DAUDIN CO., LTD.

2409TW
V1.0.5

iO-GRID NEMO Series

GFNF-1A1A、GFNF-2A2A

GFNF-3A3A、GFNF-4A4A

GFNF-1A3A、GFNF-2A4A

Module User Manual

目錄

1. Introduction

The Nemo series is an integrated IO module composed of a communication board and an IO board. Its design integrates network protocols with digital input and output capabilities into a standalone module. The communication board is responsible for fieldbus communication, enabling connections with the master controller or host computer. It supports four network protocols: ModbusTCP, EtherCAT, EtherNET/IP, and PROFINET. The applications include 32-channel digital input, 32-channel digital output, 16-channel digital input and 16-channel digital output. Users can choose between SINK (NPN) or SOURCE (PNP) models based on their needs. Using an integrated IO module can achieve lower costs when the number of usage points is small.

2. Common Module List

Part Number	Description	Remarks
GFNF-1A1A	EtherNet/IP Communication, 32-channel Digital Input Module	SINK(NPN)
GFNF-2A2A	EtherNet/IP Communication, 32-channel Digital Input Module	SOURCE(PNP)
GFNF-3A3A	EtherNet/IP Communication, 32-channel Digital Output Module	SINK(NPN)
GFNF-4A4A	EtherNet/IP Communication, 32-channel Digital Output Module	SOURCE(PNP)
GFNF-1A3A	EtherNet/IP Communication, 16-channel Digital Input/Output Module	SINK(NPN)
GFNF-2A4A	EtherNet/IP Communication, 16-channel Digital Input/Output Module	SOURCE(PNP)

Caution (ATTENTION):

1. THIS DEVICE IS FOR INDOOR USE ONLY, DON'T PUT OR USE IT IN HIGH TEMPERATURE AND HIGH MOISTURE ENVIRONMENT.

   CET EQUIPEMENT EST DESTINE A UN USAGE INTERIEUR UNIQUEMENT NE PAS STOCKER OU UTILISER DANS UN ENVIRONNEMENT A HAUTE TEMPERATURE ET HAUTE HUMIDITE.
2. AVOID FALLING AND BUMPING OTHERWISE THE ELECTRICAL COMPONENTS WILL BE DAMAGED.

   ÉVITEZ DE TOMBER ET DE VOUS ÉCRASER, SINON LES COMPOSANTS ÉLECTRIQUES SERONT ENDOMMAGÉS
3. DON'T TRY TO DISASSEMBLE OR OPEN THE COVER UNDER ANY CIRCUMSTANCE IN ORDER TO AVOID DANGER.

   NE TENTEZ JAMAIS DE DEBALLER OU D'OUVRIR LE COUVERCLE POUR EVITER TOUT DANGER.
4. IF THE EQUIPMENT IS USED IN A MANNER NOT SPECIFIED BY THE MANUFACTURER, THE PROTECTION PROVIDED BY THE EQUIPMENT MAY BE IMPAIRED.

   SI L'APPAREIL N'EST PAS UTILISE DE LA MANIERE INDIQUEE PAR LE FABRICANT, LA PROTECTION FOURNIE PAR L'APPAREIL PEUT ETRE ALTEREE.
5. THE INSTALLATION THAT THE SAFETY OF ANY SYSTEM INCORPORATING THE EQUIPMENT IS THE RESPONSIBILITY OF THE ASSEMBLER OF THE SYSTEM.

   L'INSTALLATION DE TOUT SYSTÈME INTÉGRANT CET ÉQUIPEMENT EST LA RESPONSABILITÉ DU CONSTRUCTEUR DU SYSTÈME.
6. USE WITH COPPER CONDUCTORS ONLY. INPUT WIRING: MINIMUM 28 AWG, 85°C, OUTPUT WIRING: MINIMUM 28 AWG, 85°C

   DESTINÉ À ÊTRE UTILISÉ AVEC DES CONDUCTEURS EN CUIVRE SEULEMENT. CABLAGE D'ENTREE: MINIMUM 28 AWG, 85 ° C. CABLAGE DE SORTIE: MINIMUM 28 AWG, 85 ° C.
7. FOR USE IN A CONTROLLED ENVIRONMENT. REFER TO MANUAL FOR ENVIRONMENTAL CONDITIONS.

   POUR UN ENVIRONNEMENT CONTROLE. REPORTEZ-VOUS AU MANUEL DES CONDITIONS ENVIRONNEMENTALES.
8. DISCONNECT ALL SOURCES OF SUPPLY BEFORE SERVICING.

   COUPER TOUTES LES SOURCES D'ALIMENTATION AVANT DE FAIRE L'ENTRETIEN ET LES

RÉPARATIONS.

9. PROPER VENTILATION IS REQUIRED TO REDUCE THE RISK OF HAZARDOUS OR EXPLOSIVE GAS BUILDUP DURING INDOOR CHARGING. SEE OWNERS MANUAL.

   UNE VENTILATION ADÉQUATE EST NÉCESSAIRE AFIN DE RÉDUIRE LES RISQUES D'ACCUMULATION DE GAZ DANGEREUX OU EXPLOSIFS DURANT LA RECHARGE À L'INTÉRIEUR. VOIR LE MANUEL D'ENTRETIEN.

10. PLEASE BE SURE TO USE CERTIFIED POWER SUPPLY WITH SELV OUTPUT OR CERTIFIED POWER SUPPLY PROVIDING DOUBLE INSULATION EVALUATED BY UL60950-1, UL 62368-1, OR UL61010-1 AND UL61010-2-201 STANDARDS.

    VEUILLEZ VOUS ASSURER D'UTILISER UNE ALIMENTATION CERTIFIÉE AVEC SORTIE SELV OU UNE ALIMENTATION CERTIFIÉE OFFRANT UNE DOUBLE ISOLATION ÉVALUÉE PAR LES NORMES UL60950-1 OU UL 62368-1 OU UL61010-1 ET UL61010-2-201.

2. Module Specifications

2.1 Communication Port Specifications

Communication Port Specifications	
Protocol	EtherNet/IP
Interface	2 x RJ-45
Transmission speed	10/100 Mbps

2.2 Electrical Specifications

Electrical Specifications		
Part Number	Working Voltage	Working Current
GFNF-1A1A	24 VDC (-15%~+20%)	MAX,130mA,24VDC
GFNF-2A2A		MAX,130mA,24VDC
GFNF-3A3A		MAX,170mA,24VDC
GFNF-4A4A		MAX,160mA,24VDC
GFNF-1A3A		MAX,150mA,24VDC
GFNF-2A4A		MAX,150mA,24VDC

2.3 General Specifications

General Specifications	
Size (W x D x H)	25 x 116 x 85mm
Weight	140g
Operating Temperature	-10 … +60 °C
Storage Temperature	-25˚C…+85˚C
Relative Humidity	RH 95%，non-condensing
Altitude Limit	< 2000 m
IP Protection Level	IP 20
Pollution Degree	II
Safety Certifications	CE
Wire Gauge Range (IEC / UL)	0.2 mm^2 ~ 1.5 mm^2 / AWG 24~16

2.4 Module IO Board Specifications

Digital Input Specifications		
Signal Type	SINK(NPN)	SOURCE(PNP)
Signal 0 Voltage Range	15VDC…30 VDC	0 VDC…10 VDC
Signal 1 Voltage Range	0 VDC…10 VDC	15 VDC…30 VDC
Number of Channels	32 , 16	
Maximum Input Data Length	4 Bytes	
Rated Voltage	24VDC	
Isolation	Optocoupler Isolation	
Protection Circuit	Overvoltage Protection	
Input Filtering Time	3ms	
System Indicators	2 Green LEDs (PWR, SYS), 2 Red/Green LEDs (ST, ERR)	
Channel Indicators	32 Green LEDs, Input Channel Status	
Digital Output Specifications		
Signal Type	SINK(NPN)	SOURCE(PNP)
Number of Channels	32 , 16	
Maximum Output Data Length	4 Bytes	
Rated Voltage	24VDC	
Load Specifications	Resistive Load, Inductive Load, Lamp Load	
Channel Rated Current	≦0.5 A	
Isolation	Optocoupler Isolation	
Protection Circuit	Overvoltage Protection	
System Indicators	2 Green LEDs (PWR, SYS), 2 Red/Green LEDs (ST, ERR)	
Channel Indicators	32 Green LEDs, Input Channel Status	

3. Module Panel Introduction

3.1 Integrated Module Panel

3.1.1 Product Interface and Function Description

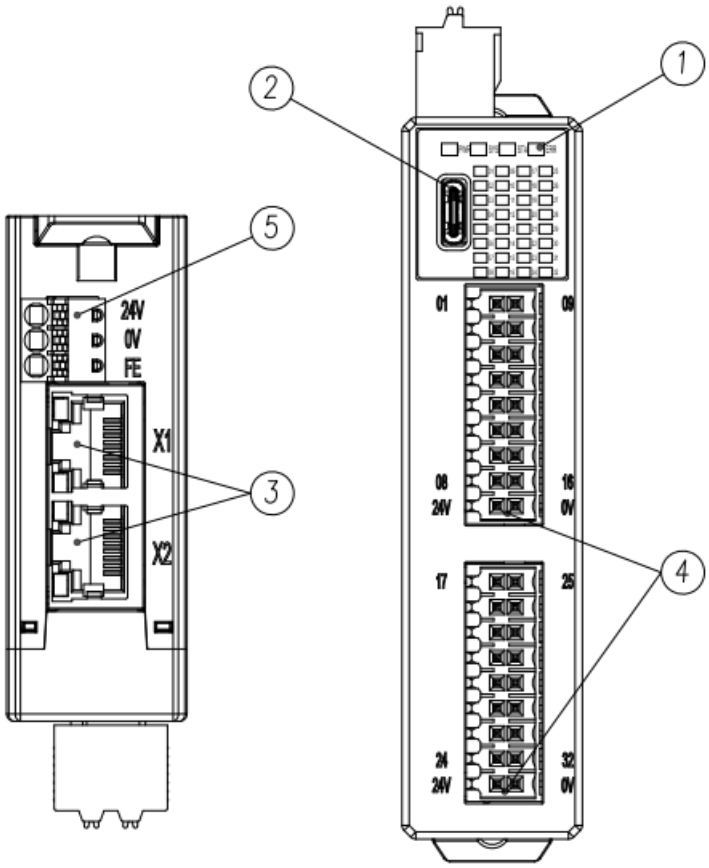


Fig 3. 1 . Front and Side Views

NO.	Name	Description
1	Module Status Indicators	System and Communication Status Indicators
2	Configuration Interface	USB Type C, System Configuration
3	Network Communication Interface	RJ45 x 2, System Network Protocol Communication Interface
4	Fieldbus Power Interface	Fieldbus (Field) Power Interface, 24V DC, Push-in Terminals
5	System Power Interface	Module System Power Interface, 24V DC, Push-in Terminals

3.1.2Indicator Description

Integrated Module Indicators				
Name	Label	Color	Status	Description
Power Indicator	PWR	Green	On	Normal Power Supply
			Off	Module Not Powered
System Indicators	SYS	Green	On	System Running
			Off	System Stopped
			Flashing	System Waiting for Network Connection (Slow Flash at 4Hz) Note 1
Connection Status Indicator	ST	Red	On	Duplicate IP address
			Flashing	Connection timeout
		Green	On	Normal connection
			Flashing	Waiting for connection
		Red &Green	Off	IP not set
			Flashing	Self-test (red and green cross flashing)
Alarm Indicator	ERR	Red	On	Module Firmware Update
			Off	No Error Alarm
			Flashing	Module Parameters Restored to Default Note 2
		Green	Off	Normal Mode
通道 指示燈	01~32	Green	On	Channel Input/Output Normal
			Off	No Signal Input or Output
Network Port Indicators				
Name	Label	Color	Status	Description
Connection Status Indicator	X1 X2	Orange	On	Network Connected
			Off	No Network Connection, Abnormal
			Flashing	Data Transmission
		Green	On	100 Mbps
			Flashing	10Mbps

Note 1 : 32-Channel Digital Output Module Supported (GFNF-3A3A/GFNF-4A4A)

Note 2 : Activating the button function causes the red light to remain steady for more than 6 seconds. After releasing the button, it flashes 3 times.

4. Module Installation and Removal Instructions

4.1 Installation

Align the module according to the arrow direction on the side and snap it onto the top of the DIN rail.

Once positioned, the latch automatically secures it to the rail.

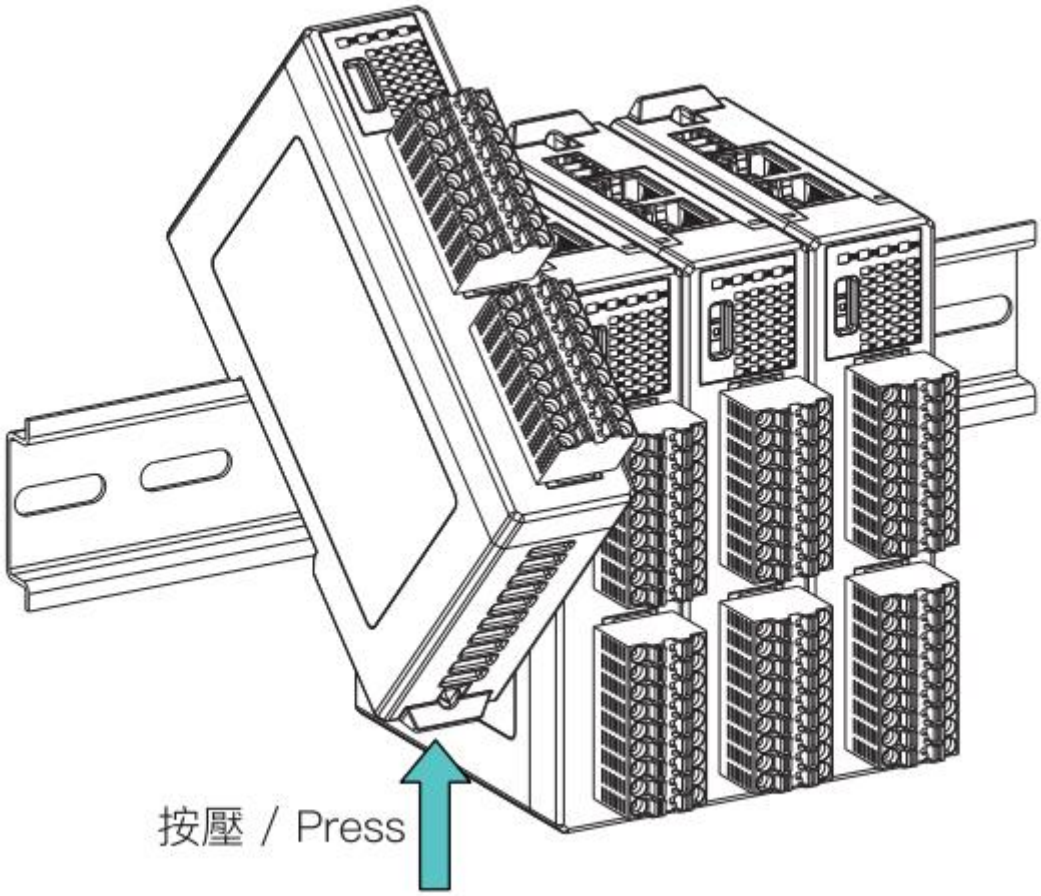


Fig 4. 1 Module Installation Diagram

※ Note: After the module is installed and positioned, the latch automatically secures onto the rail. If it does not secure properly, please press the top of the latch on both sides.

4.2 Removal

Pull downward on the plastic hook beneath the module using a screwdriver.

To remove the module from the DIN rail, reverse the steps used for installation.

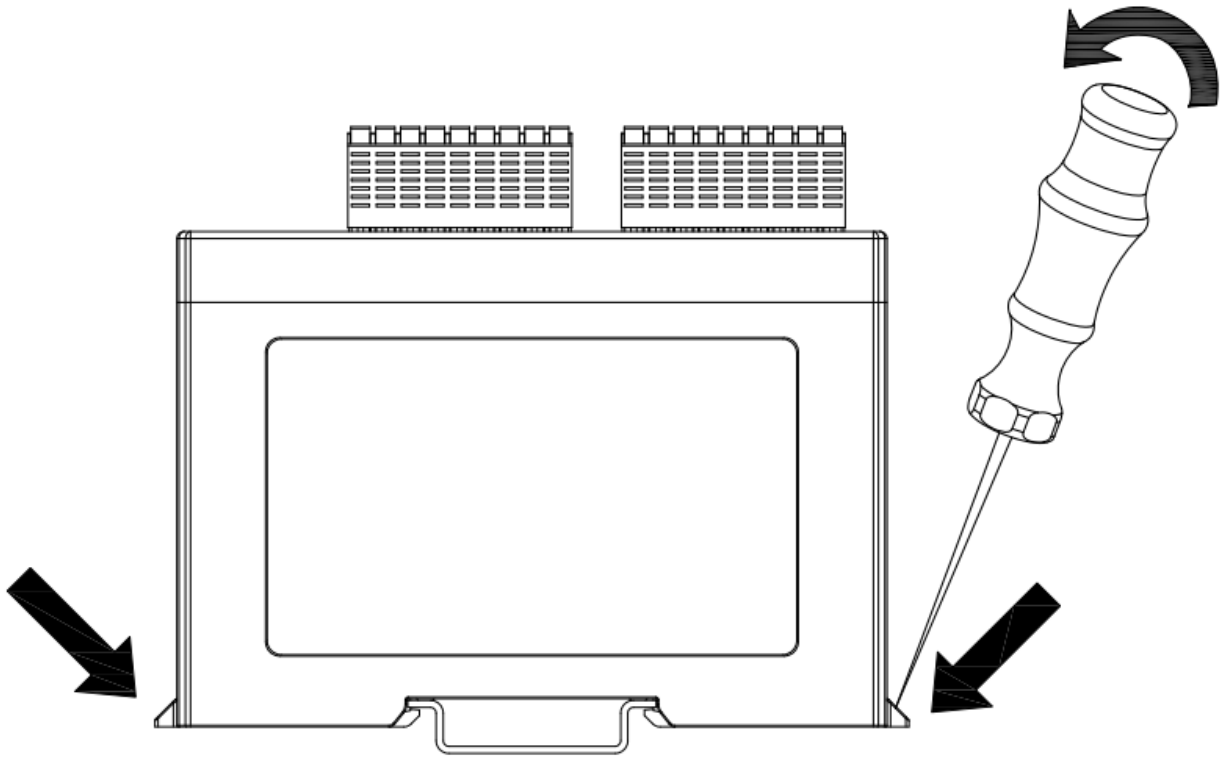


Fig 4. 2 Module Removal Diagram

4.3 Module Dimensions

4.3.1 Module Dimensions

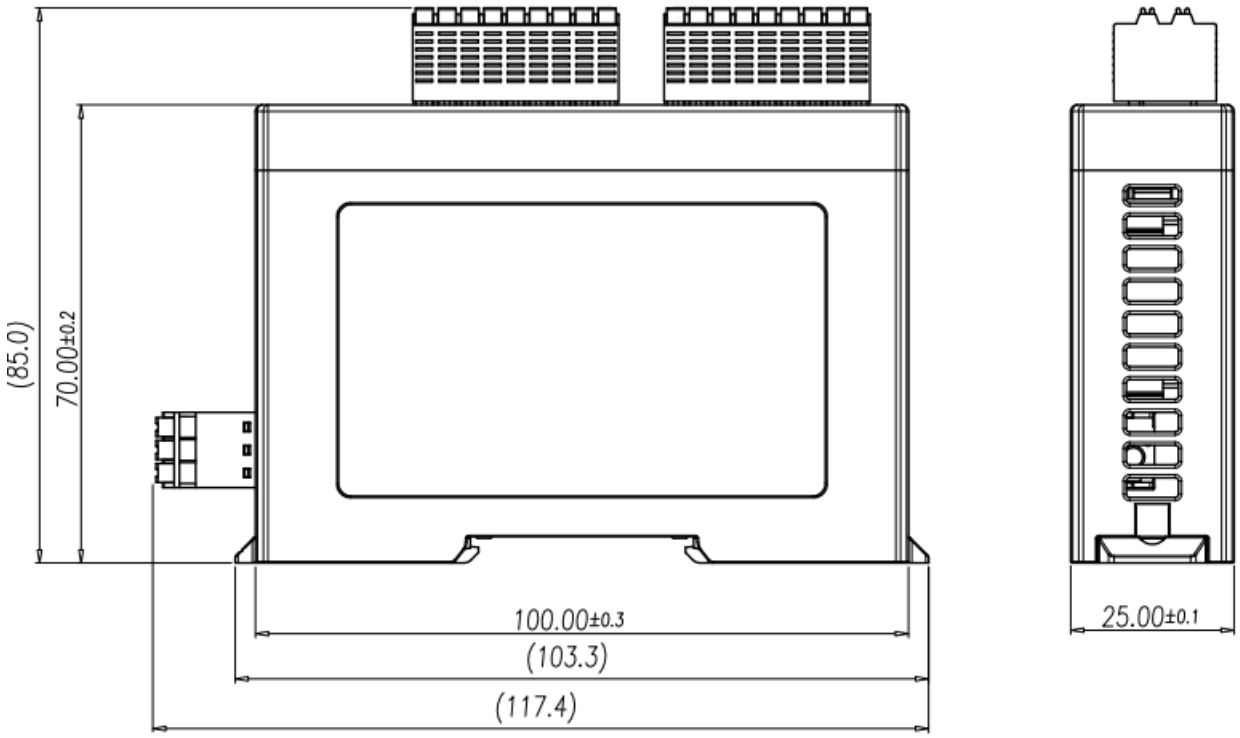


Fig 4. 3 Module Dimensions Diagram

5. Module Wiring Instructions

5.1 Module Wiring Diagram

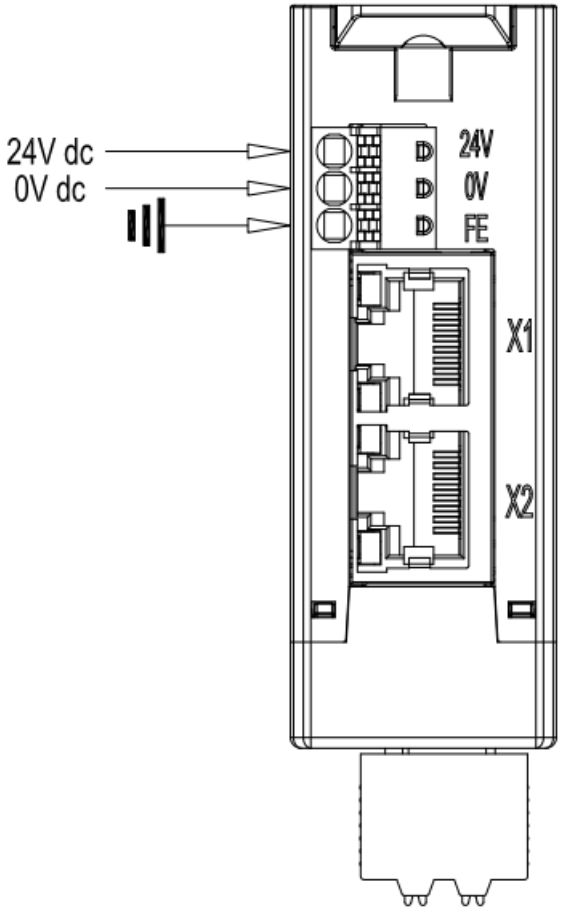


Fig 5. 1 Module Wiring Diagram

5.2 IO Board Wiring Diagram

5.2.1 GFNF-1A1A

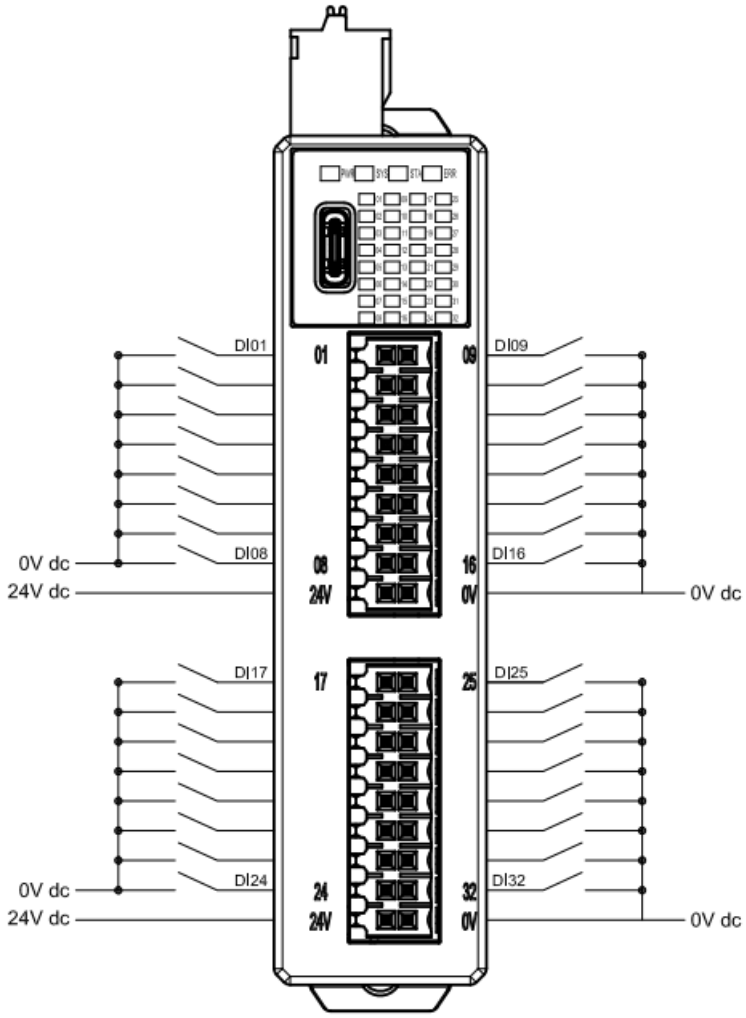


Fig 5. 2 GFNF-1A1A Wiring Diagram

5.2.2 GFNF-2A2A

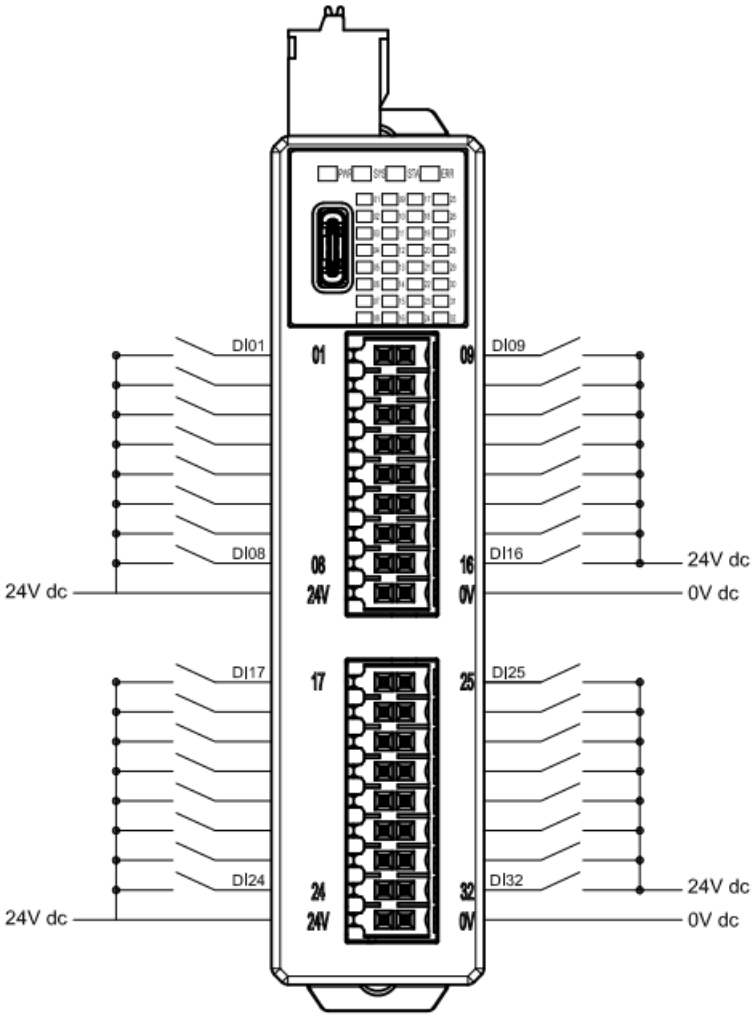


Fig 5. 3 GFNF-2A2A Wiring Diagram

5.2.3 GFNF-3A3A

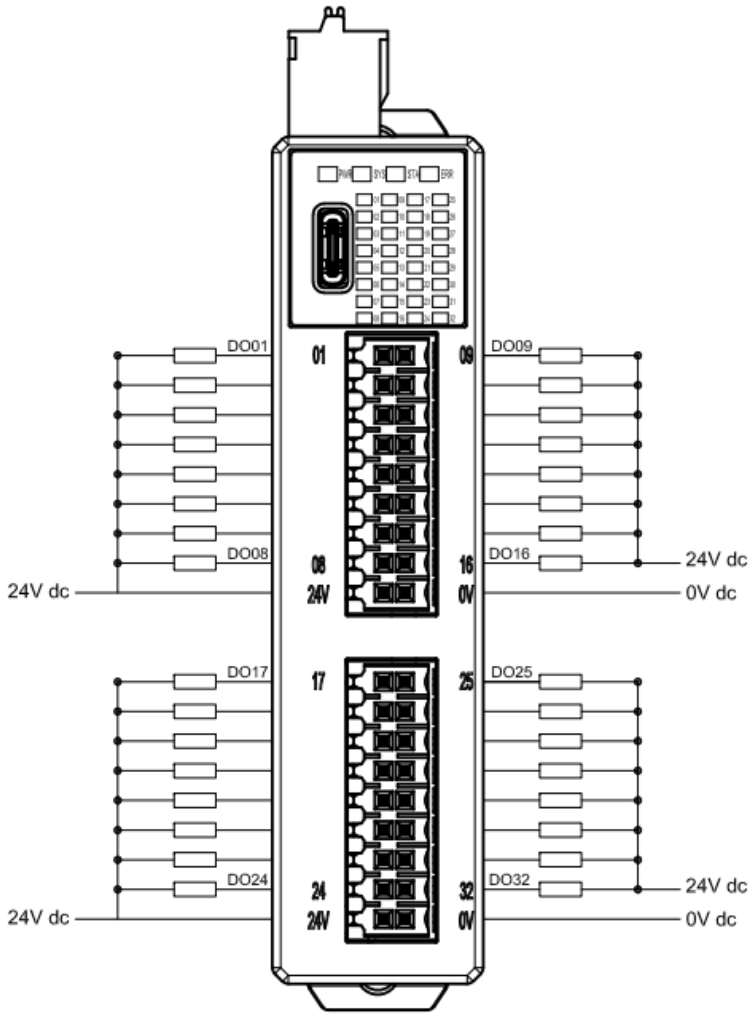


Fig 5. 4 GFNF-3A3A Wiring Diagram

5.2.4 GFNF-4A4A

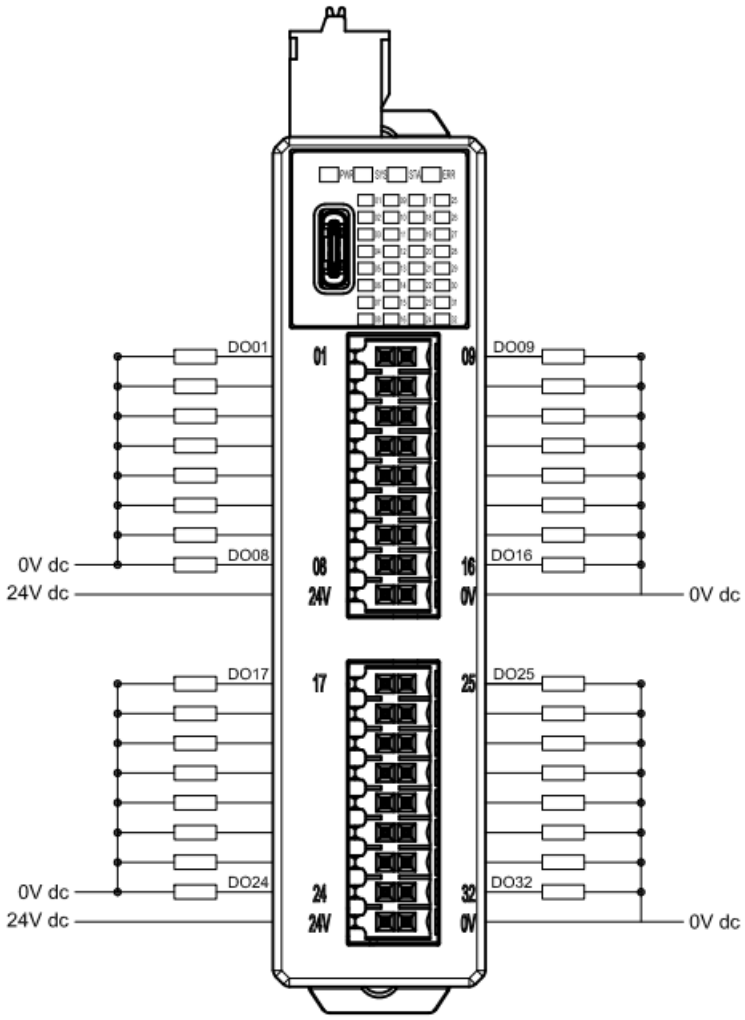


Fig 5. 5 GFNF-4A4A Wiring Diagram

5.2.5 GFNF-1A3A

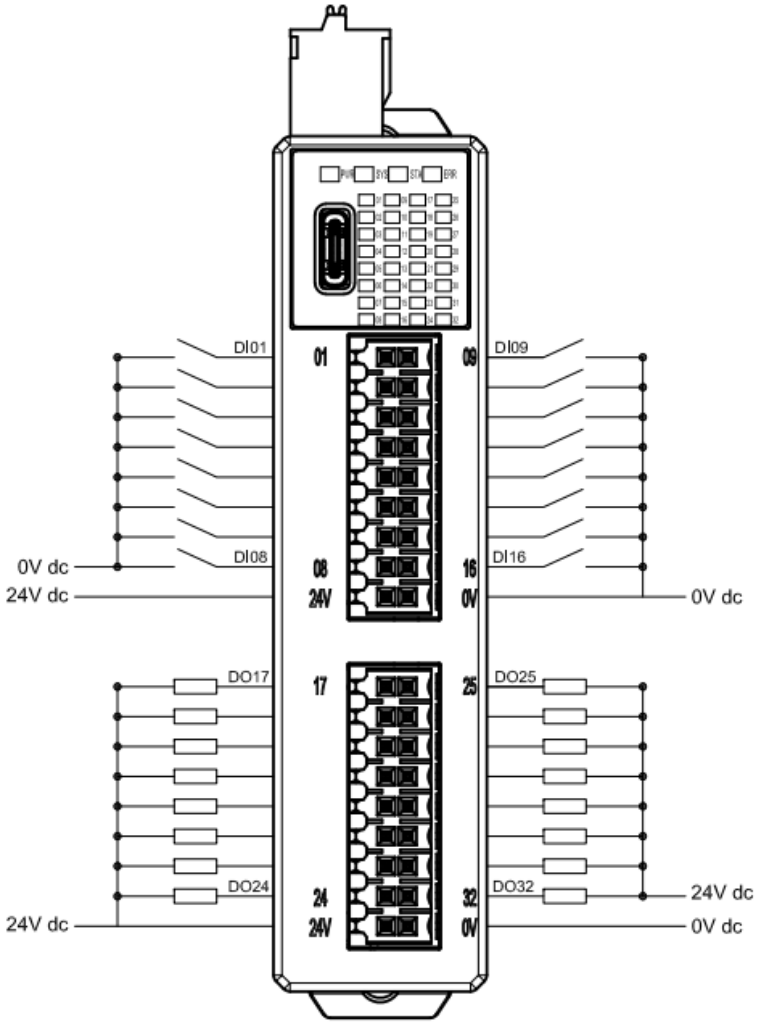


Fig 5. 6 GFNF-1A3A Wiring Diagram

5.2.6 GFNF-2A4A

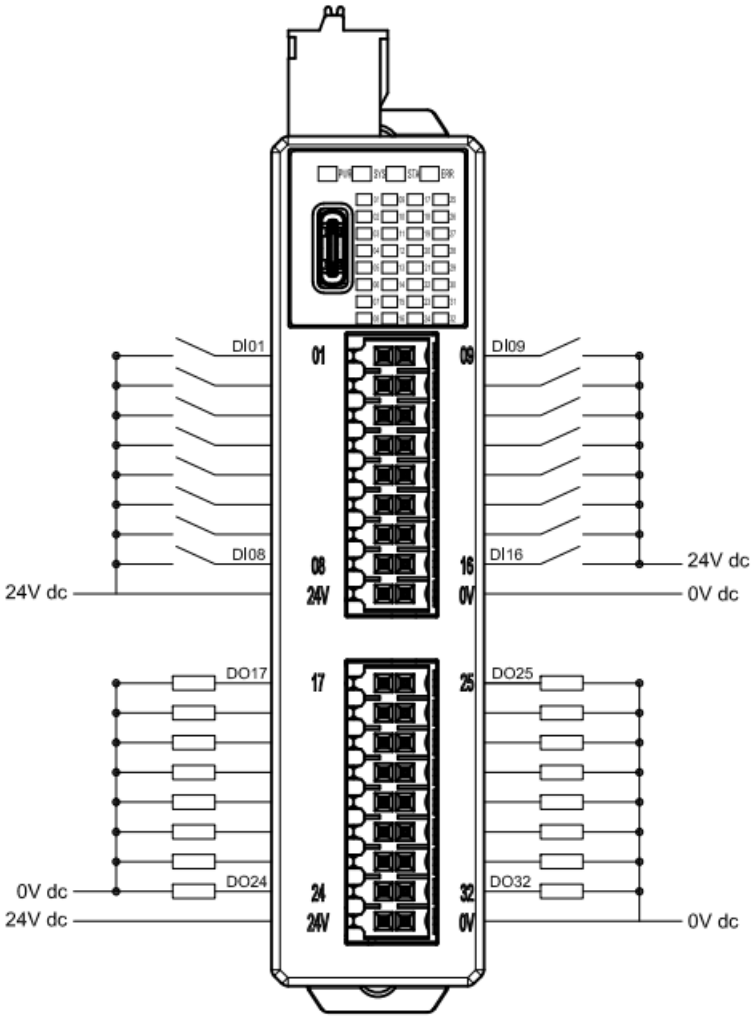


Fig 5. 7 GFNF-2A4A Wiring Diagram

6. Parameter Setting and Configuration Instructions

6.1 Module Configuration

As shown below, the module is configured primarily utilizing an integrated approach

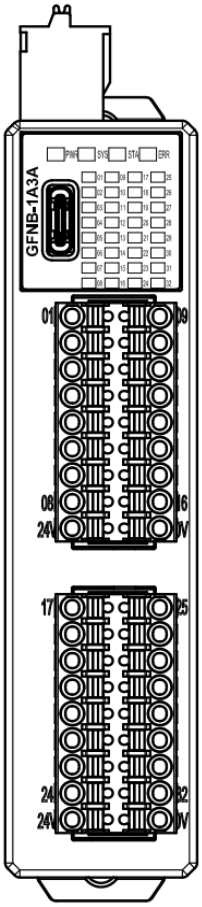


Fig 6. 1

Note: USB data cable configuration is for a single integrated module.

6.2 Module Parameter Explanation

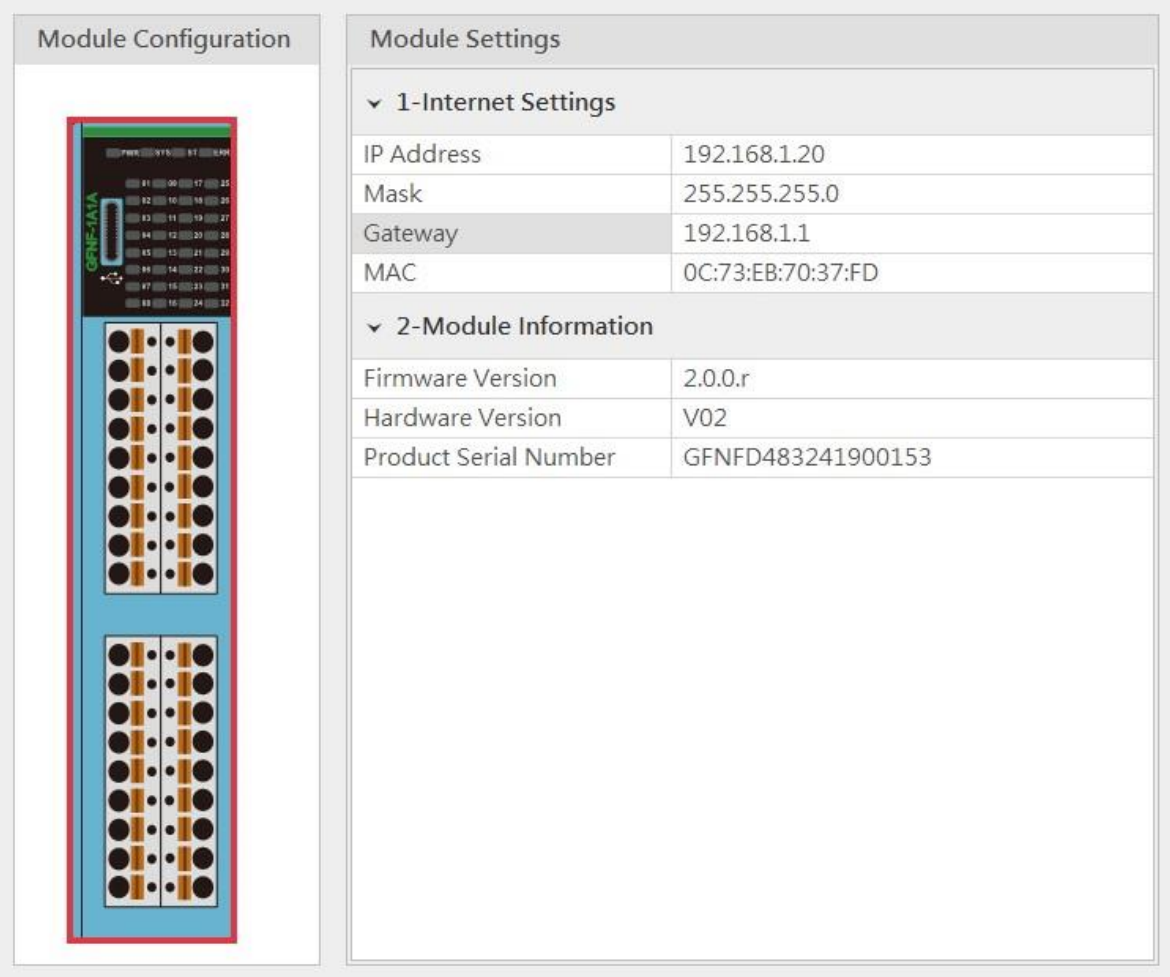


Fig 6. 2 Integrated Module Parameters

6.2.1 General Settings

- Channel # Restore Time: If unset, it defaults to 0, indicating that the restore function is not enabled.

  If the timeout parameter is set to 1000, it means that within 1 second, the module must exchange IO data with the host computer. If no data exchange occurs within this set time, the module will set the output channels to 0. This feature is supported by models with digital outputs only (GFNF-3A3A/GFNF-4A4A/GFNF-1A3A/GFNF-2A4A

6.2.2 Internet Settings

- IP Address: Can be configured in IPv4 network address format, with a default factory setting of 192.168.1.20.
- Subnet Mask: Configurable; default setting is 255.255.255.0.
- Default Gateway: Configurable; default setting is 19.168.1.1.
- Physical Address: Not configurable; MAC address is factory-set for network identification of different device modules.

6.2.3 Module Information

- Firmware Version: Current module firmware version
- Hardware Version: Module hardware design version
- Product Serial Number: Unique identifier for Daudin products

As shown in Figure 6.2, all parameters (except MAC) can be configured as needed.

After completing the settings, proceed to upload the parameters as shown in Figure 6.3.

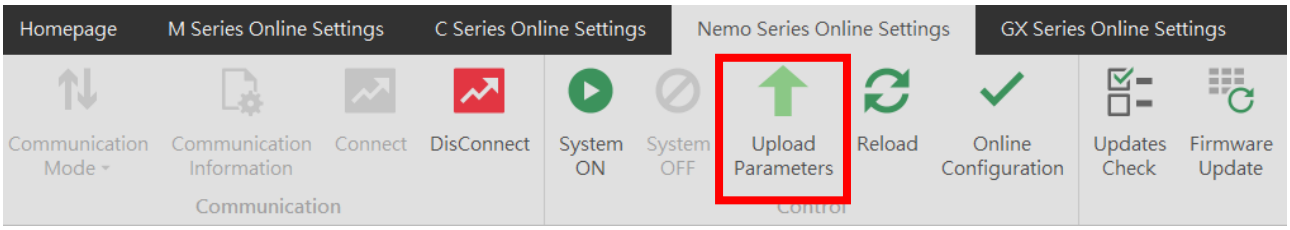


Fig 6. 3 Upload Parameters

⚠ Before proceeding with relevant settings, the system operation must be paused。

6.3 Factory Defaults

Apart from setting parameters through i-Designer, users can also reset system parameters using the reset button located inside the side casing.

Press Time/Mode	Application Mode
Light Press (<6 seconds)	Module restart (RESET)
Long Press (>6 seconds)	Restore default parameters (Application Mode)[Note]

Note: When the user presses the reset button for more than six seconds, the ERR light will turn on red. After releasing the button, the red light will flash, indicating that the default parameters have been restored.

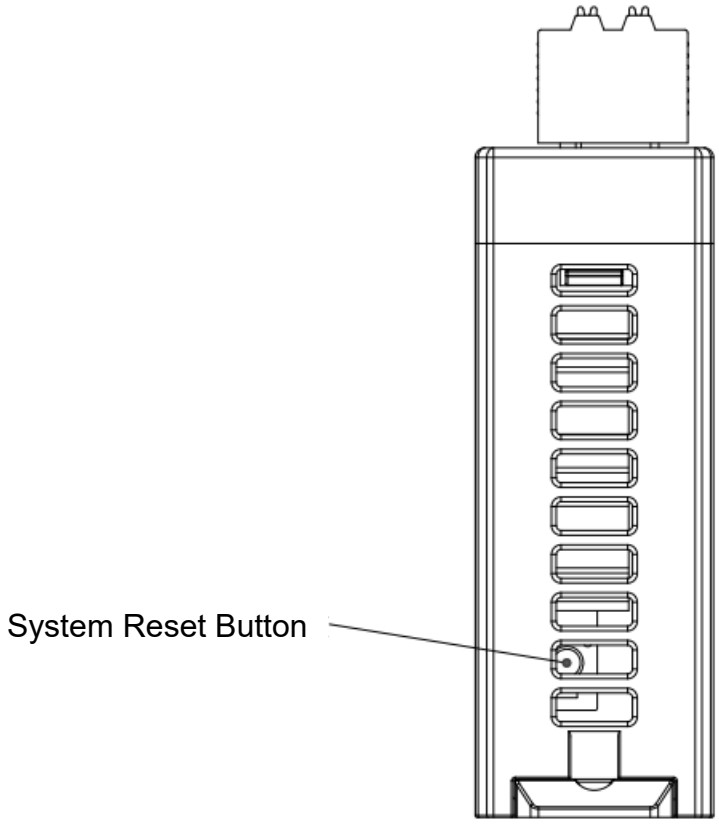


Fig 6. 3 System Reset Button

7. Appendix I: i-Designer Instructions

7.1 Installation

Download the i-Designer program from the official website, then click on the program (as shown in the figure) to install it

Fig 7. 1 Program Icon

After reading the user agreement, please check the box and click Start Installation.

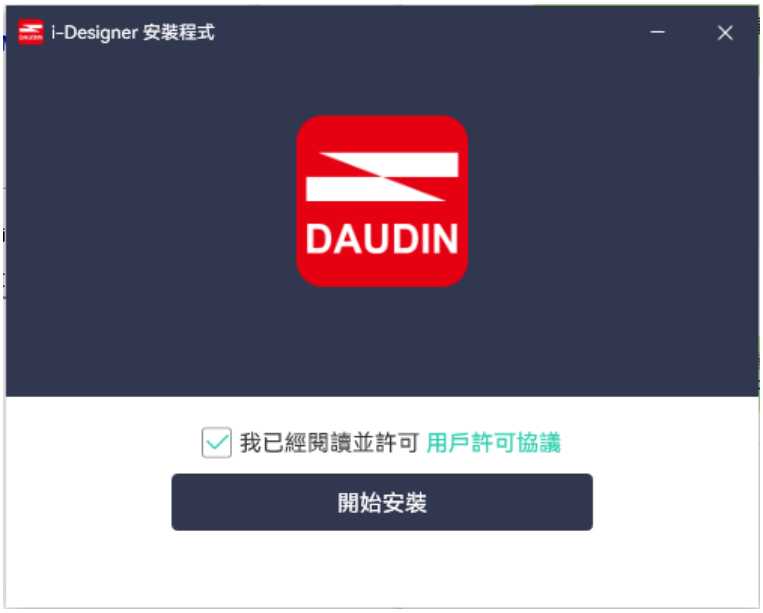


Fig 7. 2 Click Start Installation

During installation, the progress will be displayed.

Fig 7. 3 Installation Progress

Once the software installation is complete, you can choose to run it immediately by clicking the Finish button.

Fig 7. 4 Installation Complete

7.2 UI Screen Description

After installation, locate the program icon on the desktop and click it to open the settings screen (see the figure below).

Fig 7. 5 Program Icon

The screen is organized as follows, from top to bottom:

I. Tab Area: Select different product series or switch languages.

II. Function Key Area: Displays different function keys based on the selected tab.

III. Display and Configuration Area: Shows the module status and settings.

IV. Progress Display Area: Displays the progress of various functions in percentages, helping users understand the current execution status, such as configuration or updates.

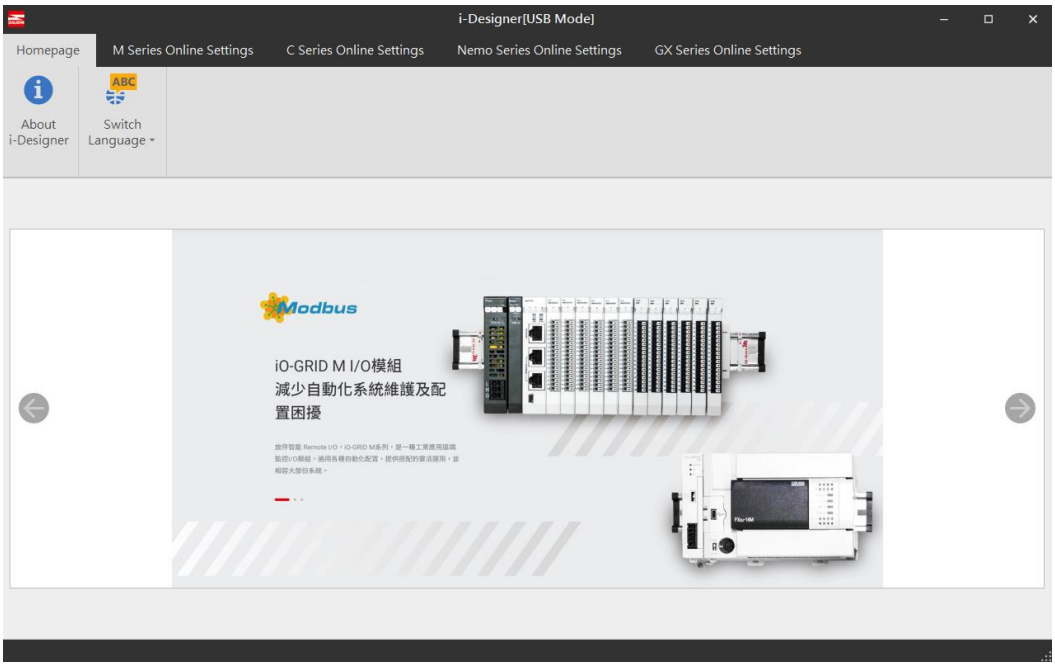


Fig 7. 6 Default Homepage

7.2.1 Tab Area：

(1) Homepage Tab: Provides information about i-Designer and options for switching the language. Refer to sections 7.2 and 7.3 for more details.

(2) Product Settings Tab: Used for setting parameters for various IO-GRID product series.

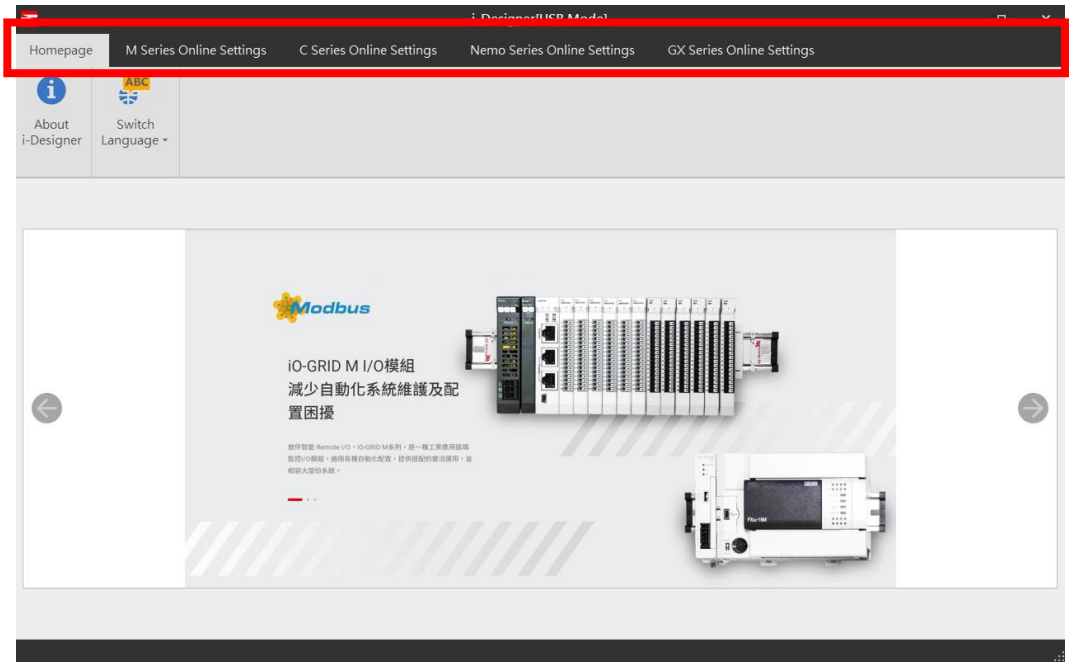


Fig 7. 7 Tab

7.2.2 Function Key Area：

The function keys displayed here vary based on the selected tab and product.

The following functions are available:

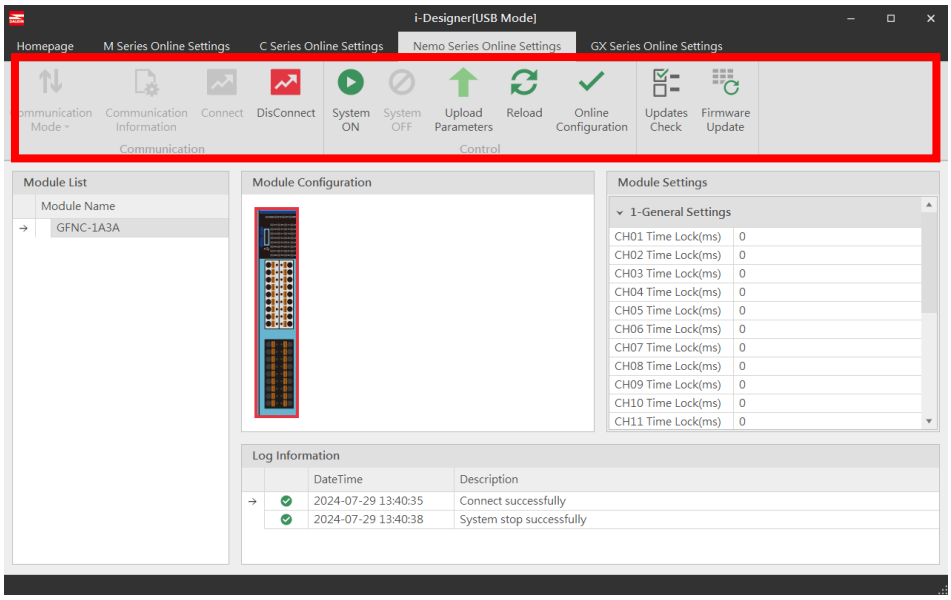
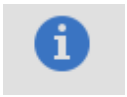


Fig 7. 8 Function Key Area

圖示	名稱	說明
	About i-Designer	Shows software version information.
	Switch Languages	Switches between Traditional Chinese, Simplified Chinese, and English.
	Connection Mode	Offers automatic or manual module connection modes.
	Connect	Connects to the module.
	Disconnect	Disconnects from the module.
	System Stop	Temporarily stops the module system.
	System Running	Starts the module system.
	Upload Parameters	Updates the module settings.
	Online Adjustment	Detects IO point status while connected.
	Firmware Update	Manually updates the module firmware.

7.2.3 Display and Configuration Area：

1. Module List: Displays the models of the connected modules; double-click to access the settings page for the module.
2. Module Layout: Shows the actual configuration diagram of the connected modules.
3. Module Parameter Settings: Parameters can be modified and uploaded only when the system is stopped.
4. Log Information: Displays status messages for the modules.

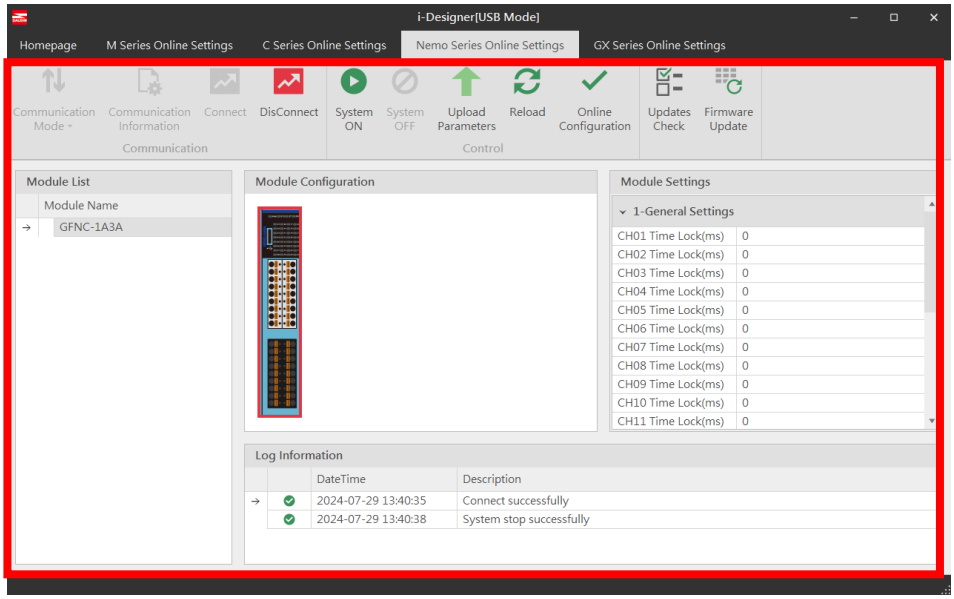


Fig 7.9 Display and Configuration Area

7.3 i-Designer Information Verification

Click on the homepage → About i-Designer

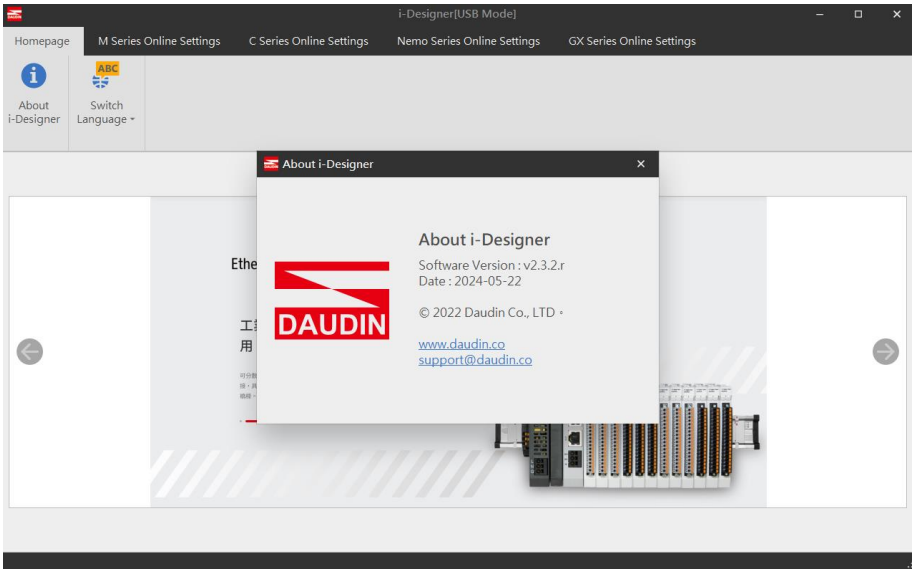


Fig 7. 10 Software Information

7.4 Language Settings

Click on the homepage → Switch Language. i-Designer currently supports three languages: Traditional Chinese, Simplified Chinese, and English. Use this feature to change the language.

Fig 7. 11 Language Selection

7.5 COM Port Connection Settings

i-Designer communicates with iO-GRID modules primarily through the COM Port interface. The connection mode can be either automatic module search or manual COM Port connection.

I. In automatic search mode, i-Designer will automatically search for devices on the COM Port to connect.

II. n custom mode, if the automatic search mode cannot connect to the device, it is recommended to use the custom mode to connect to the iO-GRID.Before setting up the connection, confirm the module COM Port interface number on your system as shown in Figures 7.13-7.16.

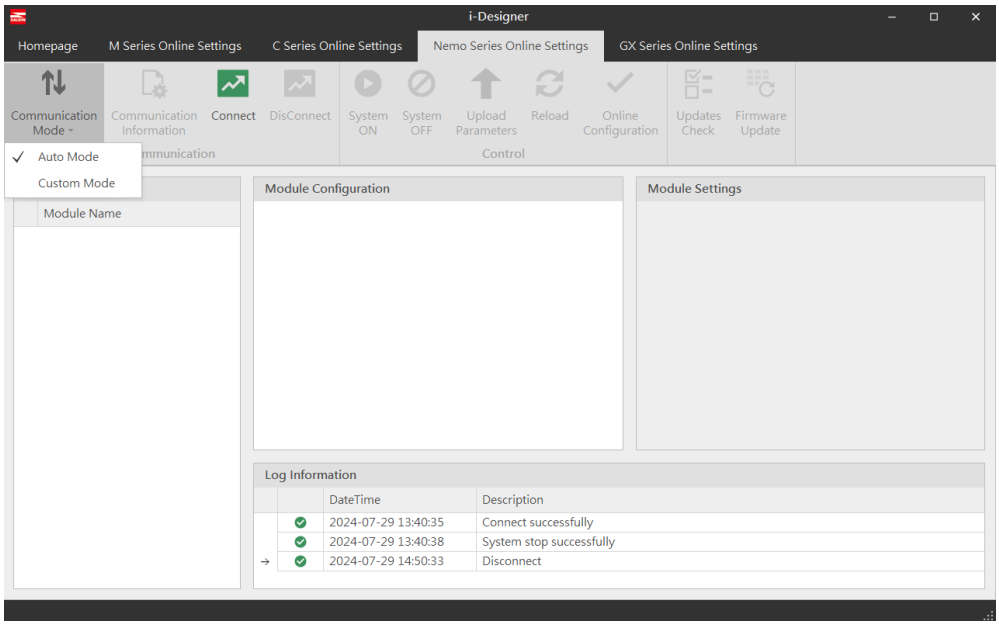


Fig 7. 22 Connection Mode Selection

Find the device number in Device Manager → Ports (COM & LPT).

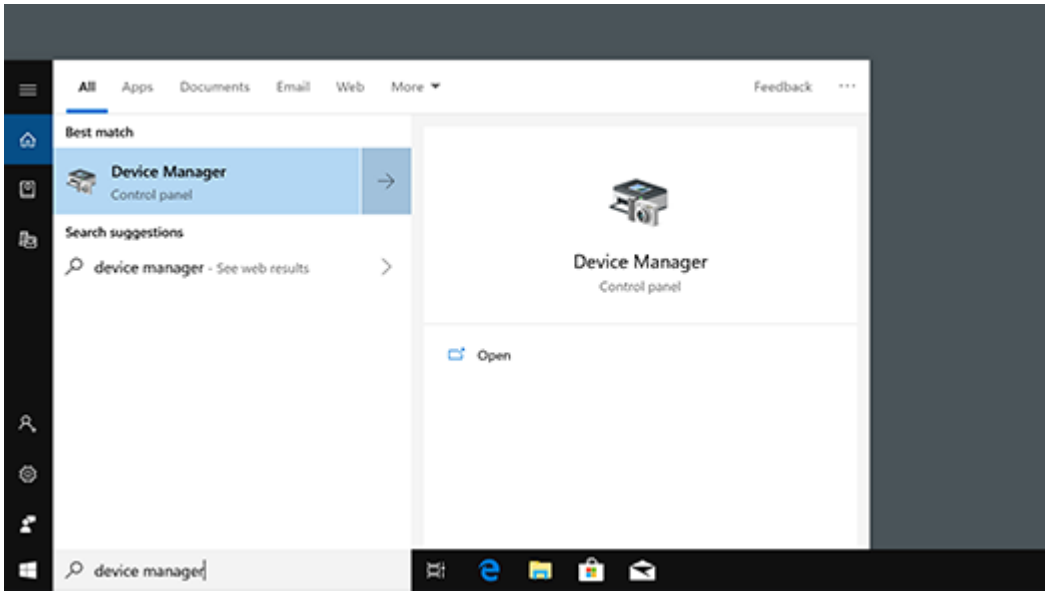


Fig 7. 33 Searching Device Manager

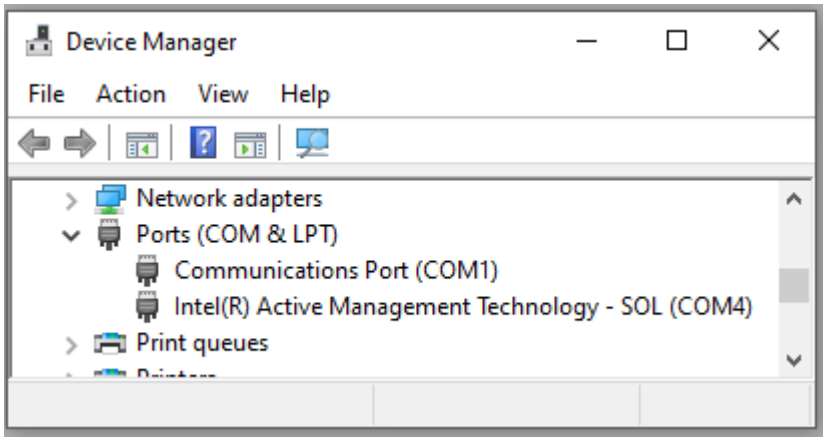


Fig 7. 44 Confirming Device Manager COM Port Number

After selecting custom mode, click on connection information to set the connection parameters.

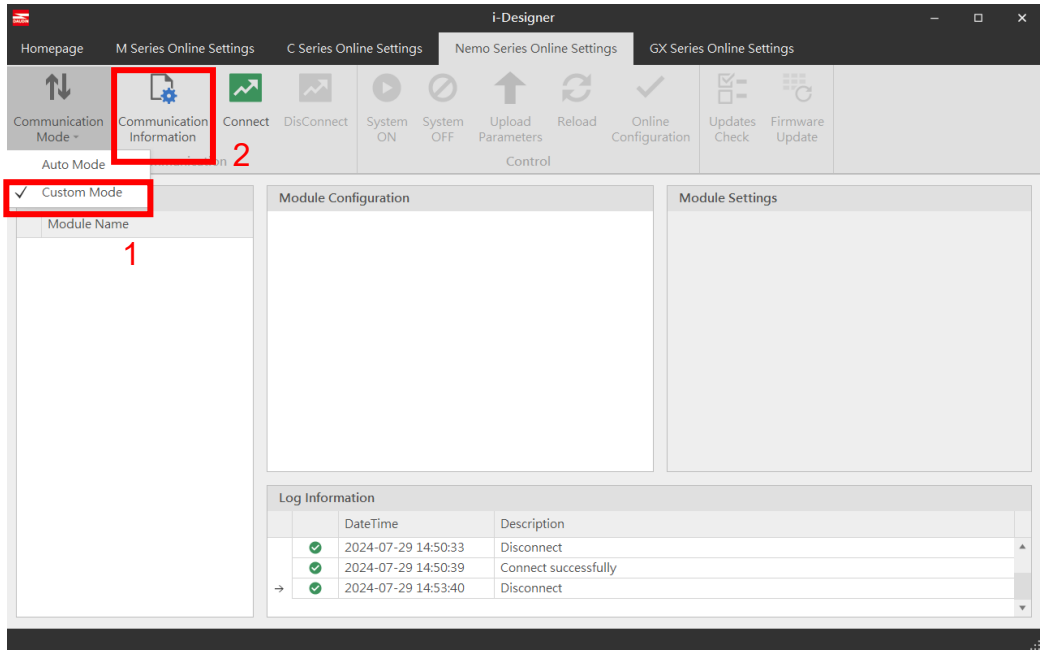


Fig 7. 55 Custom Mode Connection Settings

Enter the COM Port connection number from Device Manager and save it.

You can then proceed with the connection.

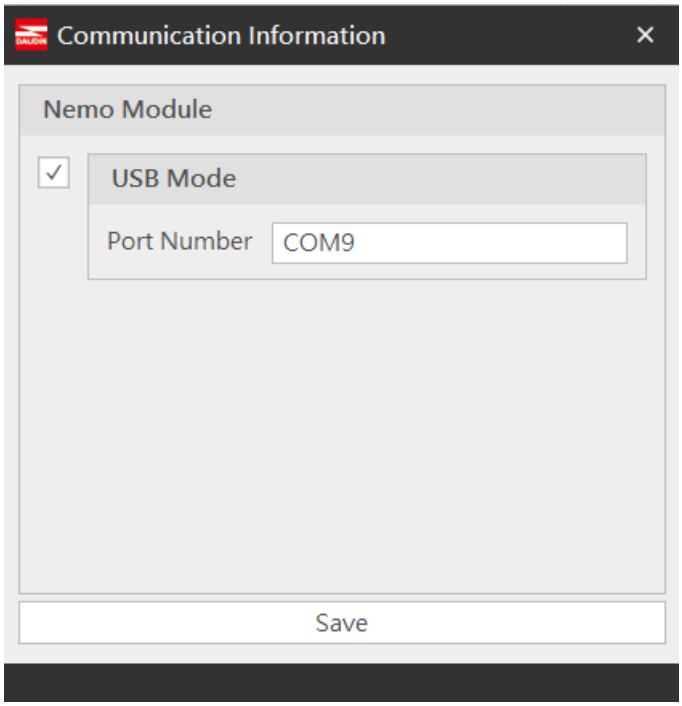


Fig 7. 66 Setting Connection COM Port

7.6 Connection Setting Instructions

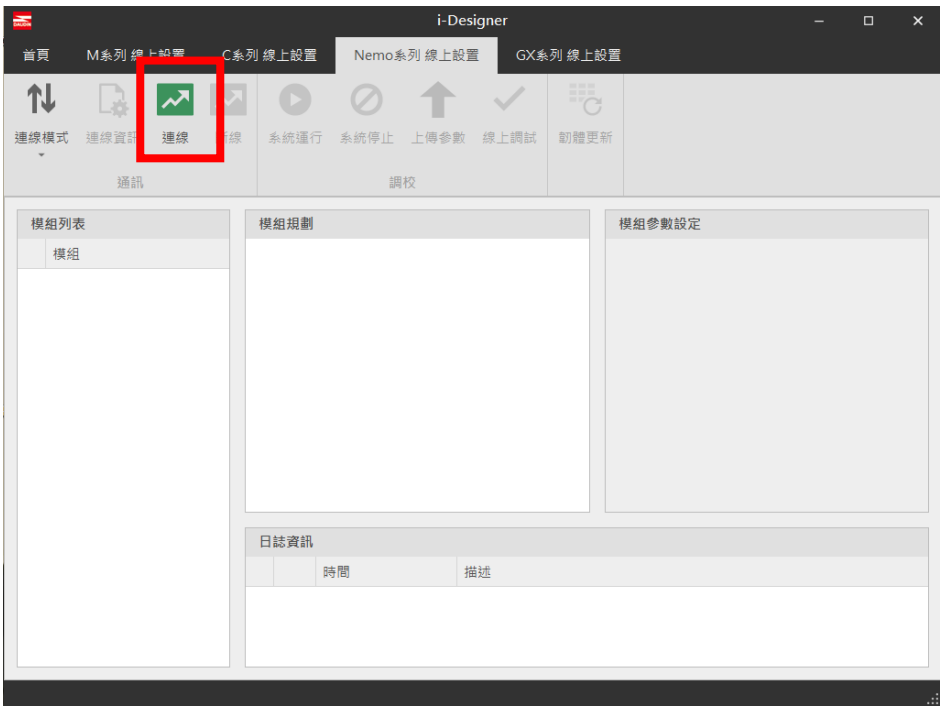


Fig 7. 77 Setting Connection

After a successful connection, the connect button in the function key area will be hidden, and the disconnect and system stop buttons will be displayed, as shown in Figure 7.18.

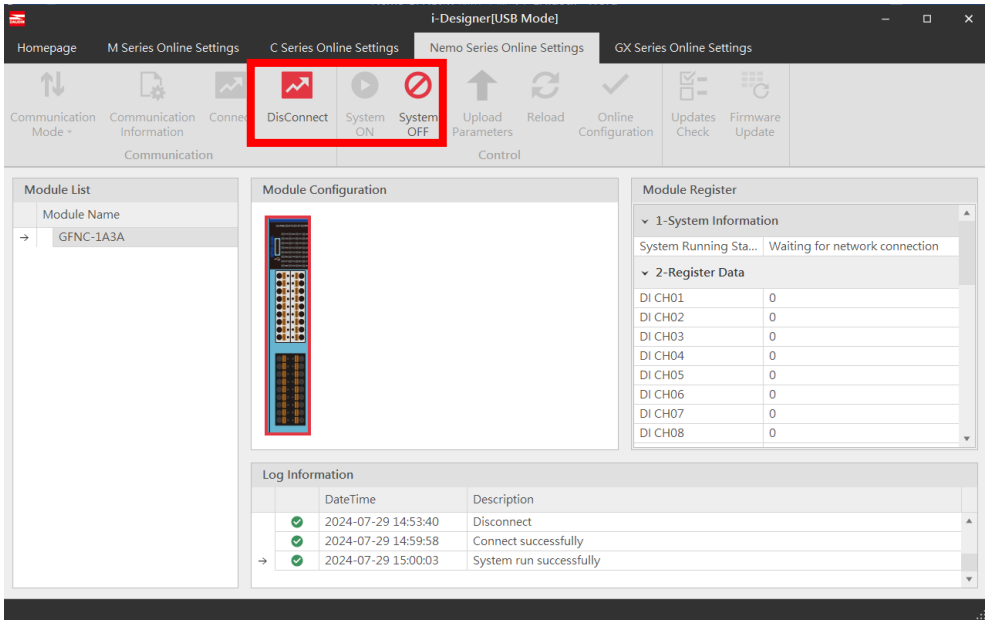


Fig 7.18 Connection Status Diagram

he system must be stopped to set module parameters, as shown in Figure 7.19.

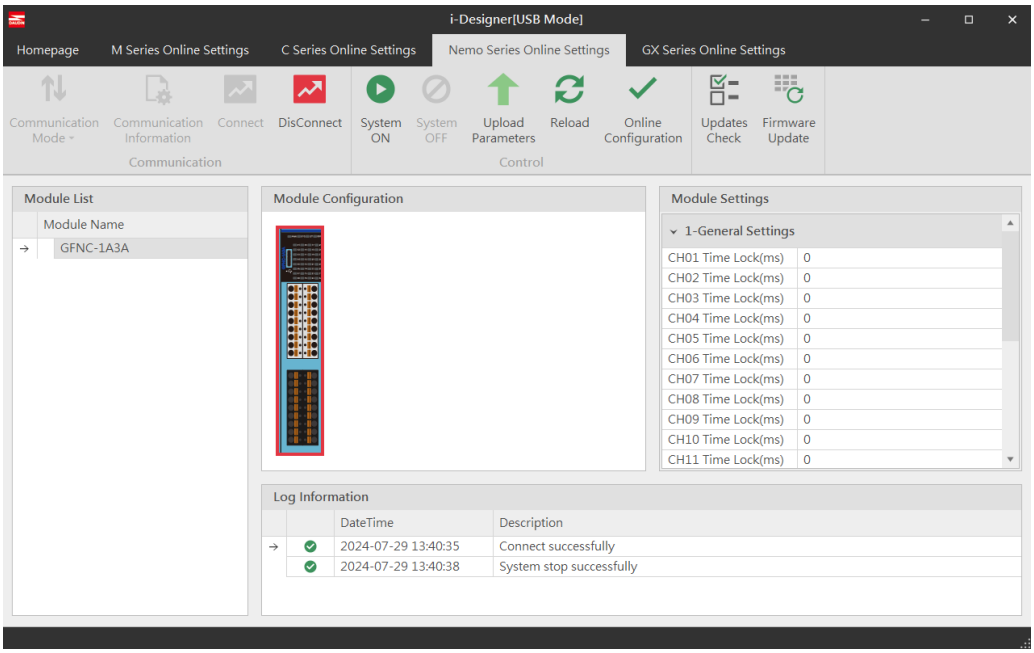


Fig 7.19 System Stop Screen

7.7 Parameter Update Instructions

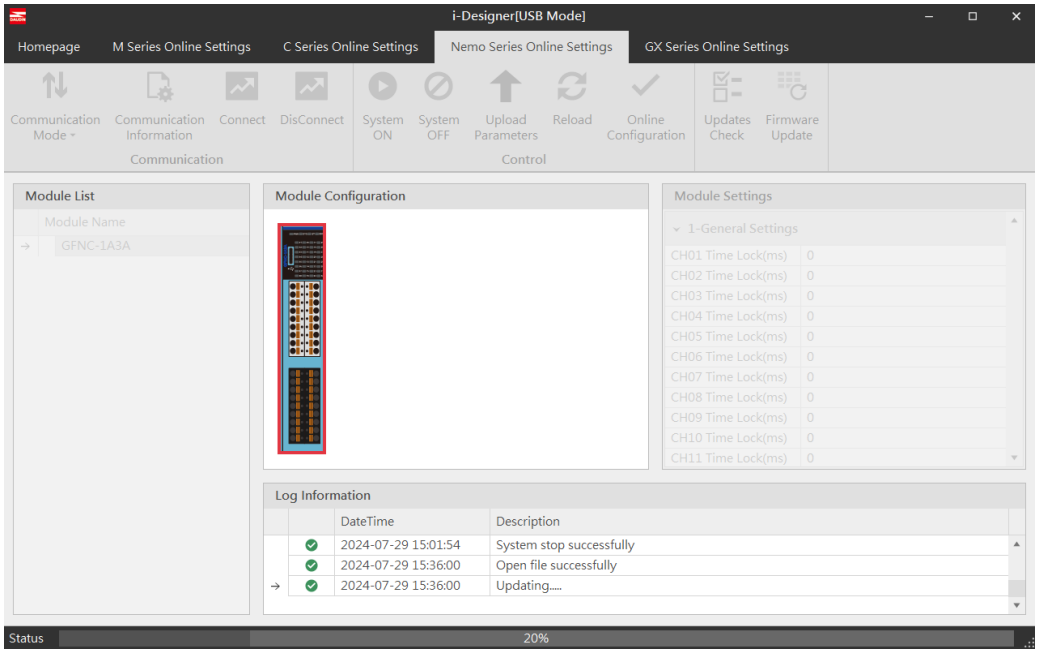


Fig 7.20 Screen After Uploading Parameters

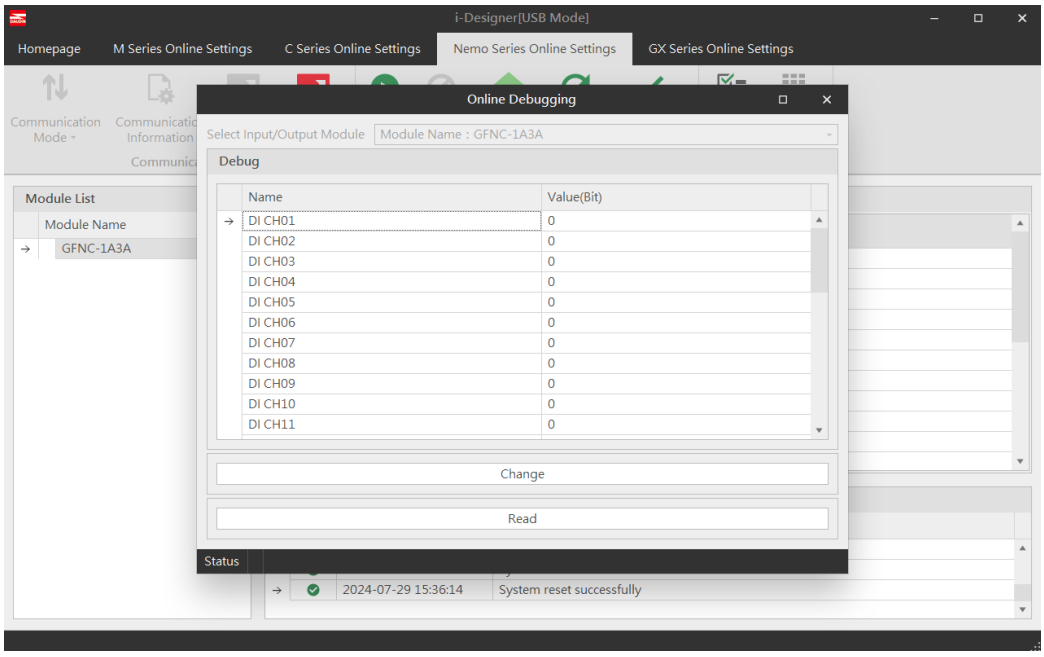
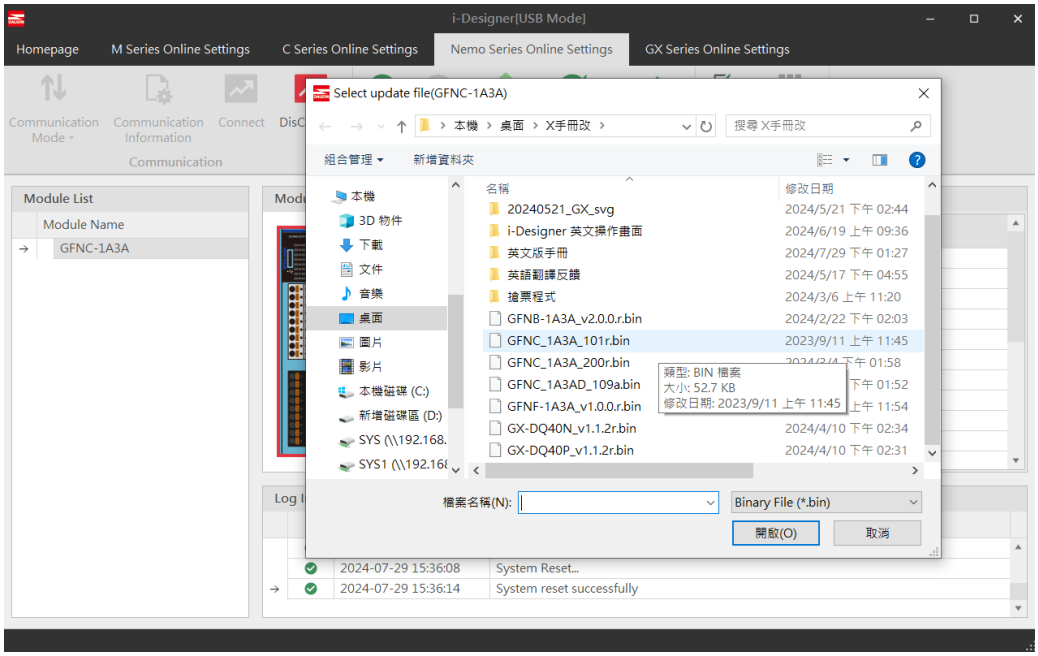


Fig 7.21 Online Adjustment Screen

7.8 Firmware Update Instructions

Click on Firmware Update, select the firmware file, and click Open to start the update.



Wait for the firmware update progress bar to complete, and the system will restart automatically.

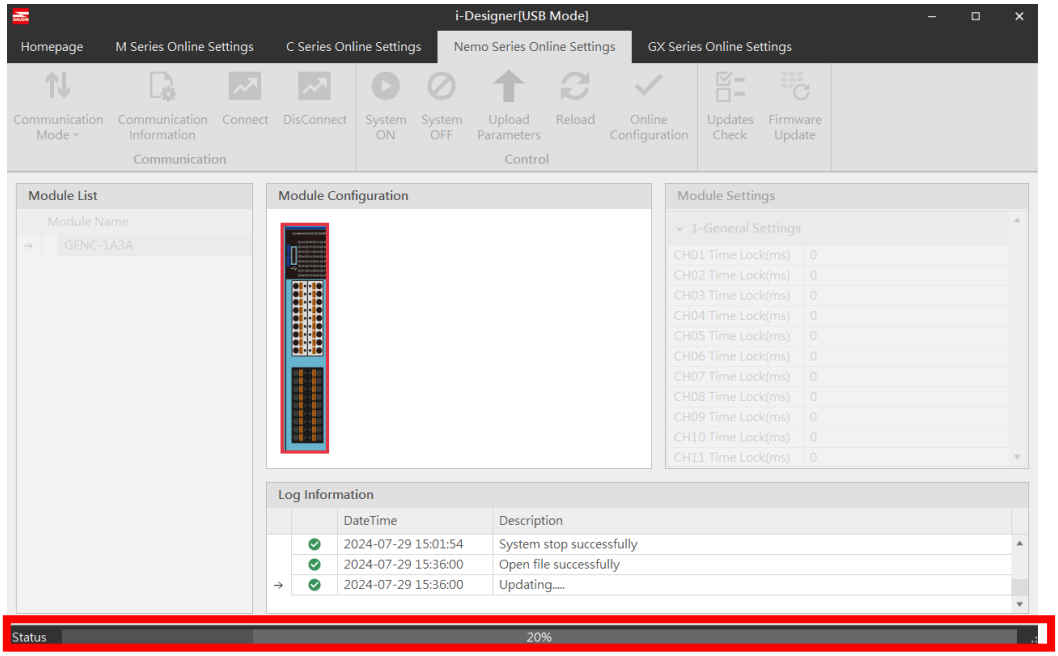


Fig 7.22 Firmware Update Screen