200 points           200 points         1300.0°C           -1450.0°C         -1450.0°C           1450.0°C         -1450.0°C		
mport Exp TC(M04TC) Cont Device Informa Configuration	poort Figuration Figuration T C ♥ Post N N ♥ Data C ♥ Data C ♥ Data C ♥ Data C ♥ L N N N N N N N N N N N N N	輸入校正設定 輸入偏移電及增益值 Parameter emperature Unit control Method control Output Processing Setting caling Enable/Disable Aaximum Scaled Value Ainimum Scaled Value (Ainimum Scaled Value Aaximum Scaled Value Buffer Setting Data Buffer Points bata Buffer Deviation V. ower Limit Deviation V. ower Limit Deviation V.	校正 e Trigger Enable/Disable alue alue alue	Ch0 Celsius ON/OFF Control Off Disable 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Celsius ON/OFF C Off Disable 100 0 600 points 200 points 200 points 1350.0°C -1450.0°C 1450.0°C 1450.0°C 1450.0°C	校正 x1 Cel Control ON Dis Dis Dis 100 0 0 5 0 0 0 0 0 0 0 0 0 0 0 0 0	Ch2 Isius //OFF Control f able 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	<ul> <li>第三</li> <li>取消</li> <li>取消</li> <li>Celsius</li> <li>Celsius</li> <li>ON/OFF Control</li> <li>Off</li> <li>Uisable</li> <li>100</li> <li>0</li> <li>0</li> <li>000 points</li> <li>200 points</li> <li>200 points</li> <li>1350.0°C</li> <li>1450.0°C</li> <li>1450.0°C</li> <li>1450.0°C</li> <li>1450.0°C</li> <li>1450.0°C</li> <li>1450.0°C</li> <li>1450.0°C</li> <li>1450.0°C</li> <li>1450.0°C</li> <li>0.0 %</li> </ul>		
mport Exp TC(M04TC) Cont Device Information	inguration ingur	輸入校正設定 輸入傳移電及增益値 Parameter emperature Unit control Method control Output Processing Setting caling Enable/Disable Maximum Scaled Value Minimum Scaled Value Aximum Scaled Value Buffer Setting Data Buffer Points befor Setting C Alert Standby Mode Ipper Limit Input Value ower Limit Input Value ower Limit Deviation V. opper Lower Limit Deviation V. Ipper Lower Li	e Trigger Enable/Disable alue alue	Ch0 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	Celsius ON/OFF C Off Disable 100 0 600 points 200 points 1350.0°C -1450.0°C 1450.0°C 0.0 % 0	校正 to Cel Control ON Dis Control ON Dis 100 00 00 00 00 00 00 00 00 0	Ch2 Isius I/OFF Control able ) points ) points able 60.0°C 00.0°C 00.0°C 50.0°C 50.0°C %	Bit         Bit           Image: Character of the second		
mport Exp TC(M04TC) Cont Device Information	riguration	軸入校正設定 輸入偏移里及增益值 Parameter emperature Unit control Method control Method control Output Processing Setting caling Enable/Disable Aaximum Scaled Value Ainimum Scaled Value Ainimum Scaled Value Ainimum Scaled Value Jata Buffer Points befor Is Setting C Alet Standby Mode Upper Limit Input Value Upper Limit Input Value Upper Limit Deviation V. ower Limit Input Value Japper Limit Deviation V. Japper Lower Limit Deviation V. Jaead Band Alert Jumber of Alett Delay oop Disconnection Det	i枝正 e Trigger Enable/Disable alue alue alue alue ettion Value	Ch0 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 % 0 0	Celsius ON/OFF C Off Disable 100 600 points 200 points 200 points 1350.°C -100.°C 1450.°C 0.0 % 0 0 sec	校正 11 Cel Control ON Dis Control ON Dis 100 00 00 00 00 00 00 00 00 0	Ch2 Isius I/OFF Control able points points points points able 100°C 1	<ul> <li>融流&lt;取消</li> <li>取消</li> <li>Celsius</li> <li>ON/OFF Control</li> <li>Off</li> <li>Uisable</li> <li>100</li> <li>Off</li> <li>200 points</li> <li>200 points</li> <li>200 points</li> <li>1350.0°C</li> <li>1450.0°C</li> <li>1450.0°C</li> <li>1450.0°C</li> <li>0.0.5%</li> <li>0.0.5%</li> <li>0.0.5%</li> <li>0.0.5%</li> </ul>		
mport Exp TC(M04TC) Cont Device Information	riguration	輸入核正設定 輸入偏移單及增益值 Parameter emperature Unit control Method control Output Processing Setting caling Enable/Disable daximum Scaled Value dinimum Scaled Valu	rth正 e Trigger Enable/Disable alue alue alue alue alue alue alue al	Ch0 Celsius ON/OFF Control Off Disable 100 0 600 points 200 points 200 points 200 points 200 points 1350.0°C -100.0°C 1450.0°C 1450.0°C 0.0 % 0 0 0 0 sec 0.0°C	Celsius ON/OFFC Off Disable 100 0 Disable 1200 points 200 points 200 points 1350.0°C -1450.0°C 1450.0°C 0.0 % 0 0 sec 0.0°C	校正 11 Cel Control ON Dis Control ON Dis 100 0 0 0 0 0 0 0 0 0 0 0 0	Ch2 Isius I/OFF Control able 0 points 0 points able 50.0°C 50.0°C 50.0°C % %	<ul> <li>融近&lt;取消</li> <li>取消</li> <li>のパ/OFF Control</li> <li>OF/OFF Control</li> <li>OFf</li> <li>Uisable</li> <li>100</li> <li>100</li> <li>200 points</li> <li>200 points</li> <li>1350.0°C</li> <li>1450.0°C</li> <li>1450.0°C</li> <li>1450.0°C</li> <li>00 %</li> <li>0</li> <li>0 sec</li> <li>0.0°C</li> </ul>		

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.

😁 MHCM55(MHCM55) Con	figuration		
in an	Parameter	Port A	Port B
Device Informa	✓ Mode Setting		
in the second se	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
	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
Import Export			OK Cancel

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		
	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
	Renly Delay Time	0 ms	
	dd Delete Clear	Move Up Move Down	Add Delete
No.	dd Delete Clear	Move Up Move Down	Add Delete r Table

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	fault Ch1	Ch2	Ch3
Configuration	D/A Channel Enable/Disable	Disa Paste		Disable	Disable
Configuration	♡ Output Signal Range Setting				
	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	Disable
	Slew Rate (steps/sec)	1024000	1024000	1024000	1024000
	Slew Rate	18750.286 mV/100ms	18750.286 mV/100ms	18750.286 mV/100ms	18750.286 mV/100ms
	♡ 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				
	Data Offset Enable/Disable	Disable	Disable	Disable	Disable
	Data Offset Value	0	0.	0	0
	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**

<u>11-1</u>	Connection	8-2
11-2	Offline Edit	8-5
11-3	Upload	8-5
11-4	Download	8-8
11-5	Run/Stop PLC	8-10
11-6	Clear PLC	
11-7	PLC Status	8-12
11-8	PLC Setting	8-1
11-9	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 Port	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.
		Timeout (ms)	PLC response timeout setting, the setting range is 100-30000 ms.
Advanced		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.

	建線參數清單     2
<ul> <li>建線参数</li> <li>2 — X</li> <li>2 — X</li> <li>2 → X</li> <li></li></ul>	新増 剛除 複製 ▲ 西 乙太網 P2_88 P0_169 2
乙太網 USB	
基本验定 准限验定 唐 建稳速度	名稱
	網路連線  區域連線 (192.168.0.2)  *
網路連線 區域連線 (192.168.0 P0 169	類型 TCP +
類型 TCP	P位址 192 . 168 . 0 . 169
IP位址 192 . 168 . 0 . 113 《	通訊埠 501 🗘
通訊埠 501 🗘	確定取消
連線測試     確定     取消     連線前一定要先詢問	確定取消

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	≠	🇊 PLC Program	Not matched	
🔽 <table-of-contents> Expansion Data</table-of-contents>	=	🙀 Expansion Data	Matched	
👿 📹 Motion Program	=	📹 Motion Program	Matched	
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 U	pload 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	
<ul> <li>✓ ● PLC Program</li> <li>✓ ■ Expansion Data</li> <li>✓ ● Motion Program</li> </ul>	≠ = n =	<ul> <li>PLC Program</li> <li>Expansion Data</li> <li>Motion Program</li> </ul>	Not matched Matched Matched	
Select All Clear All		Ur	oload 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.

2	比對			8 X			
	專案	校驗	設備	細節			
	🔽 🧊 PLC程式	¥	🇊 PLC程式	語法錯誤			
	4 🔽 <table-of-contents> 擴展資料</table-of-contents>	¥	💑 擴展資料	模組清單不一致			
	🚺 [0] M04DA	¥	[0]				
	🔽 💼 運動控制資料	¥	📹 運動控制資料	比對不同			
提示:當視塊列表个匹配時,可以先上傳攝展資料冉下載專案。							

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.



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 狀態	? <b>×</b>
	項目	狀態
	PLC 站號	1
	主機機型	MS3C6-1616T
►	主機狀態	運轉中
	PLC 割體版本	0.2.25
	MC韌體版本	0.5.8
	硬體版本	1
	記憶卡	沒有
<b>~</b>	語法檢查	正確
	資料密碼	沒有
	程式 ID	沒有
	PLC ID	沒有
	上傳保護	沒有
	下載保護	沒有
1	萬年曆	已安裝
	全部程式容量	40960 宇組(81920 位元組)
	已使用程式容量	539 宇組(1078 位元組)
	未使用程式容量	40421 字組(80842 位元組)
	MAC位址	FA-88-88-12-33-66
	HWID	905C3C78-527F-4B54-B1D5-7A8CA9DEEI
	iMonitor 狀態	離線
		確定

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 Setting		? X
-Current Time-		
Date	2022/4/7	*
Time	上午 08:13:09	\$
-Setting Time		
Use Time of	PC	
Date	2022/4/7	÷
Time	上午 08:12:58	÷
Setup to PLC		Cancel

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.

410		* * 🕇	+ @ @ -					Upe	rLogic (Be	eta)		Offlir	e Edit		- □	×
	Project	Designer	PLC	∕iew	Tools									Optio	ns He	lp • 1
Run PLC	Stop Trial PLC Run PLC	Discard Change	P Upload Do Operati	<b>↓</b> wnload on	Syntax Check Syntax Check	Offline Edit	Online Monitor Mode	Online Editing	Status Page •	Data Data Motior Chart Chart Monitor	Connect Parame Conne	ion C ter Co ct iii	uick ntrol - Si Get Syst	PLC etting •	Clear PLC us of PL	PLC Status
Project	Management		e×	Main	_unit1 ×								Initialize	e PLC		NR
* 📦	Untitled [ME30 System Con	26-1616] nfiguration View	-	N000								0	Run PLC Stop PL	с .с		
	I/O Cor	nfiguration Allocation		N001		10	÷1		S.	= 0.1		- 18	Memor	y Card C	peratio	n
	Read-C	only Register		-								8	System	Backup		
	Server (	Configuratio Is Device Allo	n ocation	N002		2	47		2	¥.	÷	÷		•	4	

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.



Fig. 255: Online Edit

- 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.

	🖀 比對		i i		? ×
	専案	校驗	設備	細節	
1	☑ 前 PLC程式	¥	🇊 PLC程式	比對不同	
Ы	🗸 📷 擴展資料	=	<table-of-contents> 擴展資料</table-of-contents>	比對相同	
	🔽 📹 運動控制資料	=	📹 運動控制資料	比對相同	
L					
L					
L					
1					
L					
				上傳して載して	取消

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.

2	比對			? <b>* *</b>		
$\left[ \right]$	専案	校驗	設備	細節		
	☑ 前 PLC程式	¥	🇊 PLC程式	語法錯誤		
L.	🔺 🔽 🚮 擴展資料	¥	💑 擴展資料	模組清單不一致		
	[0] M04DA	¥	[0]			
L	🔽 📹 運動控制資料	¥	📹 運動控制資料	比對不同		
L						
L						
	提示:當模塊列表不匹配的	手,可以	以先上傳擴展資料再	下載専案。		
L						

- 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:

E	Download				? ×
	Project	Verify	Device	Detail	
	<ul> <li>Image: PLC Program</li> <li>Expansion Data</li> <li>Amage: Amage: Amage:</li></ul>	= = =	<ul> <li>PLC Program</li> <li>Expansion Data</li> <li>Motion Program</li> </ul>	Matched Matched Matched	
	Select All Clear All			Downloa	ad 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

10			4 🗊 🗊 =			Upe	erLogic (Beta)	0	nline Monitor -	□ ×
	Project	Designer	PLC View	Tools					<ul> <li>Option</li> </ul>	s Help 🕶 🖠
Run PLC	Stop Trial PLC Run PLC	Discard Change	Upload Download Operation	Syntax Check Syntax Check	Offline Edit Monitor	Online Editing	Status Data Motion Page - Chart Chart - Monitor	Connection Parameter Connect	Quick PLC C Control Setting F Others	ear PLC LC Status
Main_	unit1 ×									
N001	] <u>MO</u>	•	· ·			•	· ·	•	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]:

	1 🖌 🗎		- 🗊 🗊 =		
	Project	Designer	PLC	/iew	Tools
Project Tree	Tool Moo Box Li	dule Memory st Address	Cross Reference	☑ Pi ☑ N ☑ El	rogram Unit Comment <mark>⊠</mark> Register Value letwork Comment lement Comment
	Proj	ect 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 D	esigner	PLC V	iew Tools				Options	Help 🕶 🧯
Project Tree	Tool Module Box List Project V	Memory Address Vindows	Cross Reference	Program Unit Comment      Register Value     Network Comment     Element Comment     Comment	<ul> <li>● Biggest ● Small</li> <li>● Large ● Tiny</li> <li>● Medium</li> <li>Font</li> </ul>	Cascade Ho	Tile Switch prizontal Windows - Window	Close All	
Main_u	nit1 ×								
N000	MO	it Comme	ent Test				Y0		
	Network Co	mment Te	est						
N001							( )	_	



#### 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:

主單元-	- ×						
N000		40		•			Y1
		I					
N001							I ► Enable
							I ► Disable
							<b>≁</b> ∎► On
N002					•		-™► 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 "Y0" is disabled, its status will not be changed by "M0" 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 "M0" and "Y0" of the "disabled" element:



Fig. 263: Disabling the element

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].

<b>**</b>	Project [	) Designer	PLC Viev	v Tools					Up	oerLogic (Be	:ta)			
Device View	IO Configuratio	Memory Allocation	Read-Only Register System Co	Server Configuration	Modbus Device Allocation	Descrete Register Allocation	Main Program Ladder D	Sub Program • iagram	Table Edit - Table 25	Status Page -	Comments Status Page	Tag	Security Proj	Project Setup • ect
Main_u	nit1 ×									Delet	te Status Page			
N000						3.			-					
N001						Status Pa	tatus Page 📃 ige Name	2 ×						
N002						StatusPa	ок (	Cancel	*		•		*	
N003									4					
N004				·										
N005														

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:

Status Pag	je												s2 C	X
		F	V	] 700	11 -123	OxFF	123	3.14	S	X	1	-		
Column Set	Add Row	Element Comment	All	Bina	ry Decimal	Hexdecimal	Unsigned Decimal	Float	Refresh	Remove	Clear All	Imoprt	Export	۵
Name	Status	Da	ata	Name	Status	Data	Name	Sta	tus	Data	Name	Status	Dat	ta 🔺
4														•
StatusPag	e1													

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	je											2 🗆	X
Column Set	Add Row	Element A Comment	All Binary	Decimal	Hexdecimal	Unsigned Decimal	Float	C Refresh	Remove	Clear All	Imoprt	Export	0
Name	Status	Data	Name	Status	Data	Name	Sta	tus	Data	Name	Status	Data	a 🔺
y0-7													
_		_										_	-
-					-	-		-					-1
							-		_				-1
	-												-
4								-					 }
StatusPag	je1										_		i.

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													\$P [	X נ
		F	<b>I</b>	) 🛺	n <b>7</b> -123	OxFF	123	3.14	S	X	1	-		
Column Set	Add Row	Element Comment	All	Bina	ry Decimal	Hexdecimal	Unsigned Decimal	Float	Refresh	n Remove	Clear All	Imoprt	Export	۵
Name	Status	Data	1	Name	Status	Data	Name	Sta	tus	Data	Name	Status	Dat	a 🔺
Y1	ENABLE	OFF												
Y2	ENABLE	OFF												
Y3	ENABLE	OFF												
Y4	ENABLE	OFF												
Y5	ENABLE	OFF												
Y6	ENABLE	OFF												
Y7	ENABLE	OFF												
•														
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 Pag	e												2	л×
	••	F	P	<b>2</b> 01	01 -123	OxFF	123	3.14	5	<b>×</b>	1	-		
Column Set	Add Row	Element Comment	All	Bina	ary Decimal	Hexdecimal	Unsigned Decimal	Float	Refre	esh Remove	Clear All	Imoprt	Export	\$
Name	Status	Dat	a	Name	Status	Data	Name	Sta	tus	Data	Name	Status	Dat	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
13-2	Project Password	9-3
13-3	Program Password	
13-4	Program Unit Password	9-6
13-5	Data Password	
13-6	 Download Password	
13-7	Upload Protection	
13-8	Download Protection	9-9

#### <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).

		* * † +	ØØ-							UperLogic (Be	ta)						Of	fline Edit	-	□ ×
		Designer	PLC Vie	w Tools															<ul> <li>Options</li> </ul>	Help 🕶 👔
Device View	IO Configura	tion Memory Allocation	Read-Only Register System C	Server Configuration onfiguration	Modbus Device De Allocation	i screte Register Allocation	Main Program Ladder	Sub Program • Diagram	Table Edit • Table	Status Page • Status Page	Comments Comment	Tag • Tags	Security Pro	Project Setup	Motion Network	Motion Axis	Motion M Point	Action Mo Flow • C	tion Sync N Control	lotion Param Mapping
Main_u	unit1 ×											2.	Proj	ject Passwo	ord Da					
0004					3.	Project P	assword				२ <u>२</u>	1	Proy Dat Dov	gram Prote a Password wnload Pas	ection d sword					
						Please chan To remove p	ge your cum password, lei	ent password. we new passw	ord fileds	empty.			PLC	ID sd/Write Pr	otection					
N002	)					New passwo Confirm pa	ord isword													
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	? ×
Program Protection Password	
Password ••••	
Confirm Password	
Program Editor	
File Version 0	*
🗹 Can Edit	
🗹 Can Copy	
🗹 Can Save	
Program Protection	
Program Protection Password for Target Item Customiz	e Unit Password
<ul> <li>Ladder Diagram</li> <li>A</li> <li>A</li> <li>A</li> <li>B</li> <li>A</li> <li>A</li> <li>B</li> <li>A</li> <li>A</li> <li>B</li> <li>B</li></ul>	
🗌 🎬 Main_unit1 🛛 🔤	
▲ □ III Sub Program	
	·]
	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.

🙄 自定義單位密碼 [主單元0]	?	×
請輸入密碼.		
••••		
	確定	:

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).



## 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).



Fig. 277: Download password

## 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

## <u>Tools</u>

<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	<del>)</del> -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), special
	Register	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.

2	System Backup
	Protection Type
	No Protection
	O PC Locked Protection
	<ul> <li>Password Protection</li> </ul>
	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				? X
Look in:	\mu D:\UperLogic			- 0 0	0 % 🗉 🗉
🔊 My Co	Name	▲ Size	е Туре	Date Modified	
b. User	assistant 🔋		FileIder	2022/3 05:06	
N OSCI	🔒 bearer		FileIder	2022/3 05:07	
	🔋 🐌 doc		FileIder	2022/3 05:06	
	ESIFiles		FileIder	2022/4 09:56	
	\mu help		FileIder	2022/3 05:06	
	\mu iconengines		FileIder	2022/3 05:07	
	imageformats		FileIder	2022/3 05:07	
	languages		FileIder	2022/3 05:06	
	🔒 M2Data		FileIder	2022/4 03:33	
	platforminputcontexts		FileIder	2022/3 05:07	
	platforms		FileIder	2022/3 05:07	
	plugin		FileIder	2022/3 05:06	
	nrintsunnort		File Ider	2022/3 05:07	•
File name:					Save
Files of type:	Fatek System Backup File (*.fsbx)				• 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:

					_	
鰔 My Co	Name	Size	Туре	Date Modified		
User	assistant assistant		FileIder	2022/3 05:06		
	bearer 🔒		FileIder	2022/3 05:07		
	all		FileIder	2022/3 05:06		
	ESIFiles		FileIder	2022/4 09:56		
	📲 퉬 help		FileIder	2022/3 05:06		
	iconengines		FileIder	2022/3 05:07		
	imageformats		FileIder	2022/3 05:07		
	languages		FileIder	2022/3 05:06		
	🐌 M2Data		FileIder	2022/4 03:33		
	platforminputcontexts		FileIder	2022/3 05:07		
	platforms		FileIder	2022/3 05:07		
	🔋 🐌 plugin		FileIder	2022/3 05:06		
	nrintsunnort		File Ider	2022/3 05:07		
ile name:	1					
	Estale System Packup Eile (* febu)				- L	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.



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.

📰 寫入韌體資訊			?	×
設備	• PLC	○ 擴展		
類型	<ul> <li>&gt;</li></ul>	○ 割體救援		
韌體檔案				Ê
韌體資訊				
PLC韌體版本	未使用			
MC韌體版本	未使用			
			Tin 2	*
			 4以)	<u> </u>

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.

	W	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:													
	<b>割體資訊</b> 新増 剛除													
		型號	割體版本	割體檔案										
	1	MHCM55	1.0.32	D:/SystemFolder/Desktop/Expansion unit/Communication/C										
	2	M04DAR	1.0.64	D:/SystemFolder/Desktop/Expansion unit/Analog/M04DAR/o										
OS File	Se	Select the path of the OS file to be written.												
	W	When the user chooses to write "OS Update" in "Expanded", this												
	ра	th exists in	the OS inf	formation.										

# 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.

💾 記憶卡資訊	? <mark>- × -</mark>
項目	狀態
🔄 容量	954.0 MB
📃 可用容量	954.0 MB
📃 記憶卡型號	MFM00
📃 複製保護	停用
📃 系統備份	存在
🔼 系統備份型號	ME3C6-1616
🔺 🔄 系統備份版本	
mE3C6-1616	0.2.46(PLC) - 0.5.13(MC) - 1(HW)
🛛 4 🔄 PLC韌體更新版本	
mE3C6-1616	0.2.46(PLC) - 0.5.13(MC) - 1(HW)
🛛 4 🔄 擴展韌體更新版本	
M04DAR	1.0.64
MHCM55	1.0.32
M02LC	1.0.0
	確定

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

🔛 🗈 🖻 🖉 👘 🛉 🛉	សាលិ:				I	UperLogic	c (Beta)				Of	ifline Edi	it	1	•	×
Project Designer	PLC View	Tools												Options	Help	• 1
Run Stop Trial Discard PLC PLC Run Change <b>PLC</b>	Upload Download	Syntax Check Syntax Check	ffline Edit Monitor Mode	Online Editing	Status Page •	Data M Chart ( Monitor	Motion Chart •	Connection Parameter Connect	Quick Control .	PLC Setting • Other	Clear PLC s	PLC Status				
Project Management	P X Main	n_unit1 ×														
<ul> <li>Untitled [MISC6-1616]</li> <li>System Configuration</li> <li>Device View</li> <li>VO Configuration</li> <li>Memory Allocation</li> <li>Read-Only Register</li> <li>Server Configuration</li> <li>Ladder Diagram</li> <li>Comment</li> <li>Tag</li> <li>Status Page</li> <li>Status Page</li> <li>Motion</li> </ul>	2000 1000 2001 1000		Options General Ho Automatic Ba Ø Backup filk Backup filk Backup direct	3. tkey Fi ckup e every e if I close tory	le Smin file witho /Docume	ut saving nts/FATEP	Ç J K/UperL	.ogic/backup								•
> 📷 Table Edit	N004							DK Ca	ncel							l

Fig. 290: Setting backup project

- 3. Open a new Project.
- 4. 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.

**↑**↓000÷ 🗎 🛏 UperLogic (Beta) Designer Tools Project 2 <u>-/-</u> E. Data Chart Upload Dow Online Editing Motio Discard Change nload Syr Ch Status Quic PLC Page -Ope ntax Ch Mo Ot eх Main unit1 × N000 Untitled [ME3C6-1616] ? X Connection Parameter System Configurat I/O Configuratio N001 ory Allocation -Only Register figuration Ethernet USB Modbus Device Allocation N002 er Diagran R List Basic Advanced 6 Network Connection 區域連線 (192,168,0,16) \* N003 Status Page Туре TCP Data Chart 168 10 IP Address 192 0 91 Table Edit N004 501 4 Port N005 Connection Test Cancel OK N006 Always ask before starting connection N007

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.

<u></u>		6 C 🕇	<b>₩</b> 🗊 🗊	) =							UperLo	ogic (Beta)	l.		
_	Project	Designer	PLC	Viev	~ ī	Tools									
Run Sta PLC PL	op Trial LC Run PLC	Discard Change	Upload Ope	Downl	oad	Syntax Check Syntax Check	Offline Edit	Online Monitor Mode	Online Editing	E Stat Page	us Data e Chart Monito	Motion Chart J	Connection Parameter Connect	Quick Control	PLC Clea Setting PLC Others
Project Ma	anagement		Ē	×	Main_	unit1 ×									
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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.