

NexAIoT Co., Ltd

nDAS Serial

User Manual (1.0)





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Chapter 1. nDAS Introduction

The nDAS software specification is shown in the Table 1-1. Note : To ensure system security, please logout after using the system.

nDAS				
System				
Browser	Google Chrome			
Interface Language	English, Traditional Chinese,			
Interface Language	Simplified Chinese, Japanese, Korean			
System Log	Maximum of 500 lines allowed.			
Login Timeout	The system will automatically log you out if there is no			
	activity for 30 minutes.			
General mode allows a maximum	16			
number of connections				
The database page allows a	1			
maximum number of connections				
	<u>I/O Module</u>			
ns050	8 Digital Input Channel, 8 Digital Output			
ns051	16 Digital Input Channel			
ns056	16 Digital Output Channel			
ns017	8 Analog Input Channel			
	Script specification			
CALC	Up to 100. (00 ~ 99) •			
MODBUSSTR	The addresses can range from 1 to 65535, with data			
MODDUSSIK	stored in Input Register (3x)			
MODBUSINT	The addresses can range from 1 to 65535, with data			
	stored in Input Register (3x)			
MODBUSUINT	The addresses can range from 1 to 65535, with data			
	stored in Input Register (3x)			
MODBUSBIT	The addresses can range from 1 to 65535, with data			
	stored in Input Status (1x)			
MODBUSHSTR	The addresses can range from 1 to 65535, with data			

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	stored in Holding Register (4x)	
MODBUSHINT	The addresses can range from 1 to 65535, with data	
WODDUSHINI	stored in Holding Register (4x)	
MODDUCHUNT	The addresses can range from 1 to 65535, with data	
MODBUSHUINT	stored in Holding Register (4x)	
MODDUCUDIT	The addresses can range from 1 to 65535, with data	
MODBUSHBIT	stored in Coil Status (0x)	
<u>C</u>	ommunication protocol	
	Data is stored in Coil Status (0x) and Holding Register	
Modbus	(4x). System status is stored in Input Status (2x), where	
	each status is represented by 1 bit.	



Chapter 2. nDAS Startup and Usage

2.1 Launching nDAS

Before using this software, it is essential to connect the power supply. For detailed instructions on the startup procedure, please refer to the electrical schematic diagram.

2.2 DIP Function Definition.

The DIP switch is used for initializing LAN port settings, Wi-Fi settings, and safe mode in the nDAS software. To enable the functionality of the DIP switch, it is necessary to power off and restart the nDAS device. The definitions of the DIP switch functions are provided in Table 2-1.

Table 2-1 DIP function definition		
DIP Status	Content	
DIP SW1 ON	LAN1 initial IP: 10.0.0.1 LAN2 initial IP: 11.0.0.1	
DIP SW1 OFF & DIP SW2 ON	Wi-Fi is AP Mode	
DIP SW1 ON & DIP SW2 ON	Safe Mode, please refer to section 2.2.1	

Table 2-1 DIP function definition

Please note that in Safe Mode, although an IP address is still configured for the LAN, if an external network interface is connected, there will be two IP addresses present.

2.2.1 Safe Mode

The nDAS software provides users with a safe mode option. In case the software experiences abnormalities that prevent the web page from opening correctly, you can enter safe mode and choose how to restart the nDAS software (as shown in Figure 2-1). Please refer to Table 2-2 for detailed instructions and explanations.

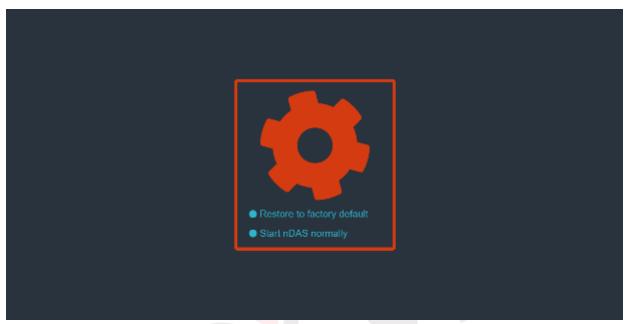


Figure 2-1 Safe Mode

	說明		
Restore to	Remove the preferences, OPCUA, database, project, user's operator,		
factory default	and .htpasswd, then restart.		
	The automatic loading of projects is not enabled (please refer to section		
	4.1.1.1 for information on how to enable this feature). You can access		
	the nDAS software to modify the settings. This situation typically		
Naumal	arises when there are scripts or other configurations within the project		
Normal	that cause the autoload feature to result in a crash of the nDAS		
	software. However, it is essential to have knowledge of the login		
	credentials (including the account password if Sign-In Password is		
	enabled, please refer to section 4.1.1.1 for information on this feature).		

Table 2-2	Restart th	ie nDAS	software	in safe	mode
10010	1				

2.3 LED Definition

The definitions of the LED indicator lights are depicted in Table 2-3.

Table 2-3 LED definition LED definition		
	System status: The green light signifies normal operation with network services enabled, while the red	
LED1	light indicates an error. When nDAS is powered on, the green light briefly turns off, it will turn on when nDAS system boot up.	
LED2	Network status: In Wi-Fi mode, the red light signifies being in AP mode, while the green light indicates being in infrastructure mode. If nDAS doesn't have Wi-Fi, the green light signifies a wired network connection, while its absence indicates no wired network connection.	
LED3	For Wi-Fi in infrastructure mode, the intensity of the Wi-Fi wireless signal is indicated by the strength of the green light.	
LED4	For Wi-Fi in infrastructure mode, the intensity of the Wi-Fi wireless signal is indicated by the strength of the green light.	
LED5	For Wi-Fi in infrastructure mode, the intensity of the Wi-Fi wireless signal is indicated by the strength of the green light.	
LED6	For Wi-Fi in infrastructure mode, the intensity of the Wi-Fi wireless signal is indicated by the strength of the green light.	

Table 2-3 LED definition

2.4 Software Mode

This software has two modes: the view mode and the general mode (with administrative privileges). The introduction of each mode will be explained in subsequent sections.

Note : Data captured by the software will only be written into the database and transmitted during operation in these two modes.

2.4.1 View Mode

For unauthorized users, only viewing software operations and chart presentation status is available. The chart presentation area displays the I/O status(as shown in Figure 2-2), and the Modbus Channel chart presentation displays the Modbus status (as shown in Figure 2-3) \circ

Note : If Modbus Channel is not enabled, the status of Modbus Channel in the status list will be hidden.

Note : If the drawing option of Modbus Channel is not selected, the Modbus chart display area will not show the chart.



Figure 2-2 View Mode



	Project Name	Tool E	Bar - • ×
← → C ▲ 不安全 10.12.1.209	I/O, Modbus Channel Statu	18	● 순 ☆ ≱ 팩 Ⅱ 🛯
nDAS nDAS6050 - test.ndas	Modbus Channel Chart		1 🖨 🖬 🎝 🕩 😧
Status Calc	TCP00.Bit_CH0	TCP00.Bit_CH1	TCP00.Bit_CH2
DI	17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34	17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34	17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34
- ■ DI_00 -0			
- DI_01	1		1
-0 - DI_02			
-0 - ■ DI 03	0	0	0
j-0			
- ■ DI_04 -0			
- III DI_05	TCP00.Bit_CH3	TCP00.Bit_CH4	TCP00.Bit_CH5
-0 - ■ DI 06	17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34	17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34	17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34
I-0			
- ■ D1_07 -0	1		1
DO - DO_00			
j-0			
- ■ DO_01 -0			
- DO_02	TCP00.Bit_CH6	TCP00.Bit_CH7	
	17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34	17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34	
-0 - ■ DO_04			
-0	,		
- DO_05 -0			
- DO_06	0 	0	
-0 - ■ DO_07			
1-0			

Figure 2-3 View Mode-Status of Chart Presentation

2.4.2 General mode (with administrative privileges)

A user with administrative privileges (as shown in Figure 2-4) has the ability to control the software's startup and shutdown, as well as load other projects. By clicking on the toggle view icon in the toolbar, it is possible to switch between normal and management modes (as shown in Figure 2-5) \circ

Note : If Modbus Channel is not enabled, the status of Modbus Channel in the status list will be hidden.

Note : If the drawing option of Modbus Channel is not selected, the Modbus chart display area will not show the chart.

📭 nDAS × +	Project Name		Tool Ba	ar 🖛	~ - σ ×
← → C ▲ 不安全 10.12.1.209		1.0			* 순 ☆ 🛊 파 🖬 🔕 :
	I/O, Modbus Ch	annel Status			
nDAS nDAS6050 - test.ndas	Plot Signal of I/	0			2 🖬 🎝 🕩 🕄
Status	Calc	DI_00 DI_01 DI_02	DL03 DL04 DL06 DL06		
DI	57.4 57.5 57.6 57.7 57.8	57.9 58.0 58.1 58.2	58.3 58.4 58.5 58.6 5	8.7 58.8 58.9	59.0 59.1 59.2 59.3
- = DI_00	1				
-0 -0		-+-+-+-		+	
- DI_01 -0					
- <mark>=</mark> DI_02	haman an an a				
-0 - DL_03					- •
-0	1				
- DI_04					
-0 - I DL_05	·				
- DI_05	1				
- 🗖 DI_06	0				+ + + + + + + + + + + + + + + + + + + +
I-0					
- III_07		DO_00 DO_01 DO_02			
DO	57.4 57.5 57.6 57.7 57.8	DO_00 DO_01 DO_02	DO_03 DO_04 DO_05 DO_ 58.3 58.4 58.5 58.6 5	_06 DO_07 18.7 58.8 58.9	59.0 59.1 59.2 59.3
- DO_00 -0					
- DO_01					
- 0					
- DO_02					\rightarrow
- - DO_03	· · · · · · · · · · · · · · · · · · ·				
j-0				└──	
- DO_04					
-0 - DO_05					
j-0	0				\rightarrow
- DO_06 -0					
- DO_07					
1-0					

Figure 2-4 General mode (with administrative privileges)

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Figure 2-5 General mode (with administrative privileges) - Click on the "Switch Administrator Mode" icon.





2.5 OLED Display

nDAS OLED provides essential functionality settings, allowing users to view nDAS parameters or execute nDAS configurations through the OLED screen.

2.5.1 Introduction to nDAS OLED Icons.

nDAS OLED is designed with a 4-grid menu layout, allowing users to access various function settings through the menu, as show in Figure 2-6.



Figure 2-6 Main Menu Screen

2.5.1.1 Primary Function Menu

Icons	Introduction	Icons	Introduction
	Modbus	ሇ	I/O
i	System Information	Y	System Setting
5.1.2 Modbus Func	tion Menu	1121	Beta
Icons	Introduction	Icons	Introduction

2.5.1.2 Modbus Function Menu

Icons	Introduction	Icons	Introduction
COM0	COM Port	TCP00	TCP/IP Port

2.5.1.3 I/O Function Menu

Icons	Introduction	Icons	Introduction
DI	Digital Input	DO	Digital Output
AI	Analog Input		

2.5.1.4 Information Function Menu

Icons	Introduction	Icons	Introduction
Ē	System Information	윮	Network Interface
C	System Time/Date	9)	Free Space

2.5.1.5 Setting Function Menu

Icons	Introduction	Icons	Introduction
<u>ि</u>	Wireless(WIFI)		Project
	Screen Rotation	(+ +)	System Logout/Login
Ċ	Reboot System	î	Simulator

2.5.2 nDAS OLED Function Description

2.5.2.1 Modbus Function Menu

The Modbus Function Menu on the OLED screen includes the COM Port or TCP Port for Modbus Master (as shown in Figure 2-7). If the Modbus channel is already activated, clicking on the Port will bring up the menu screen, as shown in Figure 2-8(using Modbus TCP Master as an example). The Modbus channel status will be displayed on the screen. If the R/W mode includes Write Mode, clicking on the status position or rotating the OLED screen allows for value input. For detailed functionality information, please refer to section 4.1.2.

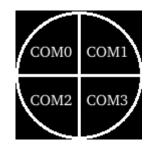


Figure 2-7 Modbus Master Port

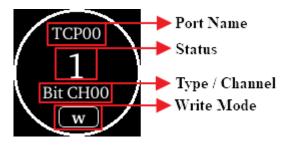


Figure 2-8 OLED Modbus TCP Master

2.5.2.2 I/O Function Menu

The I/O Function Menu on the OLED screen displays the current nDAS I/O modules, as shown in Figure 2-9(using Simulator as an example).

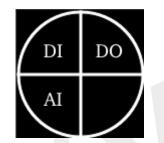


Figure 2-9 Simulator I/O Module

2.5.2.2.1 DI

Clicking on DI will bring up the menu screen (as shown in Figure 2-10), displaying the DI status on the screen. Rotating the OLED allows for channel switching. For detailed functionality information, please refer to section 4.1.3.1.

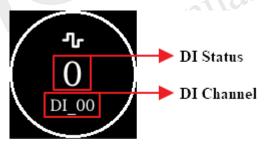


Figure 2-10 DI Module



2.5.2.2.2 DO

Clicking on DO will bring up the menu screen (as shown in Figure 2-11), displaying the DO status on the screen. Rotating the OLED allows for channel switching. If Write Mode is activated and the OLED is rotated, the output value can be changed. For detailed functionality information, please refer to section 4.1.3.2.

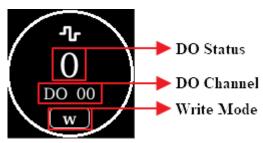


Figure 2-11 DO Module

2.5.2.2.3 AI

Clicking on AI will bring up the menu screen (as shown in Figure 2-12), displaying the AI status on the screen. Rotating the OLED allows for channel switching. For detailed functionality information, please refer to section 4.1.3.3.

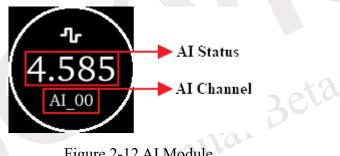


Figure 2-12 AI Module

2.5.2.3 Information Function Menu

The Information Function Menu on the OLED screen includes system information, network interface, system time, and storage space, as shown in Figure 2-13.



Figure 2-13 Information Function Menu



2.5.2.3.1 System Information

Icons	Introduction		
L.O.O.1n Version	Show system version.		
Test1234 Firmware	Show firmware version.		
Demo Dash Project	Show current project.		
Simulator I/O	Show I/O type.		



2.5.2.3.2 Network Interface

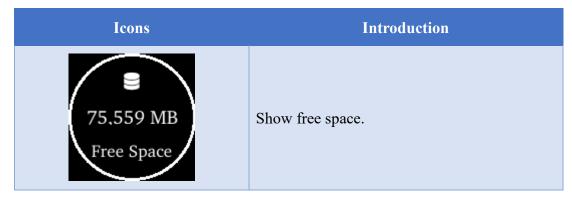
Icons	Introduction				
IP 10.12.1.182 enp3s0	Show the network interface name and IP address.				
MAC 00:10:F3:94 enp3s0	Show the network interface name and MAC information.				

2.5.2.3.3 System Time/Date

Icons	Introduction		
• 14:55:37 2023-06-02	Show the system time. Touch the icon above will display the system time zone.		
СST, +0800 ОК	Show the system time zone.		



2.5.2.3.4 Free Space



2.5.2.4 Setting Function Menu

The Setting Function Menu on the OLED screen includes wireless network, load project, OLED screen rotation, system logout/login, system restart, and simulator, as shown in Figure 2-14.

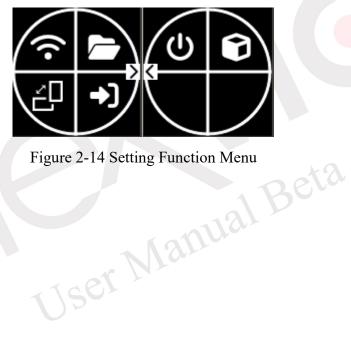


Figure 2-14 Setting Function Menu

2.5.2.4.1 Wireless (WIFI)

The wireless network supports both AP (Access Point) and Infrastructure modes, as shown in Table 2-4 and Table 2-5. For detailed functionality information, please refer to section 4.1.1.3.

Table 2-4 AP Mode			
Icons	Introduction		
ON IP 192.168.0.1 AP	 Show AP Mode IP • Touch the button above can enable/disable the wireless network functionality, as shown in Figure 2-15. Touch the button below can switch between AP and Infrastructure modes, as shown in Figure 2-16. 		
ON AP_SSID nDAS_78-44-7(AP	 Show AP Mode SSID • Touch the upper button enables/disables the wireless network functionality, as depicted in Figure 2-15. Touch the lower button allows you to switch between AP and Infrastructure Mode, as shown in Figure 2-16. 		

Table 2-5 Infrastructure Mode

Icons	Introduction	
	1 • Show Infrastructure Mode IP •	
	$2 \cdot$ Touch the upper button enables or disables	
IP	the wireless network functionality, as depicted	
10.12.1.215	in Figure 2-15.	
	3 • Touch the lower button allows you to switch	
	between AP and Infrastructure Mode, as shown	

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in Figure 2-16.
1 Show Infrastructure Mode SSID •
2 Touch the upper button, you can enable or disable the wireless network functionality, as depicted in Figure 2-15.
3 Touch the lower button, you can toggle between AP and Infrastructure Mode, as shown in Figure 2-16.



Figure 2-15 Activate/Deactivate wireless network.



Figure 2-16 Switch to AP Mode.

2.5.2.4.2 Load Project

The Load Project screen allows you to rotate the OLED to switch between different projects, as shown inFigure 2-17. Clicking the button loads the selected project, as depicted in Figure 2-18. For detailed functionality information, please refer to section 3.2.



Figure 2-17 Project Selection



Figure 2-18 Load Project

Note: It is necessary to activate the PIN Password option and log in on the OLED screen. Please refer to section 2.5.2.4.4 for more details.





2.5.2.4.3 Screen Rotation

Touch the menu screen will bring up the interface shown in Figure 2-19. Clicking on "Angle" allows you to physically rotate the OLED screen.

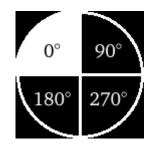


Figure 2-19 OLED screen rotation

2.5.2.4.4 System Logout/Login

It is necessary to activate the PIN Password option (please refer to section 4.1.1.5). Enter the password and click "OK".

2.5.2.4.5 System Reboot

Touch the system restart icon displays the screen as shown in Figure 2-20, asking the user if they want to restart the system.



Figure 2-20 Restart the system.

2.5.2.4.6 Simulator

Touch the system restart icon displays the screen (as shown in Figure 2-21), and clicking the button allows you to enable or disable the simulator (as shown in Figure 2-22).



Figure 2-21 Simulator Mode





Figure 2-22 Whether to enable/disable the simulator.



2.6 Login

Upon confirming the activation of nDAS, open a web browser on your computer and input the IP address of nDAS in the URL bar. This will display the view mode (as shown in Figure 2-23). Clicking on the login icon in the toolbar (as shown in Figure 2-24) to display the login dialog (as shown in Figure 2-25). The default username and password are shown in Table 2-6, while the parameters for the login dialog are listed in Table 2-7. To change the login password, refer to section 4.1.1.1.2. Please refer to section 2.4 for the two available modes of this software. Note : If there is no activity within 30 minutes of login, you will be forcefully logged out.

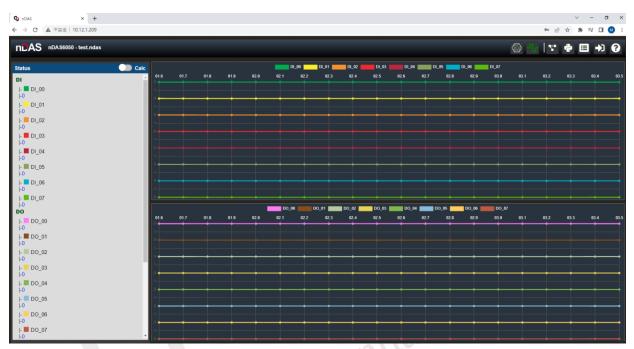


Figure 2-23 View Mode



Figure 2-24 Click login icon



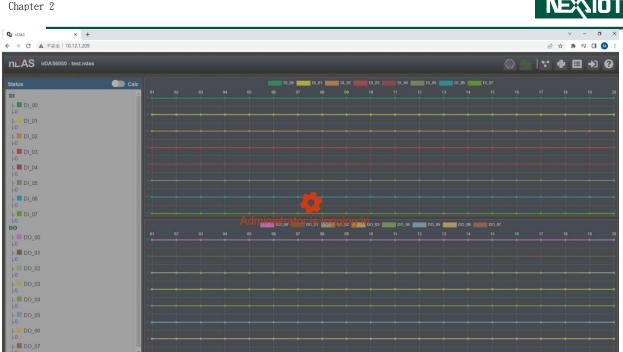
♥) Login	
Name:	
Password:	
	OK Cancel

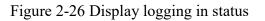
Figure 2-25 Login dialog

Account name	Default password	Premissions	
admin	123456	Have administrative privileges.	

Parameter name	Content	
Name	Input username	
Password	Input password	

Note : When an administrator login, the software interface will display "logging in" (as shown in Figure 2-26). To force a login, click anywhere on the screen (as shown in Figure 2-27), and a login dialog will appear (as shown in Figure 2-28). If the login is successful, the perviously logged-in administrator will be forced to logout.





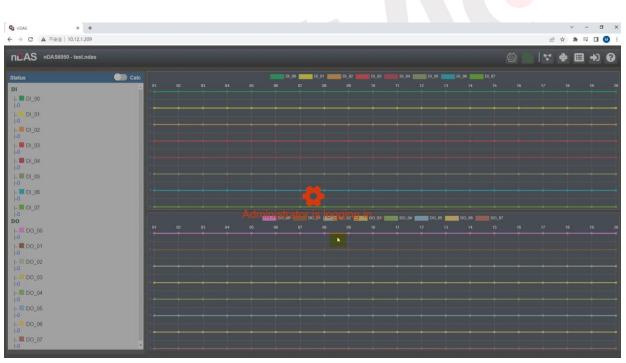


Figure 2-27 Click anywhere on the screen

NÐ



🔊 Login	
Name:	
Password:	
	OK Cancel

Figure 2-28 Login dialog

Chapter 3. Project Management

3.1 New Project

Click the "New Project" icon (as shown in Figure 3-1) to display the "New Project" settings dialog(as shown in Figure 3-2). After completing the settings, click "OK" to complete the project creation. Refer to Table 3-1 for the parameters of the "New Project" dialog.

Note: The project name is required and must not be duplicated with existing project names.



Figure 3-1 Click New Project icon

+ New Project			
Project Name:			
Author:			
Version:			
Comment:			10
	ок	Cancel	

Figure 3-2 New project settings dialog

Tuble 5-1 New project dialog parameter tuble	
Content	
Input new project name.	
This field is mandatory and the name must not	
be duplicated with any existing project names.	
Input the author for the new project, which is	
optional.	
Input the version for the new project, which is	
optional.	
Input the comment for the new project, which	
is optional.	

Table 3-1 New project dialog parameter table

3.2 Load Porject

Click on the project loading icon (as shown in Figure 3-3) to display the project loading dialog (as shown in Figure 3-4). Select the desired project name and click the "Load" button to complete the project loading process. Click the Delete button to delete the project. Please refer to Table 3-2 for the functionos of the buttons in the project loading dialog.



Figure 3-3 Click Load Project icon

- 5	Load Project	
	demo_project_00.ndas	
	demo_project_01.ndas	
	demo_project_02.ndas	
	Upload Download Delete Load Cancel	

Figure 3-4 project loading dialog

Button name	Button function
Upload	Selet "upload to remote device" to upload the local project to the remote device.
Download	Choose the project from the remote device and click "Download" to download it.
Delete	Selete the project name to be delete, click

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	the "Delete" button to remove the project.
Load	Choose the project to be loaded, click the "Load" button to load the selected project.
Cancel	Click the "Cancel" button to close the Load Project dialog.

3.3 Save Project

After completing the project creation, clicking on the save project icon (as shown in Figure 3-5) will save the current content of the project.



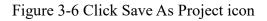
Figure 3-5 click Save Project icon

3.4 Save As Project

Clicking on the "Save As" icon (as shown in Figure 3-6) will display the "Save As" settings dialog (as shown in Figure 3-7). Once the settings are configured, clicking "OK" will complete the project save. Please refer to Table 3-3 for the parameters of the "Save As" dialog.

Note: The project name is required and must not be duplicated with existing project names.





• Save as		
Project Name:		
Author:		
Version:		
Comment:		
	OK Cancel	

Figure 3-7 Save As Project settings dialog

Parameter name	Content
Project Name	Input a name for the new saved project. This field is required and must not be the same as an existing project name.
Author	Input the name for the new saved project, which is optional.
Version	Input the version for the new saved project, which is optional.
Comment	Input the comment for the new saved project, which is optional.

Table 3-3 Save As Project parameter table

Chapter 4. Configuration of nDAS Functions

4.1 Function Configuration

The basic functionalities of nDAS are set in administrator mode. Clicking on the settings icon (as shown in Figure 4-1), the function displayed on the screen includes system, Modbus, I/O, data logging, cloud upload, OPCUA, SECS/GEM, and other functional settings. The operating methods for these functionalities will be explained in subsequent chapters.

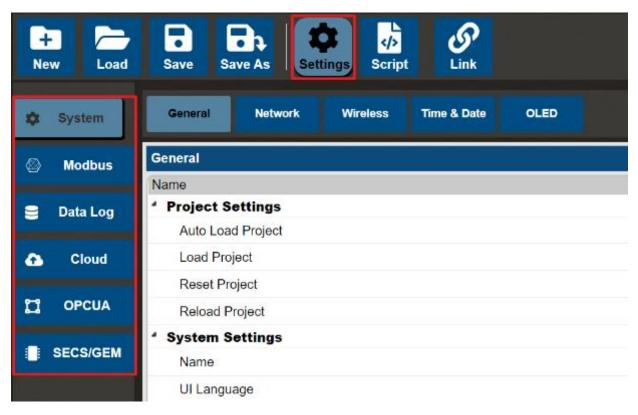


Figure 4-1 Basic Configuration for nDAS

4.1.1 System Settings

Clicking on the icon on the left menu (as show in Figure 4-2) will display the configuration parameters for nDAS' basic system (General), network settings (Network), wireless network (Wireless), time zone (Time & Date), and OLED.

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۰	System	General Network Wireless Time & Date OLED	
	Modbus	General	
ሇ	I/O	Name Project Settings	Value
		Auto Load Project	
8	Data Log	Load Project	5
		Reset Project	ប៊
•	Cloud	Reload Project	c
п	OPCUA System Settings		
•••	OFCOR	Name	
	SECS/GEM	UI Language	English
		Use Sign-In Password	
		Change Sign-In Password	
		Change Admin Password	۶
		Remote System Load	*
		IP For Remote System Load	•
		System Load	7

Figure 4-2 Click System Settings icon

4.1.1.1 General

Click on the icon to access the general system settings of nDAS (as show in Figure 4-3). The screen includes parameter settings for projects, systems, flows, network drive, and communication ports. Please refer to Table 4-1, Table 4-2, Table 4-3, Table 4-4, Table 4-5 for guidance.

General Network Wireless	Time & Date OLED	
General		
Name	Value	
Project Settings		
Auto Load Project		
Load Project		-
Reset Project		ច
Reload Project		c
System Settings		
Name		
UI Language	English	
Use Sign-In Password		✓
Change Sign-In Password		A

Figure 4-3 General System Configuration for nDAS

Parameter name	Content
Auto Load Project	If selected, the program will automatically load the previous project upon restart. It is checked by default.
Load Project	Refer to section 3.2 to load a project.
Reset Project	Clicking the button will reset the project.
NEQ10T	

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Reload Project	Clicking the button will reload the current project.

Table 4-2 System Settings

Parameter name	Content
Name	Set the name of the nDAS device.
UI Language	Select the interface language from the drop-down menu. The available languages are English, Traditional Chinese, Simplified Chinese, and Japanese. Please refer to section 4.1.1.1.1
Use Sign-In Password	Enable/disable sign-in login password.
Change Sign-In Password	Change the sign-in login password.
Change Admin Password	Clicking on this option will display the "Change Admin Password" dialog. Please refer to section 4.1.1.1.2.
System Load	Clicking on this option will display the "System Load" dialog. Please refer to section 4.1.1.1.8.
System Save	Clicking on this option will display the "System Save" dialog. Please refer to section 4.1.1.1.9.
System Restart	Reboot nDAS
System Updata	Update nDAS
Simulator	Activate/Deactivate the I/O simulator.
Firmware Version	Show firmware version
Script Watchdog Timeout(ms)	Set the maximum execution time for the script. If the execution time exceeds this limit, the script will be forcefully terminated. Note that this parameter is only valid for Python scripts.

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Table 4-3 Flow Setting

Parameter name	Content
Delay Time(ms) For Running	Input a value and set the delay time to view the display
Descending Operators	function of the flow.

Table 4-4 Network Drive

Parameter name	Content
Enable	Enable / disable network drive functionality
Anonymous	Enable / disable network drive anonymous mode
Name	Display name of network drive
Deservord	Enter network drive password (after entering, click the
Password	save button to apply)

Table 4-5 Communication Port

Table 4-5 Communication Port			
Parameter name	Content		
UDP Port	After clicking, the UDP port configuration window will appear.		
UDP Multicast Group Port	After clicking, the UDP multicast port configuration window will appear.		
TCP Command Port	After clicking, the TCP command port configuration window will appear.		
UDP Multicast Group	After clicking, the UDP multicast address		
Address	configuration window will appear.		

4.1.1.1.1 UI Language

This software supports four different interface languages, which are English, Traditional Chinese, Simplified Chinese, Japanese, and Korean. The language can be switched through the



system settings by selecting the language from a drop-down menu, as shown in the red box in

Figure 4-4.

* System Settings		
Name		
UI Language	English	~
Use Sign-In Password	English Traditional Chinese	
Change Sign-In Password	Simplified Chinese Japanese	
Change Admin Password	Korean	
Remote System Load	*	

Figure 4-4 System Settings – UI Language

4.1.1.1.2 Sign-In Password

Please select the option for login password in the system settings (as shown in Figure 4-5), which will prompt for confirmation to reload the webpage and log in (as shown in Figure 4-6). After clicking the confirmation, users will be prompted to log in (as shown in Figure 4-7). Please refer to Table 4-6 for the login name and password, and once the authentication is successful, the webpage will be reloaded.

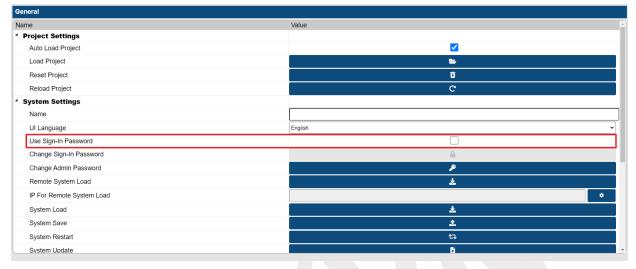
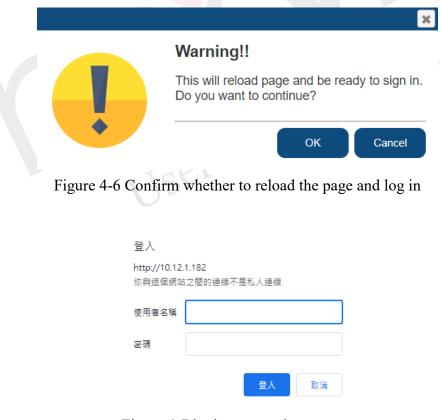


Figure 4-5 Click to start the webpage login password



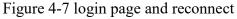


Table 4-6 RESTful API Basic Authentication authentication parameters

Parameter name

Content

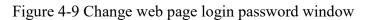


Username	admin
Password	123456(default)

4.1.1.1.3 Change Sign-In Password

Click on the "Change Webpage Login Password" button in the system settings (as shown in Figure 4-8), which will display a window for changing the webpage login password (as shown in Figure 4-9). Once the settings are complete, click "OK" to finalize the password change, and prompt the user to log in using the updated username and password. After successful login, the webpage will be reloaded. Please refer to Table 4-7 for the parameters.

eneral		
ame		Value
Project Settings		
Auto Load Project		
Load Project		E
Reset Project		ថិ
Reload Project		C
System Settings		
Name		
UI Language		English
Use Sign-In Password		
Change Sign-In Password		
Change Admin Password		P
Remote System Load		¥
IP For Remote System Load		•
System Load		Ŧ
System Save		£
System Restart		ti .
System Update		8
	→ Login Name:	
	ivame.	
	Password:	
	Orac forme Dava	
	Confirm Passwor	a.



OK

Cancel

Table 4-7 Change web page login password parameter table



Parameter name	Content
Name	Enter a name.
Password	Enter a password.
Confirm Password	Confirm password

4.1.1.1.4 Change Password

By clicking the "Change Password" button in the system settings (as shown in Figure 4-10), a dialog for changing the password in the administrator mode will be displayed (as shown in Figure 4-11). After completing the settings, click OK to complete the password change. For more details about the parameters, please refer to Table 4-8.

General	
Name	Value
٨	
4 System Settings	
Name	
UI Language	English 🗸
Change Password	P
Auto Load Project	
Load Project	~
Reset Project	С
System Load	*

Figure 4-10 Click "Change Password" button



Change Password			
Name:			
Current Password:			
New Password:			
Confirm New Password:			
	ОК	Cancel	
	OK	Gancer	

Figure 4-11 Change Login Password dialog

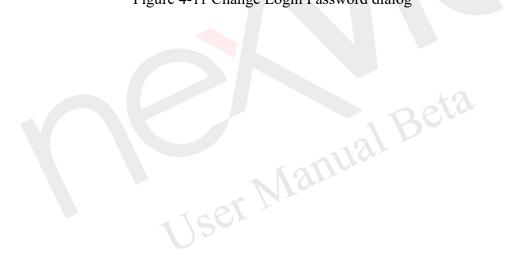




Table 4-8 Change the password parameter table				
Parameter name Content				
Name	Input account name.			
Current Password	Inputcurrent password.			
New Password	Input desired new password.			
Confirm New Password	Re-enter your desired new password.			





4.1.1.1.5 Load Project

Click on the load project button in the system settings (as shown in Figure 4-12), please refer to section 3.2 for the functionality.

General		
Name	Value	
•		
4 System Settings		
Name		
UI Language	English	¥
Change Password	۶	
Auto Load Project		
Load Project	6	
Reset Project	C	
System Load	Ł	

Figure 4-12 Click on "Load Project" in the system settings

4.1.1.1.6 Rest Project

Upon clicking the button and confirming, the parameter settings of the current project will be reset to initial status.

4.1.1.1.7 Reload Project

Click the button to reload the current project.

4.1.1.1.8 System Load

The software provides a system backup function. Click the "System Load" button in the system settings (as shown in Figure 4-13) to display the system load dialog (as shown in Figure 4-14). Click "OK" to confirm loading the selected file, or "Delete" to delete the file. Additionally, the software supports loading local backup files. Click the "Local File" button in the lower left corner of the system load dialog (as shown in Figure 4-15) to load the local system backup file into nDAS.

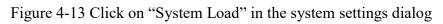
Note: If there are files with the same name in the loaded system backup file as those in the current system, they will be overwritten.

Note: To clear the current system's projects and system configurations when loading a system backup file, select the "Clear old files" option. The login password will also be changed to the one from the loaded system backup.

Chapter 4



General		
Name	Value	-
4		
* System Settings		
Name		
UI Language	Engish	-
Change Password	۶	
Auto Load Project		
Load Project	1	
Reset Project	c	
System Load	Ł	
System Save	۵.	



System Load
▷ 😒 C:/
Local File Clear old files Delete OK Cancel
Local File Clear old files Delete OK Cancel
Figure 4-14 System Load dialog
System Load
▶ 😤 C:/
Local File Clear old files Delate OK Cancel

Figure 4-15 System Load dialog (Local File)



4.1.1.1.9 System Save

The software provides a system backup function. By clicking on the "System Save" button on the system settings (as shown in Figure 4-16), you can select the items to be saved, including system settings, project, py files, and OPCUA security file (as shown in Figure 4-17). After confirming the selected items, clikc OK to display the system save dialog (as shown in Figure 4-18).

Once you have confirmed the storage path, enter the desired file name and click OK to complete the creation of the system backup file. The location of the stored file will be on the remote end (nDAS device). The software also supports local save, where you can click on the "Local File" button in the lower-left corner of the system save dialog (as shown in Figure 4-19) to store the system backup file locally.

General			
Name	Value		
٠			
System Settings			
Name			
UI Language	English		~
Change Password		P	
Auto Load Project			
Load Project		>	
Reset Project		C	
System Load		*	
System Save		â.	
Script Watchdog Timeout (ms)	60000	\$	

Figure 4-16 Click on the "System Save" button in the system settings dialog

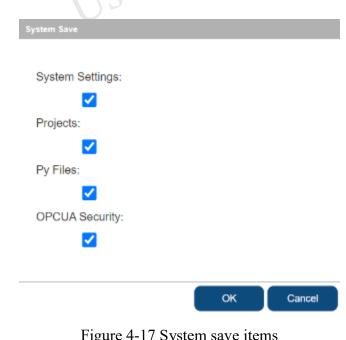
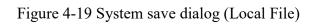




Figure 4-17 System save items



System Save	
▷ 😤 C:/	
·	
File Name:	
Local File Delete Save Cancel	
Figure 4-18 System save dialog	
i igure i i to system suve dialog	
System Save	
>	
File Name:	
Local File Delete Save Cancel	



4.1.1.2 Network

Click on the icon will take you to the nDAS network settings (as shown in Figure 4-20), which includes communication settings for the Ethernet network interface and the Bridge network interface.

٠	System	General Network Wireless Time & Date
뫎	Modbus	Network
		Name Value ^
ሇ	I/O	•
		4 eth0
9	Data Log	Interface eth0
		MAC 00-10-00-00-01
•	Cloud	IP Mode OStatic ODHCP
		IP (DHCP)
Ħ	OPCUA	Subnet Mask
	SEC S/GEM	Gateway
		Primary DNS

Figure 4-20 nDAS network configuration

4.1.1.2.1 eth Interface Setting

Table 4-9 contains the parameter settings for the Ethernet network interface.

	Parameter Name Parameter Content				
eth Network	Interface	Display network interface name			
Interface	MAC	Display MAC address			
	IP Mode	Switch to Static/DHCP			
	IP	IP address (if in Static Mode, you can enter it)			
	Subnet Mask	Subnet mask (if in Static Mode, you can enter it)			
	Geteway	Default gateway (if in Static Mode, you can enter it)			
	Primary DNS	Primary DNS server (you can enter it if in Static Mode)			
	Secondary DNS	Secondary DNS server (you can enter it if in Static Mode)			
	Status	Display network packet receive/transmit traffic			
	Apply	Click the button to save parameter changes			

Table 4-9 eth interface parameter settings



4.1.1.2.2 Bridge Interface Setting

Table 4-10 contains the parameter settings for the Bridge interface, which is used to connect multiple nDAS devices in a Daisy Chain topology using physical network cables.

Please be advised that before clicking on "Apply" and subsequently "Enable," it is essential to input the IP and Subnet Mask addresses. Only then will the Bridge interface connection take effect.

	Parameter Name	Parameter Content
Bridge Enable	Enable	Enable/Disable Bridge
Bridge Setting	Interface	Display network interface name
	IP	IP address (you can enter it if in Static Mode)
	Subnet Mask	Subnet mask (you can enter it if in Static Mode)
	STP	Enable/Disable Bridge STP mode
	Status	Display network packet receive/transmit traffic
	Apply	Click the button to save parameter changes
4.1.1.3 Wireless		Beta

4.1.1.3 Wireless

Click on the icon to access the wireless network settings (as shown in Figure 4-21), where you will find communication settings for the wireless network. Table 4-11 is the parameter settings for the wireless network.

\$	System	General Network Wireless Time & Date	
뫎	Modbus	Wireless	
		Name	Value
ഹ	I/O	۵	
		4 WLAN	
2	Data Log	Enable	
	Duta Log	Mode	Infrastructure Mode
•	Cloud	MAC	B4-8C-9D-73-89-7F
		Infrastructure Mode	
Ц	OPCUA	SSID	
	SEC S/GEM	Security Type	Open 🗸
	SECS/GEIW	Edit	ß
		C	· · · · · · · · · · · · · · · · · · ·

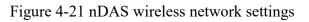


Table 4-11 Parameter settings for the wireless network			
	Parameter name	Content	
WLAN	Enable	Enable / Disable wireless network function.	
	Mode	AP / Infrastructure Mode	
	MAC	Display MAC address.	
Infrastructure	SSID	Edit SSID	
Mode	SSID Hidden	Hide SSID [Enable/Disable]	
	Used Channel	Channel	
	Security Type	Security Technology	
	Apply	Click the button to save parameter changes.	
Infrastructure	IP Mode	Fixed IP Mode	
Mode IP Setting	IP	Fixed IP: 192.168.0.1	
~~~~~g	Subnet Mask	Fixed Subnet Mask: 255.255.255.0	
	Gateway	Fixed Default Gateway: 192.168.0.1	
Centralized	SSID	Display SSID.	
Control Mode	Security Type	Display security type.	
	Edit	Edit wireless network parameters, please refer to the figure .	
	Scan	Click the button to display the list of currently available WiFi networks.	
Centralized	IP Mode	Switch to Static / DHCP mode.	
Control IP	IP	IP address (can be entered if in Static Mode.)	
Configuration	Subnet Mask	Subnet mask (can be entered if in Static Mode.)	
	Geteway	Default gateway (can be entered if in Static	
	Geteway	Mode.)	
	Primary DNS	Primary DNS server (can be entered if in Static Mode.)	
	Secondary DNS	Secondary DNS server (can be entered if in Static Mode.)	

# NEXIOT

Status	Display network packet receive / transmit traffic.
Apply	Click button to save parameters change.

#### 4.1.1.3.1 AP Mode

After switching the mode to AP Mode, as depicted in Figure 4-22, input the SSID and click on the Save button. Subsequently, nDAS will transition to AP Mode.

Wireless	
Name	Value
4 WLAN	
Enable	
Mode	AP Mode 🗸 🖬
MAC	B4-8C-9D-73-BA-AF
4 AP Mode	
SSID	nDAS_B4-8C-9D-73-BA-AF
SSID Hidden	
Used Channel	1
Security Type	Open 🗸

#### Figure 4-22 AP Mode Setting

#### 4.1.1.3.2 Infrastructure Mode

Upon switching the mode to Infrastructure Mode, click on the Edit button for Infrastructure Mode (as shown in Figure 4-23). This action will display the editing dialog window (as depicted in Figure 4-24). Input the SSID and select the desired security protocol. Finally, click on the Confirm button to complete the configuration.

Wireless		
Name	Value	4
4 WLAN		
Enable		
Mode	Infrastructure Mode	✓ □
MAC	B4-8C-9D-73-BA-AF	
⁴ Infrastructure Mode		
SSID	nDAS_80-D2-1D-E8-31-C7	
Security Type	Open	~
Edit	ď	
Scan	Q	

Figure 4-23 Infrastructure Mode

Edit Network				
Name	Value			
4				
4 SSID				
SSID	VIC7000 Seriers			
Security Type	WPA2-PSK 🗸			
4 WPA Cipher				
Pairwise	CCMP ~			
4 Authentication				
PSK				
	OK Cancel			

Figure 4-24 Infrastructure Mode Connection Setting

After clicking the Save button (as shown in Figure 4-25), wait for the connection and enter the IP of that domain in the web browser to reopen the settings page. The current wireless signal strength will be displayed in the toolbar at the top (as shown in Figure 4-26).

Wireless					
Name	Value				
⁴ WLAN					
Enable					
Mode	Infrastructure Mode	~ □			
MAC	B4-8C-9D-73-BA-AF				
Infrastructure Mode					
SSID	nDAS_80-D2-1D-E8-31-C7				
Security Type	Open	*			
Edit	ď				
Scan	Q				

Figure 4-25 Enable Infrastructure Mode

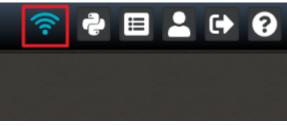


Figure 4-26 the icon of Wireless signal status

#### 4.1.1.4 Time & Date

Click on the icon to enter the time and date settings (as shown in Figure 4-27), and Table 4-12 is the parameter settings for time and date.



٠	System	General         Network         Wireless         Time & Date	
몲	Modbus	Time & Date	
		Name Value	
ሌ	I/O	⁴ Time & Date	
9	Data Log	Current Time 2022-10-17 13:09:18 CST	
<b>N</b>		Time Zone Asia/Taipei (CST, +0800)	13
•	Cloud	NTP Synchronized	
ц	OPCUA	Time Calibration	
4			
	SECS/GEM		

Figure 4-27 Time and date settings

#### Table 4-12 Parameter settings for time and date

	Parameter name	Content
Time & Date	Current Time	Display the current time.
	Time Zone	Click the button to select and set the time zone.
	NTP Synchronized	Check the box to automatically execute network
		time NTP synchronization.
	Time Calibration	Uncheck NTP Synchronized to manually adjust
		and correct the time.

#### 4.1.1.5 OLED

When you click on the icon, it will take you to the custom OLED function settings (as shown in Figure 4-28). Table 4-13 contains the parameter settings for the custom OLED.

General Netv	vork Wireless	Time & Da	te Ol	.ED							
OLED		Menu	Enable	Show	Туре	Index	Menu Tag	Tag	Min.	Max.	Step
	Value	0		Oham							
⁴ Menu Settings		0		Show	CALC ~	0 ~			0	65536	1
Initial Screen		1		Show	CALC 🗸	0 ~			0	65536 🗘	1
Initial Screen	Menu 00 🗸	2		Show	CALC ~	0 ~			0	65536 🔷	1
Reset	Submit	3		Show	CALC ~				0	65536	1
PIN Password										•	
Enable		4		Show	CALC 🗸	0 ~			0	65536	1
Change PIN Pas	Submit	5		Show	CALC 🗸	0 ~			0	65536	1
Action		6		Show	CALC 🗸	0 ~			0	65536	1
Home	*	7		Show	CALC 🗸	0 ~	$\square$		0	65536	1

Figure 4-28 Custom OLED Function Settings

	Content						
Menu Settings	Initial Screen(Enable)	Enable	/	Disable	Initial	Display	Screen
NÊQIOT							

# NEXIOT

		Functionality (Default: Main Screen)			
	Initial	Set Custom Initial Display Screen			
	Screen(Selection)				
	Reset	Reset Custom OLED Screen			
PIN Password	Enable	Enable / Disable PIN Password Functionality			
	Change PIN Password	Set PIN Password			
Actions	Home	Return to Main Menu Screen			
	Back	Return to Previous Screen			
	Knob Right	Trigger Right Rotation Button			
	Knob Left	Trigger Left Rotation Button			
Menu Actions	Menu1	Enter Main Screen 1			
	Menu2	Enter Main Screen 2			
	Menu3	Enter Main Screen 3			
	Menu4	Enter Main Screen 4			
Simulation	On / Off	Enable Auto-Switching of Custom OLED			
Display		Screen Functionality			
	Interval (ms)	Set Time Interval for Custom OLED Screen			
	-1	Switching			

The custom OLED screen settings interface, as shown in Figure 4-29, includes the following parameters:

- Type: Allows selection of the display screen type, such as CALC operator, Image, Button, I/O Module, Modbus Bit channel, Modbus Word channel.

- Index: Represents the index corresponding to the selected Type.
- Menu Tag: Specifies the name displayed for the menu on the main screen.
- Tag: Specifies the name displayed after entering the menu screen.
- Min / Max: Indicates the minimum and maximum values for writing a numerical input.
- Step: Represents the basic unit for each written value.



Menu	Enable	Show	Туре	Index	Menu Tag	Тад	Min.	Max.	Step
0		Show	CALC 🗸	0 ~			0	65536	1
1		Show	CALC 🗸	0 ~			0	65536	1
2		Show	CALC 🗸	0 ~			0	65536 🗘	1
3		Show	CALC 🗸	0 ~			0	65536	1
4		Show	CALC 🗸	0 ~			0	65536 🗘	1
5		Show	CALC 🗸	0 ~			0	65536	1
6		Show	CALC 🗸	0 ~			0	65536	1
7		Show	CALC 🗸	0 ~			0	65536	1

Figure 4-29 Custom OLED Display Settings

Note: If you select the "Image" option for the Type, you will need to click the "View" button to load the image. The supported image formats are *.bmp and *.tif.

#### 4.1.2 Modbus

By clicking on the icon in the left-hand menu (as shown in Figure 4-30) you can enter the Modbus configuration screen. nDAS provides a Modbus TCP/RTU communication interface for users, which includes Modbus TCP/RTU communication parameter settings, device coil status, device holding register, Master COM Port monitoring, and Master TCP Port monitoring (as shown in Figure 4-31)  $\circ$ 

٠	System	TCP/RTU Colls Status (0X) Holding Registers (4X) COM2	
	Modbus	TCP/RTU	
		Name	Value
2	Data Log	* TCP Slave	
-	Buttu Eog	Enable	
•	Cloud	Port	502
		* TCP Master	
	OPCUA	Add	C
		4 Chart	
	SECS/GEM	Chart Maximum Number Of Points	20
		* COM2 (ttymxc2)	
		Modbus Role	● Master ○ Slave ○ None
		Baud Rate	115200 🗸
		Data Bits	8 ~

Figure 4-30 Modbus Function Settings



٠	System	TCP/RTU Coils Status (0X) Holding Registers (4X) COM2	
$\odot$	Modbus	TCP/RTU	
_		Name	Value
9	Data Log	* TCP Slave	
		Enable	
•	Cloud	Port	502
		* TCP Master	
п	OPCUA	Add	<b>.</b>
		4 Chart	
	SECS/GEM	Chart Maximum Number Of Points	20
		* COM2 (ttymxc2)	
		Modbus Role	Master      Slave      None
		Baud Rate	115200 🗸
		Data Bits	8 ~

Figure 4-31 Modbus TCP/RTU Communication Parameter Settings, Local Coil Status List, Local Holding Register List, Master COM Port Monitoring, Master TCP Port Monitoring

Note : Monitoring the Master TCP Port requires prior addition in the communication parameter settings, nDAS provides a maximum of five communication ports for user utilization, as referenced in section 4.1.2.1.

#### 4.1.2.1 TCP/RTU

Click on the icon to enter Modbus TCP/RTU Communication Parameter Settings (as shown in Figure 4-32).

٠	System	TCP/RTU Coils Status (0X) Holding Registers (4X) TCP00	
	Modbus	TCP/RTU	
		Name	Value
ሇ	I/O	* TCP Slave	
		Enable	
2	Data Log	Port	502
		* TCP Master	
•	Cloud	Add	<b>⊕</b>
		TCP00	IP: 10.12.1.233 Port: 502 Response Time (ms): 100 💼
п	OPCUA	4 Chart	
		Chart Maximum Number Of Points	20
	SECS/GEM	4 COM2 (ttymxc2)	
		Modbus Role	OMaster OSlave  None
		Baud Rate	115200
		Data Bits	8
		Parity	None
		Stop Bits	1 ~

Figure 4-32 Modbus TCP/RTU communication parameter settings

Modbus TCP Slave configuration, as shown in Table 4-14.

Parameter name		Content		
Enable	Enable/Disable communication.	Modbus	ТСР	Slave

#### Table 4-14 Modbus TCP Slave communication parameter settings.

Port Modbus TCP Port configuration.
-------------------------------------

nDAS supports Modbus TCP Master. Click the "Add" button as shown in Figure 4-33. After clicking the button, you need to enter the IP address, port number, and response time. Additionally, a TCP Master monitoring icon will be added to the menu bar as shown in Figure 4-34.

TCP/RTU	
Name	Value
* TCP Slave	
Enable	
Port	502
* TCP Master	
Add	•
4 Chart	
Chart Maximum Number Of Points	20
* COM2 (ttymxc2)	
Modbus Role	Master      Slave      None
Baud Rate	115200 🗸
Data Bits	8 ~
Parity	None ~
Stop Bits	1 ~
Response Time (ms)	100



TCP/RTU Coils Status (0X) Holding Registe	ers (4X) COM2 TCP00	
TCP/RTU		
Name	Va	/alue
* TCP Slave		
Enable		
Port	502	12
TCP Master		
Add		÷
TCP00	IP	P: Port: 502 Response Time (ms): 100 💼

Figure 4-34 Modbus TCP Master monitoring menu

Configure the quantity of Modbus Master drawing points (as shown in Figure 4-35). Enter the maximum number of drawing points, referring to section 4.6.2.

Value	
502	\$
•	
20	*
Master      Slave      None	
115200	
8	
None	
1	
100	\$
	502 502 20 © Master O Slave O None 115200 8 None 1

#### Figure 4-35 Establish the quantity of drawing points for Modbus Master.

Configure the communication parameters for Modbus RTU COM Port as specified in Table 4-15.

參數名稱	參數內容
Modbus 角色	切換 Master / Slave / None
鮑率	選擇鮑率
資料位元	選擇資料位元
同位元檢查	選擇同位元檢查
停止位元	選擇停止位元
反應時間	Modbus 角色切換到 Master, 輸入反應時間
Slave ID	Modbus 角色切換到 Slave,輸入 Slave ID

#### 4.1.2.2 Coils Status

Click on the icon to access the Coils Status Table for Modbus (as shown in Figure 4-36). The following section provides an explanation of the coil status addresses corresponding to the nDAS I/O Board.

Coils Status (0X)		
Name	Base Address	Length
Coils Status (0X)		
DI Logic Status	1	8
Counter Switch	33	8
Clear Counter	41	8
Clear Overflow	49	8
DI Low Latch Status	57	8
DI High Latch Status	65	8
DO Logic Status	17	8
COM2 Expansion Bit	1001	128
TCP00 Expansion Bit	2001	128
TCP01 Expansion Bit	2129	128
TCP02 Expansion Bit	2257	128
TCP03 Expansion Bit	2385	128

# Figure 4-36 Modbus Coils Status Table

#### 4.1.2.2.1 ns050

Name	<b>Base Address</b>	Length
Digital Input Logic	1	8
State		
<b>Counter Switching</b>	33	8
<b>Clear Counter</b>	41	8

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Clear Overflow	49	8
<b>DI Low Latch State</b>	57	8
DI High Latch State	65	8
Digital Output Logic	17	8
State		
COM2 Expansion Bit	1001	128
<b>TCP00 Expansion Bit</b>	2001	128
<b>TCP01 Expansion Bit</b>	2129	128
TCP02 Expansion Bit	2257	128
TCP03 Expansion Bit	2385	128
<b>TCP04 Expansion Bit</b>	2513	128

## 4.1.2.2.2 ns051

4.1.2.2.2 ns051		
Name	<b>Base Address</b>	Length
Digital Input Logical	1	16
State		
<b>Counter Toggle</b>	33	16
<b>Counter Reset</b>	49	16
<b>Overflow Clear</b>	65	16
DI Low Latching State	81	16
DI High Latching State	97	16
<b>COM2</b> Expansion Bit	1001	128
TCP00 Expansion Bit	2001	128
<b>TCP01 Expansion Bit</b>	2129	128
TCP02 Expansion Bit	2257	128
TCP03 Expansion Bit	2385	128
TCP04 Expansion Bit	2513	128

#### 4.1.2.2.3 ns056

Name	<b>Base Address</b>	Length
Digital Output Logical	17	16
State		
COM2 Expansion Bit	1001	128
<b>TCP00 Expansion Bit</b>	2001	128
TCP01 Expansion Bit	2129	128
NÊQIOT		

TCP02 Expansion Bit	2257	128
TCP03 Expansion Bit	2385	128
<b>TCP04 Expansion Bit</b>	2513	128

#### 4.1.2.2.4 ns017

Name	<b>Base Address</b>	Length
<b>Reset Historical</b>	101	9
Maximum AI Value		
<b>Reset Historical</b>	110	9
Minimum AI Value		
High Alarm Flag	131	9
Low Alarm Flag	141	9
COM2 Expansion Bit	1001	128
<b>TCP00 Expansion Bit</b>	2001	128
TCP01 Expansion Bit	2129	128
TCP02 Expansion Bit	2257	128
<b>TCP03 Expansion Bit</b>	2385	128
TCP04 Expansion Bit	2513	128
4.1.2.3 Holding Registers		Beta

## 4.1.2.3 Holding Registers

Click on the icon to access the Holding Registers Table for Modbus (as shown in Figure 4-37). The following section provides an explanation of the holding register addresses corresponding to the nDAS I/O Board. 1 TCP

olding Registers (4X)			
ame	Base Address	Length	
Holding Registers (4X)			
Module Name	211	10	
DI All Logic Status	301	<b>\$</b> 1	
Counter Frequency	17	16	
DO All Logic Status	303	1	
Pulse Output Low Level Width	33	16	
Pulse Output High Level Width	49	16	
Set Absolute Pulse	65	16	
Set Incremental Pulse	81	16	
COM2 Expansion Bit Error Code	1129	128	
COM2 Expansion Word	1001	128	
COM2 Expansion Word Error Code	1257	128	
TCP00 Expansion Bit Error Code	2129	128	

Figure 4-37 Modbus Holding Registers Table





#### 4.1.2.3.1 ns050

Name	<b>Base Address</b>	Length
Module Name	211	10
All Digital Input Logical States	301	1
Counter Frequency	17	16
All Digital Output Logical States	303	1
Pulse Output Low Level Width	33	16
Pulse Output High Level Width	49	16
Set Absolute Pulse	65	16
Set Incremental Pulse	81	16
COM2 Expansion Bit Error Code	1129	128
COM2 Expansion Word	1001	128
COM2 Expansion Word Error Code	1257	128
TCP00 Expansion Bit	2129	128
Error Code	2129	120
<b>TCP00 Expansion Word</b>	2001	128
TCP00 Expansion Word Error Code	2257 500	128
TCP01 Expansion Bit Error Code	2513	128
TCP01 Expansion Word	2385	128
TCP01 Expansion Word Error Code	2641	128
TCP02 Expansion Bit Error Code	2897	128
TCP02 Expansion Word	2769	128
TCP02 Expansion Word	3025	128
Error Code TCP03 Expansion Bit	3281	128

Error Code		
<b>TCP03 Expansion Word</b>	3153	128
<b>TCP03 Expansion Word</b>	3409	128
Error Code		
TCP04 Expansion Bit	3665	128
Error Code		
<b>TCP04 Expansion Word</b>	3537	128
TCP04 Expansion Word	3793	128
Error Code		
Operation	4001	200
Data Recording Status	5101	1
Wi-Fi RSSI Status	5302	1

#### 4.1.2.3.2 ns051

Name	Base Address	Length
Module Name	211	10
All Digital Input	301	1
Logical States		
<b>Counter Frequency</b>	17	32
COM2 Expansion Bit	1129	128
Error Code	1129	
<b>COM2</b> Expansion	1001	128
Word		
COM2 Expansion	1257	128
Word Error Code		
<b>TCP00 Expansion Bit</b>	2129	128
Error Code		
<b>TCP00 Expansion</b>	2001	128
Word		
<b>TCP00 Expansion</b>	2257	128
Word Error Code		
TCP01 Expansion Bit	2513	128
Error Code		
<b>TCP01 Expansion</b>	2385	128
Word NEঝIOT		

<b>TCP01 Expansion</b>	2641	128
Word Error Code		
TCP02 Expansion Bit	2897	128
Error Code		
TCP02 Expansion	2769	128
Word		
TCP02 Expansion	3025	128
Word Error Code		
TCP03 Expansion Bit	3281	128
Error Code		
<b>TCP03 Expansion</b>	3153	128
Word		
TCP03 Expansion	3409	128
Word Error Code		
<b>TCP04 Expansion Bit</b>	3665	128
Error Code		
TCP04 Expansion	3537	128
Word		
TCP04 Expansion	3793	128
Word Error Code		
Operation	4001	200
Data Recording Status	5101	1
Wi-Fi RSSI Status	5302	1
	UP	

# 4.1.2.3.3 ns056

Name	<b>Base Address</b>	Length
Module Name	211	10
All Digital Output	303	1
Logical States		
Pulse Output Low	17	32
Level Width		
Pulse Output High	49	32
Level Width		
Set Absolute Pulse	81	32
Set Incremental Pulse	113	32
NEXIOT		

	1120	120
COM2 Expansion Bit	1129	128
Error Code		
COM2 Expansion	1001	128
Word		
<b>COM2</b> Expansion	1257	128
Word Error Code		
TCP00 Expansion Bit	2129	128
Error Code		
TCP00 Expansion	2001	128
Word		
TCP00 Expansion	2257	128
Word Error Code		
TCP01 Expansion Bit	2513	128
Error Code		
TCP01 Expansion	2385	128
Word	2505	120
	2(41	100
TCP01 Expansion	2641	128
Word Error Code		
TCP02 Expansion Bit	2897	128
Error Code		Bo
TCP02 Expansion	2769	128
Word		
TCP02 Expansion	3025	128
Word Error Code	US	
TCP03 Expansion Bit	3281	128
<b>Error</b> Code		
TCP03 Expansion	3153	128
Word		
TCP03 Expansion	3409	128
Word Error Code		
TCP04 Expansion Bit	3665	128
Error Code		
TCP04 Expansion	3537	128
Word		
	3793	128
TCP04 Expansion	3793	128

# NEXXIOT

Word Error Code		
Operation	4001	200
Data Recording Status	5101	1
Wi-Fi RSSI Status	5302	1

## 4.1.2.3.4 ns017

Name	<b>Base Address</b>	Length
Module Name	211	10
AI Value	1	9
AI Status	10	16
Historical Maximum	111	9
AI Value		
Historical Minimum AI	121	9
Value		
AI Engineering Value	131	18
Historical Maximum	151	18
AI Engineering Value		
Historical Minimum AI	171	18
Engineering Value		Rela
AI Scale Value	191	9
AI Range Code	201	9
AI Channel Mask	221	1
AI Physical Status	231	18
COM2 Expansion Bit	1129	128
Error Code		
COM2 Expansion	1001	128
Word		
COM2 Expansion	1257	128
Word Error Code		
<b>TCP00 Expansion Bit</b>	2129	128
Error Code		
TCP00 Expansion	2001	128
Word		
TCP00 Expansion	2257	128
Word Error Code		

TCP01 Expansion Bit	2513	128
Error Code		
<b>TCP01 Expansion</b>	2385	128
Word		
<b>TCP01 Expansion</b>	2641	128
Word Error Code		
TCP02 Expansion Bit	2897	128
Error Code		
TCP02 Expansion	2769	128
Word		
TCP02 Expansion	3025	128
Word Error Code		
TCP03 Expansion Bit	3281	128
Error Code		
TCP03 Expansion	3153	128
Word		
TCP03 Expansion	3409	128
Word Error Code		
TCP04 Expansion Bit	3665	128
Error Code		Ber
<b>TCP04 Expansion</b>	3537	128
Word		
TCP04 Expansion	3793	128
Word Error Code	US	
Operation	4001	200
Data Recording Status	5101	1
Wi-Fi RSSI Status	5302	1

#### 4.1.2.4 COM Port & TCP Rules

nDAS provides monitoring for both Master COM Port and Master TCP Port. To add TCP Master, please refer to section 4.1.2.1. Click on the icon to access the monitoring dashboard, as shown in Figure 4-38.



٠	System	TCP/RTU	J Colls Status (0X) Holding Regis		Holding Registers (4X)	Registers (4X) COM2												
0	Modbus						Rule	Bit Statu	atus Word Sta		itatus C	liagnostician						
-	_	Rule	Enable	Slave	ID Type		Start Address	Length		R/W	Scan Inter (ms)	val Mapp Chan	ing nel	Tag	Log	Log Change	Chart	Status
ሇ	I/O	0		1	01 Coil Status	~	1	1	R	~	1000	0	*					Unavailable
9	Data Log	1		1	01 Coil Status	~	1	1	R	~	1000	0	*					Unavailable
•	Cloud	2		1	01 Coil Status	~	1	1	R	~	1000	•	×					Unavailable
		3		1	01 Coil Status	~	1	1	R	~	1000	0	•					Unavailable
	OPCUA	4		1	01 Coil Status	~	1	1	R	~	1000	0	* *					Unavailable
	SECS/GEM	5		1	01 Coil Status	~	1	1	R	~	1000	•	×					Unavailabl
		6		1	01 Coil Status	~	1	1	R	~	1000	0	*					Unavailable
		7		1	01 Coil Status	~	1	1	R	~	1000	0	*					Unavailable
		8		1	01 Coll Status	~	1	1	R	~	1000	0	×					Unavailable
		9		1	01 Coil Status	~	1	1	R	~	1000	0						Unavailable

Figure 4-38 Modbus Master Monitoring Instrument Panel Configuration

### 4.1.2.4.1 Rule

Click on the icon to switch to the Modbus Master Rule Parameter Configuration screen (as shown in Figure 4-39). On this page, you can set rules to enable/disable Modbus channels. Each port provides 32 rules for user configuration. The parameter explanations can be found in Table 4-16.

				Rule	Bit Status	Word S	tatus Diagn	iostician					
Rule	Enable	Slave ID	Туре	Start Address	Length	R/W	Scan Interval (ms)	Mapping Channel	Tag	Log	Log Change	Chart	Status
0		1	01 Coil Status 🗸	1	1	R •	1000	0					Success
1		1	03 Holding Register 🗸	1	1	R •	1000	0					Success
2		1	01 Coil Status 🗸	1	1	R •	1000	0					Unavailable
3		1	01 Coil Status 🗸	1	1	R •	1000	0					Unavailable
4		1	01 Coil Status 🗸	1	1	R •	1000	0					Unavailable
5		1	01 Coil Status 🗸	1	1	R •	1000	0					Unavailable
6		1	01 Coil Status 🗸	1	1	R •	1000	0					Unavailable
7		1	01 Coil Status 🗸	1	1	R •	1000	0					Unavailable
8		1	01 Coil Status 🗸	1	1	R v	1000	0					Unavailable
9		1	01 Coil Status 🗸	1	1	R •	1000	0					Unavailable

Figure 4-39 Modbus Master Rule Parameter Configuration

Description
Display rule number.
Enable/Disable rule.
Set connected Slave ID
Modbus commonly used function
codes 01~04.
Set Modbus starting address.

#### NEXIOT



Length	Set Modbus data length.
R/W	Set read/write status.
Scan Interval (ms)	Set scan time.
Mapping Channel	Each data corresponds to a channel. Note : nDAS provides 128 channels.
Tag	Display rule tag in Data Log.
Log	Log to Data Log or not
Log Change	Log when there's a change in reading value to Data Log.
Chart	Plot or not, refer to 4.6.2.
Status	Display Modbus read/write status.

#### 4.1.2.4.2 Bit Status

Click on the icon to switch to the Modbus Bit Status Parameter Configuration screen (as shown in Figure 4-40). This screen allows you to monitor the Modbus bit status. If you set the Modbus Master Rule data type to 01 or 02 and activate the rule, it will be displayed on this screen.

			Rule	Bit Status Word St	tatus Diagnostician			
Channel	Polling Times	Value	Status	Slave ID	Slave Address	Mapping Address (0X)	Write Value	Write
0	370	0	Success	1	1	2001	◎ 0 ○ 1	Submit
1	0	0	Unavailable	1	1	0	● 0 ○ 1	Submit
2	0	0	Unavailable	1	1	0	● 0 ○ 1	Submit
3	0	0	Unavailable	1	1	0	● 0 ○ 1	Submit
4	0	0	Unavailable	1	1	0	● 0 ○ 1	Submit
5	0	0	Unavailable	1	1	0	◎ 0 ○ 1	Submit
6	0	0	Unavailable	1	1	0	● 0 ○ 1	Submit
7	0	0	Unavailable	1	1	0	◎ 0 ○ 1	Submit
8	0	0	Unavailable	1	1	0	0 1	Submit
9	0	0	Unavailable	1	1	0	◎ 0 ○ 1	Submit

#### Figure 4-40 Modbus Bit Status Monitoring Screen

### 4.1.2.4.3 Word Status

Click on the icon to switch to the Modbus Word Status Monitoring screen (as shown in Figure 4-41). This screen allows you to monitor the Modbus word status. If you set the Modbus Master Rule data type to 03 or 04 and activate the rule, it will be displayed on this screen.



			Rule	Bit Status Word St	atus Diagnostician			
Channel	Polling Times	Value	Status	Slave ID	Slave Address	Mapping Address (4X)	Write Value	Write
0	409	0	Success	1	1	2001	0	Submit
1	0	0	Unavailable	1	1	0	0	Submit
2	0	0	Unavailable	1	1	0	0	Submit
3	0	0	Unavailable	1	1	0	0	Submit
4	0	0	Unavailable	1	1	0	0	Submit
5	0	0	Unavailable	1	1	0	0	Submit
6	0	0	Unavailable	1	1	0	0	Submit
7	0	0	Unavailable	1	1	0	0	Submit
8	0	0	Unavailable	1	1	0	0	Submit
9	0	0	Unavailable	1	1	0	0	Submit

Figure 4-41 Modbus Word Status Monitoring Screen

## 4.1.2.4.4 Diagnostician

Click on the icon to switch to the Modbus Master Rule Monitoring screen (as shown in Figure 4-42). This screen displays the current communication status of each rule.

		Rule Bit Status	Word Status Diagnostician		
Rule	Polling Times	Current Response Time (ms)	Max. Response Time (ms)	Min. Response Time (ms)	Status
0	449	0.912	25.602	0.674	Success
1	453	0.686	41.325	0.671	Success
2	0	0	0	60000	Unavailable
3	0	0	0 60000		Unavailable
4	0	0	0	60000	Unavailable
5	0	0	0	60000	Unavailable
6	0	0	0	60000	Unavailable
7	0	0	0	60000	Unavailable
8	0	0	0	60000	Unavailable
9	0	0	0	60000	Unavailable

Figure 4-42 Modbus Master Rule Monitoring Screen



## 4.1.3 I/O

By clicking on the icon in the left-side menu, you can access the I/O Parameter Configuration as well as the screens for each I/O module. nDAS provides different settings for different modules under the I/O menu (as shown in Figure 4-43). Table 4-17 provides the common parameter settings for the I/O modules.

٠	System	Settings	DI_00	DI_01	DI_02	DI_03	DI_04	DI_05	DO_00	DO_01		
0	Modbus	Settings										
·V	I/O	Name <b>I/O Settin</b>	gs						Value			
=	Data Log	Name Interval (	ms)						Simulator	r		
•	Cloud	Chart Ma	iximum Nur	nber Of Poi	nts				20			0
11	OPCUA											
	SECS/GEM											



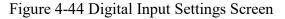
	Table 4-17	Common	parameter settings	for l	I/O module	es
--	------------	--------	--------------------	-------	------------	----

	Parameter name	Content
I/O Settings	Name	Show current module name
	Interval (ms)	Set the time interval for each I/O read.
		Default value is 1000 ms.
	Chart Maximum	Set the maximum number of data points that can
	Number Of Points	be plotted by the oscilloscope.
		All
4.1.3.1 Digital Inpu	t icer	

### 4.1.3.1 Digital Input

Click on the icon to access the DI module (as shown in Figure 4-44). The interface encompasses DI parameter configuration and oscilloscope signal display. Table 4-18 presents the fundamental DI parameter settings.

٠	System	Settings DI_00	DI_01	DI_02	DI_03	DI_04	D	N_05	DO	_00	DO_0														
$\otimes$	Modbus	DI_00														DI_00									
		Name	Value			09.4	10.4	11.4	12.4	13.4	14.4	15.4	16.4		18.4	19.4	20.4	21.4	1 22.4	23.4	24.4	25.4	26.4	27.4	28.4
ሇ	I/O	⁴ DI Settings																							
		Channel	0																						
8	Data Log	Tag Name																							
		Mode	DI		~																				
•	Cloud	Channel Mask				1	_		-	_				_		-+-	_	_		_	-+-		_	-+-	
8-0		Invert Signal																							
Ħ	OPCUA	4 Status																							
	SECS/GEM	Status	0																						
		4 Log																							
		Log Enabled				0	+	-		+-	_			+	-+-	-		-+		+	-		-+-	-	-
		Change of State																							







	Parameter name	Content
DI Settings	Channel	Display channel ID
	Tag Name	Configure label names
	Mode	Present the following mode options:
		Digital Input (DI)
		Counter
		Low-to-High Latch
		High-to-Low Latch
		Frequency
	Channel Mask	Enable/Disable channel masking
	Invert Signal	Activate/Deactivate signal inversion
Status	Status	Display DI signal status
Log	Log Enable	Enable/Disable recording of DI channel
	Change of State	Record changes in DI channel signal
Counter	Start	Activate/Deactivate counter function
	Reset	Clicking the button will reset the current channel count
	Overflow Auto Reset	Enable/Disable automatic reset on counter overflow
	Overflow	Display overflow status
Frequency	Precision	0.1Hz
		0.01Hz
	Reset Time(ms)	Enter reset time

## Table 4-18 Digital Input Settings

The logging feature must be enabled by selecting the logging option to write the channel data into the database. The channel masking option allows you to choose whether to hide the data of that channel. If the channel masking is enabled, the channel data will not be written into the database and will cease to be displayed on the oscilloscope.

Note: Channel data will be written into the database only when both the logging feature and channel masking are enabled.

The status change option allows for an additional annotation in the database when the channel signal status changes.

Note: This feature requires the logging function to be enabled as well.

## 4.1.3.2 Digital Output

Click on the icon to access the DO module (as shown in Figure 4-45). The interface encompasses DO parameter configuration and oscilloscope signal display. Table 4-19 presents the fundamental DO parameter settings.

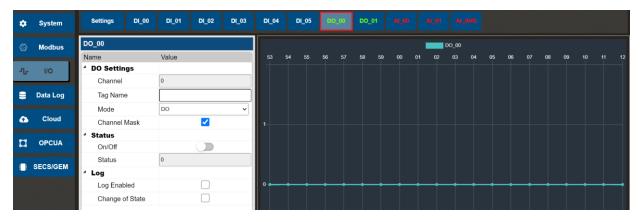


Figure 4-45 Digital Output Settings Screen

	Parameter name	Content		
DO Settings	Channel	Display channel ID		
	Tag Name	Configure label names		
	Mode	Present the following mode options:		
		Digital Output (DO)		
		Pulse Output		
		AI Alarm Driven		
	Channel Mask	Enable channel masking		
Status	On/Off	Activate/Deactivate DO signal output		
	Status	Display DO status		
Log	Log Enable	Enable/Disable recording of DO channel		
	Change of State	Record changes in DO channel signal		
Pulse Output(Pulse	Low Signal Width	Set low signal output time		
Output Mode)	(ms)			
	High Signal Width(ms)	Set high signal output time		
	Output Frequency	Set output frequency based on signal width		
	Duty Cycle	Set duty cycle based on signal width		
Enable/Disable(Pulse	Continuous	Activate continuous pulse signal output		
Output Mode)	Fixed Total	Set pulse output count		
NE∕\$\IOT				

#### Table 4-19 Digital Output Settings



	Start	Start pulse output
	Stop	Stop pulse output
AI Alarm Driven (AI	Mapping Channel	Map to AI channel
Alarm Driven Mode)	Trigger Mode	Deactivate
		High Alarm
		Low Alarm

The logging feature must be enabled by selecting the logging option to write the channel data into the database. The channel masking option allows you to choose whether to hide the data of that channel. If the channel masking is enabled, the channel data will not be written into the database and will cease to be displayed on the oscilloscope.

Note: Channel data will be written into the database only when both the logging feature and channel masking are enabled.

The status change option allows for an additional annotation in the database when the channel signal status changes.

Note: This feature requires the logging function to be enabled as well.

## 4.1.3.3 Analog Input

Click on the icon to access the AI module (as shown in Figure 4-46). The interface encompasses AI parameter configuration and oscilloscope signal display. Table 4-20 presents the AI parameter settings.

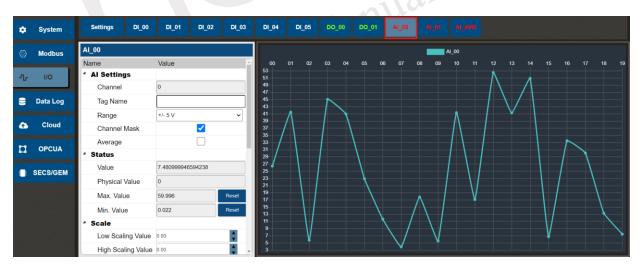


Figure 4-46 Analog Input Settings Screen

	Parameter name	Content
AI Settings	Channel	Display channel ID
NÊQIOT		VIC7000 User Manual (Beta)

## NEXXIOT

	Tag Name	Configure label names
	Range	Present the following voltage and current range
		options:
		+- 11 V
		+- 10 V
		+- 5 V
		+- 2.5 V
		+- 1.25 V
		+- 0.625 V
		+- 0.312 V
		+- 0.156 V
		+- 0.0781 V
		+- 0.0391 V
		+- 0.0195 V
		$0 \sim 20 \text{ mA}$
		+- 20 mA 4 ~ 20 mA
	Channel Mask	Enable/Disable masking
	Average	Enable/Disable calculating average value
Status	Value	Current measured value
	Physical Value	Physical mapped value
	Max. Value	Historical maximum value
	Min. Value	Historical minimum value
Scale	Low Scaling Value	Voltage or current scaling lower limit
	High Scaling Value	Voltage or current scaling upper limit
	Physical Min. Scaling	Physical value scaling lower limit
	Value	
	Physical Max. Scaling	Physical value scaling upper limit
	Value	
High Alarm	Enable	Enable High Threshold Alarm
	Mode	Present two mode options:
		Momentary
		Latch
	Value	Configure alarm threshold values
	Status	Display alarm status
NEXIOT		VIC7000 User Manual (Beta)

# NEXAIOT

	Clear	Clear alarm status
Low Alarm	Enable	Enable Low Threshold Alarm
	Mode	Present two mode options:
		Momentary
		Latch
	Value	Configure alarm threshold values
	Status	Display alarm status
	Clear	Clear alarm status
Log	Log Enable	Enable/Disable channel logging function
	Change of State	Record AI channel signal changes. When the
		amplitude exceeds the error value, the event will
		be logged.
	Deviation(%)	Set error value

The logging feature must be enabled by selecting the logging option to write the channel data into the database. The channel masking option allows you to choose whether to hide the data of that channel. If the channel masking is enabled, the channel data will not be written into the database and will cease to be displayed on the oscilloscope.

Note: Channel data will be written into the database only when both the logging feature and channel masking are enabled.

The status change option allows for an additional annotation in the database when the channel signal status changes.

Note: This feature requires the logging function to be enabled as well.

In the given scenario, if we assume the mapping of 0 to 50  $^{\circ}$ C to 0.5 to 3 VDC, the parameter settings would be as shown in Figure 4-47.

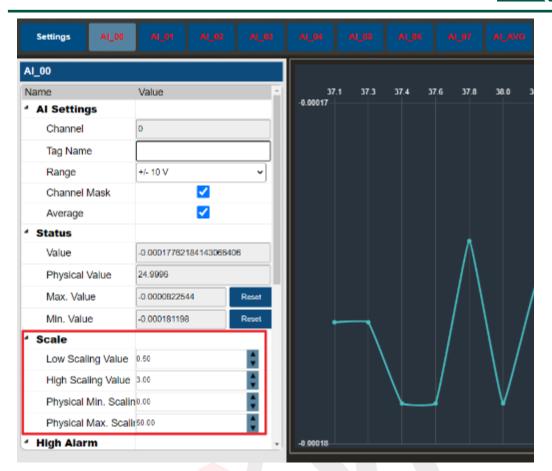


Figure 4-47 Physical value configuration

If an input voltage value of 2 VDC is applied to channel 0, the measured value would be as shown in Figure 4-48. Referring to Modbus Table 4.1.2.3.4, the value read from the Modbus address would be as depicted in Figure 4-49. The unit of the voltage value is in millivolts (mV).



Settin	gs Al_00	AL_D1 AL	.02 AL_03	AI_04	AL_05	AL_06	AI_07	ALAVO
AI_00								
Name		Value		1.9996	<b>36 36</b>	37	38 39	40 4
4 AI Se	əttings			1.9996				
Cha	annel	0						
Tag	Name							
Rar	nge	+/- 10 V	~					
Cha	annel Mask							
Ave	erage							
4 State	us							
Val	ue	1.99940145015716	55					
Phy	ysical Value	29.9985		1.9994				1
Max	x. Value	1.99941	Reset					
Min	n. Value	-0.000196963	Reset					/
4 Scal	e		_					
Lov	v Scaling Value	0.50	\$					
Hig	h Scaling Value	3.00	\$					
Phy	ysical Min. Scalin	0.00	\$					
Phy	ysical Max. Scallr	50.00	\$					
4 High	Alarm			1.9992				

Figure 4-48 The actual measured voltage

Address: 0001 Length: 1	Device Id: MODBUS 03: HOLDING F	Point Type	•	eta
40001: < 19	99>			

Figure 4-49 Modbus AI Value

The AI scaling value can be calculated using a proportional relationship between the current voltage value and the voltage range. The formula is as follows:

$$\frac{Range^{+} - Range^{-}}{Scaling_{High} - Scaling_{Low}} = \frac{Range^{+} - V_{Input}}{Scaling_{High} - V_{Scaling}}$$

In the given formula,  $V_{Input}$  represents the current measured voltage value,  $V_{Scaling}$  represents the mapped voltage value,  $Range^+$  represents the current high voltage range,  $Range^-$  represents the current low voltage range,  $Scaling_{High}$  represents the defined maximum scaling value,  $Scaling_{Low}$  represents the defined minimum scaling value.

The AI Physical Value can be calculated using a proportional relationship between the AI Scaling Value and the Low/High Scaling Value range. The formula is as follows:

 $\frac{Scaling_{High} - Scaling_{Low}}{Physical_{Max} - Physical_{Min}} = \frac{V_{Scaling} - Scaling_{Low}}{Physical_{Mapping} - Physical_{Min}}$ 

In the given formula,  $V_{Scaling}$  represents the mapped voltage value (AI Scaling Value),  $Physical_{Mapping}$  represents the mapped physical value (AI Physical Value),  $Physical_{Max}$ represents the defined maximum physical scaling value,  $Physical_{Min}$  represents the defined minimum physical scaling value,  $Scaling_{High}$  represents the defined maximum scaling value,  $Scaling_{Low}$  represents the defined minimum scaling value.

Referring to Modbus Table 4.1.2.3.4, the AI scaling value read from the Modbus address is depicted in Figure 4-50. The unit of the voltage value is in millivolts (mV).

➡ ModSca1 Address: Length:	0191	Device Id: MODBUS F 03: HOLDING F	 [
40191:	< 1999	9>	

Figure 4-50 Modbus AI Scaling Value

If an input voltage value of 2 VDC is applied to channel 0, and the mapping scenario is from 0 to 50  $^{\circ}$ C to 0.5 to 3 VDC, the mapped physical value would be as shown in Figure 4-51. Referring to Modbus Table 4.1.2.3.4, the AI physical value read from the Modbus address is depicted in Figure 4-52. The unit of the voltage value is volts (V), and the data type is Float.



Settings Al_00	AL_01 AL_02	AL_00	Al_84	Al_06	Al_06	AI_07	ALAVG
AI_00							
Name	Value	-	1.99942	42 43	44	45 46	47 4
4 Al Settings			1.99942				
Channel	0			\	×		
Tag Name				$\backslash$	$/ \mathbb{N}$		
Range	+/- 10 V	~		$ \rangle$	$\prime$ $\land$		
Channel Mask				( ) /			
Average				V			
* Status							
Value	1.9994181394577026						$\setminus$
Physical Value	29.9965						
Max. Value	4.9914	Reset					V
Min. Value	-4.99178	Reset					
* Scale							
Low Scaling Value	0.60	۵					
High Scaling Value	3.00	\$					
Physical Min. Scall	n 0.00	٥					
Physical Max. Scal	t 50.00	۵					
* High Alarm		*	1.99940				

Figure 4-51 Mapping to physical value

🖶 ModSca1			×	
Address: Length:	0231 2	Device Id: MODBUS I 03: HOLDING F	 T	eta
40231: 40232:	29.99	85		

Figure 4-52 Modbus AI Physical Value

## 4.1.4 Data Log

By clicking on the icon in the left-side menu (as shown in Figure 4-53), you will access the screen for Data Log configuration and historical data query. nDAS provides the functionality of storing data in a database. By selecting the desired recording method through the parameter selection in the top menu, data will be automatically stored in the database. It also offers a database query feature, where you can set the query method in the top menu and input the query range to retrieve a data list on the webpage. For detailed instructions, please refer to sections 4.1.4.1 and 4.1.4.2.

#### Chapter 4



٠	System	Settings Query								
0	Modbus	Settings								
		Name	Value							
ሇ	I/O	* Memory Storage								
		Log Enabled								
=	Data Log	* Log Method								
-	Duta Eog	At Fixed Interval								
•	Cloud	Interval (ms)	80000							
		* General								
п	OPCUA	Circular Logging								
		Log Storage Space (MB)	500							
	SECS/GEM									

Figure 4-53 Data Log Module

#### 4.1.4.1 Data Log Settings

By clicking on the configuration icon in the top menu, you can access the Data Log parameter settings (as depicted in Figure 4-53). Table 4-21 represents the fundamental parameters for Data Log configuration.

	Parameter name	Content		
Memory Storage	Log Enable	Enable/Disable database logging.		
Log Method	At Fixed Interval	Enable/Disable fixed interval logging mode.		
	Interval(ms)	Set the time parameter value for fixed interval		
		(100~6000000).		
General	Circular Logging	Enable/Disable cyclic logging.		
	Log Storage Space(MB)	Set the upper limit for stored data size.		

The data storage functionality is set to Disable by default. The fixed interval parameter is checked by default, and when this parameter is enabled, nDAS will write data to the database at a uniform time interval, with a default value of 1 minute. If the cyclic logging option is checked, when the .db database size exceeds 10GB, the oldest records will be deleted to make space for new data. If the option is unchecked and the database is full, data writing to the database will stop. The record storage space can be configured to set the upper limit for the size of stored data in the database. For example, if the nDAS database has already stored data up to 500MB and the setting is changed to 100MB, no further data will be written to the database. The default value is 500MB.

### 4.1.4.2 Data Log Query

By clicking on the configuration icon in the top menu, you can access the screen for Data Log query method settings (as shown in Figure 4-54). Table 4-22 represents the parameters for Data

Log query configuration.



	Modbus	Query				
	incusus	Name	Value			
ሇ	I/O	* Format				
	_	UUID				
8	Data Log	MAC ID				
		Timestamp	UTC	~		
•	Cloud	* Filter				
ALLEY .		Filter Mode	No Filter	~		
П	OPCUA	* Command				
-	SECS/GEM	Search	٩			
•	SECS/GEM	Save	*	]		
		Clear	<b></b>			

## Figure 4-54 Data Log Query method settings

	Parameter name	Content
Format	UUID	Display the field in the list.
	MAC ID	Display the field in the list.
	Timestamp	Provide the following mode selections:
		Coordinated Universal Time (UTC)
		Local Time
Filter	Filter Mode	Provide the following mode selections:
		No Filter
		Time Filter
		Amount of Latest Data Filter
	Start Time & End Time	Based on the Time Filtering mode, input the time
		range.
	Amount	Based on the Quantity Filtering for Latest Data
		mode, input the quantity.
Command	Search	Click the button to perform a database search.
	Save	Click the button to save the current list data as
		a .json file.
	Clear	Click the button to clear the database data.

#### Table 4-22 Data Log query configuration

The database query feature presents the content of the database in a list format on the webpage. If the Universal Unique Identifier (UUID) and MAC address are checked, the corresponding field will be displayed; otherwise, it will be hidden. The timestamp determines the display format of the time as either Coordinated Universal Time (UTC) or local time. The filtering mode controls the search conditions. nDAS offers two query modes: time-based and latest data count. If the time filtering mode is selected, the parameters for start and end time need to be filled in, or only one of them can be entered. If the latest data count filtering mode is selected, the parameter for quantity needs to be filled in. The search functionality will list the database content based on the set conditions and present it in a table format (as shown in Figure 4-55).

٠	System	Settings Que	ery							
0	Modbus	Query		Log Type \$	Timestamp 🚽	UUID \$	MAC ID \$	Slot \$	Channel \$	I/O Type \$
		Name	Value	128	2023/06/07 11:32:14.975 GMT+8	nDAS6000_B48C9D73BAAF	B4-8C-9D-73-BA-AF	0	0	1
- <b>J</b>	I/O	* Format		128	2023/06/07 11:32:14.975 GMT+8	nDAS6000_B48C9D73BAAF	B4-8C-9D-73-BA-AF	0	1	1
		UUID	×	128	2023/06/07 11:32:14.975 GMT+8	nDAS6000_B48C9D73BAAF	B4-8C-9D-73-BA-AF	0	2	1
9	Data Log	MAC ID		128	2023/06/07 11:32:14.975 GMT+8	nDAS6000_B48C9D73BAAF	B4-8C-9D-73-BA-AF	0	3	1
-	Data Log		Local Time V	128	2023/06/07 11:32:14.975 GMT+8	nDAS6000_B48C9D73BAAF	B4-8C-9D-73-BA-AF	0	4	1
-		Timestamp		128	2023/06/07 11:32:14.975 GMT+8	nDAS6000_B48C9D73BAAF	B4-8C-9D-73-BA-AF	0	5	1
•	Cloud	* Filter		128	2023/06/07 11:32:14.975 GMT+8	nDAS6000_B48C9D73BAAF	B4-8C-9D-73-BA-AF	0	6	1
		Filter Mode	Amount of Latest Data Filter 🗸	128	2023/06/07 11:32:14.975 GMT+8	nDAS6000_B48C9D73BAAF	B4-8C-9D-73-BA-AF	0	7	1
	OPCUA	Amount	5	128	2023/06/07 11:32:14.975 GMT+8	nDAS6000_B48C9D73BAAF	B4-8C-9D-73-BA-AF	0	0	4
		4 Command		128	2023/06/07 11:32:14.975 GMT+8	nDAS6000_B48C9D73BAAF	B4-8C-9D-73-BA-AF	0	1	4
	SECS/GEM	Search	٩	128	2023/06/07 11:32:14.975 GMT+8	nDAS6000_B48C9D73BAAF	B4-8C-9D-73-BA-AF	0	2	4
		Search		128	2023/06/07 11:32:14.975 GMT+8	nDAS6000_B48C9D73BAAF	B4-8C-9D-73-BA-AF	0	3	4
		Save	*	128	2023/06/07 11:32:14.975 GMT+8	nDAS6000_B48C9D73BAAF	B4-8C-9D-73-BA-AF	0	4	4
		Clear	Û	128	2023/06/07 11:32:14.975 GMT+8	nDAS6000_B48C9D73BAAF	B4-8C-9D-73-BA-AF	0	5	4
			a de la companya	128	2023/06/07 11:32:14.975 GMT+8	nDAS6000_B48C9D73BAAF	B4-8C-9D-73-BA-AF	0	6	4
				128	2023/06/07 11:32:14.975 GMT+8	nDAS6000_B48C9D73BAAF	B4-8C-9D-73-BA-AF	0	7	4
				128	2023/06/07 11:31:14.975 GMT+8	nDAS6000_B48C9D73BAAF	B4-8C-9D-73-BA-AF	0	0	1
				128	2023/06/07 11:31:14.975 GMT+8	nDAS6000_B48C9D73BAAF	B4-8C-9D-73-BA-AF	0	1	1
				128	2023/06/07 11:31:14.975 GMT+8	nDAS6000 B48C9D73BAAF	B4-8C-9D-73-BA-AF	0	2	1

Figure 4-55 Data Log Query Result

## 4.1.5 Cloud

By clicking on the icon in the left-side menu, you can access the screen for cloud functionality settings. nDAS provides various cloud data automatic upload services, including Private Server, Dropbox, Google Drive, OneDrive, Azure Storage Accounts, AWS S3, and AWS IoT (as shown in Figure 4-56).

	<b>.</b>	Private Server Dropbox	Google	OneDrive	Azure	AWS S3	AWS IOT		
۰	System		Coogio						
0	Modbus	Private Server							
		Name				Value			
8	Data Log	* Setting							
		Connection Status				Disable			
4	Cloud	IP/Domain Name							
		Server Port				8000			\$
	OPCUA	* File Mode							_
		File Upload							
	SECS/GEM	Upload Mode				Time Inter	val		~
		Time Interval (ms)				5000			\$
		File Name Format				YYYYMM	DDHHMMSS		~
		Time Stamp Format				UTC			~
		4 JSON Mode							
		JSON Upload							
		Push Mac Address							
		Push Timestamp							

Figure 4-56 Cloud Module

## 4.1.5.1 Private Server

### 4.1.5.1.1 Basic Settings

Clicking on the icon will take you to the configuration screen for the Private Server service (as

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shown in Figure 4-57). Table 4-23 provides the settings for Private Server connection and upload methods. nDAS supports outputting data in JSON format strings as well as CSV files to the Private Server. Users need to provide their own private server as the receiving end and input the private server's IP and Port in the nDAS settings. Afterward, they can initiate file upload or transmission of JSON strings to begin the data transfer process.

٠	System	Private Server	Dropbox	Google	OneDrive	Azure	AWS S3	AWS IoT	
0	Modbus	Private Server							
		Name						Value	
ሇ	I/O	4 Setting							
		Connection	n Status					Disable	
=	Data Log	IP/Domain	Name						
		Server Por	t					8000	
-	Cloud	⁴ File Mode							
		File Upload	ł						
Ц	OPCUA	Upload Mo	de					Time Interval	~
-	0500/0514	Time Interv	/al (ms)					5000	
	SECS/GEM	File Name	Format					YYYYMMDDHHMMSS	~
		Time Stam	p Format					итс	~
		4 JSON Mode	е						
		JSON Uplo	bad						
		Push Mac	Address						
		Push Time:	stamp						
		Time Stam	p Format					UTC	~
		4 Authentica	tion						
		Туре						Disable	~

## Figure 4-57 Private Server Connection Settings

	Parameter name	Content		
Settings	Connection status.	Display connection status.		
	IP/Domain name.	Enter Server IP.		
	Server port.	Enter Server Port.		
File Mode	File upload.	Activate/Deactivate file upload.		
	Upload method.	Time interval/Item cycle interval.		
	Time interval (ms).	Enter time based on upload method time interval		
		mode.		
	Item cycle interval	Enter quantity based on upload method item		
	(quantity).	cycle interval mode.		
	File name format.	YYYYMMDDHHMMSS / YYYYMMDD.		
	Timestamp format.	UTC / Local Time.		
JSON Mode	JSON upload.	Activate/Deactivate JSON message upload.		
	Include MAC address.	Display MAC address in JSON message.		
	Include timestamp.	Display timestamp in JSON message.		
	Timestamp format.	UTC / Local Time.		
Authentication	Туре.	Disable/Enable Basic Authorization.		
	Username.	Enter username for Basic Authorization.		
NEXIOT				

#### Table 4-23 Private Server Connection Settings

Password.

## 4.1.5.2 Dropbox

## 4.1.5.2.1 Basic Setting

Click on the icon to access the configuration for connecting to the Dropbox cloud service (as shown in Figure 4-58). Table 4-24 provides settings for the Dropbox cloud connection and upload methods.

٠	System	Private Server Dropbox Google OneDrive Azure AWS S3 AWS IoT
	Modbus	Dropbox
		Name Value
ሇ	I/O	* Connection
		Connection Ø
8	Data Log	Connection Status Disable
		* Setting
9	Cloud	Upload
_		Upload Mode Time Interval
П	OPCUA	Time Interval (ms) 5000
		File Name Format YYYYMMDDHHMMISS V
	SECS/GEM	Time Stamp Format UTC ~

## Figure 4-58 Dropbox Connection Settings Screen

	Parameter name	Content
Connection	Connection.	Click the button to access cloud permissions settings.
	Connection status.	Display connection status.
Settings	File upload.	Activate/Deactivate file upload.
	Upload method.	Time interval/Item cycle interval.
	Time interval (ms).	Enter time based on upload method time interval mode.
	Item cycle interval	Enter quantity based on upload method item
	(quantity).	cycle interval mode.
	File name format.	YYYYMMDDHHMMSS / YYYYMMDD.
	Timestamp format.	UTC / Local Time.

#### Table 4-24 Dropbox Connection Settings

#### 4.1.5.2.2 Connection Process

Click on the "Connect" button (as shown in Figure 4-59) to display the cloud authorization dialog window (as shown in Figure 4-60).



*	System	Private Server Dropbox Google OneDrive Azure AWS S3 AWS IoT
	Modbus	Dropbox
		Name Value
ሇ	I/O	4 Connection
		Connection Ø
	Data Log	Connection Status Disable
		* Setting
9	Cloud	Upload
		Upload Mode Time Interval ~
Ц	OPCUA	Time Interval (ms) 5000
		File Name Format YYYYMMDDHHMMISS ~
	SECS/GEM	Time Stamp Format UTC ~

## Figure 4-59 Click Button of Connection

٠	System	Private Server Dropbox Google OneDriv	e Azure AWS S3 AWS IoT	
$\otimes$	Modbus	Dropbox		
		Name		
ഹ	I/O	* Connection	Login to your cloud account, copy the Authorization code and paste to the following	
		Connection	column.	Ø
2	Data Log	Connection Status		
_		* Setting	Authorization Code:	
6	Cloud	Upload	1	
		Upload Mode		~
Ц	OPCUA	Time Interval (ms)	Link Submit Cancel	
		File Name Format	YYYYMMDDHHMMSS	
	SECS/GEM	Time Stamp Format	UTC	v

Figure 4-60 Cloud Authorization Dialog

Establishing the connection requires the user to log in to their personal Dropbox account. It uses OAuth 2.0 authentication method, which requires the user to log in and authorize nDAS to upload data to their personal cloud storage space.

Next, click on the external link in the cloud authorization dialog window (as shown in Figure 4-61). After clicking the link, you will be redirected to the Dropbox user login screen (as shown in Figure 4-62), where you will be prompted to log in to your personal account.

Srant Cloud Access					
Login to your cloud account, copy the Authorization code and paste to the following column.					
Authorization Code:					
Link	Submit	Cancel			

Figure 4-61 Click on the external link in the cloud authorization dialog window



	•	
R I Dea	abay Witter any sint adapt	
	obox 以連結 nex_aiot_ndas_s 使用 Google 登入	enes
G	使用 Google 室入	
É	使用 Apple 登人	
72	zi	
電子郵件		
密碼		
泡記座碼?		

Figure 4-62 Dropbox user login screen

After successfully logging in, the web page will redirect you to the user confirmation screen (as shown in Figure 4-63). Click on the "Continue" button to proceed to the authorization screen.

	連接應用程式前,請先
	&職並信任開發者。允許來自您不認識的開發者之應用程式,可 專您的資料安全。
	會看到這則警告? 程式只有少量用戶,可能不是您想連接的程式。
Γ	取尚 编结
	確定是否該將應用程式連接到 Dropbox 帳戶,請按一下 [取消]。您也可 瞭解連接應用程式時應該注意的事項。

Figure 4-63 Dropbox user confirmation screen

Next, the web page will redirect you to the user permission authorization screen (as shown in Figure 4-64). Click on the "Allow" button. After granting permission, a authorization code will be generated (as shown in Figure 4-65). Copy the authorization code and paste it into the field

in the cloud authorization dialog window, then click on the "Execute" button (as shown in Figure 4-60).



Figure 4-64 Dropbox user permission authorization screen

已產生存取代碼	
在「nex_aiot_ndas_series」中輸入此碼以完成程序	
_Dov9WHr4AkAAAAAAAACWVhqyuM0_FfHoXC7yg3yo1w	

Figure 4-65 Dropbox generates authorization code screen

Upon successful authorization, a dialog window will appear indicating that the authorization was successful. The connection status will also be updated to "Connected" (as shown in Figure 4-66, Figure 4-67).



٠	System	Private Server Dropbox Google	OneDrive Azure	AWS S3 AWS IoT		
$\otimes$	Modbus	Dropbox				
		Name		Value		
ഹ	I/O	* Connection	Cloud Authorization Result:Dropbo	K J	1	
_		Connection			Ø	
2	Data Log	Connection Status	Suces			
		4 Setting	Authoriza	Authorization successful.		
6	Cloud	Upload				
		Upload Mode		UK		¥
n	OPCUA	Time Interval (ms)		5000		0
		File Name Format		YYYYMMDDHHMMSS		~
	SECS/GEM	Time Stamp Format		UTC		~

#### Figure 4-66 Dropbox authorization success dialog window

٠	System	Private Server Dropbox Google OneDrive Azure AWS S3 AWS IoT
	Modbus	Dropbox
		Name Value
ሇ	I/O	* Connection
		Connection O
8	Data Log	Connected Connected
_		* Setting
6	Cloud	Upload
_		Upload Mode Time Interval
п	OPCUA	Time Interval (ms) 5000
		File Name Format YYYYMMDDH+MMSS ~
	SECS/GEM	Time Stamp Format

## Figure 4-67 Dropbox connection status

#### 4.1.5.3 GoogleDrive

## 4.1.5.3.1 Basic Setting

Click on the icon to access the configuration for connecting to the Google Drive cloud service (as shown in Figure 4-68). Table 4-25 provides settings for the Google Drive cloud connection and upload methods.

٠	System	Private Server Dropbox Google OneDrive Azure	AWS S3 AWS IOT
0	Modbus	Google	
		Name	Value
ሇ	I/O	* Connection	
-		Connection	в
9	Data Log	Connection Status	Disable
		* Setting	
9	Cloud	Upload	
		Upload Mode	Time Interval
Ц	OPCUA	Time Interval (ms)	5000
		File Name Format	YYYYMMDDHHMMSS V
	SECS/GEM	Time Stamp Format	UTC 🗸

#### Figure 4-68 Google Drive cloud service connection settings

Table 4-25 Google Drive cloud c	connection setting parameters
---------------------------------	-------------------------------

Parameter name		Content	
Connection	Connection.	Click the button to access cloud permissions settings.	

## NEXAIOT

	Connection status.	Display connection status.
Settings	File upload.	Activate/Deactivate file upload.
	Upload method.	Time interval/Item cycle interval.
	Time interval (ms).	Enter time based on upload method time interval
		mode.
	Item cycle interval	Enter quantity based on upload method item
	(quantity).	cycle interval mode.
	File name format.	YYYYMMDDHHMMSS / YYYYMMDD.
	Timestamp format.	UTC / Local Time.

## 4.1.5.3.2 Connection Process

Click on the "Connect" button (as shown in Figure 4-69) to display the cloud authorization dialog window (as shown in Figure 4-70).

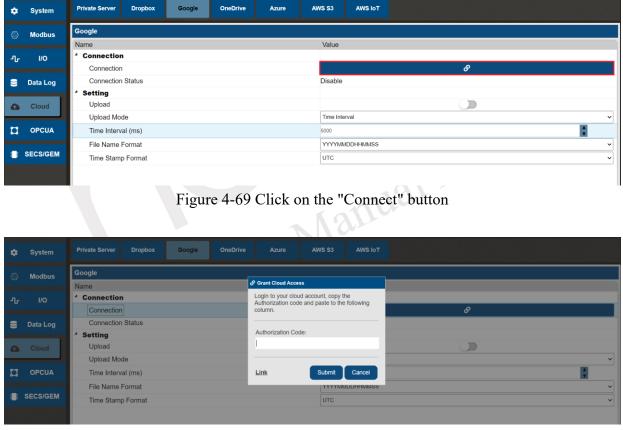


Figure 4-70 Cloud authorization dialog window

Establishing the connection requires the user to log in to their personal Google Drive account. It uses OAuth 2.0 authentication method, which requires the user to log in and authorize nDAS to upload data to their personal cloud storage space.

Next, click on the external link in the cloud authorization dialog window (as shown in Figure 4-71). After clicking the link, you will be redirected to a new web page where you will be **NEXIOT** 



prompted to log in to your personal Google Drive account (as shown in Figure 4-72).

𝔗 Grant Cloud Access						
Login to your cloud account, copy the Authorization code and paste to the following column.						
Authorization Code:						
Link	Submit	Cancel				

Figure 4-71 Click on the external link in the cloud authorization dialog window

●使用 Google 帳戶登入          登入         繼續使用「Demo」         電子郵件地址或電話號碼         □         忘記電子郵件地址?	J	爆簧		ţa.
繁體中文 ▼	說明	隱私權	條款	

Figure 4-72 Google Drive user login screen

After successfully logging in, the web page will redirect you to the user permission authorization screen (as shown in Figure 4-73). Check the desired options and click on the "Continue" button to proceed to the authorization screen.



Figure 4-73 Google Drive user permission authorization screen

Next, the web page will redirect you to the authorization code screen (as shown in Figure 4-74). Copy the authorization code from the "code" parameter in the URL and paste it into the field in the cloud authorization dialog window. Then, click on the "Execute" button (as shown in Figure 4-70).

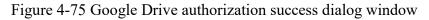


Figure 4-74 Google Drive generates an authorization code screen

Upon successful authorization, a dialog window will appear indicating that the authorization was successful. The connection status will also be updated to "Connected" (as shown in Figure

## 4-75, Figure 4-76).

٠	System	Private Server Dropbox Google	OneDrive Azure AWS	3 S3 AWS IOT
	Modbus	Google		
		Name		Value
ሇ	I/O	* Connection	Cloud Authorization Result:GoogleDrive	×
_		Connection		Ø
2	Data Log	Connection Status	Sucess	
		4 Setting	Authorization	successful.
6	Cloud	Upload		ОК
	_	Upload Mode		V
n	OPCUA	Time Interval (ms)	5	000
		File Name Format		YYYYMMDDHHMMSS v
	SECS/GEM	Time Stamp Format		utc 🗸



٠	System	Private Server Dropbox Google OneDrive Azure AWS S3 AWS IoT
©	Modbus	Google
		Name Value
ሇ	I/O	* Connection
		Connection Ø
2	Data Log	Connection Status Connected
		* Setting
6	Cloud	Upload
		Upload Mode Time Interval ~
п	OPCUA	Time Interval (ms)
		File Name Format YYYYMMDDHHMMSS ~
	SECS/GEM	Time Stamp Format

Figure 4-76 Google Drive connection status

### 4.1.5.4 OneDrive

To automatically upload data to OneDrive using nDAS, you will need to register an application in Azure Active Directory.

### 4.1.5.4.1 Application process for registering with Azure Active Directory

First, go to the homepage of the Microsoft Azure development platform and log in to your Microsoft account. Then, click on the Azure Active Directory icon (as shown in Figure 4-77).



Figure 4-77 Azure Active Directory

Click the application registration menu in the menu options (as shown in Figure 4-78).



Figure 4-78 Azure Active Directory Application Registration Menu

The screen will display the registered applications in Azure Active Directory. Click on "New registration" to add a new registration (as shown in Figure 4-79).



Figure 4-79 Added registration of Azure Active Directory application

Enter the application name, for example, "nDAS6000." Select "Web" as the Redirect URI and enter "http://localhost/module_upload_redirect_url.html". Finally, click on "Register" (as shown in Figure 4-80).



## 註冊應用程式

* 名稱
此應用程式的使用者互動顯示名稱 (之後可以變更)。
nDAS6000
誰可以使用此應用程式或存取此 API?
● 僅此組織目錄中的帳戶 (僅 NEXCOM International Co., Ltd 單一租用戶)
○ 任何組織目錄中的帳戶 (任何 Azure AD 目錄 - 多租用戶)
◯ 任何組織目錄中的帳戶 (任何 Azure AD 目錄 - 多租用戶) 和個人 Microsoft 帳戶 (例如 Skype、Xbox)
◯ 僅限個人 Microsoft 帳戶
協助我選擇
重新導向 URI (選用)
我們會在成功驗證使用者之後,將驗證回應傳回給此 URI。現在已不一定需要在此時提供此 URL,可以在之後變更,但在大多數的情況下會 需要值。
Web V http://localhost/module_upload_redirect_url.html V
請在此註冊您要使用的應用程式。您可以從企業應用程式新增,整合資源庫中的應用程式與您組織之外的其他應用程式。



註冊

Figure 4-80 Application name, redirect URI settings

Note: The redirect URI must be "http://localhost/module_upload_redirect_url.html".

After adding the application, proceed to add a new secret and credential (as shown in Figure 4-81, Figure 4-82).

(8) «	📋 删除 🜐 端點 🔤	預覽功能		
防御				
速入門	へ 程式集			
合小帮手	顯示名稱	: <u>nDAS6000</u>	用戶端認題	: <u>新增遷證或必塑</u>
		5 : c350a7f2-b6f1-432c-a5ce-0d21bb4d4768	重新導向URI	: <u>1 個 Web,0 個 SPA,0 個公用用戶端</u>
	物件職別碼	: 2996e866-691a-4fe8-85c6-2c03fa69683c	應用程式識別碼 URI	: <u>新淮應用程式識別碼 URI</u>
<b>景興圏性</b>	目錄 (租用戶) 識別碼	: 150ede72-6bf3-4029-ac57-de982587a01e	本機目錄中受控的應用程	: nDAS6000
8	支援的帳戶類型	: 僅我的組織		
體及秘密	•			
过設定	● 目 2020 年 6 月 30 1	日起,我們將不再為 Active Directory 驗證程式庫 (ADAL) 與 Azure AD Graph 新増日	1月以能。我们揭编遭提供技術又接換女王性更新,但不再提供以能更新。	1億用種乳必須丌該主 Microsoft 附還種乳庫 (MSAL) 與 Microsoft Graph 。 <u>選入</u>
「権限	開始使用 文件			
	HARTER XI			
開 API				



#### Figure 4-81 Application overview

	必密 ☆ …				
₽ 搜尋 《	₽ 想提供意見反應嗎?				
■ 概観					
丛 快速入門	認證讓機密應用程式在可定址的網路位置 (使用 HTTPS 配置) 接收權杖時,可以向驗證服務證明自己的身分識別,為進一步確保其安全,建議您使用馮證 (而不是用戶 為認證。				
🚀 整合小帮手					
管理	① 您可以在下列案引標識中找到應用程式註冊憑證、秘密和問盟認	鲁 •	×		
🧰 商標與圖性		-			
∋ 驗證	憑證 (0) 用戶鑑密碼 (0) 同盟認證 (0) 應用程式在要求權权時,用以證明其身分識別的祕密字串,也稱為應用程式密碼。				
↑ 憑證及祕密					
權杖設定					
→ API 權限	十 新増用戶端密碼				
🔷 公開 API	措述	值①	祕密識別碼		
12 應用程式角色	未為此應用程式建立任何用戶端祕密。				
▶ 擁有者					
🚨 角色和系統管理員					
10 資訊清單					

#### Figure 4-82 Add new credential or secret

Click on "New client secret" and enter the password description and the expiration period for the password (as shown in Figure 4-83).

新增用戶端密碼		×
描述	three_month	
到期	90 天 (3 個月)	$\sim$

Figure 4-83 Client password description and password validity period

When the password is successfully added, the client secret will be displayed. Please make sure to copy and backup this value (as shown in Figure 4-84) as you will need it later.

▶ 搜尋	≪ ♀ 想提供意見反應嗎?			
5 概觀				
🏜 快速入門	可以花些時間提供意見反應給我(	門嗎? →		×
ኛ 整合小帮手				
音理	認證讓機密應用程式在可定址的網路( 為認證。	位置 (使用 HTTPS 配置) 接收權权的	寺,可以向驗證服務證明目己的身分識別。為進一 ¹	步確保其安全,建議您使用憑證 (而不是用戶端密碼) 作
商標與屬性				
融證	⑤ 您可以在下列索引標籤中找到應用	用程式註冊憑證、秘密和同盟認證。		×
馮證及祕密				
權杖設定	憑證 (0) 用戶端密碼 (1) 同目	星認證 (0)		
- API 權限	應用程式在要求權杖時,用以證明其	身分識別的祕密字串,也稱為應用	用程式密碼。	
♪ 公開 API				
應用程式角色	┿ 新増用戶端密碼			_
擁有者	描述	到期	值①	祕密識別碼
角色和系統管理員	three_month	2023/8/27	avgeq comectalgep issues are quicked.	
資訊清單			L	1

#### Figure 4-84 OneDrive client password



## 4.1.5.4.2 Basic Setting

Please follow these steps:

1. Go to the homepage of the Microsoft Azure development platform and log in to your Microsoft account.

2. Click on the Azure Active Directory icon (as shown in Figure 4-77).

3. In the Azure Active Directory, navigate to the Registered App list and select your registered application (as in 4.1.5.4.1).

4. Copy the Tenant ID and the Client ID (as shown in Figure 4-85).

Make sure to keep the Tenant ID and Client ID secure and confidential as they are sensitive credentials.

賎 nDAS6000 🛷 …		
₽提尋 ≪	圓 副除 ⊕ 無點 國 預覽功能	
- 概観	🚯 有空嗎? 歡迎信提供 Microsoft 身分識別平台 (前身為關發人員版 Azure AD) 的意見反產 →	
📣 快速入門		
💉 整合小新手	へ 程式集	
答理	顧示名稱 : <u>nDAS6000</u>	用戶端認證 : <u>0.邁證 : 1. 祕密</u>
■ 商種祭屬性	应用程式 (用戶端) 識別碼: <del>◆Makinit Uses note asso unconficeation</del>	重新導向 URI : <u>1 個 Web · 0 個 SPA · 0 個公用用戶</u> 機
他前     他前	物件識別碼 : 3ec9ca41-1aad-449e-9e07-52590bda1840	應用程式識別碼 URI : 新增 <u>應用程式識別碼 URI</u>
· 派遣 派遣及松宏	目錄 (租用戶) 識別碼 :	本機目錄中受控的應用程: nDAS6000
	支援的報戶類型 : <u>僅我的組織</u>	
<ul> <li>₩ 植枝般定</li> <li>◆ API 權限</li> </ul>	● 目 2020年6月30日题。 我們修不再為 Active Directory 驗證程式庫 (ADAL) 與 Azure AD Graph 新增任何功能。 我們修確讓提供	技術支援與安全性更新,但不再進供功能更新,應用程式必須升級至 Microsoft 驗證程式章 (MSAL) 與 Microsoft Graph · <u>三人了館</u>
🔷 公開 API		
144 應用程式角色	開始使用 文件	
🎎 擁有者		
	Figure 4-85 Copy the renter II	D and client ID

Click the icon to enter the OneDrive cloud service connection settings (as shown in Figure 4-86), Table 4-26 is the OneDrive connection and upload method settings.

٠	System	Private Server Dropbox Google OneDrive Azure AWS S3 AWS IoT
格	Modbus	OneDrive
		Name Value
ሇ	I/O	
		4 Connection
8	Data Log	Tenant ID
	_	Client ID
•	Cloud	Client Secret
	OPCUA	Connection
DPCUA		Connection Status No Connecting
	SECS/GEM	* Setting
	OECO/GEM	Upload
		Unload Mada

Figure 4-86 OneDrive cloud service connection settings

Table 4-26	OneDrive	cloud	connection	setting	parameters
------------	----------	-------	------------	---------	------------

Parameter name		Content	
Connection	Rental user identifier	Enter the rental user identifier.	

```
NÊ¢IOT
```

## NEXXIOT

	Client identifier	Enter the client identifier.		
	Client password	Enter the client password.		
	Connection	Click the button to access cloud authorization settings.		
		č		
	Connection status	Display the connection status.		
Settings	File upload	Activate/Deactivate file upload.		
	Upload method	Time interval/Item cycle interval.		
	Time interval (in	Enter the time based on the upload method time		
	milliseconds)	interval mode.		
	Item cycle interval (in	Enter the quantity based on the upload method		
	quantity)	item cycle interval mode.		
	File name format	YYYYMMDDHHMMSS/YYYYMMDD		
		timestamp format.		
	Timestamp format	UTC/Local Time.		

### 4.1.5.4.3 Connection Process

Upon registering the application in Azure Active Directory, retrieve the rental user identifier (Tenant ID), client identifier (Client ID), and client password (Client Secret) from the application information. Paste them and click the "Connect" button (as shown in Figure 4-87) to display the cloud authorization dialog window (as shown in Figure 4-88).

٠	System	Private Server Dropbox Google OneDrive Azure AWS S3 AWS IoT
0	Modbus	ОпеDrive
		Name Value
ሇ	I/O	* Connection
		Tenant ID etter and the state of a state of
=	Data Log	Client ID
		Client Secret
•	Cloud	Connection
	000114	Connection Status Disable
Ц	OPCUA	* Setting
	OF COLOFIL	Upload
	SECS/GEM	Upload Mode Time Interval
		Time Interval (ms) 5000
		File Name Format YYYYMMDDHHMMSS ~
		Time Stamp Format UTC ~

Figure 4-87 Enter the ID and password and click the connect button



٠	System	Private Server	Dropbox	Google	OneDrive	Azure	AWS S3	AWS IoT			
$\otimes$	Modbus	OneDrive							_		
		Name									
ሇ	I/O	* Connection	1			Login to your clou Authorization cod	ud account, copy the	following			
		Tenant ID				Authorization code and paste to the following column.			r-de982587a01e		
8	Data Log	Client ID							a1203fd206fa		
		Client Secret				Authorization Code:			N0BdiMSV1IJ5T_oPc5q		
4	Cloud	Connection							Ø	٦	
п	OPCUA	Connection	Status			Link	Submit	Cancel			
•••	OFCOA	* Setting			Subinit Cancer						
	SECS/GEM	Upload									
	SECS/GEM	Upload Mode				Time Interval				~	
		Time Interv	al (ms)				5000		a		
		File Name I	Format				YYYYM	IDDHHMMSS		~	
		Time Stamp Format					итс			~	

Figure 4-88 Cloud authorization dialog window

Please note that if any of the identifiers, client identifier, or client password are not entered, the "Connect" button will be disabled and cannot be clicked.

Establishing a connection requires the user to log in with their Microsoft personal account. It utilizes OAuth 2.0 authentication method, which requires the user to log in and grant authorization to nDAS for data upload to their personal cloud storage space.

Next, click the external link in the cloud authorization dialog window (as shown in Figure 4-89). Upon clicking the link, you will be redirected to a new webpage where you will be prompted to log in to your personal account (as shown in Figure 4-90).

Login to your cloud ac Authorization code an column.		
Authorization Code:		
Link	Submit	Cancel

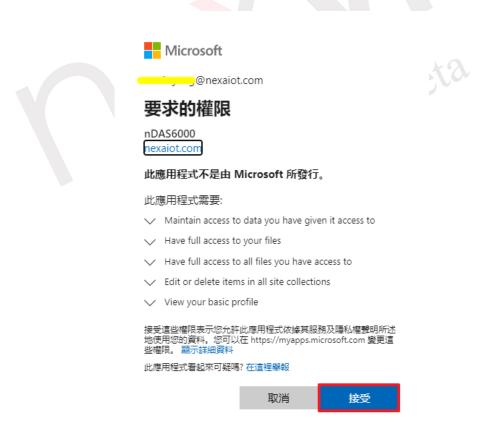
Figure 4-89 Click on the external link in the cloud authorization dialog window

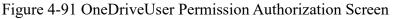


Microsoft		
登入		
電子郵件、電話	或 Skype	
無法存取您的帳戶	馬?	
		下一步
🔍 登入選項		

Figure 4-90 OneDrive user login screen

After a successful user login, the webpage will redirect you to the user permission authorization screen (as shown in Figure 4-91). Click "Accept" to proceed to the authorization screen.





Next, the webpage will redirect you to the authorization code screen (as shown in Figure 4-92). Copy the authorization code from the "code" parameter in the URL and paste it



into the field in the cloud authorization dialog window. Then click "Execute" (as shown in Figure 4.60).

C trafficat > 1		
O (     Destinational is a closed and instantion     Code. Baseland Code (     Destination     Code)     Code     Code	Neg Ilau (M77) Kultarian Dushaya/Rabadahakaba-Di Ataong asalari	нікаліурацыі Керністи регирника тарахов опітарий артигаль 😰 🔬
	1	
	Ann M. Lander, J. Salin Ann Ann A.	
	無法連上這個網站	
	localhort 他们在你。	
	伊爾爾德:: • 他回道洋派教	
	- 新聞Alline Alline A	
	HILCOMPANY AND A HILPAN	
	=C&A	\$10° \$20°

Figure 4-92 Google Drive generates an authorization code screen

Upon successful authorization, a dialog window will appear indicating the authorization was successful. The connection status will also be updated to "Connected" (as shown in Figure 4-93, Figure 4-94).

۵	System	Private Server Dropbox Google OneDrive Azure AWS S3 AWS IoT
$\otimes$	Modbus	OneDrive X
		Name Sucess
ሇ	I/O	Connection     Authorization successful.
		Tenant ID 77a01e
8	Data Log	Client ID
		Client Secret K.D8Q~F.fVKqGc5M0nca1jEkSP4JnYNvL5TqQdB8
6	Cloud	Connection Ø
a	OPCUA	Connection Status Connected
••	0.0011	* Setting
	SEC S/GEM	Upload
		Upload Mode Time Interval

Figure 4-93 Google Drive authorization success dialog window

٠	System	Private Server Dropbox Google OneDrive Azure AWS S3 AWS IoT
$\otimes$	Modbus	OneDrive
		Name Value
ሇ	I/O	4 Connection
		Tenant ID
8	Data Log	Client ID
		Client Secret
•	Cloud	Connection 🔗
n	OPCUA	Connected Connected
•••	oroon	* Setting
	SEC S/GEM	Upload
		Upload Mode

#### Figure 4-94 Google Drive connection status

## 4.1.5.5 Azure

To automatically upload data to an Azure Storage account using nDAS, you will need to establish a device connection to the Azure Storage account through Azure IoT Hub.

## 4.1.5.5.1 Azure IoT Hub and Azure Storage Account Setup Process

First, go to the Microsoft Azure developer portal homepage and log in with your Microsoft account. Then, click on the IoT Hub icon (as shown in Figure 4-95).

Azure 服務								
 建立資源	よ IoT 中極	Azure Active Directory	<b>國</b> 存續換戶	Logic Apps	新有資源	使用編式服務	<b>》</b> 快速入門中心	→ 更多服務

Figure 4-95 Azure IoT Hub

Enter IoT Hub and click "Create" to create an IoT Hub (as shown in Figure 4-96).

IoT 中樞 ☆ … NEXCOM International Co., Ltd. (nexaiot.com)					
🕂 建立 😳 管理檢視 🗸 🖒 重新整理 🚽 匯出至 CSV 😪 建立查詢 🛛 📀 指派標籤					
節選任何欄位 訂用帳戶 等於 全部 資源群組 等於 全部 × 位置 等於 全部 ×	+ → 加入篩選				
正在顯示1至1筆記錄 (共1筆)。					
名稱 ↑↓	類型 ↑↓				
DAS-Series	IoT 中樞				

### Figure 4-96 Ready to build IoT Hub

Select your Azure subscription account and enter the IoT Hub name. Choose the appropriate pricing and scale tier and click on "Review + Create" (as shown in Figure 4-97). Next, review the configuration settings and click on "Create" (as shown in Figure 4-98) to proceed.



標記 檢閱 + 建立	
十億的 IoT 資產。 深入了解 ピ	
使用資源群組 (例如資料夾) 有助於您組織及管理資源。	
VisionGateway	$\sim$
G01 新建	$\sim$
nDAS6000-Series	~
East US	$\sim$
標進 (最熱門)	$\sim$
比較層級	
400,000 (\$775.05/月) 奇男紙有器頂	$\sim$
	+億的 IoT 寶產。 深入了解 ご 使用寶源群組 (例如寶料夾) 有助於您組織及管理寶源。 VisionGateway GO1 新建 nDAS6000-Series East US 種連 (最熱門) 比較層級

檢閱 + 建立	                                                                                                                                                                                                                                                                                                                                                     
	USEL



基本 網路功能 管理	附加元件 標記 檢閱 + 建立	
價格		
IoT 中樞	\$775.05 TWD 每月 變更基本資料	
附加元件總計	\$0.031 TWD 每部裝置 每月 變更附加元件	3
基本		
訂閱	VisionGateway	
資源群組	G01	
IoT 中樞名稱	nDAS6000-Series	
區域	East US	
已啟用災害復原	是	
層級	Standard	
每日訊息限制	400,000 (\$775.05/月)	
網路功能		
連線設定	公用存取	
私人端點連線	<b>#</b>	
允許公用網路存取	啟用	
最小 TLS 版本	1.0	
管理		
層級	S1	
S1 IoT 中樞單位數	1	
裝置到雲端的磁碟分割	4	

Figure 4-98 Confirm and build IoT Hub

Navigate to the IoT Hub endpoint that you have created. In the menu, select "Devices" and click on "New" to add a new device (as shown in Figure 4-99).

首頁 > IoT 中樞 > nDAS6000-Series					
IoT 中樞 NEXCOM International Co., Ltd.	«	■ nDAS6000-Series	装置 ☆ ☆ …		
+ 建立 🔅 管理檢視 🗸 …		₽ 搜尋 《	檢視、建立、刪除和更新您 IoT 中樞中	中的裝置。 <u>深入了解</u>	
篩選任何欄位		光 森観	▲ + 新増裝置 == 編輯資料行 (	〕重新整理 <⊘ 指派標績	蹠 📋 刪除
名稱 ↑↓		■ 活動記錄	✓ 輸入裝置識別碼	類型:全部 十新増額	音選
nDAS-Series		⁸ ☆ 存取控制 (IAM)	a mar crana marza na		
🛪 nDAS6000-Series		有籤	装置識別碼	類型	狀態
		🤌 診斷並解決問題			
		🗲 事件	沒有任何可顯示的裝置。		
		装置管理			
		■ 装置			
		💁 IoT Edge			
		🕺 設定 + 部署			
		🧼 更新			
		🔎 查詢			
		中樞設定			
		ೕ 內建端點			
		🔀 訊息路由			
		🕒 榴窯上傳			
		🐣 容錯移轉			
		定價與級別			
		層性			
		台 鎖定			

Figure 4-99 Add IoT Hub device

During the device creation process, enter a device identifier, which will be used for subsequent connection authentication. After entering the identifier, click on "Save" (as shown in

Figure 4-100).

<del>入</del> 建立裝置	
↑ 在裝置目錄中尋找 Azure IoT 認證裝置	
装置識別碼 * ①	
nDAS6050_001	
□ IoT Edge 裝置	
驗證類型 ① 對稱金論 已自我簽署的 X.509 已簽署的 X.509 CA	
自動產生金鑰 ① ✓	
將這個裝置連線至 loT 中幅 ①	
父装置 ①	
沒有任何父装置 設定父装置	

儲存

Figure 4-100 IoT Hub device identification code



NÈ&IOT

Go back to the Microsoft Azure developer portal homepage and click on the Storage account icon (as shown in Figure 4-101).

Azure 服務

+	X		Azure Active	-		Ŷ	۲	×	$\rightarrow$
建立資源	IoT 中樞	儲存體帳戶	Azure Active Directory	Logic Apps	所有資源	訂用帳戶	應用程式服務	快速入門中心	更多服務

Figure 4-101 Azure storage account

Navigate to the Storage account menu and click on "Create" (as shown in Figure 4-102).

儲存體帳戶 ☆ … NEXCOM International Co., Ltd.		
🕂 建立 🏷 還原 🚳 管理檢視 🗸 🖒 重新整理	业 匯出至 CSV % 建立查詢 │   ◎ 指派標籤   前 删除	
節選任何欄位 訂用帳戶 等於 全部	資源群組 等於 全部 Ⅹ 位置 等於 全部 Ⅹ +√ 加入篩選	
正在顯示 1 至 2 筆記錄 (共 2 筆)。		
名稱 ↑↓	類型 ↑↓	種類 ↑↓
🗌 🚍 ndascloudupload	儲存體帳戶	StorageV2
🗌 🚍 ndastest01	儲存體帳戶	StorageV2

Figure 4-102 Ready to create storage account

Enter the name for the storage account and click on "Review". Wait for the review process to complete. Once the information is confirmed, click on "Create" (as shown in Figure 4-103).

建立儲存體帳戶		建立儲存體帳戶	
基本 進階 網路 資料保護 加 ——	密 標鏡 檢閱	基本 進階 網路 資料保護	加密標鏡檢閱
	I提供具高可用性、安全性、持久性、調整能力及傳播能力的審減儲存體。Azure 儲存 ie Storage Gen2、Azure 借索儲存體、Azure 行列及 Azure 貸利表。儲存體帳戶的費用 盛入了聲 Azure 储存體帳戶	基本	
		訂用帳戶	VisionGateway
		實源群組	G01
專案詳細資料		位置	japanwest
避即要在其中建立新供存釉幅后的印刷。	青骥攮新的或現有的資源群組,以便一併整理和管理您的儲存體帳戶與其他資源。	儲存體帳戶名稱	nexaiot
		部署模型	Resource manager
訂用帳戶 *	VisionGateway V	效能	Standard
資源詳細*	G01 V	複寫	請取權限異地備援儲存體 (RA-GRS)
295,000 ST 842	新建	進階	
		啟用階層命名空間	已停用
執行個體詳細資料		啟用網路檔案系統 v3	已停用
**************************************		允許跨租用戶複寫	已廠用
如果您需要建立酱版儲存體帳戶類型,請打	安一下 這裡。	存取層	Hot
儲存體帳戶名稱 ① *	nexaiot	啟用 SFTP	已停用
	(Asia Pacific) Japan West	大型檔案共用	Disabled
區域 ① *	(Asia Pacific) Japan West	網路	
		網路連線	公用端點 (所有網路)
效能 ① *	● 標準:建議用於大多數案例 (一般用途 v2 帳戶)	預設路由層	Microsoft 網路路由
	◯ 進階: 建谱用於需要低延湿的案例。	端點類型	標準
備援 ① *	異地備援儲存體 (GRS) 🗸	安全性	
	✔ 在區域無法提供服務時,對可用的資料進行講取存取。	安全傳驗	己敏用
<b>检阅</b> < 上一	步 下一步:進降 >	建立 《上	步 下一步 > 下截自動化的範本

### Figure 4-103 Review and create storage accounts

Click the account at the end of the storage account menu (as shown in Figure 4-104).

儲存體帳戶 ☆ … NEXCOM International Co., Ltd.		
+ 建立 🍤 還原 🚳 管理檢視 🗸 💍 重新整理	🧕 匯出至 CSV 😚 建立查詢 📗 🖗 指派標籤 💼 刪除	
篩選任何欄位 訂用帳戶 等於 全部	資源群組 等於 全部 × 位置 等於 全部 × ⁺√ 加入篩選	
正在顯示1至3筆記錄 (共3筆)。		
名稱 ↑↓	類型 ↑↓	種類 ↑↓
🗌 🚍 ndascloudupload	儲存體帳戶	StorageV2
🗌 🚍 ndastest01	儲存體帳戶	StorageV2
nexaiot	儲存體帳戶	StorageV2

Figure 4-104 Storage Account

Navigate to the storage account and click on the "Containers" option in the menu (as shown in Figure 4-105).

inexaiot ☆ ☆ … 儲存體帳戶	
₽ 搜尋 《	┌ 上傳 🏪 在總管中開啟 🔟 刪除 → 移動 🗸 🖒 重新整理 🧧 在行動裝置中開啟
■概観	へ 程式集
■ 活動記錄	資源群組 ( <u>移動</u> ) : G01
✓ 標籤	位置 : Japan West
🤌 診斷並解決問題	主要/次要位置 :主要: Japan West,次要: Japan East
8 存取控制 (IAM)	訂用帳戶 ( <u>移動)</u> : VisionGateway
資料移轉	訂用帳戶識別碼: 832af5e4-6708-4618-b499-4eb076227d98
🗲 事件	磁碟狀態 : 主要: 可用, 次要: 可用
■ 儲存體瀏覽器	標籤 (編輯) : 按一下這裡即可新增標籤
🔌 Storage Mover	屬性 監視 功能(7) 建議(0) 教學課程 工具 + SDK
資料儲存	■ Blob 服務
· · · · · · · · · · · · · · · · · · ·	■ 500 mm ■ 500 mm ■ 600 mm<
- 檔案共用	福祉(An Gine Die)の 預設存取層 Hot
□□ 佇列	Blob 公用存取 已愈用
□ 資料表	Blob 虛刪除 已啟用 (7 天)

Figure 4-105 Storage account container menu

Then click to add a new container (as shown in Figure 4-106).



■ nexaiot   容器	
	+ 容器 🔒 變更存取層級 🏷 還原容器 🗸 💍 重新整理
■概観	依首碼搜尋容器
■ 活動記錄	
◆ 標籤	名稱
🧷 診斷並解決問題	\$logs
⁸ ♀ 存取控制 (IAM)	
資料移轉	
🗲 事件	
■ 儲存體瀏覽器	
🗎 Storage Mover	

Figure 4-106 ready to build container

Enter the container name and create a new container (as shown in Figure 4-107).

新增容器	×
名稱 *	
ndascontainer	
公用存取層級 ① 私人 (沒有匿名存取)	$\overline{}$
◇ 進階	



Figure 4-107 Add container

NEXXIOT

Go back to the IoT Hub menu and select "File upload" from the menu. Then click on "Select Azure Storage container" (as shown in Figure 4-108).

<b>▶ nDAS6000-Series</b>   檔案上傳 ☆ …				
₽ 搜尋 《	□ 儲存 × 捨棄			
※ 概観 🌷				
■ 活動記錄	① 您會在這裡指定上傳檔案時,要發出通知的儲存體容器、檔案到期日及重試次數。			
⁸ ☆ 存取控制 (IAM)				
◆ 標籤	儲存體容器設定 り 清除			
🤌 診斷並解決問題	Azure 儲存體容器			
🗲 事件	選取 Azure 儲存體容器			
装置管理	檔案通知設定			
■ 装置	接收上傳檔案的通知 ①			
IoT Edge	SAS TTL ①			
😤 設定 + 部署	0			
🧼 更新				
🏓 查詢	預設 TTL ①			
中樞設定	0			
☞ 內建端點	最大傳遞計數 ①			
🔀 訊息路由	O			
檔案上傳	驗證類型			
🕐 容錯移轉	請選擇此檔案上傳端點的驗證類型。 深入了解。 🗗			
定價與級別	● 以金鑰為基礎			
屬性	○ 条統指派			
吕 鎖定	○ 使用者指派			

Figure 4-108 Configure IoT Hub file upload to storage container

Next, select the desired storage account (as shown in Figure 4-109), choose the specified container, and click on "Select" (as shown in Figure 4-110).

健友體帳后

+ 儲存體帳戶 💟 重新整理 🛛 🖓 提供意見反應
搜尋儲存體帳戶
名稱
ndascloudupload
ndastest01
nexaiot

# Figure 4-109 IoT Hub select storage account



容器 nexaiot	
十 容器	🖒 重新整理 🛛 🔗 提供意見反應
₽ 依首碼	授專奇器
名稱	
\$logs	
ndascont	ainer

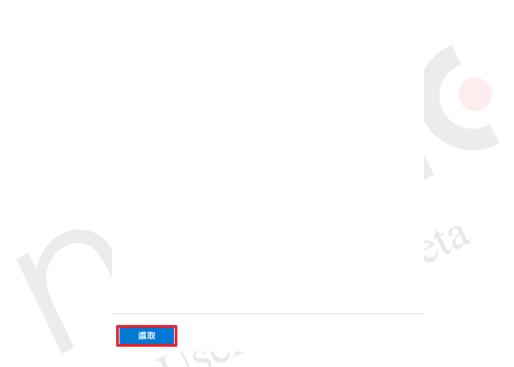


Figure 4-110 IoT Hub selects the container of the storage account

After completing the configuration for uploading files to the specified storage container, go back to the IoT Hub menu and click on "Save" (as shown in Figure 4-111).



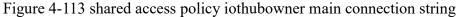
nDAS6000-Series | 檔案上傳 ☆ … loT 中樞 ₽ 搜尋 📙 儲存 🗙 捨棄 💦 概觀 📄 活動記錄 ⑦ 您會在這裡指定上傳檔案時,要發出通知的儲存體容器、檔案到期日及重試次數。 冷 存取控制 (IAM) 4 檀簌 儲存體容器設定 ႒ 清除 Azure 儲存體帳戶 診斷並解決問題 Þ nexaiot 事件 装置管理 Azure 儲存體容器 ndascontainer 装置 IoT Edge Azure 儲存體容器 😤 設定 + 部署 ndascontainer 變更 Azure 儲存體容器 更新 💄 杳詢 檔案通知設定 接收上傳檔案的通知 ① 中樞設定 開閉 開啟 ● 內建端點 SAS TTL ① 🟒 訊息路由  $\cap$ 福案上傳 🐣 容錯移轉 預設 TTL ① 0 ① 定價與級別 | 層性 最大傳遞計數 ① 🔒 鎖定

Figure 4-111 Settings for uploading IoT Hub storage files to specified storage containers

#### 4.1.5.5.2 Basic Setting

First, go to the Microsoft Azure developer portal homepage and log in with your Microsoft account. Then, click on the IoT Hub icon (as shown in Figure 4-95). In the IoT Hub menu, select "Shared access policies" and click on "iothubowner" (as shown in Figure 4-112). Copy the primary connection string (as shown in Figure 4-113).





Click on the icon to access Azure Cloud Service Connection Settings (as shown in Figure 4-114). Table 4-27 provides the Azure connection and upload method settings.

```
NEXIOT
```



٠	System	Private Server Dropbox Google OneDrive Azure AWS 53 AWS IoT
0	Modbus	Azure
		Name Value
ሇ	I/O	* Connection
		Azure Device ID
8	Data Log	Connection String
		Connection
9	Cloud	Connection Status Disable
		* Setting
Ц	OPCUA	Upload
_		Upload Mode Time Interval
	SECS/GEM	Time Interval (ms) 5000
		File Name Format YYYYMMDDHHMMSS ~
		Time Stamp Format UTC ~

#### Figure 4-114 Azure cloud service connection settings

	Parameter name	Content
Connection	Azure Device Identifier	Enter the Azure device identifier.
	Connection String	Enter the connection string.
	Connection	Click the button to enter cloud authorization settings.
	Connection Status	Display the connection status.
Settings	File Upload	Enable/Disable file upload.
	Upload Method	Time interval/Item cycle interval.
	Time Interval (ms)	Enter the time based on the upload method time
		interval mode.
	Item Cycle Interval	Enter the quantity based on the upload method
	(quantity)	item cycle interval mode.
	File Name Format	YYYYMMDDHHMMSS / YYYYMMDD
	Timestamp Format	UTC / Local Time.

#### Table 4-27 Azure Cloud Connection Setting Parameters

#### 4.1.5.5.3 Connection Process

After creating the connection endpoint in Azure IoT Hub and adding a device connected to the storage container, go to the "Devices" section in Azure IoT Hub and find the device identifier for the data to be uploaded (as shown in Figure 4-100). Enter this device identifier in the Azure Device Identifier field. In the "Shared access policies" section of Azure IoT Hub, copy the primary connection string for "iothubowner" (as shown in Figure 4-113) and paste it into the Connection String field. Finally, click on the Connect button (as shown in Figure 4-115).



٠	System	Private Server Dropbox Google OneDrive Azure AWS S3 AWS IoT
	Modbus	Azure
ሇ	I/O	Name Value  Connection
_		Azure Device ID nDAS6050_001
9	Data Log	Connection String         HostName=nDAS6000-Series azure-devices net_SharedAccessKey=4F9oEV/DSF           Connection         Ø
٥	Cloud	Connection Status Disable
n	OPCUA	Setting     Upload
•	SECS/GEM	Upload Mode
••••		Time Interval (ms)     3600000       File Name Format     YYYYYMMDDHHMMSS
		Time Stamp Format     UTC

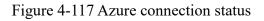
Figure 4-115 Enter the device identification code and the main connection string and click the connect button

After the verification process is completed, a dialog window will appear indicating successful authorization, and the connection status will be updated to "Connected" (as shown in Figure 4-116, Figure 4-117).

٠	System	Private Server	Dropbox	Google	OneDrive	Azure	AWS S3	AWS IoT				
$\otimes$	Modbus	Azure										
		Name					Value					
ሇ	I/O	* Connection	1		Cloud Auth	orization Result:A	zure		×			
_		Azure Devi	ce ID			<b>C</b>	cess					
2	Data Log	Connection	String						-devices.net,SharedAccessKeyName=iothubowner;SharedAccessKey=4F9oEV/DSF			
		Connection				Con	nected	Ø				
6	Cloud	Connection						ок				
		* Setting	Status					OK				
п	OPCUA	Upload										
			4.				Time Interval					
	SECS/GEM	Upload Mo	de				Time Inte	rval	V			
	SECS/GEM	Time Interv	al (ms)				3600000					
		File Name	Format				YYYYM	IDDHHMMSS	~			
		Time Stam	p Format				UTC		~			

Figure 4-116 Azure connection success dialog window

٠	System	Private Server Dropbox Google OneDrive Azure AWS S3 AWS IoT
0	Modbus	Azure
		Name Value
ሇ	I/O	* Connection
		Azure Device ID nDAS6050_001
8	Data Log	Connection String HostName=nDAS6000-Series azure-devices.net,SharedAccessKeyName=iothubowner,SharedAccessKey=4F90EV/DSH
		Connection S
9	Cloud	Connected Connected
		' Setting
Ц	OPCUA	Upload C
_		Upload Mode Time Interval
	SECS/GEM	Time Interval (ms)
		File Name Format YYYYMDDHHMMSS Y
		Time Stamp Format



#### 4.1.5.6 AWS S3

### 4.1.5.6.1 AWS S3 Account Setup Process

Users need to obtain the Access Key ID and Secret Access Key for their AWS account security

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Account ID:

credentials in the AWS service (as shown in Figure 4-118).

 Image: Services
 Q. Search for services, features, blogs, docs, and more
 [Alt+5]

 All services
 Image: Service s

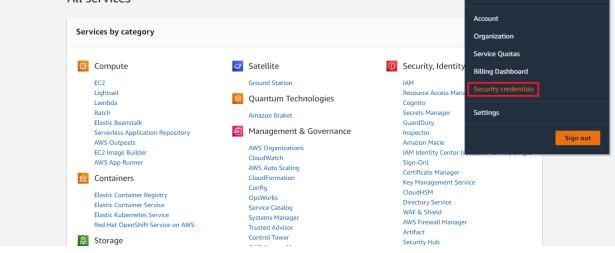


Figure 4-118 account security credentials

Next, expand the Access Keys and create a new access key (as shown in Figure 4-119, Figure 4-120).

dentity and Access lanagement (IAM)		Your Securit	ty Credentials						
	- 1	Use this page to manag	e the credentials for your AWS	account. To manage cred	lentials for AWS Identity ar	nd Access Manageme	nt (IAM) use	ers, use the	IAM Consol
Dashboard									
Access management		To learn more about the	types of AWS credentials and	how they're used, see AV	VS Security Credentials in	AWS General Referer	ice.		
User groups		<ul> <li>Password</li> </ul>							
Users		<ul> <li>Multi-factor aut</li> </ul>	thentication (MFA)						
Roles			access key ID and secre	t access key)					
Roles Policies		Access keys (a	access key ID and secre	et access key)					
	L	Use access keys to	make programmatic calls to A		ols for PowerShell, AWS SI	DKs, or direct AWS AF	PI calls. You	can have a	maximum
Policies	L	Use access keys to			ols for PowerShell, AWS SI	DKs, or direct AWS AF	PI calls. You	can have a	maximum
Policies Identity providers Account settings	L	Use access keys to n of two access keys ( For your protection,	make programmatic calls to A	WS from the AWS CLI, Too	s a best practice, we recon	nmend frequent key ro	otation.		maximum
Policies Identity providers Account settings		Use access keys to n of two access keys ( For your protection,	make programmatic calls to Al (active or inactive) at a time. you should never share your s	WS from the AWS CLI, Too	s a best practice, we recon	nmend frequent key ro	otation.	arn more	maximum
Policies Identity providers Account settings Access reports Access analyzer		Use access keys to of two access keys ( For your protection, if you lose or forge	make programmatic calls to Al active or inactive) at a time. you should never share your s t your secret key, you canno Access Key ID	NS from the AWS CLI, Too ecret keys with anyone. A t retrieve it. Instead, cre	s a best practice, we recon ate a new access key and Last Used	nmend frequent key ro d make the old key ir Last Used	otation. nactive. Lea	arn more	
Policies Identity providers Account settings Access reports Access analyzer Archive rules		Use access keys to of two access keys ( For your protection, If you lose or forge Created	make programmatic calls to Al active or inactive) at a time. you should never share your s t your secret key, you canno Access Key ID	NS from the AWS CLI, Too ecret keys with anyone. A t retrieve it. Instead, cre	s a best practice, we recon ate a new access key and Last Used	nmend frequent key ro d make the old key ir Last Used	otation. nactive. Lea	arn more	

Figure 4-119 expand the Access Keys



entity and Access anagement (IAM)		To learn more about the	types of AWS credentials and	how they're used, see AV	VS Security Credentials i	n AWS General Refere	nce.		
,	1	<ul> <li>Password</li> </ul>							
Dashboard		<ul> <li>Multi-factor auth</li> </ul>	nentication (MFA)						
Access management		<ul> <li>Access keys (a)</li> </ul>	ccess key ID and secre	t access key)					
User groups									
Users		· · · · · · · · · · · · · · · · · · ·	nake programmatic calls to AV active or inactive) at a time.	/S from the AWS CLI, Too	ols for PowerShell, AWS	SDKs, or direct AWS AP	PI calls. You can	have a maximu	um
Roles			,						
Policies			rou should never share your se your secret key, you cannot	· · · · · · · · · · · · · · · · · · ·	and the second	1 A A		nore	
Identity providers			, jour coorer nej, jou cumo		Last Used	-	Louin -	1010	
Account settings		Created	Access Key ID	Last Used	Region	Last Used Service	Status	Actions	
Access reports		Create New Acces	ss Key						
Access analyzer									_
Archive rules		Root user access	s keys provide unrestricted acc	ess to your entire AWS a	ccount. If you need long-	term access keys, we r	ecommend crea	ating a new	
		IAM user with lim	ited permissions and generati	ng access keys for that u	ser instead. Learn more				
Analyzers									
Analyzers Settings									

Figure 4-120 create a new access key

After clicking the button, a new set of Access Key ID and Secret Access Key will be generated. It is recommended to either backup the keys or directly download the key file (as shown in Figure 4-121). These credentials will be needed when connecting to AWS S3 later on.

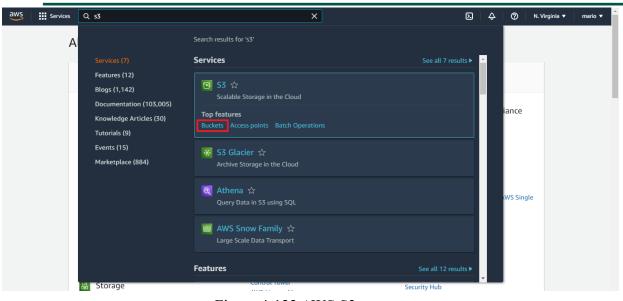
	h for services, features, blogs, docs, and more [Alt+S]	D	\$ Ø	Global 🔻	mario
Identity and Access Management (IAM)	🕆 🕻 Your Security Credentials				
	Use this page to manage the credentials for your AWS account. To manage credentials for AWS Identity and Acc	ess Manageme	ent (IAM) users,	use the IAM Co	onsole
Dashboard					
→ Access management	To learn more about the types of AWS credentials and how they're used, see AWS Security Credentials in AWS C	General Refere	nce.		
User groups	▲ Password				
Users	Create Access Key				
Roles		-			
Policies	Vour access key (access key ID and secret access key) has been created successfully.				
Identity providers	Download your key file now, which contains your new access key ID and secret access key. If you do not download the key file now, you will not be able to retrieve your secret access key again.	irect AWS A	PI calls. You can	have a maxim	hum
Account settings	To help protect your security, store your secret access key securely and do not share it.				
	▼ Hide Access Key	equent key r	rotation. i <b>nactive.</b> Learn r	nore	
Access analyzer	Access Key ID:		naouve. Loann	nore	
Archive rules		t Used rvice	Status	Actions	
Analyzers	Download Key File Close				
Settings					
Credential report	Root user access keys provide unrestricted access to your entire AWS account. If you need long-term acc	cess keys, we	recommend crea	ating a new	
Organization activity	IAM user with limited permissions and generating access keys for that user instead. Learn more				

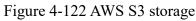
Figure 4-121 Store access key ID and private access key

Next, in the AWS cloud service, select the storage bucket feature of S3 (as shown in Figure 4-122). Click on "Create Bucket" (as shown in Figure 4-123) and follow the prompts to select and enter the desired attributes for the storage bucket. This will complete the process of creating the storage bucket based on the user's requirements.

#### Chapter 4







aws	Services	<b>Q</b> Search for se	rvices, features, blogs, docs, and more [Alt+S]	Σ	¢	0	Global 🔻	mario	·
Am	azon S3	×	③ Optimize costs and gain visibility into storage usage and trends with Amazon S3 Storage Lens.			View	tutorial	×	6
Buck	cets	_	Amazon S3 > Buckets						
Obje	ss Points ect Lambda Access i-Region Access P		► Account snapshot Storage lens provides visibility into storage usage and activity trends. Learn more 【	View Sto	orage L	ens das	hboard		
	h Operations ss analyzer for S3	5	Buckets Info Buckets are containers for data stored in S3. Learn more 🖄	Delete		Create	bucket		
	k Public Access se account	ettings for	Q Find buckets by name			< 1	> ©		
▼ Stor	age Lens		Name     ▲     AWS Region     ▼     Access     ▼     0	Creation dat	te		$\bigtriangledown$		
	boards Organizations se	ettings	No buckets No buckets Create bucket						
Feat	ure spotlight 3								
► Δ\ <i>M</i> /ς	Marketolare for '	cz v	Figure 4-123 Create Storage						

### 4.1.5.6.2 Basic Setting

Click on the icon to access the AWS S3 cloud service connection settings (as shown in Figure 4-124). Table 4-28 provides the settings for AWS S3 cloud connection and upload methods.

٠	System	Private Server Dropbox Google OneDrive Azure AWS S3 AWS IoT
뫎	Modbus	WS \$3
		Name Value ^
ሇ	I/O	
		4 Connection
8	Data Log	AWS Region
		Access Key ID
•	Cloud	Secret Access Key
a	OPCUA	Bucket Name
60	oroun	Connection
	SECS/GEM	Connection Status No Connecting
		4 Setting
NE	TOLýc	

## Figure 4-124 AWS S3 cloud service connection settings

	D	Contout
	Parameter name	Content
Connection	AWS Region	Enter the AWS region.
	Access Key ID	Input the access key ID.
	Confidential Access	Input the confidential access key.
	Key	
	Storage Container	Input the name of the storage container.
	Name	
	Connection	Click the button to access cloud authorization
		settings.
	Connection Status	Display the connection status.
Settings	File Upload	Activate/Deactivate file uploading.
	Upload Method	Time interval/Periodic interval for the project.
	Time Interval	Enter the time based on the upload method time
	(milliseconds)	interval mode.
	Periodic Interval	Enter the quantity based on the upload method
	(quantity)	periodic interval mode.
	File Name Format	YYYYMMDDHHMMSS/YYYYMMDD
		format.
	Timestamp Format	UTC/Local Time.

### 4.1.5.6.3 Connection Process

After adding a storage container in AWS S3, kindly copy and paste the following information:

- AWS Region
- Access Key ID
- Secret Access Key
- Bucket Name

Once you have pasted the information, click on the "Connect" button (as shown in Figure 4-125).

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٠	System	Private Server Dropbox Google OneDrive Azure AWS S3 AWS IoT				
뮮	Modbus	AWS \$3				
		Name Value ^				
ሇ	I/O					
		4 Connection				
😑 🛛 Data Log		AWS Region ap-northeast-3				
	_	Access Key ID				
0	Cloud	Secret Access Key				
0-0	000114	Bucket Name				
n	OPCUA	Connection Ø				
	SECS/GEM	Connection Status No Connecting				
		4 Setting				

Figure 4-125 Enter the AWS S3 connection information and click the connect button

After the verification is completed, a dialogue window will appear confirming the successful authorization. The connection status will also be updated to "Connected" (as shown in Figure 4-126 and Figure 4-127).

٠	System	Private Server Dropbox Google OneDrive Azure AWS S3 AWS IoT
格	Modbus	AWS \$3
ሇ	I/O	Name Value   Countertion Cloud Authorization Result:AWS S3
9	Data Log	AWS Region Success
•	Cloud	Access Key ID Authorization successful. Secret Access Key
Ħ	OPCUA	Bucket Name
	SEC S/GEM	Connection Status Connected   Setting

Figure 4-126 AWS S3 connection success dialog window

٠	System	Private Server Dropbox Google OneDrive Azure AWS 53 AWS IoT	
格	Modbus	AWS \$3	
		Name Value	
ഹ	I/O		
		4 Connection	
9	Data Log	AWS Region ap-northeast-3	
-		Access Key ID	
~	Cloud		
•	Cloud	Secret Access Key	
		Bucket Name	
n	OPCUA	OPCUA	Connection
	SEC S/GEM	Connection Status Connected	
		4 Setting	

Figure 4-127 AWS S3 connection status

### 4.1.5.7 AWS IoT

### 4.1.5.7.1 AWS IoT Account Setup Process

After logging in to the AWS management console, refer to the following operation process.



### 4.1.5.7.1.1 Create Thing, Certificate of Thing, Policy of Thing

1. Click Services to enter the IoT Core entrance (as shown in Figure 4-128).

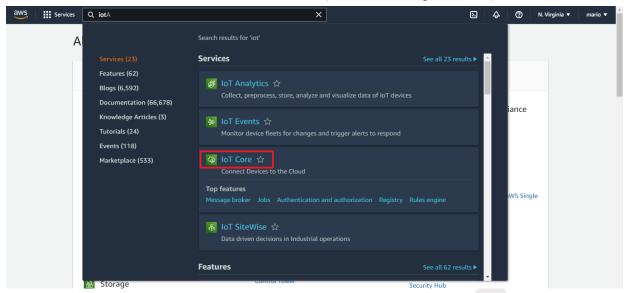


Figure 4-128 IoT Core Endpoint

2. Next, expand the "Manage" section on the left-hand side of the dashboard and click on "Things" to proceed with creating a Thing as instructed (as shown in Figure 4-129).

aws Services	Q         Search for services, features, blogs, docs, and more         [Alt+5]	¢	N. Virginia •
AWS IoT	AWS IoT > Manage > Things		
Monitor Activity	C       Advanced search       Run aggregations       Edit       Delete       Create things		
▼ Manage	Q Filter things by: name, type, group, billing, or searchable attribute.		< 1 >
Overview			
Things	Name Thing type		
Types Thing groups	No things		
Billing groups	No things to display in this Region		
Jobs	Create things		

Figure 4-129 Ready to Create Thing

3. When reaching step 3 of creating a Thing, you will need to choose a Policy. If you don't have a Policy available, please follow the instructions and navigate to "Policies" first to create a Policy (as shown in Figure 4-130).



Step 1 Specify thing properties	Attach policies to certificate - optional Info AWS IoT policies grant or deny access to AWS IoT resources. Attaching policies to th	ne device certificate applies this access to
Step 2 - <i>optional</i> C <b>onfigure device certificate</b>	the device.	
Step 3 - optional Attach policies to certificate	Policies (0) Select up to 10 policies to attach to this certificate.	C Create policy 🖄
	Q Filter policies	< 1 > @
	Name	
	No policies	
	No policies could be found in us-east-1.	

Figure 4-130 Ready to Create Policy

4. Based on your specific requirements, please fill in the options for the IoT Core actions and Policy resources you need. In this example, we will demonstrate granting full permissions, and please ensure to select "Allow" as the Policy effect. Once you have made your selections, click on "Create" (as shown in Figure 4-131).

Policy statements Policy	y examples
Policy document Info An AWS IoT policy contains one or n resources. Builder JSON	nore policy statements. Each policy statement contains actions, resources, and an effect that grants or denies the actions by the
Policy effect Allow	Policy action     Policy resource       ★     ▼
Add new statement	Cancel

Figure 4-131 Create Policy

5. Returning to the incomplete Thing screen, you will now see the newly created Policy. Select the desired Policy and proceed to create the Thing (as shown in Figure 4-132).

Step 1 Specify thing properties	Attach policies to certificate - optional Info AWS IoT policies grant or deny access to AWS IoT resources. Attaching policies to the device certificate applies this access to				
Step 2 - <i>optional</i> Configure device certificate	the device.				
Step 3 - optional Attach policies to certificate	Policies (1/1) Create policy 🖸				
	Q. Filter policies				
	✓ Name				
	nDAS_policy				
	Cancel Previous Create thing				

#### Figure 4-132 Complete the creation of Thing

6. Next, an automatic prompt will appear to download the certificates. Download all the certificates and click "Done" to complete the Thing creation (as shown in Figure 4-133). You can then verify the certificates by expanding the "Secure" section on the left-hand side of the dashboard, selecting "Certificates," and confirming the presence of the newly created certificates. By clicking on a certificate, you can view the associated Thing and Policy. It is recommended to delete and recreate the Thing, Policy, and certificates if any modifications to the Policy or Thing are required.

Download certificate and key files to install on your device AWS.	so that it can connect to
Device certificate You can activate the certificate now, or later. The certificate must be AWS IoT.	active for a device to connect to
Device certificate Deactivate certifi 3dd95d2a299te.pem.crt	cate 🕑 Download
Key files The key files are unique to this certificate and can't be downloaded a Download them now and save them in a secure place.	after you leave this page.
▲ This is the only time you can download the key files	s for this certificate.
Public key file 3dd95d2a299e127f216ce5d2689fd4-public.pem.key	▶         Download           ♥         Key downloaded
Private key file 3dd95d2a299e127f216ce5d689fd4-private.pem.key	단 Download
Root CA certificates Download the root CA certificate file that corresponds to the type of you're using. You can also download the root CA certificates later.	f data endpoint and cipher suite
Amazon trust services endpoint RSA 2048 bit key: Amazon Root CA 1	전 Download
Amazon trust services endpoint ECC 256 bit key: Amazon Root CA 3	[₩] Download
If you don't see the root CA certificate that you need here, root CA certificates. These root CA certificates and others a guides. Learn more	
	Done

Figure 4-133 Download the Certificate of Thing

### 4.1.5.7.1.2 Establish Rules for IoT Core to Communicate with S3

 Within the IoT Core portal, expand the "Act" section on the left-hand side of the dashboard, and click on "Rules" to proceed with creating a rule as instructed (as shown in Figure 4-134).



aws	Services	Q Search for services, features, blogs, docs, and more [Alt+S]	۶.	¢	0	N. Virginia 🔻
Certi	ficates	•				
Polic	ies	AWS IoT > Act > Rules				
CAs						
Role	Aliases	Rules (0) Info				
Auth	orizers	Rules allow your things to interact with other services. Rules are analyzed and perform specific actions based on messages p	ublished b	/ your dev	ices.	
Defer	nd	Q Find rules			<	1 > @
▼ Act						
Over	view	Name $\nabla$ Status $\nabla$ Rule topic 🖸		Cre	ated da	te
Rule	s	No rules				
Desti	nations	You don't have any rules in us-east-1.				
Test		Create rule				
						•

Figure 4-134 Ready to create Rule

2. During step 2 of creating a Rule, you need to enter an SQL statement. This statement determines which messages from the subscribed Topic in IoT Core will be affected and whether to add filters to extract specific information as needed (as shown in Figure 4-135).

Step 1 Specify rule properties	Configure SQL statement Info Add a simplified SQL syntax to filter messages received on an MQTT topic and push the data elsewhere.
Step 2 Configure SQL statement	
	SQL statement
Step 3	SOL version
Attach rule actions	The version of the SQL rules engine to use when evaluating the rule.
Step 4	2016-03-23
Review and create	SQL statement Enter an SQL statement using the following: SELECT <attribute> FROM <topic filter=""> WHERE <condition>. For example: SELECT temperature FROM 'int/topic' WHERE temperature &gt; 50. To learn more, see AWS IoT SQL Reference.</condition></topic></attribute>
Fig	gure 4-135 Create Rule-Configure SQL statement

3. During step 3 of creating a Rule, you need to choose an action. In this case, you must select the "S3 bucket" option (as shown in Figure 4-136).

Step 1 Specify rule properties	Att Q   Simple Queue Service (SQS) An act Send a message to an SQS queue	-
Step 2 Configure SQL statement	Apache Kafka Cluster Send a message to Apache Kafka within a VPC	Back
Step 3	Kinesis Stream A message sent to a VPC will be meterred with an additional action.	Datk
Attach rule actions	SEI Republish to AWS IoT topic Republish a message to an AWS IoT topic	
Step 4 Review and create	S3 bucket Store a message in an Amazon S3 bucket Set Set Set Set CloudWatch metric Send message data to CloudWatch metric	activities that dd up to 10
	Act CloudWatch alarm Chance the state of a CloudWatch alarm Choose an action Add rule action	Remove

Figure 4-136 Create Rule –Setup Rule Action



4. During step 3 of creating a Rule, after selecting the "S3 bucket" action, you will need to choose the specific S3 Bucket where you want to store the data (as shown in Figure 4-137). If you haven't created the Bucket beforehand, you will need to navigate to the entry point of the S3 service and create the Bucket there (as shown in Figure 4-138).

tic	on 1
	S3 bucket Remove
В	ucket name Info
S	3 URL
	Q s3://bucket View 🖾 Browse S3
	ley he 53 key for this message.
Ē	s3key
_	anned ACL he Amazon S3 canned ACL that controls access to the object identified by the object key.
	private 🗸
	AM role
Ē	hoose a role to grant AWS IoT access to your endpoint.
	Choose an IAM role   C View  C C Create new role

Figure 4-137 Create Rule - Select S3 Bucket in action

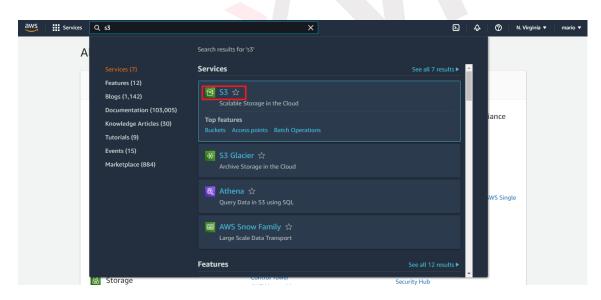
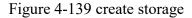


Figure 4-138 AWS S3 Endpoint

5. Upon accessing the AWS S3 service endpoint, click on "Create bucket" and proceed to create the Bucket as instructed (as shown in Figure 4-139).



Services Q Search for se	rvices, features, blogs, docs, and more	[Alt+S]		<b>∑</b>	lobal 🔻
Amazon S3 ×	Amazon S3 > Buckets				
Buckets Access Points Object Lambda Access Points	<ul> <li>Account snapshot</li> <li>Storage lens provides visibility into st</li> </ul>	torage usage and activity trends. Learn more	Ľ	View Storage Lens dashboa	ird
Multi-Region Access Points Batch Operations Access analyzer for S3	Buckets (2) Info Buckets are containers for data stored in	C	D Copy ARN Empty	Delete Create buck	ket
Block Public Access settings for	Q Find buckets by name		-	< 1 >	٢
this account Storage Lens	Name       ○     ndascontainer	AWS Region  V Asia Pacific (Osaka) ap- northeast-3	Access Bucket and objects not public	Creation date March 21, 2022, 13:05:01 (UTC+08:00)	~
Dashboards AWS Organizations settings	<ul> <li>test-mqtt-message- bucket</li> </ul>	US East (N. Virginia) us-east-1	Bucket and objects not public	April 27, 2022, 09:32:04 (UTC+08:00)	



6. Please note that it is important to ensure that the AWS Region of the Bucket matches the Region of IoT Core (as shown in Figure 4-140 and Figure 4-141).

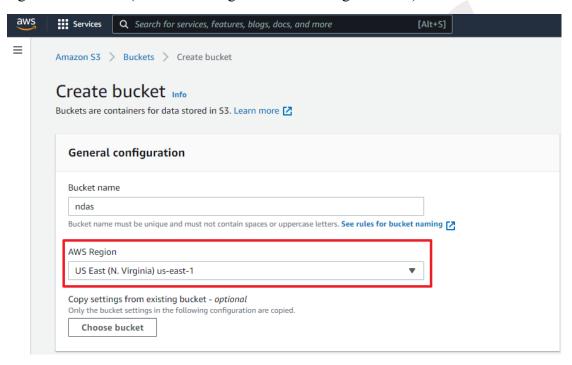
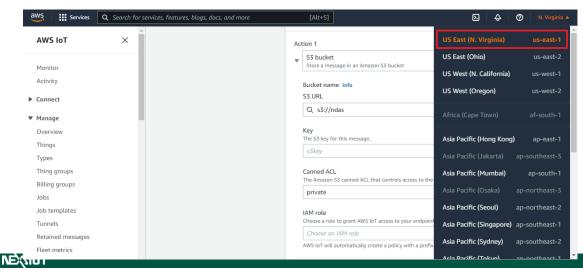


Figure 4-140 AWS Region in Bucket



### Figure 4-141 AWS IoT Core Region

7. Continuing with step 3 of creating the Rule, after selecting the completed bucket, you need to enter a Key (as shown in Figure 4-142). The Key represents the file name of the data stored in S3. Here is an example code for the Key:

\${topic()}/\${parse_time("yyyy", timestamp())}\${parse_time("MM", timestamp())}\${parse_time("dd", timestamp())}/\${timestamp()}.csv The path of the object seen in S3 will be shown as follows: nDAS_Series/nDAS600/20220101/1641041999000.csv

	S3 bucket  Store a message in an Amazon S3 bucket
1	ucket name Info
1	3 URL
	Q s3://ndas X View 🗷 Browse S3
	ey
Ì	ne S3 key for this message.
	{topic()}/\${parse_time{"yyyy", timestamp())}\${parse_time("MM", timestamp())}\${parse_time("dd", timestamp())}/
	<pre>\${topic()}/\${parse_time("yyyy", timestamp())}\${parse_time("MM", timestamp())}\${parse_time("dd", timestamp())}, anned ACL ne Amazon S3 canned ACL that controls access to the object identified by the object key. private</pre>
	anned ACL ne Amazon S3 canned ACL that controls access to the object identified by the object key.
	anned ACL ne Amazon S3 canned ACL that controls access to the object identified by the object key. private
	ne Amazon S3 canned ACL that controls access to the object identified by the object key.  private  M role noose a role to grant AWS IoT access to your endpoint.

8. During step 3 of creating the Rule, you need to choose an IAM role responsible for writing data to the S3 Bucket. If you haven't created the role beforehand, you can select "Create new role" and enter a name for the role (as shown in Figure 4-143 and Figure 4-144).

tion 1	
S3 bucket	Remove
Store a message in an Amazon S3 bucket	
Bucket name Info	
S3 URL	
Q s3://ndas X View [2	Browse S3
Key	
The S3 key for this message.	
<pre>\${topic()}/\${parse_time("yyyy", timestamp())}\${parse_time("MM", timestamp())}\${parse_time("MM", timestamp())}}</pre>	ime("dd", timestamp())}/:
Canned ACI	
The Amazon S3 canned ACL that controls access to the object identified by the object key.	
private	•
IAM role	
Choose a role to grant AWS IoT access to your endpoint.	
Choose an IAM role   View  C	reate new role
AWS IoT will automatically create a policy with a prefix of "aws-iot-rule" under your IAM role selected.	

Figure 4-143 Ready to create IAM role





Create role		
Create role	×	
Dela mene		
Role name		1
put_obj_to_s3_from_iot_core		ne("dd", timestamp())
Enter a unique role name that contains name can't contain any spaces.	alphanumeric characters, hyphens, and underscores. A role	
name can't contain any spaces.		
	Cancel Create	
IAM role	Cancel Create	
IAM role Choose a role to grant AWS IoT access to		
		Create new role

Figure 4-144 Enter name of IAM Role

Please note that the Role requires a Policy in order to have functionality. You will need to navigate to the IAM entry point separately to create the required Policy for the Role.

9. After completing the Action, click on "Next" to proceed. The next step is to review the Rule, ensure everything is correct, and then click on "Create" to finalize the creation (as shown in Figure 4-145).

aws	Services	<b>Q</b> Search for services, featu	es, blogs, docs, and more [Alt+S]	Σ.	¢	0	N. Virginia 🔻
=			Canned ACL The Amazon S3 canned ACL that controls access to the object identified by the object key. private			•	
			IAM role Choose a role to grant AWS IoT access to your endpoint. put_obj_to_53_from_iot_core AWS IoT will automatically create a policy with a prefix of "aws-iot-rule" under your IAM role selected.	w rol	e		
			Add rule action				
			Error action - optional You can optionally set an action that will be executed when something goes wrong with processing your rule. If two rule rule fail, the error action receives one message that contains both errors.	actio	ns in the	same	
			Add error action				
			Cancel Prev	ious		Next	]

Figure 4-145 Check and finish creating Action

7. Click Services to enter the IAM entry (as shown in Figure 4-146).



WS Services Q IAM	×	Σ	¢	0	N. Virginia 🔻	mario 🔻
A	Search results for 'IAM'					
Services (6) Features (17) Blogs (1,424) Documentation (113,4) Knowledge Articles (30 Events (6) Marketplace (371)	Ton features	accounts and cloud applications		iance WS Sing	le	
	Features		Ŧ			
🔠 Storage	Control Tower	Security Hub		-		

Figure 4-146 IAM Endpoint

10. Upon accessing the IAM entry point, expand the "Access management" section on the lefthand side of the dashboard and click on "Roles." Here, you will be able to see the Role that was created earlier (as shown in Figure 4-147).

Management (IAM)	IAM >				
Q. Search IAM	An IA	95 (6) Info M role is an identity you can create that has for short durations. Roles can be assumed by	specific permissions with credentials that are entities that you trust.	Delete	Create role
Dashboard	_	Search			< 1 > @
Access management User groups					
Users		Role name			Last activity
Roles		AWSServiceRoleForAmazonSSM	AWS Service: ssm (Service-Linked Role)		-
Policies		AWSServiceRoleForOrganizations	AWS Service: organizations (Service-Linked Role)		119 days ago
dentity providers Account settings		AWSServiceRoleForSSO	AWS Service: sso (Service-Linked Role)		-
Access reports		AWSServiceRoleForSupport	AWS Service: support (Service-Linked Role)		-
Access analyzer Archive rules		AWSServiceRoleForTrustedAdvisor	AWS Service: trustedadvisor (Service-Linked Role)		-
Analyzers		put_obj_to_s3_from_iot_core	AWS Service: iot		-
Settings					

11. Click on the "Policies" option on the left-hand side of the dashboard and proceed to create a Policy for "Put Object" operation to the S3 Bucket (as shown in Figure 4-148).

aws Services Q Search for	r services, features, blogs, docs, and more [Alt+	s]	
Identity and Access X Management (IAM)	Introducing the new Policies list experience     We've redesigned the Policies list experience to make it ea	sier to use. <u>Let us know what you think</u> .	
Q Search IAM	IAM > Policies		
Dashboard	Policies (945) Info		2 Actions 🔻
Access management User groups	A policy is an object in AWS that defines permissions.		Create Policy
Users	Q Filter policies by property or policy name and pres	s enter < 1 2 3	3 4 5 6 7 48 > 🧿
Roles			
Policies	Policy name	🗢 Туре	✓ Used as ✓ Description
Identity providers	①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①	AWS managed	None Provides read only
Account settings	①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①	AWS managed	None Provides read only
Access reports Access analyzer	○	AWS managed	None Provides the abilit
Archive rules Analyzers	ClientVPNServiceRolePolicy	AWS managed	None Policy to enable A
Settings	<ul> <li>Image: Image: Amplitude Amplitude</li></ul>	AWS managed	None Administrator acc

Figure 4-148 Ready to create IAM Role Policy

12. You can choose to follow the wizard to automatically fill in the details according to your requirements, or you can manually enter the JSON parameters. Here is an example as shown in Figure 4-149.

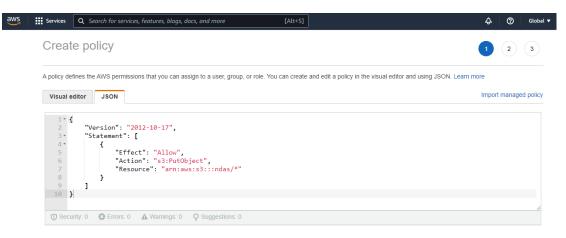


Figure 4-149 Input the policy content of Put Object to S3 Bucket (JSON format)

13. Following the process, after entering the Policy name in the final step, click on "Create Policy" to complete the creation. You will be able to view the newly created Policy in the list of Policies (as shown in Figure 4-150).

aws Services Q Search for	services, features, blogs, docs, and more [Alt+	5]	
Identity and Access X Management (IAM)	Introducing the new Policies list experience     We've redesigned the Policies list experience to make it ear	sier to use. <u>Let us know what you think</u> .	×
Q Search IAM	The policy <u>put_obj_to_s3_from_iot_core_policy</u> has been c	reated.	×
Dashboard	IAM > Policies		
Access management User groups Users	Policies (946) Info A policy is an object in AWS that defines permissions.		Create Policy
Roles	Q Filter policies by property or policy name and press	sontor	3 4 5 6 7 48 > ()
Policies Identity providers Account settings	Policy name	▼ Type	□         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □         □
Access reports	○	Customer managed	None
Access analyzer Archive rules		AWS managed	None Provides read only
Analyzers	①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①     ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①      ①	AWS managed	None Provides read only
Settings	O 🕀 📫 AWSMarketplaceFullAccess	AWS managed	None Provides the abilit

Figure 4-150 Complete the establishment of Policy

14. The Role requires a Policy to have functionality. Click on "Roles" on the left-hand side of the dashboard, then click on the recently created Role. Expand the "Add permissions" section and select "Attach policies" (as shown in Figure 4-151).



aws Services Q Search for se	rvices, features, blogs, docs, and more	[Alt+S]	🗘 👩 Global 🔻
Identity and Access X Management (IAM)	Summary		Edit
Q Search IAM Dashboard	Creation date May 06, 2022, 10:36 (UTC+08:00)	ARN 42 am:aws:tam::8195814 core	62400:role/service-role/put_obj_to_s3_from_iot_
Access management     User groups     Users	Last activity None	Maximum session duration 1 hour	1
Roles Policies Identity providers	Permissions Trust relationships	Tags Access Advisor Revoke sessions	
Account settings	<b>Permissions policies</b> (0) You can attach up to 10 managed policies.		Simulate Remove
Access reports     Access analyzer     Archive rules	Q. Filter policies by property or policy name a	and press enter	Add permissions  Attach policies Croate jolice policy
Analyzers Settings	Policy name 🗗	⊽ Туре	Create inline policy

Figure 4-151 Prepare to attach Policy to Role

15. Upon entering the screen to choose the Policy, select the desired Policy to attach, and then click on "Attach policies" located at the bottom right corner of the webpage (as shown in Figure 4-152).

aws	Services	<b>Q</b> Search for services, features, blogs, docs, and me	pre [Alt+S]					¢	⑦ Global ▼
=	IAM > Role	s > put_obj_to_s3_from_iot_core > Add permis	sions						
	Attach pol	icy to put_obj_to_s3_from_iot_core							
	Current	permissions policies (0)							
	Other pe	ermissions policies (Selected 1/751)					C	Creat	te Policy 🗗
	Q Filter	policies by property or policy name and press enter			< 1	234	56	7	38 > 🔘
	E Po	olicy name 🗷	$\nabla$	Туре			$\bigtriangledown$	Descrip	tion
		put_obj_to_s3_from_iot_core_policy		Customer r	managed				
		AWSDirectConnectReadOnlyAccess		AWS mana	aged			Provides	s read only access
		MazonGlacierReadOnlyAccess		AWS mana	aged			Provides	s read only access

Figure 4-152 Select Policy to attach to Role

## 4.1.5.7.2 Basic Setting

Click on the icon to access the AWS IoT cloud service connection settings (as shown in Figure 4-153). Table 4-29 provides the configuration options for AWS IoT cloud connection and upload methods.

			i and i state in the second	
몲	Modbus	AWS IOT		
		Name	Value	
ሇ	I/O	4		
		⁴ Connection		
9	Data Log	Endpoint		
	_	Certificate		
6	Cloud	Private Key		<b>&gt;</b>
Ħ	OPCUA	Topic		
	OICOA	Send Message		ø
	SEC S/GEM	Send Message Status	No Connecting	
. <u>.</u> .		4 Setting		
		Linkard		

## Figure 4-153 AWS IoT cloud service connection settings

	Parameter name	Content
Connection	Endpoint	Enter the endpoint.
	Certificate	Click the button to import the certificate file.
	Private key	Click the button to import the private key file.
	Topic	Enter the topic.
	Send message	Click the button to send a message to the AWS IoT Core test client.
	Message sending status	Display the message sending status.
Settings	File upload	Enable/Disable file upload.
	Upload method	Time interval/Item cycle interval.
	Time interval (ms)	Enter the time based on the upload method time interval mode.
	Item cycle interval	Enter the quantity based on the upload method
	(quantity)	item cycle interval mode.
	File name format	YYYYMMDDHHMMSS / YYYYMMDD.
	Timestamp format	UTC / Local Time.
4.1.5.7.3 Connect	ion Process	

#### Table 4-29 AWS IoT Cloud Connection Setting Parameters

### 4.1.5.7.3 Connection Process

Upon accessing the AWS IoT Core entry point, navigate to "Settings" located at the bottom of the left-hand side dashboard. From there, copy the Endpoint (as shown in Figure 4-154).

aws Services Q Search for serv	ices, features, blogs, docs, and more [Alt+S]	Þ.	¢	0	N. Virginia 🔻
Wireless connectivity	AWS IoT > Settings				
▶ Secure	Settings Info				
Defend					
▶ Act	Device data endpoint Info Your devices can use your account's device data endpoint to connect to AWS.		C		
▶ Test					
	Each of your things has a REST API available at this endpoint. MQTT clients and AWS IoT Device SDKs 🗹 al endpoint.	so use t	this		
Device Software	Endpoint				
Settings	a3e2p7zznku39z-ats.iot.us-east-1.amazonaws.com				
Feature spotlight				_	
Documentation 🗹	Domain configurations				
New console experience	You can create domain configurations to simplify tasks such as migrating devices to AWS IoT Core, migrating application infr AWS IoT Core and maintaining brand identity.	astructu	re to		
Tell us what you think	Actions  Create domain configuration				

Figure 4-154 Copy the Endpoint

Paste the Endpoint (as shown in Figure 4-154), load the certificate and private key (as shown in NEXIOT



Figure 4-133), enter the subscribed topic (as shown in Figure 4-135). The completed input screen should resemble Figure 4-155.

nD	AS nDAS	600 - nDAS_demo_project.ndas 🔮 🖨 🛟 😯
+ Nev		Save As Save As Script Monitor
٠	System	Private Server Dropbox Google OneDrive Azure AWS S3 AWS IoT
格	Modbus	AWS IoT
		Name Value
ሇ	I/O	4 Connection
2	Data Log	Endpoint a3e2p7zznku39z-ats.iot.us-east-1.amazonaws.com
-		Certificate
<b>a</b>	Cloud	Private Key //ndas/nDAS/bin/x64/explorer/debug/aws_iot/private/3dd95d2a299e127f216ce5df484ef52e
		Topic nDAS_Series/nDAS600
Ħ	OPCUA	Send Message
	SEC S/GEM	Send Message Status No Connecting
		4 Setting
		Upload

Figure 4-155 Ready to test the connection of AWS IoT

Access the IoT Core entry point and navigate to the MQTT test client from the bottom of the left-hand side dashboard. In the testing interface, enter the topic you have configured in the "Topic" field. Click on the "Subscribe" button. The subscribed topic will appear in the table below (as shown in Figure 4-156). Finally, go back to the nDAS interface and click on the "Send Message" button (as shown in Figure 4-157).

WS Services Q	Search for servio	ces, features, blogs, docs, and more	[Alt+S]		2	0	N. Virginia 🔻	mario
AWS IoT	×	topics to communicate their state to A	nonitor the MQTT messages being passed in yo WS IoT. AWS IoT also publishes MQTT messag MQTT messages to topics by using the MQTT t	es to inform devices and app	-			
Connect	- 1	Subscribe to a topic P	ublish to a topic					
Connect one device Connect many devices		Topic filter   Info The topic filter describes the topic(s) to v nDAS_Series/nDAS600	which you want to subscribe. The topic filter can incluc	le MQTT wildcard characters.				
Test <ul> <li>Device Advisor</li> </ul> MQTT test client		Additional configuration           Subscribe						
Manage All devices		Subscriptions	nDAS_Series/nDAS600	Pause	Clear	Б	cport Edi	t
<ul> <li>Greengrass devices</li> <li>LPWAN devices</li> </ul>		nDAS_Series/nDAS600 🛇 🗙	No messages have been sent to this subscrip here.	tion yet. Please send a mess	age to this	subscript	tion to see messa	iges
<ul> <li>Remote actions</li> <li>Message Routing</li> </ul>	-							

Figure 4-156 AWS IoT connection test screen

From the subscribed topic menu, you can see the test result indicating a successful connection, as shown in Figure 4-157.



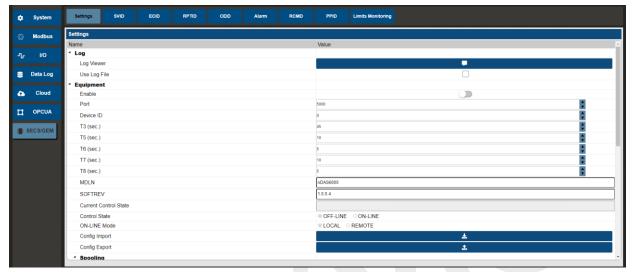
	600 - nDAS_demo_project.ndas	ê 🗉 🛓 🕩 Q	aws Services Q Search for service	ces, features, blogs, docs, and more [Alt+S] D 👌 🧿 N. Virginia 🔹 mario 🔹
+	E Et 🏟 🍻	<b>≝</b> <i>8</i>	AWS IOT ×	state to AWS IoT. AWS IoT also publishes MQTT messages to inform devices and apps of changes and events. You can subscribe to MQTT message topics and publish MQTT messages to topics by using the MQTT test client.
New Load	Save Save As Settings Script Private Server Dropbox Google AWS IoT	Monitor Link OneDrive Azure AWS S3	Monitor Connect Connect one device	Subscribe to a topic         Publish to a topic           Topic filter         Imit           The topic filter consoluble the topic() to which you want to subscribe. The topic filter can include
器 Modbus -	Name Connection	Value	Connect many devices	MQTT wildcard characters. nDAS_Series/nDAS600
🛢 Data Log	Endpoint Certificate	a3e2p7zznku39z-ats.iot.us-east-1.amazonaws.com /ndas/nDASi/bin/x64/explorer/debug/aws_iot/cert/3dd9	Test <ul> <li>Device Advisor</li> <li>MQTT test client</li> </ul>	Additional configuration     Subscribe
Cloud	Private Key Topic	/ndasinDAS/bin/x64/explorer/debug/aws_jot/private/3d	Manage ▶ All devices	Subscriptions nDAS_Series/nDAS600
SECS/GEM	Send Message Send Message Status Setting	Send Successfully	Greengrass devices     LPWAN devices     Remote actions	nDAS_Series/nDAS600 🗢 X Edit
	Upload Upload Mode Time Interval (ms)	Time Interval	Restage Routing     Retained messages     Security	▼ nDA5_Series/nDA5600 October 24, 2022, 14:32:3
	Time Stamp Format	UTC ~	Fleet Hub     Device Software	(UTC+0800)  Message cannot be displayed in specified format.
			Billing groups Settings Learn	nDAS600:connection
			Feature spotlight   Feedback Looking for language selection? Find it	t in the new Unified Settings [2] Privacy Terms Cookie preferences © 2022, Anazon Web Services, Inc. or its affiliates.

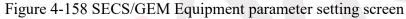
Figure 4-157 Click "Send Message" to view the AWS IoT connection test results



# 4.1.6 SECS/GEM

By clicking on the icon located in the left-hand menu, you gain access to the interface dedicated to configuring parameters for the SECS/GEM equipment side (as depicted in Figure 4-158). Reference Table 4-30 for the SECS/GEM equipment side parameter settings.





	Parameter name	Content
Log	Log Viewer	Upon clicking, the log window for the SECS Equipment becomes visible.
	Host Log Viewer	Upon clicking, the log window for the SECS HOST becomes visible.
	Use Log File	When selected, logs will be stored as files. The saved data will be located in the directory path: C:\VIC7000\bin\log.
Equipment	Enable	Is the SECS equipment side operational?
	Port	Set the communication port number for the equipment side, with a default of 5000.
	Device ID	Specify the station number for the equipment side, with a default of 0.
	T3 (sec.)	Configure the T3 parameter for the equipment side, measured in seconds, with a default of 45 seconds.
	T5 (sec.)	Configure the T5 parameter for the equipment

## Table 4-30 SECS/GEM Equipment parameter setting

		side, measured in seconds, with a default of 10 seconds.
	T6 (sec.)	Configure the T6 parameter for the equipment side, measured in seconds, with a default of 5 seconds.
	T7 (sec.)	Configure the T7 parameter for the equipment side, measured in seconds, with a default of 10 seconds.
	T8 (sec.)	Configure the T8 parameter for the equipment side, measured in seconds, with a default of 5 seconds.
	MDLN	Set the MDLN parameter for the equipment side, with a default of the VIC product model.
	SOFTREV	Set the SOFTREV parameter for the equipment side, with a default of the software version.
	Current Control State	Display the current control status of the equipment side.
	Control State	Configure the control status of the equipment side.
	ON-LINE Mode	Configure the ON-LINE mode of the equipment side. Note: Only effective when the control status is ON-LINE.
	Config Import	Upon clicking, you can select a configuration for import.
	Config Export	Upon clicking, you initiate the export of the configuration.
Spooling	Current Spooling State	Display the current simulated offline status of the equipment side.
	Actual Count	Display the number of messages actually stored in the simulated offline area of the equipment side.
NÊ∖siot	Actual Count SVID	Configure the SVID for the actual quantity parameter of simulated offline messages for the equipment side.

	Total Count	Display the total number of messages ever stored in the simulated offline area of the equipment side.
	Total Count SVID	Configure the SVID for the total quantity parameter of simulated offline messages for the equipment side.
	Start Time	Display the time when the equipment side started storing messages in the simulated offline area.
	Start Time SVID	Configure the SVID for the start time parameter of simulated offline messages for the equipment side.
	Full Time	Display the time when the simulated offline area became full on the equipment side. The default maximum storage for the simulated offline area is 100 messages.
	Full Time SVID	Configure the SVID for the full time parameter of simulated offline messages for the equipment side.
	Max Transmit	Set the maximum number of messages to transmit from the simulated offline area when responding to an offline message request (S6F23, Transmit Spooled Messages).
	Max Transmit ECID	Configurethe ECIDforthe maximumsendquantityparameterofsimulatedofflinemessages.
	Overwrite	Configurewhethertoenableoverwritefunctionalitywhen the simulated offline area isfull.
CEID	Change ECV	Configure the CEID triggered when ECV is changed.
	Equipment OFF-LINE	Configure the CEID triggered when the equipment side control status changes to OFF-LINE.
	ON-LINE LOCAL	Configure the CEID triggered when the ON- LINE mode of the equipment side changes to

	LOCAL.
	Configure the CEID triggered when the ON-
ON-LINE REMOTE	LINE mode of the equipment side changes to
	REMOTE.
Add PPID	Configure the CEID triggered when a PPID is
Add I I ID	added.
Delete PPID	Configure the CEID triggered when a PPID is
Detete I I ID	deleted.
Message Recognition	Configure the CEID triggered when S10F03
Message Recognition	receives an acknowledge message.
	Configure the CEID triggered when the
Spooling Deactivated	messages in the simulated offline area are
	cleared.



### 4.1.6.1 SVID

The software provides the ability to configure Status Variable IDs (SVIDs) for the equipment side, which can be set as I/O, extended bits/characters for Modbus, or as script calculations (CALC). To add a new SVID, follow these steps:

1. Click on the "+" icon button, which will trigger the display of the SVID window.

SVID	ECID	RPTID	CEID	Alarm
	S	VID		Na
F	igure 4-159 C	Click on the "H	-" icon buttor	1
	SVID			
	SVID:	0		
	Unit:			
		ОК	<b>☆</b> Cancel	

Figure 4-160 SVID window

Note: It is imperative that SVIDs and ECIDs remain distinct and non-zero.

2. Subsequently, by clicking on the configuration symbol link, the SV Link window will emerge. Within this window, you can configure the desired link to I/O, extended bits/characters for Modbus, or script calculations (CALC).

SVID			
SVID:			
	0	×	
Name:			
Unit:			
Link:			
	ок	Cancel	

Figure 4-161 Clicking on the configuration symbol link

SV Link			
Link Type:			ta.
ΙΟ		~	
IO:			
DI_00		~	
	ок	Cancel	

Figure 4-162 SV Link window

 Finally, upon clicking "Confirm," the configuration of the SVID parameters will be successfully concluded.

SVID		
SVID:		
	1	
Name:		
Unit:		
Data Type:		
ASCII	~	
Link:		
IO, DI_00	•	
	OK Cancel	
Figur	e 4-163 clicking "Confirm"	
	Manua	
Settings SVID ECID RPTID CEID Alarm	RCMD PPID Limits Monitoring	Link
X 1 Name	ASCII	►UIIN IO, DI_00

Figure 4-164 Setting SVID successfully

### 4.1.6.2 ECID

To add a new Equipment Constants ID (ECID) in the software's equipment side, follow these steps:

1. Click on the "+" icon button, which will prompt the display of the ECID window.

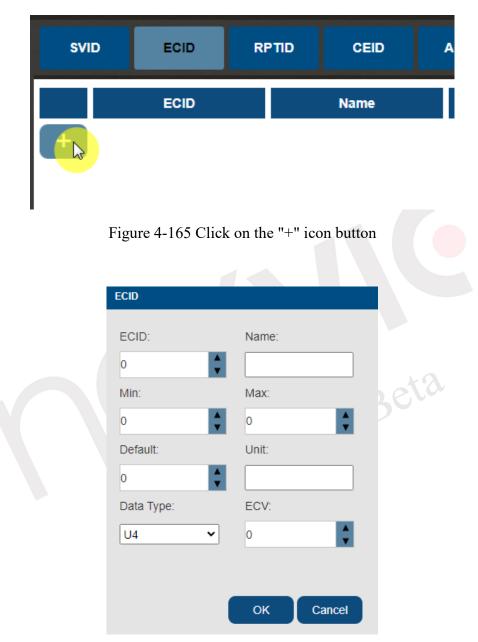


Figure 4-166 ECID window

Note: Please be aware that SVIDs and ECIDs must remain distinct and non-zero.



2. Click "Confirm" to finalize the ECID parameter configuration.

ECID	
ECID:	Name:
10	
Min:	Max:
0	100
Default:	Unit:
5	
Data Type:	ECV:
U4 🗸	5
	OK Cancel
	OK Cancel

Figure 4-167 clicking "Confirm"

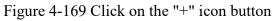
SVID	ECID	RPTID	CEID	Alarm	RCMD	PPID	Limits Monitoring							
	ECID		Name		Min		Max	Default		Unit	Di	ata Type	E	cv
X 10		¢ ECID1		0		100	\$	5	\$		U4	~	5	\$
+														
										() =				I
				Fig	gure 4	-168	Setting	ECID su	icces	ssfully				
Figure 4-168 Setting ECID successfully														
						2C								

### 4.1.6.3 RPTID

To add a new Report ID (RPTID) in the software's equipment side, follow these steps:

1. Click on the "+" icon button, which will bring up the RPTID window.





RPTID
RPTID:
0
Name:
L
vid:
OK Cancel

Figure 4-170 RPTID window

2. Click on the configuration symbol link for VID, which will lead to the VID configuration window. Here, you can set one or multiple VID(s).

RPTID	
RPTID:	
0	\$
Name:	_
VID:	
	OK Cancel
	OK Cancel

Figure 4-171 Clicking on the VID configuration symbol

VID			
	VID	Name	Value
+			
			OK Cancel

Figure 4-172 VID configuration window

3. Finally, click "Confirm" to complete the RPTID parameter configuration.

RPTID	
RPTID:	
2001	\$
Name:	
RPTID1	
VID:	
1,2,3,4	•
	OK Cancel

Figure 4-173 clicking "Confirm"

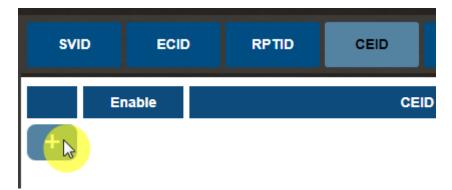


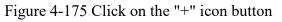
Figure 4-174 Setting RPTID successfully

### 4.1.6.4 CEID

To add a new Collection Event ID (CEID) in the software's equipment side, follow these steps:

1. Click on the "+" icon button, which will bring up the CEID window.





CEID		
CEID:		
0	\$	
Name:		
RPTID:		
	<b>•</b>	
	OK Cancel	

Figure 4-176 CEID window

2. Click on the configuration symbol link for RPTID, which will lead to the RPTID configuration window. Here, you can set one or multiple RPTID(s).

CEID	
CEID:	
0	\$
Name:	
RPTID:	
	<b>C</b>
	OK Cancel

Figure 4-177 Clicking on the RPTID configuration symbol

RPTID				
	RPTID	Name	VID	
+				
			ок	Cancel

Figure 4-178 RPTID configuration window

3. Finally, click "Confirm" to complete the CEID parameter configuration.

CEID	
CEID:	
3001	¢
Name:	
CEID1	
RPTID:	
2001,2002	•

Figure 4-179 clicking "Confirm"



Figure 4-180 Setting CEID successfully

### 4.1.6.5 Alarm

To add a new Alarm in the software's equipment side, follow these steps:

1. Click on the "+" icon button, which will bring up the Alarm window. The parameters

within this window are introduced in the following table.

SVID	ECID	RPTID	CEID	Alarm
E	nable			ALID

Figure 4-181 Click on the "+" icon button

ALID	
ALID:	
0	
ALTX:	
Set CEID:	
0	
Clear CEID:	
o 🗘	
OK Cancel	

Figure 4-182 Alarm window

### Table 4-31 Alarm parameter setting

Parameter name	Content	
ALID	Alarm Identification.	
ALTX	Alarm Text.	
Set CEID	CEID to be triggered when the alarm state is	
	triggered (set).	
Clear CEID	CEID to be triggered when the alarm state is cleared.	

NEXIOT



Finally, click "Confirm" to complete the Alarm parameter configuration. 2.

ALID	
ALID:	
4001	\$
ALTX:	
ALARM1	
Set CEID:	
3001	\$
Clear CEID:	
3002	\$

Figure 4-183 clicking "Confirm"

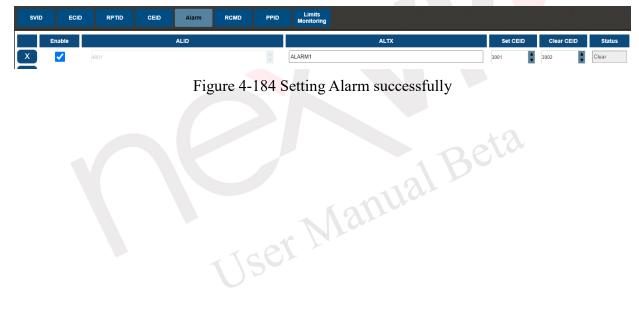


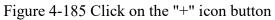
Figure 4-184 Setting Alarm successfully

### 4.1.6.6 RCMD

To add a new Remote Command String (RCMD) in the software's equipment side, follow these steps:

1. Click on the "+" icon button, which will bring up the RCMD window.





RCMD:	
Name:	
Params Name:	
seta	
CEID:	
OK Cancel	

Figure 4-186 RCMD window

2. Click on the configuration symbol link for parameter names, which will lead to the parameter name configuration window. Here, you can set one or multiple parameter names.

RCMD:			
Name:			
Params Name:			
CEID:			
0		\$	
	ок	Cancel	

Figure 4-187 Clicking on the parameter name configuration symbol

Params Name	
+	
OK Cancel	

Figure 4-188 parameter name configuration window



3. Finally, click "Confirm" to complete the RCMD parameter configuration.

RCMD	
RCMD:	
Demo1	
Name:	
Demo 1	
Params Name:	
a,b,c	<b>\$</b>
CEID:	
3001	\$
	OK 📐 Cancel

Figure 4-189 clicking "Confirm"

SVID	ECID	RPTID	CEID	Alarm	RCMD	PPID	Limits Monitoring		
		RCMD				Name		Params Name	CEID
X Demo	1			Demo 1				a,b,c 🌣	3001
									_

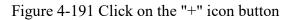
Figure 4-190 Setting RCMD successfully

### 4.1.6.7 PPID

To add a new Process Program Identity (PPID) in the software's equipment side, follow these steps:

1. Click on the "+" icon button, which will bring up the PPID window.

SVID	ECID	RPTID	CEID	Alarm	RCMD	PPID
			P	PID		



PPID
PPID:
Name:
Detail:
∎ Bett
OK Cancel
Figure 4-192 PPID window

 Click on the "Detailed Content" button, which will lead to the detailed content configuration window for the process program. Here, you can set one or multiple Command Codes (CCODE) as well as the parameter names contained within each CCODE.

PPID:		]	
Name:		]	
Detail:	≣		

Figure 4-193 Click on the "Detailed Content" button

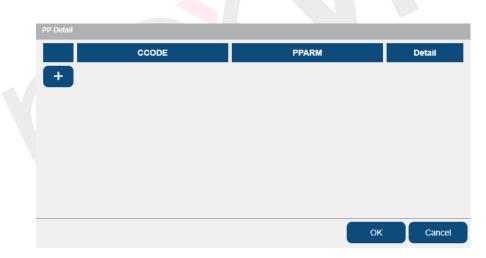


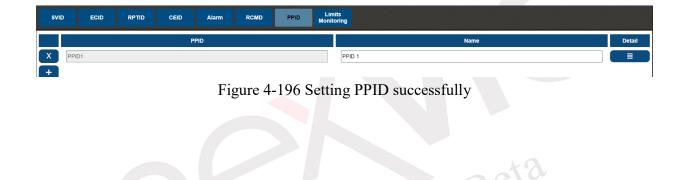
Figure 4-194 detailed content configuration window for the process program



3. Finally, click "Confirm" to complete the PPID parameter configuration.

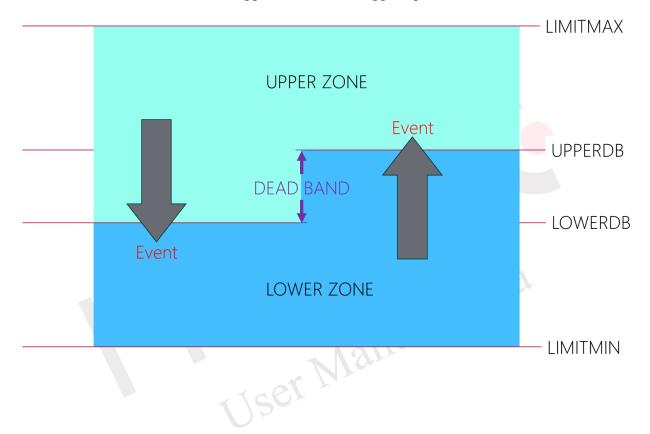
PPID	
PPID:	
PPID1	
Name:	
PPID 1	
Detail:	
	OK Cancel

Figure 4-195 clicking "Confirm"



### 4.1.6.8 Limits Monitoring

This is used to monitor whether a Variable (VID) surpasses or falls below the set boundary values. The triggering principle is illustrated in the diagram below. The region between the Upper Zone and the Lower Zone contains a Dead Band. When a value transitions from the Upper Zone and falls below the Upper Dead Band (UPPERDB), no event is triggered until it drops below the Lower Dead Band (LOWERDB), where triggering occurs. Conversely, if a value transitions from the Lower Zone and exceeds the Upper Dead Band, triggering occurs.



To add a new Limit Monitoring in the software's equipment side, follow these steps:

 Click on the "+" icon button, which will bring up the VID window. Here, you can set the VID to be monitored.

SVID	ECID	RPTID	CEID	Alarm	RCMD	PPID Limits Monitoring					
E	nable	VID		N	lame		CEID				
+6											

Figure 4-197 Click on the "+" icon button

VID	
VID Type:	
SVID V	
SVID:	
101 ~	
Name:	
PAGE01.COLOR01	
OK Cancel	
Figure 4-198 VID window	

2. Set the maximum and minimum limits for the restriction, and specify the CEID to be

CEID RCMD PPID ECID RPTID Alarm LIMITMIN LIMITMAX CEID • 0 • 0 ✓ PAGE01.COLOR01 * 0 +

Figure 4-199 Set the maximum and minimum limits for the restriction, and specify the CEID to be triggered

triggered.

3. Click on "Detailed Content," which will prompt the setting of upper and lower limits. In this window, you can configure individual or multiple Limit IDs (LIMITID), along with their corresponding Upper Dead Band (UPPERDB) and Lower Dead Band (LOWERDB) values. Upon completion, click "Confirm" to finalize the limit monitoring parameter configuration.

Limits Monitoring			
CEID	LIMITMIN	LIMITMAX	Detail
4	0	100	

Figure 4-200 Click on "Detailed Content"

Limite Monitoring L	Jpperdb and Lowerdb			
	LIMITID	LOWERDB	UPPERDB	
+				
				_
			OK Cancel	
Figure 4-2	201 setting v	vindow of upper	r and lower limi	ts
Ũ	0	11		
	0	11	r and lower limi	
	ng Upperdb and Lowerdb		1210-	
		LOWERDB	UPPERDB	
	g Upperdb and Lowerdb		UPPERDB	
Limits Monitorin	ag Upperdb and Lowerdb LIMITID 1	LOWERDB 40	UPPERDB 60	
Limits Monitorin	g Upperdb and Lowerdb	LOWERDB	UPPERDB	
Limits Monitorin	ag Upperdb and Lowerdb LIMITID 1	LOWERDB 40	UPPERDB 60	
Limits Monitorin	ag Upperdb and Lowerdb LIMITID 1	LOWERDB 40	UPPERDB 60	
Limits Monitorin	ag Upperdb and Lowerdb LIMITID 1	LOWERDB 40	UPPERDB 60	
Limits Monitorin	ag Upperdb and Lowerdb LIMITID 1	LOWERDB 40	UPPERDB 60	
Limits Monitorin	ag Upperdb and Lowerdb LIMITID 1	LOWERDB 40	UPPERDB 60	
Limits Monitorin	ag Upperdb and Lowerdb LIMITID 1	LOWERDB 40	UPPERDB 60	

Figure 4-202 clicking "Confirm"

SVIE	ECID	RPTID	CEID	Alarm	RCMD	PPID	Limits Monitoring				
	Enable	VID		Nai	me		CEID	LIMITMIN		LIMITMAX	Detail
X	<b>~</b>			PAGE01.COLOR0	)1	4001	\$	0	100	\$	≣

Figure 4-203 Setting limit monitoring parameter configuration successfully



## **4.1.7 OPCUA**

Click on the icon in the left-side menu to access the OPC UA Server parameter settings screen (as shown in Figure 4-204). Table 4-32 provides the OPC UA Server parameter configuration details.

٠	System	Settings Certificates Accounts	
<b>\</b>	Modbus	Settings	
		Name	Value
ሇ	I/O	4 Settings	
		Port	48010
8	Data Log	4 Status	
		Endpoint	
•	Cloud	Start	0
	000110	Stop	0
П	OPCUA	Restart	ti.
	SECS/GEM	Anonymous Access	
- <b>-</b>		Enable	
		<u></u>	

Figure 4-204 OPCUA Server parameter setting screen

		Server parameter setting					
	Parameter name	Content					
Settings	Port	Set the port number					
Status	Endpoint	Display DI signal status					
	Start	Start OPC UA Server					
	Stop	Stop OPC UA Server					
	Restart	Restart OPC UA Server					
Anonymous	Enable	Enable/disable anonymous access mode					
Access							
Security	None	Enable/disable None security policy					
Policies	Basic128Rsa15	Enable/disable Basic128Rsa15 security policy					
	Basic256	Enable/disable Basic256 security policy					
	Basic256Sha256	Enable/disable Basic256Sha256 security policy					
	Aes128Sha256RsaOaep	Enable/disable Aes128Sha256RsaOaep security					
		policy					
	Aes256Sha256RsaPss	Enable/disable Aes256Sha256RsaPss security					
		policy					
Security Modes	Sign	Enable/disable Sign security mode					
	Sign & Encrypt	Enable/disable Sign & Encrypt security mode					

### Table 4-32 OPCUA Server parameter setting

Note: If you make changes to the configuration parameters of the OPCUA Server while it is running, you need to manually restart the OPCUA Server.

### 4.1.7.1 Certificates

Clicking on the icon in the top menu will display the OPCUA Server certificate list (as shown in Figure 4-205). When an OPCUA Client accesses the Server, the certificate information of that Client will be displayed. If the inspection of the certificate is satisfactory, you can right-click the mouse to choose whether to trust or deny the OPCUA Client (as shown in Figure 4-206).

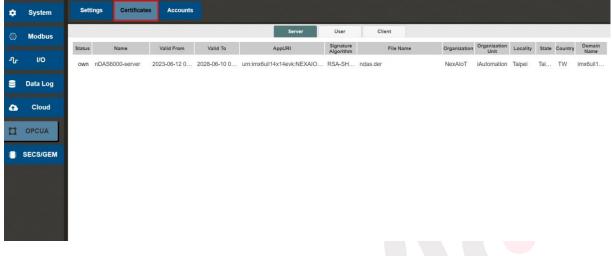


Figure 4-205 OPCUA server certification list

٠	System	Setti	ings	Certificate	s Accounts										
	Modbus						Server	User	Client						
		Status	٨	lame	Valid From	Valid To	AppURI	Signature Algorithm	File Name	Organization	Organization Unit	Locality	State	Country	Domain Name
∿	I/O	own	nDAS60	00-server	2023-06-12 0	2028-06-10 0	urn:imx6ull14x14evk:NEXAIO	RSA-SH	ndas.der	NexAloT	iAutomation	Taipei	Tai	TW	imx6ull1
8	Data Log	reje	Trust		6-08 0	2028-06-06 0	urn:imx6ull14x14evk:NEXAIO	RSA-SH	nDAS6000-client [A0717A857	NexAloT	iAutomation	Taipei	Tai	TW	imx6ull1
•	Cloud	L	Reject Delete												
	OPCUA														
	SECS/GEM														

Figure 4-206 Select Trust / Reject for OPCUA client in OPCUA server certification list

If the OPCUA Client authentication method involves certificate validation, the OPCUA Server will perform a second verification. By clicking on the "User" tab in the OPCUA Server certificate list, the certificate information of that Client will be displayed. If the inspection of the certificate is satisfactory, you can right-click the mouse to choose whether to trust or deny the certificate (as shown in Figure 4-207).

#### Chapter 4



٠	System	Setti	ings	Certificate	es Accoun	IS											
	Modbus					_		Server	User	Client			Organization				Domain
ሇ	I/O	Status	nDAS60	Name	Valid From 2023-07-12 08.	Valid To		AppURI	Signature Algorithm RSA-SH		Name		Organization Unit		State Taiwan	Country	Name
9	Data Log	rejec.	Trus		13 05.	2024-07-12 05	. UserCertifica	ate	RSA-SH	4F9596395B93	08F52CB262A	. NexAloT	iAutomation	Taipei	Taiwan	TW	imx6ull14.
•	Cloud	ll	Reje Dele														
11	OPCUA																
•	SECS/GEM																

Figure 4-207 Select Trust / Reject for OPCUA user in OPCUA user certification list

By clicking on the "Client" tab in the OPCUA Server certificate list, you can view the certificates of the local machine when connected as a Client to another OPCUA Server. By default, these certificates are trusted (as shown in Figure 4-208). For more detailed information about OPCUA Client and its operation, please refer to the OPCUA Client operator's description in the VIC Flow manual.

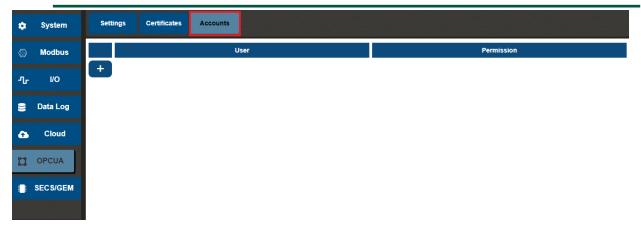
•	System	Settings	Certificate	Accounts									
*	System												
	Modbus					Server	User Signature	Client	_	Ornanization	_	_	Domain
ሇ	I/O	Status	Name	Valid From	Valid To	AppURI	Algorithm	File Name	Organization	Organization Unit	Locality	State	Country Name
-0-	"0	own nDAS6	000-client	2023-07-20 03	2028-07-18 03	urn:imx6ull14x14evk:NEXAIOT	RSA-SH	client.der	NexAloT	iAutomation	Taipei	Taiwan	TW imx6ull14
8	Data Log	trusted nDAS6	000-server	2023-07-20 02	2028-07-18 02	urn:imx6ull14x14evk:NEXAIOT	RSA-SH	56E1D572C340451A9D5F6F3	NexAloT	iAutomation	Taipei	Taiwan	TW imx6ull14
•	Cloud												
	OPCUA												
	SECS/GEM												
	SECS/GEM												

Figure 4-208 Select Trust / Reject for OPCUA server in OPCUA client certification list

### 4.1.7.2 Account

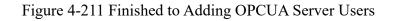
Kindly click on the icon located at the top menu to reveal the roster of OPCUA Server accounts (as illustrated in Figure 4-209). By selecting the "+" symbol, you will be able to create a new user. Enter the desired username and password, followed by the selection of user privileges (as depicted in Figure 4-210). To finalize the configuration, kindly click on "OK" (as shown in Figure 4-211).





### Figure 4-209 OPCUA Server Account List

		Add Account
		User Name:
		user_can_browse
		Password:
		Permission:
		🗌 Read 📄 Write 🗹 Browse
		OK Cancel
		Figure 4-210 Add OPCUA Server User
		Figure 4-210 Add OFCOA Server User
		121
٠	System	Settings Certificates Accounts
©	Modbus	User Permission
ሇ	I/O	X user_can_browse Browse
2	Data Log	
•	Cloud	
П	OPCUA	
	SEC S/GEM	



Note: If the OPCUA Server is running, you need to restart the OPCUA Server manually when you finish adding users.



## 4.2 Script

By clicking on the script icon (as shown in Figure 4-212), you can enter the script, as illustrated in Figure 4-213. The scripting language used is Python.





Image: New Load     Image: Save As     Image: Save As     Image: Save As     Image: Save As	Stop all operators of trigger
Image: Constraint of the second se	Calc Modbus SECS/GEM Functions Trigger Functions
from vic import * def mainLoop(id, info, data): pass 7	Link Python Output
Apply Save Script / Apply Button	
Figure 4-213 Script	

### 4.2.1 Script Editing Area

Users can write scripts in the script editing area, and when they finish writing, they must click the "Apply" button, with the shortcut key being "Ctrl + S". If the syntax in the script is correct, the Python output field will display "Apply successfully", as shown in Figure 4-214. If there is a syntax error, the error message will show the line number, and the error may be on the displayed line number or the next line. In addition to the error information displayed in the Python output field, there will also be error markers on the line number, as shown in Figure 4-215.

ື ຕ	I/O Calc	Modbus	SECS/GEM	Functions
	Trigger Functions	Link	Python Output	
	Apply successfu	lly.		_

Figure 4-214 The syntax of the script is correct

3 4 0 ■ 100 00 00 00 00 00 00 00 00 00 00 00 00	> ບ	C	I/O	Calc	Modbus	SECS/GEM	Functions
from vic import *			Trigger	Functions	Link	Python Output	
			Apply s	uccessfu	lly.		
					t recent c	1	
def mainLoop(id, info, data):						<module></module>	
123						mportlib/init	py", line
pass						, module)	
						bootstrap>", li	
						bootstrap_ext	
						bootstrap_ext	
						bootstrap_ext	
			File "<	frozen in	nportlibl	bootstrap>", li	ne 219, in
			File "/e	opt/nDAS	/bin/py/vi	ic_script.py", I	ine 6
			pass				
			۸				
			Indenta	tionError	: uninden	nt does not ma	itch any ou
Apply							

Figure 4-215 The syntax of the script is error

### 4.2.2 Input Area for Variables and Functions

The script page of this software has eight categories of variable and function input areas, namely I/O, CALC(Calculation operator), Modbus, SECS/GEM, function, trigger function, link, and Python output, as shown in Table 4-33.

Table 4-33 Script Variable Table				
n(channeln), please refer to section 4.2.2.1.				
Ι/Ο				
DI_n	Status of DI channels			
DO_n	Status of DO channels			
AI_n	Status of AI channels			
Calculations, please refer to section 4.2.2.2.				
CALC[0]	calculation variable 00			
CALC[1]	calculation variable 01			
CALC[2]	calculation variable 02			
CALCI001	coloulation variable 00			
CALC[99]calculation variable 99Functions, please refer to section 4.2.2.3.				
Functions, prease refer t	Please refer to section 4.2.2.3.16 to			
PYTHON_MAIN_LOOP	generate default content for Python			
	scripts.			
	Please refer to section 4.2.2.3.1 to log			
LOG	messages to a log.			
	For controlling the machine's LED,			
LED	please refer to section 4.2.2.3.2 for			
	detailed instructions.			
	Please refer to section 4.2.2.3.5 to send			
SEND.EMAIL	an email.			
	Please refer to section 4.2.2.3.6 to send a			
<b>SEND.LINE</b>	Line message.			
	Please refer to section 4.2.2.3.7 to send a			
SEND.WECHAT	WeChat group message.			
	Please refer to section 4.2.2.3.8 to send a			
SEND.WECHAT_P	WeChat personal message: .			

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CENID TE AMO	Please refer to section 4.2.2.3.9 to send a			
<b>SEND.TEAMS</b>	Microsoft Teams message.			
	Retrieve the opcua_item and utilize it in			
OPCUA_ITEM	other OPCUA methods as instructed in			
	section 4.2.2.3.10.			
	Obtain the OPCUA node status			
<b>OPCUA.READ</b>	following the guidance in section			
	4.2.2.3.11.			
ODCUA WDITE	Write values to an OPCUA node by			
OPCUA.WRITE	referring to section 4.2.2.3.12.			
ODCUA CALL METHOD	Invoke an OPCUA Call Method using			
OPCUA.CALL_METHOD	the instructions in section 4.2.2.3.13.			
OPCUA.SUBSCRIBE	Subscribe to an OPCUA node by			
UTCUA.SUBSCRIBE	consulting section 4.2.2.3.14.			
OPCUA.UNSUBSCRIBE	Cancel a subscription to an OPCUA			
UPCUA.UNSUBSCRIBE	node as outlined in section 4.2.2.3.15.			
CURRENT TIME	Please refer to section 4.2.2.3.3 for			
	current time.			
	For writing values to the database,			
DB_IN	please refer to section 4.2.2.3.4 for			
	detailed guidance.			
WRITE TEXT	Please refer to section 4.2.2.3.17 to write			
WRITE_TEXT	the contents into a text file.			
	Please refer to section 4.2.2.3.18 to write			
WRITE_TEXT_LN	the contents into a text file and perform a			
	line break after writing.			
	Please refer to section 4.2.2.3.19 to set a			
SET_PREFERENCE	system variable that can still exist even			
	after nDAS is restarted.			
	Please refer to section 4.2.2.3.20 to			
GET_PREFERENCE	obtain the value of a system variable,			
	which will return a default value if the			
	variable does not exist.			
SHOW DIALOG	Please refer to section 4.2.2.3.21 to			
	display a popup dialog.			

TRIGGER_OPERATOR	Please refer to section 4.2.2.3.22 to trigger the specified VIC flow trigger		
	operator.		
SECS/GEM, please refer to section 4.2.2.4.			
SET_ALARM	Please refer to section 4.2.2.4.1.1		
CURRENT_CONTROL_ONLINE_MODE	Please refer to section 4.2.2.4.1.2		
SET_CONTROL_OFFLINE	Please refer to section 4.2.2.4.1.3		
SET_CONTROL_ONLINE	Please refer to section 4.2.2.4.1.4		
SET_CONTROL_ONLINE_LOCAL	Please refer to section 4.2.2.4.1.5		
SET_CONTROL_ONLINE_REMOTE	Please refer to section 4.2.2.4.1.6		
TRIGGER_CEID	Please refer to section 4.2.2.4.1.7		
SEND_S10F01	Please refer to section 4.2.2.4.1.8		
OnSecsGemEquipS02F18	Please refer to section 4.2.2.4.1.9		
OnSecsGemEquipS02F31	Please refer to section 4.2.2.4.1.10		
OnSecsGemEquipS02F41	Please refer to section 4.2.2.4.1.11		
OnSecsGemEquipS02F49	Please refer to section 4.2.2.4.1.12		
OnSecsGemEquipS10F03	Please refer to section 4.2.2.4.1.13		
ARE_YOU_THERE	Please refer to section 4.2.2.4.2.1		
SEND_S02F17	Please refer to section 4.2.2.4.2.2		
Trigger Functions, please refer to section 4.2.2.5			
	Please refer to section 4.2.2.5.1 to		
OnInitScript	initialization script is triggered upon		
	loading the project.		
	Please refer to section 4.2.2.5.2 to click		
OnReloadFunction	the reload button or press the shortcut		
	key (F3) to reload.		
	Please refer to section 4.2.2.5.3 to the		
OnSystemInit	program opens and initialization is		
Chisystematic	complete (automatically loading the		
	project).		
OnSystemExit	Please refer to section 4.2.2.5.4 to the		
	program is closed.		
OnBeforeTrigger	Trigger function is triggered when the		
	trigger function is activated.		
OnAfterTrigger	Trigger function is triggered after the		
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	trigger function is activated.		
	When the subscribed OPCUA node		
OnOpcuaDataChange	value changes within the script, trigger		
	this function.		
OnCalcWrite	When the RESTful API writes values to		
OnCalewrite	the CALC operator, trigger this function.		
Modbus-Bit Channel, please re	efer to section 4.2.2.6.1		
BIT_CHANNEL[0][0]	Status of Modbus COM0 Bit channel 0.		
	Error status of Modbus COM0 Bit		
BIT_ERR_CHANNEL[0][0]	channel 0.		
BIT_CHANNEL[0][1]	Status of Modbus COM0 Bit channel 1.		
	Error status of Modbus COM0 Bit		
BIT_ERR_CHANNEL[0][1]	channel 1.		
•			
	·		
BIT_CHANNEL[0][127]	Status of Modbus COM0 Bit channel		
	127.		
	Error status of Modbus COM0 Bit		
BIT_ERR_CHANNEL[0][127]	channel 127.		
Modbus- Word Channel, please refer to section 4.2.2.6.2			
	Status of Modbus COM0 Word channel		
WORD_CHANNEL[0][0]	0.		
	Error status of Modbus COM0 Word		
WORD_ERR_CHANNEL[0][0]	channel 0.		
	Status of Modbus COM0 Word channel		
WORD_CHANNEL[0][1]	1.		
	Error status of Modbus COM0 Word		
WORD_ERR_CHANNEL[0][1]	channel 1.		
•	•		
	•		
	Status of Modbus COM0 Word channel		
WORD_CHANNEL[0][127]	127		
	Error status of Modbus COM0 Word		
WORD_ERR_CHANNEL[0][127]	channel 127		
Modbus-Modbus Bit, please refer to section 4.2.2.6.3			
Moubus-Moubus Dit, please refer to section 4.2.2.0.5			

MODBUSBIT[1]	Modbus Bit 01			
MODBUSBIT[2]	Modbus Bit 02			
MODBUSBIT[3]	ModbusBit 03			
· .	•			
MODBUSBIT[65535]	ModbusBit 65535			
Modbus- Modbus String, please				
MODBUSSTR[1]	Modbus String 01			
MODBUSSTR[2]	Modbus String 02			
MODBUSSTR[3]	Modbus String 03			
	•			
MODDUSSTDI655251	Modhur String (5525			
MODBUSSTR[65535]	Modbus String 65535			
Modbus-Modbus Int, please re				
MODBUSINT[1]	Modbus Int 01			
MODBUSINT[2]	Modbus Int 02			
MODBUSINT[3]	Modbus Int 03			
•				
•	•			
MODBUSINT[65535]	Modbus Int 65535			
Modbus-Modbus Uint, please r	efer to section 4.2.2.6.6.			
MODBUSUINT[1]	Modbus Uint 01			
MODBUSUINT[2]	Modbus Uint 02			
MODBUSUINT[3]	Modbus Uint 03			
·	•			
•	•			
MODBUSUINT[65535]	Modbus Uint 65535			
Modbus-Modbus Uint16, please				
MODBUSUINT16[1]	Modbus Uint16 01			
MODBUSUINT16[2]	Modbus Uint16 02			
MODBUSUINT16[3]	Modbus Uint16 03			

•	•			
•	•			
MODBUSUINT16[65535]	Modbus Uint16 65535			
Modbus-ModbusH Bit, please 1				
MODBUSHBIT[1]	Modbus Coils Bit 01			
MODBUSHBIT [2]	Modbus Coils Bit 02			
MODBUSHBIT [3]	Modbus Coils Bit 03			
	<u>.</u>			
MODBUSHBIT [65535]	Modbus Coils Bit 65535			
Modbus-ModbusH String, please				
MODBUSHSTR[1]	Modbus Holding String 01			
MODBUSHSTR[2]	Modbus Holding String 02			
MODBUSHSTR[3]	Modbus Holding String 03			
MODBUGHGEDUCECCE				
MODBUSHSTR[65535]	Modbus Holding String 65535			
Modbus-ModbusH Int, please r				
MODBUSHINT[1]	Modbus Holding Int 01			
MODBUSHINT[2]	Modbus Holding Int 02			
MODBUSHINT[3]	Modbus Holding Int 03			
•				
•				
MODDUGUNITIZZZZ	Madhua Halding Int (5525			
MODBUSHINT[65535]	Modbus Holding Int 65535			
Modbus-ModbusH Uint, please r				
MODBUSHUINT[1]	Modbus Holding Uint 01			
MODBUSHUINT[2]	Modbus Holding Uint 02			
MODBUSHUINT[3]	Modbus Holding Uint 03			
•	•			
•	•			
MODDUSUUNTI655251	Modbus Holding Lint 65525			
MODBUSHUINT[65535]	Modbus Holding Uint 65535			
Modbus-ModbusH Uint16 , please	refer to section 4.2.2.0.12 °			
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MODBUSHUINT16[1]	Modbus Holding Uint16 01		
MODBUSHUINT16[2]	Modbus Holding Uint16 02		
MODBUSHUINT16[3]	Modbus Holding Uint16 03		
_			
•			
•			
MODBUSHUINT16[65535]	Modbus Holding Uint16 65535		
Modbus- Read System Modbus Bit, p	lease refer to section 4.2.2.6.13.		
MODBUSSYSBIT[1]	Read Modbus System Bit 01		
MODBUSSYSBIT[2]	Read Modbus System Bit 02		
MODBUSSYSBIT[3]	Read Modbus System Bit 03		
ModbusModbus Functions, please refer to section 4.2.2.6.14.			
MODBUS_MASTER_READ_BIT	Read Modbus Server Bit.		
MODBUS_MASTER_WRITE_BIT	Write Modbus Server Bit.		
MODBUS_MASTER_READ_STR	Rea dModbus Server String.		
MODBUS_MASTER_WRITE_STR	Write Modbus Server String.		
MODBUS_MASTER_READ_UINT	Read Modbus Server unsigned integers.		
MODBUS_MASTER_WRITE_UINT	Write Modbus Server unsigned integers.		
Link, please refer to s	section 4.2.2.7.		
TCP/IP Var Name	The TCP/IP variable name on the Link		
Modbus Var Name	The Modbus variable name on the Lin		
SMTP Var Name	The SMTP variable name on the Link		
LINE Var Name	The LINE variable name on the Link		
Wechat Var Name	The Wechat variable name on the Link		
Teams Var Name	The Teams variable name on the Link		
<b>OPCUA Client Var Name</b>	The OPCUA variable name on the Link		
Python Output			
Output of a Python script includes the content printed by "print" statements and any error			
messages.			

The aforementioned variables and functions can be selected not only in the input area of variables and functions, but also in the script editing area by right-clicking the mouse, as shown in Figure 4-216.



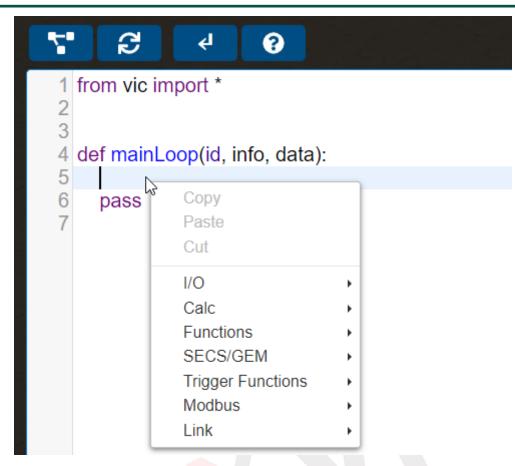


Figure 4-216 Selecting Variables and Functions by Right-Clicking the Mouse





### 4.2.2.1 I/O

To perform logical checks on I/O in the script, select I/O in the variables and function input area to display the list of I/O contained in nDAS (as shown in Figure 4-217).

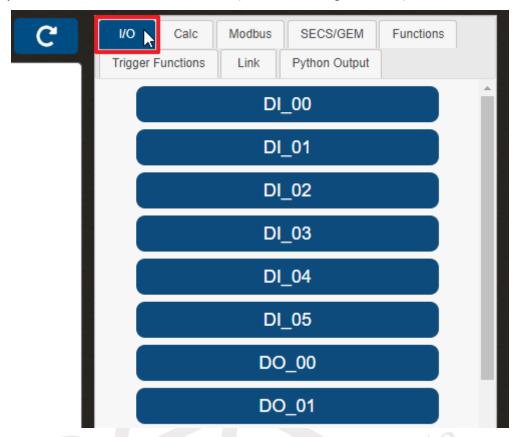


Figure 4-217 Selection of I/O for variables and function inputs

For example, if you want to print the status of DI channel 0 in the script execution result, you need to write a script in the script editing area, and the execution result is shown in Figure 4-218.

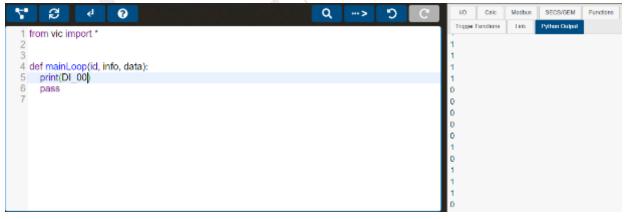


Figure 4-218 Print the status of DI channel 0

### 4.2.2.2 Calculation

To display script execution results in the interface, record them in a database, or transmit them through other means of transmission, it is necessary to use calculation variables. Select "Calculation Variables" in the Variables and Function Inputs section, which displays the

calculation variables (as shown in Figure 4-219). There are a total of 100 calculation variables in this software, but only 20 (0-19) are displayed in the Variables and Function Inputs section. If the user needs to use calculation variables beyond the number displayed in the interface, they must input them manually by entering "CALC[n]", where n is a number between 0 and 99.

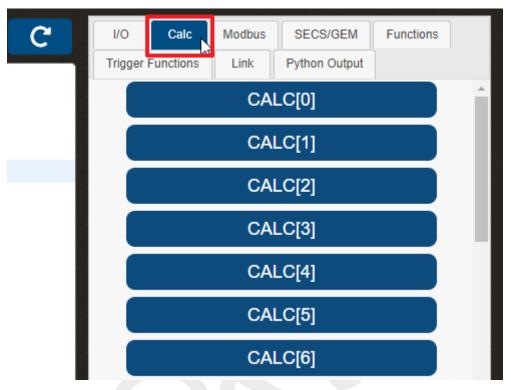


Figure 4-219 Selection of Calculation for variables and function inputs

For instance, if you want to display the status of analog input channel 0 in the script execution result, you need to write a script in the script page (as shown in Figure 4-220), and the execution result will be displayed as shown in Figure 4-221.

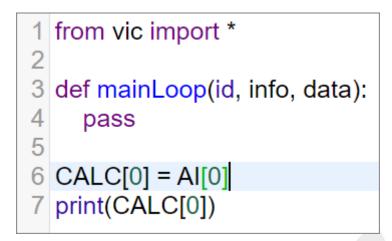
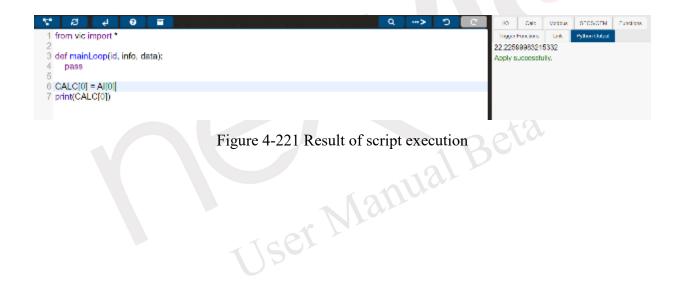


Figure 4-220 Example script writing



# 4.2.2.3 Functions

Selecting a function from the variable and function input area will display the system script functions, as shown in Figure 4-222. These functions include SEND.EMAIL \LOG \SEND.LINE, and many others.

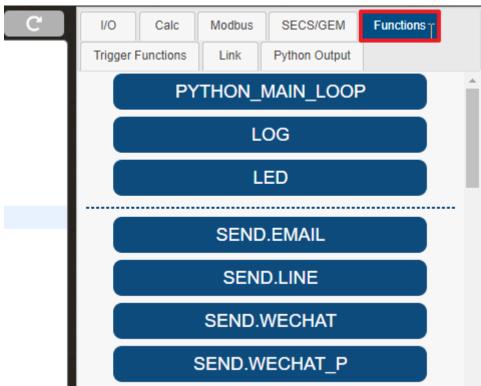


Figure 4-222 Selection of Functions for variables and function inputs

### 4.2.2.3.1 LOG

This function enables logging messages in the system log. When the LOG button is clicked in the variable and function input area (as shown in Figure 4-223), a LOG function is added to the script editing area (as shown in Figure 4-224).

LOG(type, message, sec) function needs to be configured with three parameters, representing the following meanings :

type : sets the color of the message recorded in the system log (0: black, 1: red, 2: blue).

message : sets the content of the message to be recorded in the system log.

sec : sets the time interval during which this function should not be executed. If set to 0, there is no time interval.

C	I/O Calc Modbus SECS/GEM Functions
	Trigger Functions Link Python Output
	PYTHON_MAIN_LOOP
	LOG
	LOG(type, message, sec, module='calc') LED
	SEND.EMAIL
	SEND.LINE
	Figure 4-223 Click on "LOG"
	<pre>4 def mainLoop(id, info, data): 5 LOG(,,) 6 pass 7</pre>

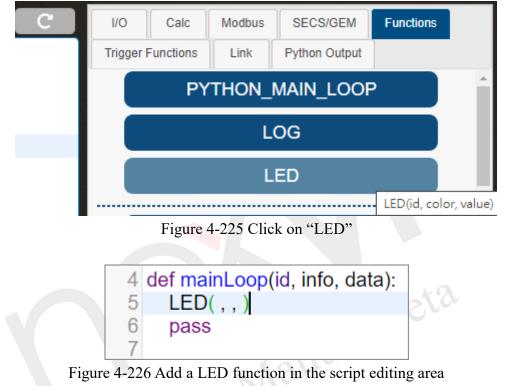
Figure 4-224 Add a LOG function in the script editing area

# 4.2.2.3.2 LED

This function is used to control the LED lights on the machine. By clicking the "LED" function in the Variables and Functions input section (as shown in Figure 4-225), an LED function will be added to the script writing area (as illustrated in Figure 4-226).

The LED(id, color, value) function requires three parameters, each representing the following:

- id: Parameter of type int, specifying the LED number to control.
- color: Parameter of type int, with possible values 0 or 1; 0 indicates green, and 1 indicates red.
- value: Parameter of type int, where 0 means off and 1 means on.



Note: When controlling the LED, if nDAS is equipped with wireless Wi-Fi, it's necessary to disable the Wi-Fi first.

# 4.2.2.3.3 CURRENT_TIME

This function retrieves the current time. To access it, click on the CURRENT_TIME function in the variable and function input area (as shown in Figure 4-227), and the CURRENT_TIME function will be added to the script editing area (as shown in Figure 4-228). The execution result is shown in Figure 4-229.

C	I/O     Calc     Modbus     SECS/GEM     Functions       Trigger Functions     Link     Python Output
	OPCUA.READ
	OPCUA.WRITE
	OPCUA.SUBSCRIBE
	OPCUA.UNSUBSCRIBE
	CURRENT_TIME
	Figure 4-227 Click on "CURRENT_TIME"
	1 from vic import *
	<ul> <li>3 def mainLoop(id, info, data):</li> <li>4 pass</li> <li>5</li> </ul>
	6 print(CURRENT_TIME())

Figure 4-228 Add a CURRENT_TIME function in the script editing area



Figure 4-229 Result of CURRENT_TIME execution

# 4.2.2.3.4 DB_IN

This function is used to write data to the database, and the storage format should be referenced from section 4.1.4.2. By clicking the "DB_IN" function in the Variables and Functions input section (as shown in Figure 4-230), a DB_IN function will be added to the script writing area (as depicted in Figure 4-231).

The DB_IN(value, slot, channel, log_change) function requires four parameters, each representing the following:

- value: The value you intend to write to the database.
- slot: Slot ID, ranging from 0 to 1024.
- channel: Channel ID, ranging from 0 to 1024.
- log_change: Whether to enable recording when the value changes.

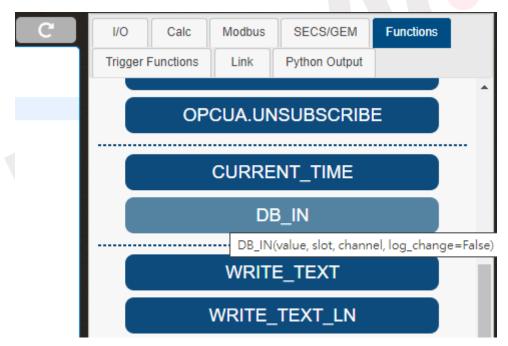


Figure 4-230 Click on "DB_IN"

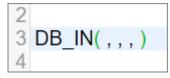


Figure 4-231 Add a DB_IN function in the script editing area

### 4.2.2.3.5 SEND.EMAIL

This function allows for setting up email messages to be sent to users. Prior to using the function, users must first set up an SMTP connection on the Link (please refer section 4.4.3 for instructions). Once this is complete, clicking on SEND.EMAIL in the function input area will add the SEND.EMAIL function to the script editing area (as shown in Figure 4-232)  $\circ$ 

SEND.EMAIL(id, to, subject, body, sec) function requires five parameters, each representing the following :

id : Sets the SMTP connection to be used. Users can select the connection by choosing it from the function input area (as shown in Figure 4-233)and clicking on the desired SMTP connection (as shown in Figure 4-234), which will then be added to the script editing area (as shown in Figure 4-235).

to: The email address of the recipient.

subject : The subject of the email message.

body: The content of the email message.

sec : The time interval in seconds during which this funciton will not be executed again. If set to 0, there will be no time interval.

7	3	ęl	0			Q	••• >	С	C	VO Calc Modbus BECB/GEW Functions
1 fr	om vic ir	mport *								PYTHON MAIN LOOP
3										
4 d	ef mainL SEND.	.oop(id, EMAIL(	nfo, dat	1):						LOG
6	5 SEND.EMAIL(,,,,) 6 pass 7								SEND.EMAIL	
										SEND.LINE
										SEND.WECHAT
										SEND.WECHAT_P
										SEND.TEAMS
					$\mathbf{V}$					

Figure 4-232 Click "SEND.EMAIL" and add the SEND.EMAIL function in the script editing area.



Figure 4-233 Choose the link in the variables and functions input area

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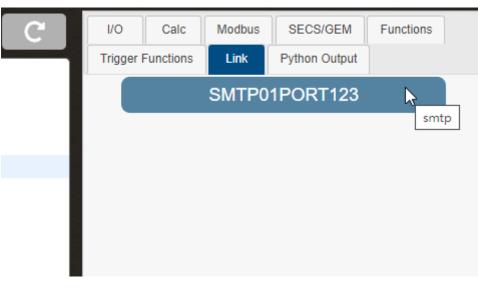


Figure 4-234 Click on the SMTP to be used.

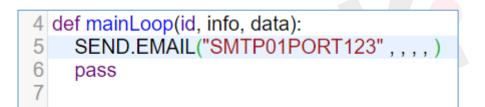


Figure 4-235 Add the SMTP in the script editing area.

# 4.2.2.3.6 SEND.LINE

This function enables the sending of messages to users through LINE. Prior to use, one must set up LINE Notify on the Link, please refer to section 4.4.4 for instructions. Once this is done, simply click on SEND.LINE in the variables and functions input area (as shown in Figure 4-236) to add the SEND.LINE function to the script editor (as shown in Figure 4-237) °

SEND.LINE (id, message, sec) function requires three parameters, each with the following meaning :

id : Sets the LINE Notify connection to use. To select a connection, choose from the options available in the varables and funcitons input area (as shown in Figure 4-238), and click on the desired LINE Notify connection (as shown in Figure 4-239) to add it to the script editor (as shown in Figure 4-240).

message : The content of the message to be sent.

sec : The time interval in seconds during which this funciton will not be executed again. If set to 0, there will be no time interval.

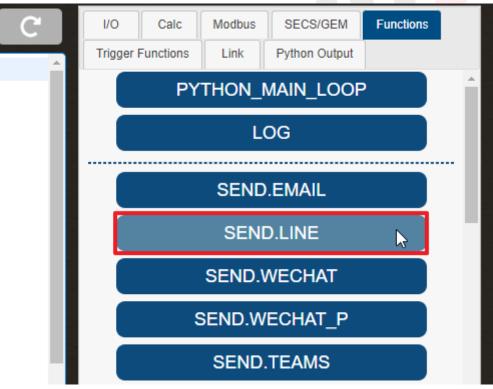


Figure 4-236 Click on "SEND.LINE".

4	def mainLoop(id, info, data):
5	SEND.LINE(,,)
6	pass
7	

Figure 4-237 Add the SEND.LINE function in the script editing area.





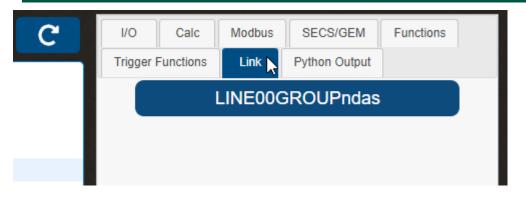


Figure 4-238 Choose the link in the variables and functions input area.

C	I/O Calc	Modbus	SECS/GEM	Functions
	Trigger Functions	Link LINE000	Python Output	
				line

Figure 4-239 Click on the LINE Notify connection to be used.

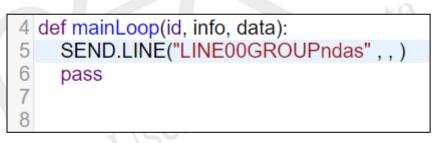


Figure 4-240 Add the LINE Notify connection in the script editing area.

The example code transmits the status of DI channel 0 every one second. The script is written as shown in Figure 4-241. The received message at LINE is shown in Figure 4-242.

```
10 def mainLoop(id, info, data):
11 SEND.LINE("LINE00GROUPndas", "DI_00 = " + str(DI_00), 1)
12 pass
13
```

Figure 4-241 Example script for SEND.LINE

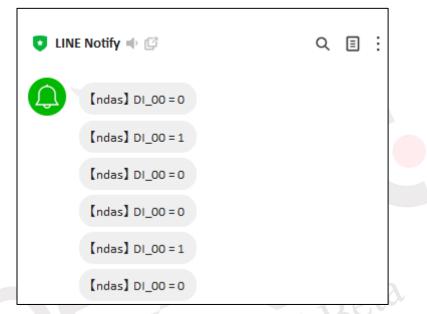


Figure 4-242 Message received by LINE in actuality

# 4.2.2.3.7 SEND.WECHAT

This function allows sending messages to every user who follows the test WeChat public account, and requires prior setup of Wechat (please refer to section 4.4.5 for instructions). After completing the setup, clicking SEND.WECHAT in the function section of the variable and function input area (as shown in Figure 4-243) will add the SEND.WECHAT function to the script editor (as shown in Figure 4-244).

SEND.WECHAT (id, templateID, keyword1, keyword2, keyword3, sec) function requires six parameters, each representing the following :

id : sets the WeChat connection to use, selected from the connection list in the variable and function input area (as shown in Figure 4-245), and chosen by clicking on the desired connection (as shown in Figure 4-246), which will be added to the script editor (as shown in Figure 4-247). templateID : sets the ID of the template message to be sent (please refer to section 5.4.1 to obtain instructions).

keyword1 : sets the data to be sent as keyword1 content in the template message.

keyword2 : sets the data to be sent as keyword2 content in the template message.

keyword3 : sets the data to be sent as keyword3 content in the template message.

sec : The time interval in seconds during which this funciton will not be executed again. If set to 0, there will be no time interval.

Note : If keyword1 to keyword3 do not require data to be sent, please' ' (a space between single quotes) in the parameter field.

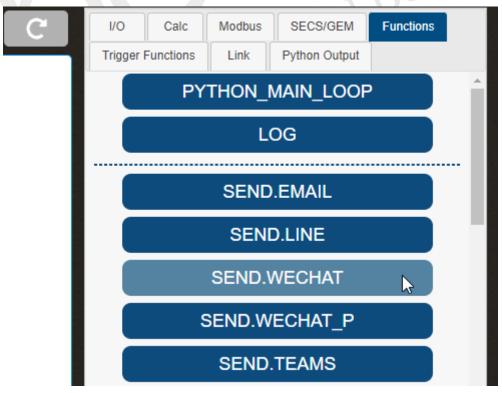


Figure 4-243 Click on "SEND.WECHAT"





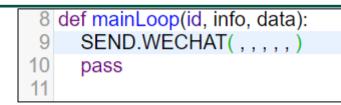






Figure 4-245 Choose the link in the variables and functions input area.

C	I/O Calc	Modbus	SECS/GEM	Functions
	Trigger Functions	Link	Python Output	
	WE	ECHAT0	0APPIDwx1	67 🔓 📃
				wechat
Fi	gure 4-246 Click or	the Wecl	nat connection t	o be used.



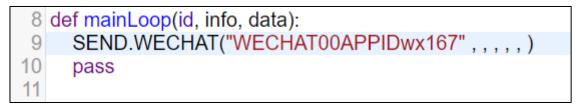
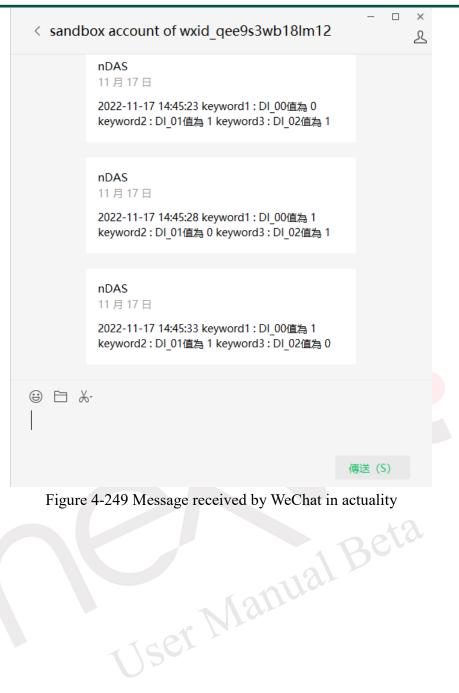


Figure 4-247 Add the Wechat connection in the script editing area

The example transmits data with keywords "keyword1" to "keyword3", representing the status of DI channel 0 to 2, and sends the message every five seconds. The script is written as shown in Figure 4-248, and the actual message received on WeChat is shown in Figure 4-249.

```
3 ID = "WECHAT00APPIDwx167"
4 TempID = "Q6MODwbflllon9lk3tps0zQP2ib3Zyp1Xxg8qllNlb4"
 5
6 \sec = 5
 7
8 def mainLoop(id, info, data):
9
     keyword01 = "DI 00值為 " + str(DI 00)
10
     keyword02 = "DI 01值為 " + str(DI 01)
11
     keyword03 = "DI 02值為 " + str(DI 02)
12
     SEND.WECHAT(ID, TempID, keyword01, keyword02, keyword03, sec)
13
     pass
14
```

# Figure 4-248 Example script for SEND.WECHAT



# 4.2.2.3.8 SEND.WECHAT_P

This function can be used to send messages to specific users who have subscribed to the test public account on WeChat. To use this function, you need to first set up the WeChat connection on the Link (please refer to section 4.4.5 for instructions). Once the setup is complete, click on the SEND.WECHAT_P function in the variable and function input area (as shown in Figure 4-250)to add the SEND.WECHAT_P function to the script editor (as shown in Figure 4-251).

SEND.WECHAT_P (id, templateID, openID, keyword1, keyword2, keyword3, send image, sec) function requires seven parameters to be set, each representing the following :

id: sets the Wechat connection to use, selected from the connection list in the variable and function input area (as shown in Figure 4-252), and chosen by clicking on the desired connection (as shown in Figure 4-253), which will be added to the script editor (as shown in Figure 4-254).

templateID : sets the ID of the template message to be sent (please refer to secution 5.4.1 to obtain instructions).

openID : To transmit the WeChat ID of a user who follows the public account, please refer to section 5.4.2 for the method to obtain it.

keyword1 : sets the data to be sent as keyword1 content in the template message.

keyword2 : sets the data to be sent as keyword2 content in the template message.

keyword3 : sets the data to be sent as keyword3 content in the template message.

sec : The time interval in seconds during which this funciton will not be executed again. If set to 0, there will be no time interval.

If keyword1 to keyword3 do not require data to be sent, please' ' (a space between single quotes) in the parameter field.



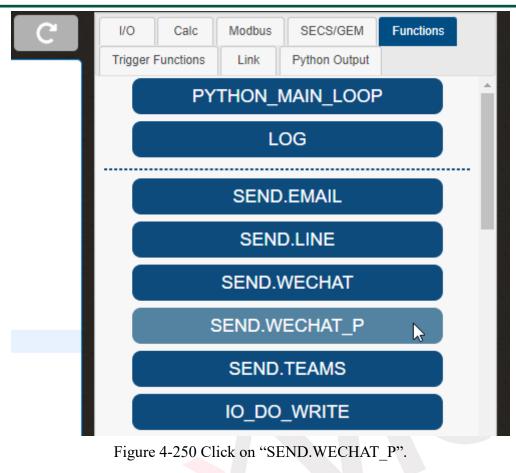




Figure 4-251 Add the SEND.WECHAT_P function in the script editing area.



Figure 4-252 Choose the link in the variables and functions input area



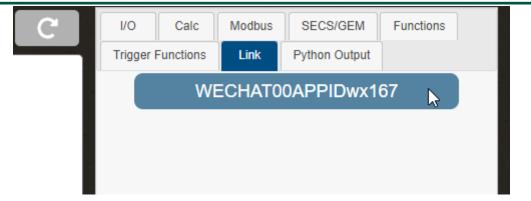


Figure 4-253 Click on the Wechat to be used.

8	def mainLoop(id, info, data):	
9	SEND.WECHAT_P("WECHAT00APPIDwx167",,,,,)	
10	pass	
11		

Figure 4-254 Add Wechat connection in the script editing area

The example transmits data with keyword1 to keyword3, representing the status of DI channel 0 to 2, and sends the message every five seconds. The script is written as shown in Figure 4-255, and the actual message received on WeChat is shown in Figure 4-256.

```
3 ID = "WECHAT00APPIDwx167"
 4 TempID = "Q6MODwbflllon9lk3tps0zQP2ib3Zyp1Xxg8qllNlb4"
 5 OpenID = "oBFdB58-X2xfVeKXFEDcyO0pRzMw"
 6 \sec = 5
 7
 8 def mainLoop(id, info, data):
9
     keyword01 = "DI 00值為 " + str(DI 00)
10
     keyword02 = "DI_01值為 " + str(DI_01)
11
     keyword03 = "DI 02值為 " + str(DI 02)
12
     SEND.WECHAT_P(ID, TempID,OpenID, keyword01, keyword02, keyword03, sec)
13
     pass
14
```

Figure 4-255 Example script for SEND.WECHAT_P



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	nDAS 11 月 17 日 2022-11-17 15:04:28 keyword1 : DI_00值為 1 keyword2 : DI_01值為 1 keyword3 : DI_02值為 1				
	nDAS 11 月 17 日 2022-11-17 15:04:34 keyword1 : DI_00值為 1 keyword2 : DI_01值為 0 keyword3 : DI_02值為 0				
	nDAS 11 月 17 日 2022-11-17 15:04:39 keyword1 : DI_00值為 0 keyword2 : DI_01值為 1 keyword3 : DI_02值為 0				
⊜ ⊟ <i>)</i> 	ζ-				
		傳	送 (S)		
Figure 4	-256 Message received by WeChat	in a	actuali	ity	
	User Manua				

## 4.2.2.3.9 SEND.TEAMS

This function allows you to send messages to users via Microsoft Teams. Before using it, you need to set up the Teams connection on the Link (please refer to section 4.4.6 for instructions). Once done, clicking on SEND.TEAMS in the variables and functions input area (as shown in Figure 4-257) will add the SEND.TEAMS function to the script editor (as shown in Figure 4-258).

SEND. TEAMS (id, title, message, send image, sec) function requires four parameters, each representing the following :

id : Sets the Teams connection to be used. To select a connection, choose a link in the variables and functions input area (as shown in Figure 4-259), and click on the desired Teams connection (as shown in Figure 4-260), which will be added to the script editor (as shown in Figure 4-261). title : The title of the message to be sent.

message : The content of the message to be sent.

sec : The time interval in seconds during which this funciton will not be executed again. If set to 0, there will be no time interval.



Figure 4-257 Click on "SEND.TEAMS"

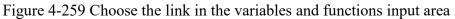
	9	def mainLoop(id, info, data):	
1	0	SEND.TEAMS(,,,)	
1	1	pass	
1	2		





Figure 4-258 Add the SEND.TEAMS function in script editing area





C I/O Calc Modbus SECS/GEM Functions
Trigger Functions Link Python Output
TEAMS00NAME_nDAS_test
teams
Figure 4-260 Click on the Teams connection to be used.
9 def mainLoop(id, info, data):
0 SEND.TEAMS("TEAMS00NAME_nDAS_test",,,)
1 pass
Figure 4-261 Add the Teams connection in the script editing area.

This is an example of sending periodic messages every 5 seconds, as shown in Figure 4-262. The message is actually received by Microsoft Teams, as shown in Figure 4-263.

```
9 def mainLoop(id, info, data):
10 SEND.TEAMS("TEAMS00NAME_nDAS_test" ,"nDAS_demo" , "DI_00 = " + str(DI_00), 5)
11 pass
12
13
```

Figure 4-262 Example script for SEND.TEAMS



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Figure 4-263 Message received by Microsoft Teams in actuality



# 4.2.2.3.10 OPCUA_ITEM

This function facilitates the retrieval of nodes from the OPCUA Server. Prior to its utilization, it's necessary to navigate to the linking page and configure the connection to the OPCUA Server (refer to section 4.4.7 for configuration details). Upon completing the configuration, within the variable and function input section, by selecting the OPCUA_ITEM function (as illustrated in Figure 4-264), the software will seamlessly integrate the OPCUA_ITEM function into the script-writing area (as depicted in Figure 4-265).

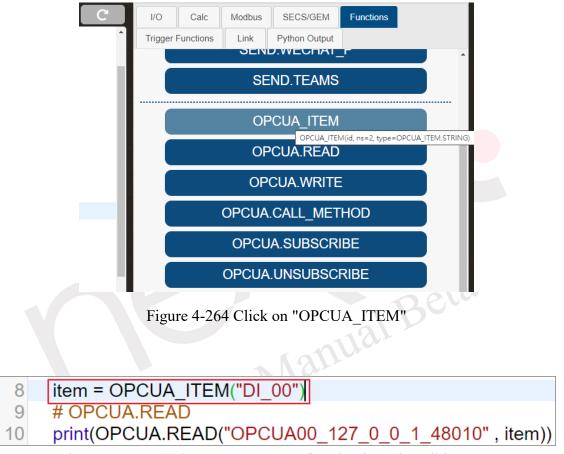


Figure 4-265 Add the OPCUA_ITEM function in script editing area

This function is employed in cases where other OPCUA methods necessitate the inclusion of an "item" type. In such scenarios, it becomes essential to input the name of the OPCUA node. As an illustrative example involving the nDAS OPCUA Server, users can proactively examine the node names provided by nDAS using the OPCUA Client within VIC Flow. This can be accomplished by referring to Figure 4-266 for guidance.



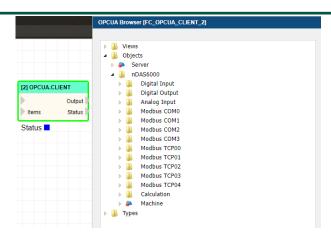


Figure 4-266 Browse all node by OPCUA Client operator of VIC Flow



# 4.2.2.3.11 OPCUA.READ

This function is designed to retrieve the node status from the OPCUA Server. Before utilizing it, navigate to the linking page and configure the connection to the OPCUA Server (refer to section 4.4.7 for configuration details). Upon completing the configuration, within the variable and function input section, click on the OPCUA.READ function (as depicted in Figure 4-267). This action will seamlessly integrate the OPCUA.READ function into the script-writing area. After inputting the requisite parameters, as shown in Figure 4-268, executing the script will yield results that are subsequently printed, as illustrated in Figure 4-269.

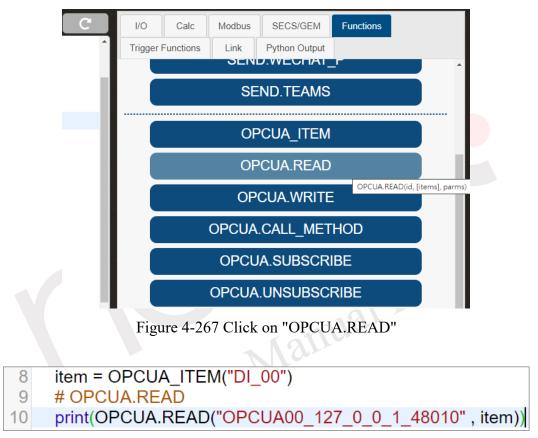


Figure 4-268 Add the OPCUA.READ function in script editing area

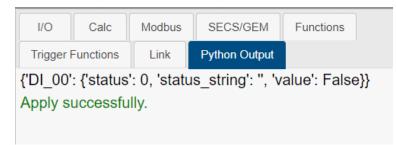


Figure 4-269 Result of OPCUA.READ

# 4.2.2.3.12 **OPCUA.WRITE**

This function facilitates the writing of values to nodes on the OPCUA Server. To use it, first navigate to the linking page and configure the connection to the OPCUA Server (refer to section 4.4.7 for configuration details). After completing the configuration, within the variable and function input section, click on the OPCUA.WRITE function (as depicted in Figure 4-270). This action will seamlessly integrate the OPCUA.WRITE function into the script-writing area. Subsequently, input the required parameters as illustrated in Figure 4-271.

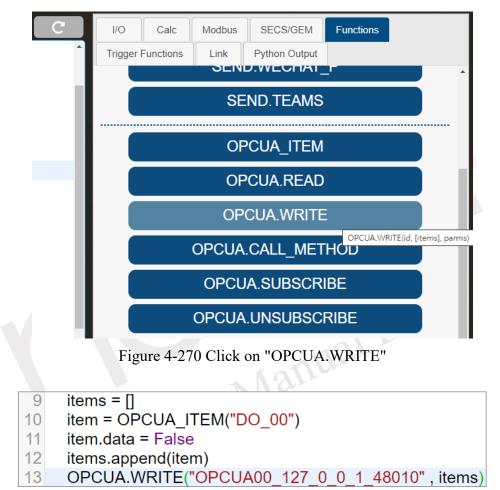


Figure 4-271 Add the OPCUA.WRITE function in script editing area

# 4.2.2.3.13 OPCUA.CALL_METHOD

This function is utilized for invoking methods on the OPCUA Server. Prior to its use, navigate to the linking page and configure the connection to the OPCUA Server (refer to section 4.4.7 for configuration details). After completing the configuration, within the variable and function input section, click on the OPCUA.CALL_METHOD function (as depicted in Figure 4-272). This action will integrate the OPCUA.CALL_METHOD function seamlessly into the script-writing area. Subsequently, input the required parameters as exemplified in Figure 4-273.

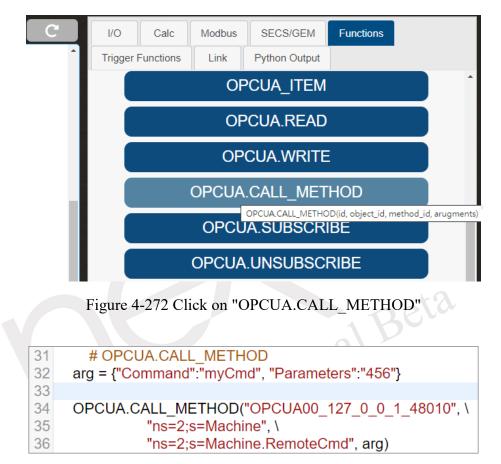
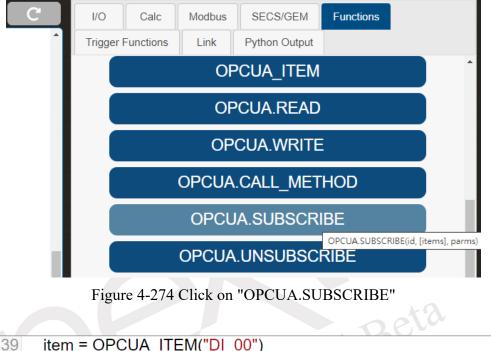


Figure 4-273 Add the OPCUA.CALL_METHOD function in script editing area

# 4.2.2.3.14 OPCUA.SUBSCRIBE

This function is used to subscribe to nodes on the OPCUA Server. Prior to its utilization, navigate to the linking page and configure the connection to the OPCUA Server (refer to section 4.4.7 for configuration details). After completing the configuration, within the variable and function input section, click on the OPCUA.SUBSCRIBE function (as depicted in Figure 4-274). This action will seamlessly integrate the OPCUA.SUBSCRIBE function into the script-writing area. Following this, input the necessary parameters as shown in Figure 4-275.



40	OPCUA.SUBSCRIBE("OPCUA00_127_0_0_1_48010", item)	

Figure 4-275 Add the OPCUA.SUBSCRIBE function in script editing area

# 4.2.2.3.15 OPCUA.UNSUBSCRIBE

This function is utilized to unsubscribe from the OPCUA Server. If nodes on the OPCUA Server were subscribed to in advance and the need arises to cancel those subscriptions, it's imperative to invoke this function. Prior to its use, navigate to the linking page and configure the connection to the OPCUA Server (refer to section 4.4.7 for configuration details). Once the configuration is complete, within the variable and function input section, click on the OPCUA.UNSUBSCRIBE function (as depicted in Figure 4-276). This action will seamlessly integrate the OPCUA.UNSUBSCRIBE function into the script-writing area. Subsequently, input the required parameters as demonstrated in Figure 4-277.

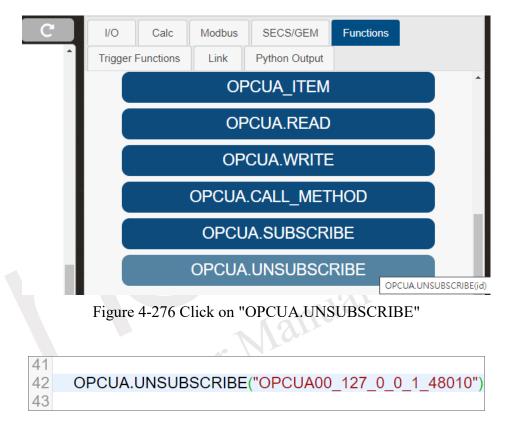


Figure 4-277 Add the OPCUA.UNSUBSCRIBE function in script editing area



# 4.2.2.3.16 PYTHON_MAIN_LOOP

The purpose of this function is to insert default Python script content. When the PYTHON_MAIN_LOOP is clicked in the function input area for variables and functions (as shown in Figure 4-278), the default script content will be inserted into the script writing area (as shown in Figure 4-279).

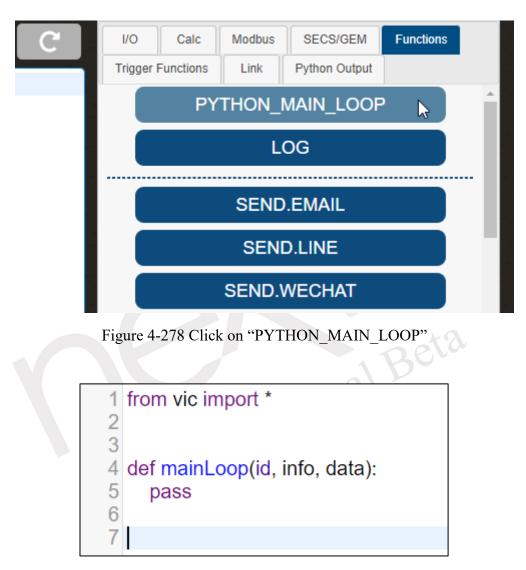


Figure 4-279 Inserting Default Content in Script Editing Area

*Special Note : PYTHON_MAIN_LOOP will also input logs from I/O and Modbus Channel. If data is written to I/O or Modbus Channel within PYTHON_MAIN_LOOP, the data displayed on the UI may not be as expected. To avoid this situation, enable the "At Fixed Interval" option in Data Log Setting to ensure consistent time intervals (please refer to section 4.1.4.1 for the setting method).



### 4.2.2.3.17 WRITE_TEXT

This function writes content to a text file. By clicking WRITE_TEXT in the variable and function input area (as shown in Figure 4-280), the WRITE_TEXT function will be added to the script editor (as shown in Figure 4-281).

WRITE_TEXT (filepath, content, sec) function needs to be set with three parameters, each representing the following :

filepath : Sets the file path location for the text file. If only the file name is set, the file will be created in the /opt/nDAS/Export folder on the nDAS device.

content : Sets the content to be written.

sec : The time interval in seconds during which this funciton will not be executed again. If set to 0, there will be no time interval.

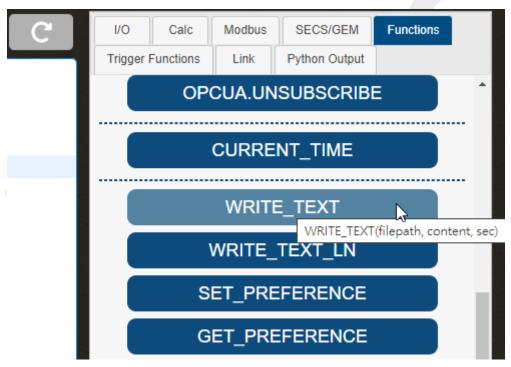


Figure 4-280 Click on "WRITE_TEXT"

4 def mainLoop(id, info, data):						
5	WRITE_TEXT(,,)					
6	pass					
7						

Figure 4-281 Add the WRITE_TEXT function in the script editing area

# 4.2.2.3.18 WRITE_TEXT_LN

This function writes content to a text file and automatically adds a newline after writing the content. When you click on WRITE_TEXT_LN in the variable and function input area (as shown in Figure 4-282), a WRITE_TEXT_LN function will be added to the script editor with the content you want to write (as shown in Figure 4-283).

WRITE_TEXT_LN (filepath, content, sec) function needs to be set with three parameters, each representing the following :

filepath : Sets the file path location for the text file. If only the file name is set, the file will be created in the /opt/nDAS/Export folder on the nDAS device.

content : Sets the content to be written.

sec : The time interval in seconds during which this funciton will not be executed again. If set to 0, there will be no time interval.

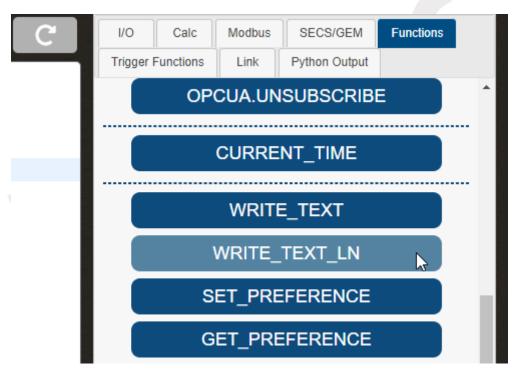


Figure 4-282 Click on "WRITE_TEXT_LN"

4 def mainLoop(id, info, data):						
5	WRITE_TEXT_LN(,,)					
6	pass					
7						

Figure 4-283 Add the WRITE_TEXT_LN funciton in the script editing area

# 4.2.2.3.19 SET_PREFERENCE

This function enables the setting of system variables, which will persist even after nDAS is restarted. To access the SET_PREFERENCE function in the variable and function input area (as shown in Figure 4-284), simply click on it. This will add the SET_PREFERENCE function to the script editor (as shown in Figure 4-285).

SET_PREFERENCE (key, value) function requires two parameters to be set, each with the following meanings :

key: Sets the parameter name.

value : Sets the value of the parameter.

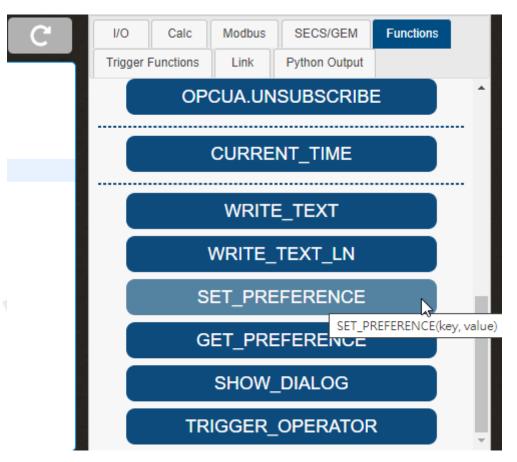


Figure 4-284 Click on "SET_PREFERENCE"

4	def mainLoop(id, info, data):
5	SET_PREFERENCE(,)
6	pass
7	

Figure 4-285 Add the SET_PREFERENCE function in the script editing area

# 4.2.2.3.20 GET_PREFERENCE

This function retrieves the value of a system variable, and returns a default value if the variable does not exist. To add the GET_PREFERENCE function to the script editor, click on GET_PREFERENCE in the variable and function input area (as shown in Figure 4-286). The GET_PREFERENCE function will be added to the script editor (as shown in Figure 4-287).

GET_PREFERENCE (key, default_value) function requires two parameters to be set, each with the following meanings :

key : Sets the parameter name.

default_value : The default value for the parameter.

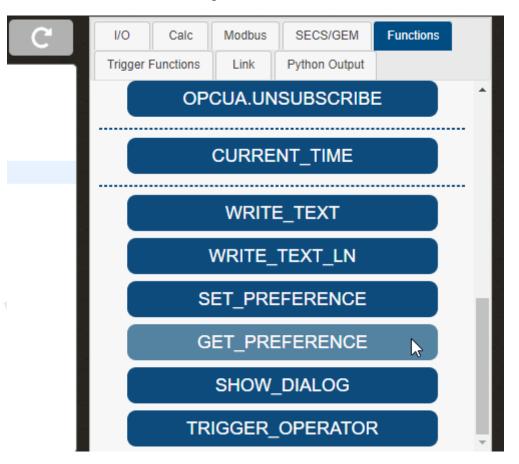


Figure 4-286 Click on "GET_PREFERENCE"

4	def mainLoop(id, info, data):
5	GET_PREFERENCE(,)
6	pass
7	

Figure 4-287 Add the GET_PREFERENCE function in the script editing area

# 4.2.2.3.21 SHOW_DIALOG

This function can pop up a dialog in the nDAS operation interface and display the set message. By clicking on SHOW_DIALOG in the variable and function input area (as shown in Figure 4-288), the SHOW_DIALOG function will be added to the script editor (as shown in Figure 4-289).

SHOW_DIALOG(type, title, content, sec) function requires four parameters to be set, each representing the following :

type : Sets the type of the dialog, please refer to Table 4-34.

title : Sets the title of the dialog.

content : Sets the content of the dialog.

sec : The time interval in seconds during which this funciton will not be executed again. If set to 0, there will be no time interval.

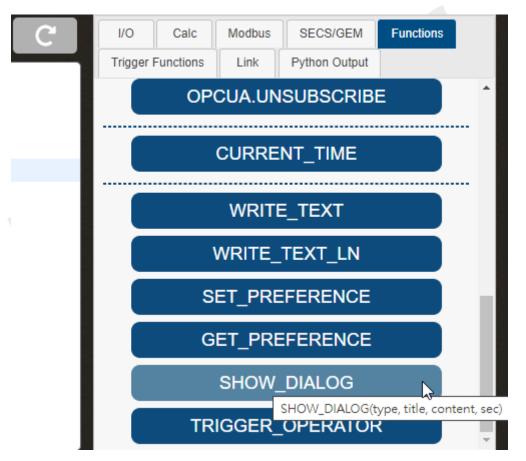


Figure 4-288 Click on "SHOW_DIALOG"

4	4 def mainLoop(id, info, data):					
5	SHOW_DIALOG(,,,)					
6	pass					
1						

Figure 4-289 Add the SHOW_DIALOG function in the script editing area



Туре	Dialog	Туре	Dialog				
0 (Success)	Deesa Tale 2 SLICess Demo Content OK	2 (Information)	Deep Tale 2 Information Demo Content OK				
1 (Failed)	Denso Title El Pailed!! Demo Coment. OK	3 (Warning)	Deno Tale 2 Warning!! Deno Content OK				

### Table 4-34 Dialog Type Table



#### 4.2.2.3.22 TRIGGER_OPERATOR

This function triggers a specified VIC flow trigger operator. Clicking on TRIGGER_OPERATOR in the function input area (as shown in Figure 4-290), the TRIGGER_OPERATOR function will be added to script editor (as shown in Figure 4-291).

TRIGGER_OPERATOR(id) function requires one parameter to be set, with the following meaning :

id : sets the ID of the VIC flow trigger operator to be triggered.

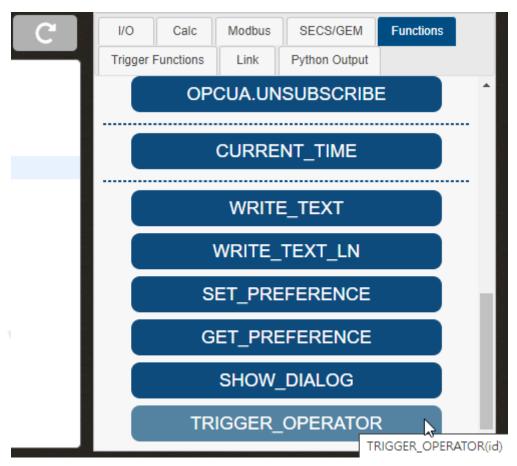


Figure 4-290 Click on "TRIGGER_OPERATOR"

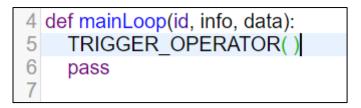


Figure 4-291 Add the TRIGGER_OPERATOR function in the script editing area



#### 4.2.2.4 SECS/GEM

## 4.2.2.4.1 Equipment

#### 4.2.2.4.1.1 SET_ALARM

This function is utilized to set the current state of an ALID as an alarm state. In the Variable and Function Input Area of the SECS/GEM in the equipment, clicking on SET_ALARM (as shown in Figure 4-292) results in the addition of the SET_ALARM function in the script writing area (as shown in Figure 4-293).

The SET_ALARM(alid, TRUE/FALSE) function necessitates the configuration of two parameters, each representing the following:

alid: Specifies the ALID for which the state should be altered.

TRUE/FALSE: Determines whether to activate the alarm. If an alarm is to be activated, set this parameter to TRUE; conversely, set it to FALSE.

I/O	Calc	Modbus	SECS/GEM	Functions	Trigger Functions
Link	Python (	Dutput			
Equipm	nent C	ommon			
			SET_AL	FM	
SET_ALARM(alid, True/False)					
Figure 4-292 Click on "SET_ALARM"					
	4		inLoop(id,	-	):
	5	SET	_ALARM(	, )	
	6	pass			

Figure 4-293 Add the SET_ALARM function in the script editing area

# 4.2.2.4.1.2 CURRENT_CONTROL_ONLINE_MODE

This function serves to acquire the current ON-LINE control mode of the equipment side. In the Variable and Function Input Area of the SECS/GEM within the equipment, clicking on CURRENT CONTROL ONLINE MODE (as depicted in Figure 4-294) leads to the inclusion of the CURRENT_CONTROL_ONLINE_MODE function in the script writing area (as illustrated in Figure 4-295).



Figure 4-294 Click on "CURRENT_CONTROL_ONLINE_MODE"

Figure 4-295 Add the CURRENT_CONTROL_ONLINE_MODE function in the script editing Jser Manu

# 4.2.2.4.1.3 SET_CONTROL_OFFLINE

This function facilitates the adjustment of the current control state of the equipment side to OFF-LINE. Within the Variable and Function Input Area of the SECS/GEM in the equipment, clicking on SET_CONTROL_OFFLINE (as indicated in Figure 4-296) results in the incorporation of the SET_CONTROL_OFFLINE function in the script writing area (as shown in Figure 4-297).

SET_ALARM CURRENT_CONTROL_ONLINE_MODE SET_CONTROL_OFFLINE	Equipment
Figure 4-296 Click on "SET_CONTROL_OFFLINE"	Fi

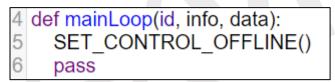


Figure 4-297 Add the SET_CONTROL_OFFLINE function in the script editing area

# 4.2.2.4.1.4 SET_CONTROL_ONLINE

This function enables the adjustment of the current control state of the equipment side to ON-LINE. Within the Variable and Function Input Area of the SECS/GEM in the equipment, clicking on SET_CONTROL_ONLINE (as shown in Figure 4-298) results in the inclusion of the SET_CONTROL_ONLINE function in the script writing area (as illustrated in Figure 4-299).



4	def mainLoop(id, info, data):	]
5	SET_CONTROL_ONLINE()	
6	pass	

Figure 4-299 Add the SET_CONTROL_ONLINE function in the script editing area

# 4.2.2.4.1.5 SET_CONTROL_ONLINE_LOCAL

This function allows the configuration of the current ON-LINE control state of the equipment side to LOCAL. Within the Variable and Function Input Area of the SECS/GEM in the equipment, clicking on SET_CONTROL_ONLINE_LOCAL (as depicted in Figure 4-300) results in the inclusion of the SET_CONTROL_ONLINE_LOCAL function in the script writing area (as illustrated in Figure 4-301).

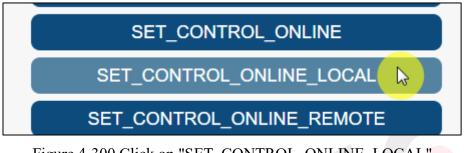


Figure 4-300 Click on "SET_CONTROL_ONLINE_LOCAL"

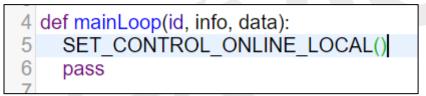


Figure 4-301 Add the SET_CONTROL_ONLINE_LOCAL function in the script editing area

# 4.2.2.4.1.6 SET_CONTROL_ONLINE_REMOTE

This function enables the adjustment of the current ON-LINE control state of the equipment side to REMOTE. Within the Variable and Function Input Area of the SECS/GEM in the equipment, clicking on SET_CONTROL_ONLINE_REMOTE (as shown in Figure 4-302) results in the addition of the SET_CONTROL_ONLINE_REMOTE function in the script writing area (as illustrated in Figure 4-303).

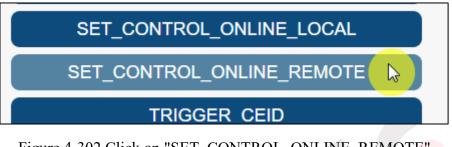


Figure 4-302 Click on "SET_CONTROL_ONLINE_REMOTE"

4	def mainLoop(id, info, data):
5	SET_CONTROL_ONLINE_REMOTE()
6	pass

Figure 4-303 Add the SET_CONTROL_ONLINE_REMOTE function in the script editing area

# 4.2.2.4.1.7 TRIGGER_CEID

This function allows the configuration of sending an Event Report (S6F11). Within the Variable and Function Input Area of the SECS/GEM in the equipment, clicking on TRIGGER_CEID (as depicted in Figure 4-304) results in the inclusion of the TRIGGER_CEID function in the script writing area (as illustrated in Figure 4-305).

The TRIGGER_CEID(ceid) function requires the configuration of a single parameter, which signifies the following:

ceid: Specifies the Event Report (CEID) to be sent.



Figure 4-304 Click on "TRIGGER_CEID"



Figure 4-305 Add the TRIGGER_CEID function in the script editing area

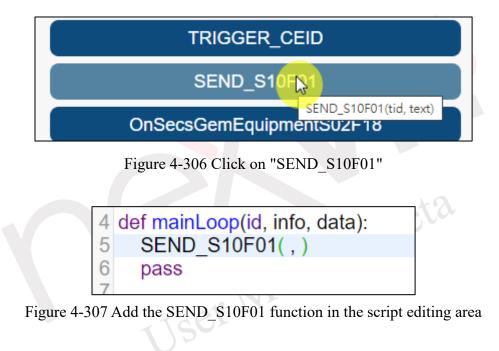
# 4.2.2.4.1.8 SEND_S10F01

This function facilitates the issuance of the S10F1 command to the Host side. In the Variable and Function Input Area of the SECS/GEM in the equipment, clicking on SEND_S10F01 (as shown in Figure 4-306) leads to the inclusion of the SEND_S10F01 function in the script writing area (as illustrated in Figure 4-307).

The SEND_S10F01(tid, text) function necessitates the configuration of two parameters, each representing the following:

tid: Terminal ID.

text: Message content to be transmitted to the Host side.



### 4.2.2.4.1.9 OnSecsGemEquipS02F18

When the equipment side receives the S2F18 command sent by the Host side, this function is triggered. Within the Variable and Function Input Area, clicking on OnSecsGemEquipS02F18 in the trigger function (as illustrated in Figure 4-308) results in the addition of the OnSecsGemEquipS02F18 function in the script writing area (as shown in Figure 4-309). Users can then customize the content of the function according to their requirements.

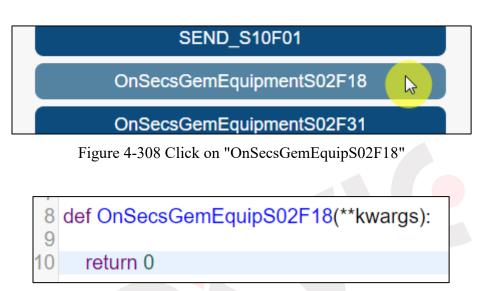


Figure 4-309 Add the OnSecsGemEquipS02F18 function in the script editing area

#### 4.2.2.4.1.10 OnSecsGemEquipS02F31

When the equipment side receives the S2F31 command sent by the Host side, this function is triggered. Within the Variable and Function Input Area, clicking on OnSecsGemEquipS02F31 in the trigger function (as shown in Figure 4-310) results in the addition of the OnSecsGemEquipS02F31 function in the script writing area (as illustrated in Figure 4-311). Users can then customize the content of the function according to their requirements.





Figure 4-311 Add the OnSecsGemEquipS02F31 function in the script editing area

#### 4.2.2.4.1.11 OnSecsGemEquipS02F41

When the equipment side receives the S2F41 command sent by the Host side, this function is triggered. Within the Variable and Function Input Area, clicking on OnSecsGemEquipS02F41 in the trigger function (as illustrated in Figure 4-312) results in the addition of the OnSecsGemEquipS02F41 function in the script writing area (as shown in Figure 4-313). Users can then customize the content of the function according to their requirements.

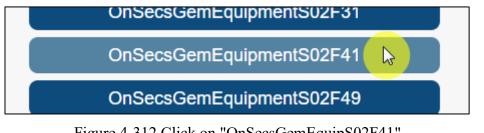


Figure 4-312 Click on "OnSecsGemEquipS02F41"

8 def OnSecsGemEquipS02F41(**kwargs):
 9 pass

Figure 4-313 Add the OnSecsGemEquipS02F41 function in the script editing area

#### 4.2.2.4.1.12 OnSecsGemEquipS02F49

When the equipment side receives the S2F49 command sent by the Host side, this function is triggered. Within the Variable and Function Input Area, clicking on OnSecsGemEquipS02F49 in the trigger function (as shown in Figure 4-314) results in the addition of the OnSecsGemEquipS02F49 function in the script writing area (as depicted in Figure 4-315). Users can then customize the content of the function according to their requirements.



Figure 4-314 Click on "OnSecsGemEquipS02F49"

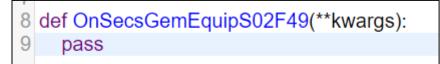


Figure 4-315 Add the OnSecsGemEquipS02F49 function in the script editing area

#### 4.2.2.4.1.13 OnSecsGemEquipS10F03

When the equipment side receives the S10F3 command sent by the Host side, this function is triggered. Within the Variable and Function Input Area, clicking on OnSecsGemEquipS10F03 in the trigger function (as shown in Figure 4-316) results in the addition of the OnSecsGemEquipS10F03 function in the script writing area (as depicted in Figure 4-317). Users can then customize the content of the function according to their requirements.

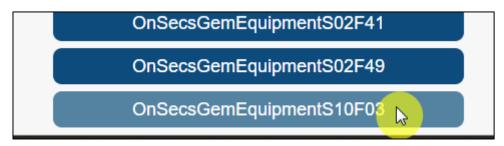


Figure 4-316 Click on "OnSecsGemEquipS10F03"



Figure 4-317 Add the OnSecsGemEquipS10F03 function in the script editing area

#### 4.2.2.4.2 Common

#### 4.2.2.4.2.1 ARE_YOU_THERE

The ARE_YOU_THERE function is used to send the Are-You-There (S1F1) message from the equipment side. In the SECS/GEM section of the Variable and Function Input Area, clicking on ARE_YOU_THERE (as shown in Figure 4-318) will add the ARE_YOU_THERE function to the script writing area (as depicted in Figure 4-319).

The ARE_YOU_THERE function requires three parameters to be set, each representing the following:

- *role: Set the role to be sent. The default value is set as being sent by the Host side. However, the system only supports sending from the equipment side, so this parameter needs to be set to the string "E".
- *linkId: This parameter is used to set the Host link name to be used. Again, since the system only supports sending from the equipment side, this parameter should be set as an empty string.
- *callback: Represents the function to be used after receiving the response. If set, it indicates asynchronous processing. If not set, it indicates synchronous processing.
- Note: * indicates optional parameters.





Figure 4-318 Click on "ARE_YOU_THERE"

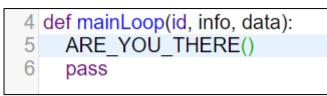


Figure 4-319 Add the ARE_YOU_THERE function in the script editing area



# 4.2.2.4.2.2 SEND_S02F17

The SEND_S02F17 function is used to send the Request On-Line Time (S2F17) message from the equipment side. In the SECS/GEM section of the Variable and Function Input Area, clicking on SEND_S02F17 (as shown in Figure 4-320) will add the SEND_S02F17 function to the script writing area (as depicted in Figure 4-321).

The SEND_S02F17 function requires three parameters to be set, each representing the following: *role: Set the role to be sent. The default value is set as being sent from the equipment side, so this parameter should be set to the string "E".

*linkId: This parameter is used to set the Host link name to be used. However, since the system only supports sending from the equipment side, this parameter should be set as an empty string.

*callback: Represents the function to be used after receiving the response. If set, it indicates asynchronous processing. If not set, it indicates synchronous processing.

Note: * indicates optional parameters.

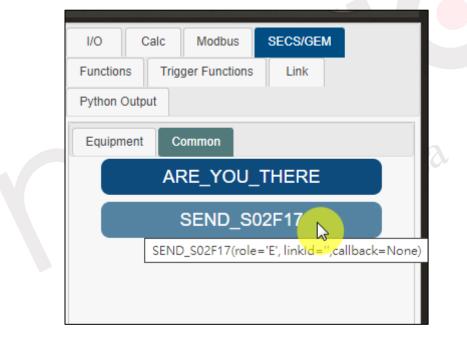


Figure 4-320 Click on "SEND_S02F17"

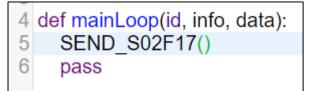


Figure 4-321 Add the SEND_S02F17 function in the script editing area

## 4.2.2.5 Trigger Functions

## 4.2.2.5.1 OnInitScript()

Upon initialization of the script and project loading, this function is triggered. By clicking

on OnInitScript in the trigger function input area for variables and functions (as shown in Figure 4-322), the OnInitScript function will be added to the script editing area (as shown in Figure 4-323), allowing users to customize the contents of the function according to their needs.

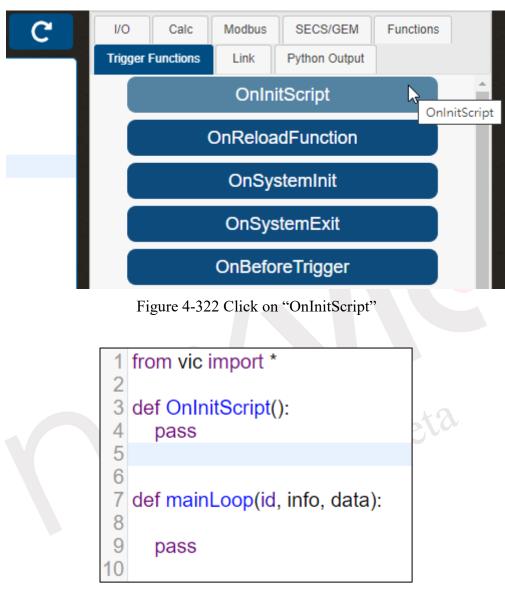


Figure 4-323 Add the OnInitScript function in the script editing area

#### 4.2.2.5.2 OnReloadFunction()

Clicking the Reload button or pressing the shortcut key (F9) triggers this function. By clicking OnReloadFunction in the trigger function area of variables and functions input (as shown in Figure 4-324), the OnReloadFunction function will be added to the script writing area (as shown in Figure 4-325)). Users can write the contents of the function according to their own needs.

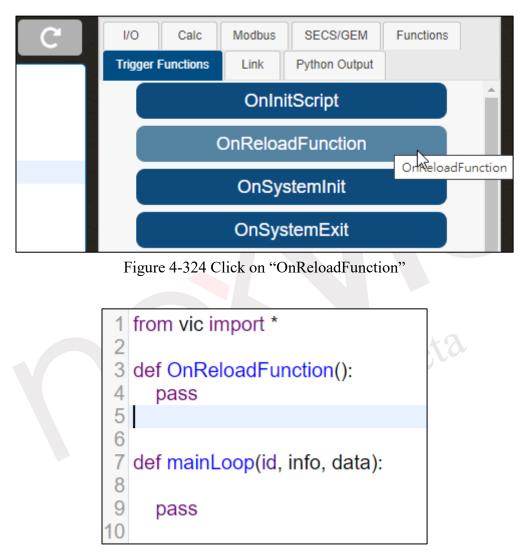


Figure 4-325 Add the OnReloadFunction function in the script editing area

### 4.2.2.5.3 OnSystemInit()

This function is triggered automatically when the program is opened and initialization is completed (after the project is loaded). To add the OnSystemInit function in the script editing area, click on OnSystemInit in the trigger function of variables and function inputs (as shown in Figure 4-326). The user can then write the contents of the function according to their needs (as shown in Figure 4-327).

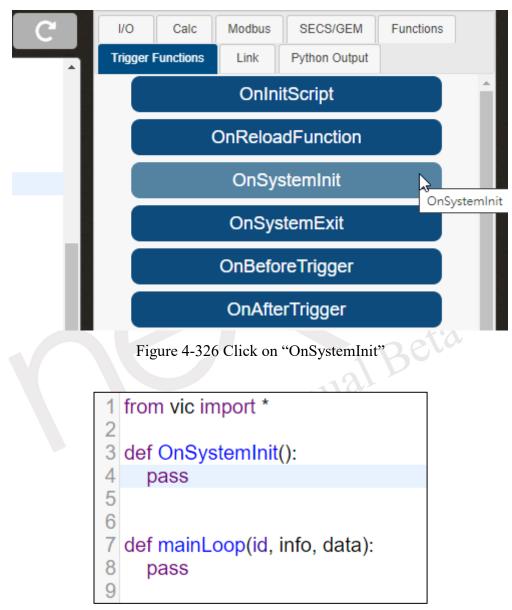


Figure 4-327 Add the OnSystemInit function in the script editing area

## 4.2.2.5.4 OnSystemExit()

This function is triggered when the program is closed. To add the OnSystemExit function in the script writing area, click OnSystemExit in the trigger function section of the variables and function input area (as shown in Figure 4-328). The user can then customize the content of the function according to their needs (as shown in Figure 4-329).

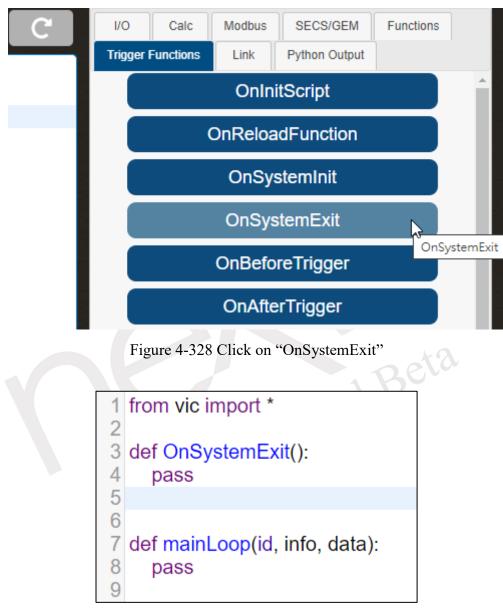


Figure 4-329 Add the OnSystemExit function in the script editing area

### 4.2.2.5.5 OnBeforeTrigger

When the Trigger Operator is triggered, this function will be triggered. By clicking OnBeforeTrigger in the trigger function section of variables and function inputs (as shown in Figure 4-330), the OnBeforeTrigger function will be added to the script writing area (as shown in Figure 4-331). Users can write the content of the function according to their needs.

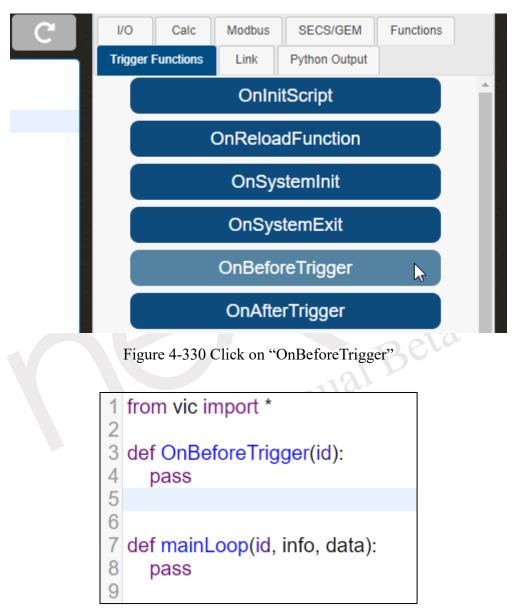


Figure 4-331 Add the OnBeforeTrigger function in the script editing area

## 4.2.2.5.6 OnAfterTrigger

Once the Trigger Operator is activated, this function will also be triggered. Clicking OnAfterTrigger in the variable and function input area (as shown in Figure 4-332) will add the OnAfterTrigger function to the script writing area (as shown in Figure 4-333). Users can write the content of the function according to their needs.

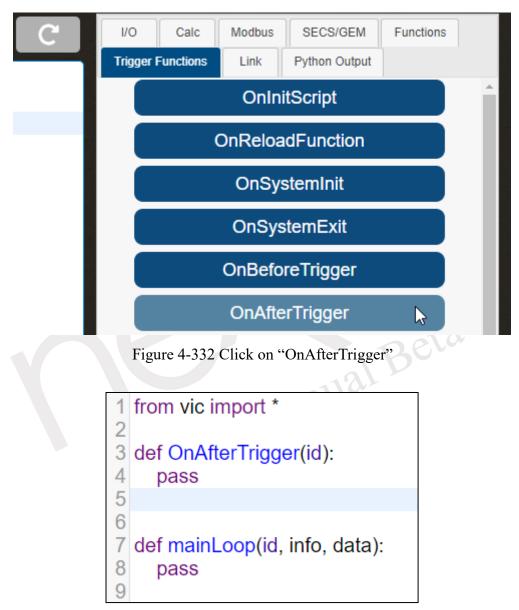


Figure 4-333 Add the OnAfterTrigger function in the script editing area



### 4.2.2.5.7 OnOpcuaDataChange

When the subscribed OPCUA node value changes, it triggers this function. In the Variables and Functions input section, click on the "OnOpcuaDataChange" function (as shown in Figure 4-334), and this will add the "OnOpcuaDataChange" function to the script writing area (as illustrated in Figure 4-335). Users can customize the content of the function according to their needs. The "id" and "data" parameters represent the subscribed OPCUA id and node status, respectively.

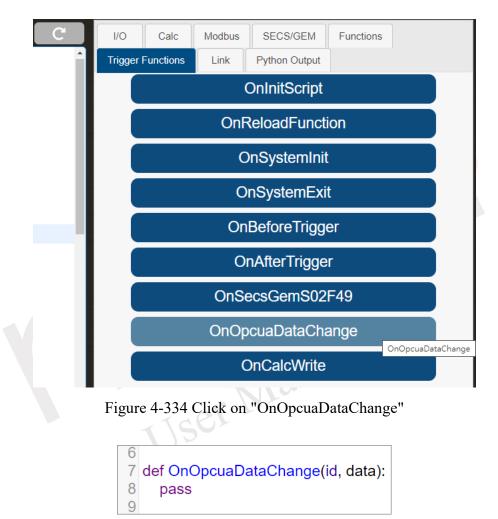


Figure 4-335 Add the OnOpcuaDataChange function in the script editing area



## 4.2.2.5.8 OnCalcWrite

When the RESTful API writes values to the CALC operator, it triggers this function. In the Variables and Functions input section, click on the "OnCalcWrite" function (as shown in Figure 4-336), and this will add the "OnCalcWrite" function to the script writing area (as depicted in Figure 4-337). Users can customize the content of the function according to their needs. The "id" and "value" parameters represent the incoming CALC operator index and value, respectively.

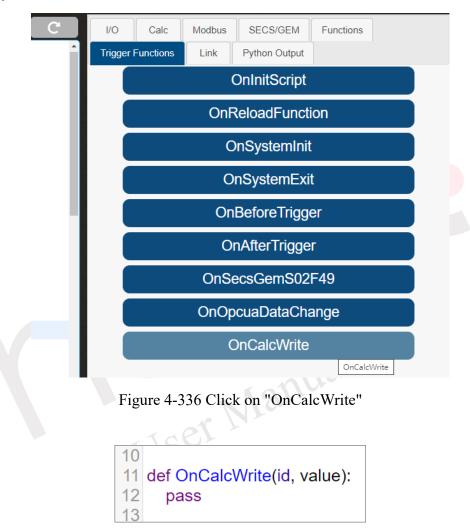


Figure 4-337 Add the OnCalcWrite function in the script editing area



## 4.2.2.6 Modbus

## 4.2.2.6.1 Bit Channel

It is feasible to engage in the scripting of Modbus Bit Channel value read and write operations, drawing inspiration from section 4.1.2.4.1. Within the domain of variable and function input, the act of selecting the Bit Channel within the Modbus context is pivotal (as delineated in Figure 4-338). This consequential selection begets the manifestation of the Modbus Bit Channel variable.

In the context of nDAS configuration, a total of 128 utilizable Modbus Channels are at one's disposal, although the interface extends visibility to a mere 20. In instances where the user's intentions encompass Modbus Bit Channels that transcend the boundaries of the interface's revelation, a self-directed approach to input becomes requisite. This entails the personal entry of communication port and channel parameters. The stipulated methodology for input is encapsulated within the syntax "BIT_CHANNEL[port][n]". It is of significance to note that in the event of COM Port utilization, the 'port' value aligns with the COM Port index. Conversely, in the case of TCP employment, the 'port' is allocated within the numerical range of 100 to 104, while 'n' spans the continuum of 0, 1, 2, all the way through to 127.

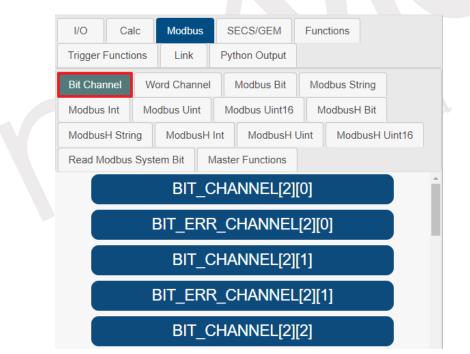


Figure 4-338 Selecting Bit Channel for Variables and Function Input in Modbus.



## 4.2.2.6.2 Word Channel

It is possible to read and write Modbus Word Channel values in a script, as described in section 4.1.2.4.1. To select a Modbus Word Channel variable in the variable and function input area, choose the Word Channel option under Modbus (as shown in Figure 4-339). The nDAS system has a total of 128 Modbus Channels available, but only 20 are displayed in the interface. If a user needs to use Modbus Word Channels beyond those displayed in the interface, they must input the communication port and channel manually using the following format: "WORD CHANNEL[port][n]". For COM ports, the port number starts at 0 and goes up to the

maximum port number minus 1. For TCP, the port numbers are 100-104, and n ranges from 0 to 127.

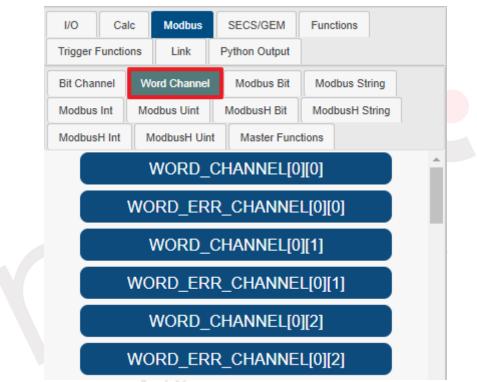


Figure 4-339 Selecting Word Channel for Variable and Function Input in Modbus

## 4.2.2.6.3 Modbus Bit

The Modbus Bit function facilitates the local Input Status (1x) bit read and write operations. To utilize this feature, navigate to the variable and function input section, and select the Modbus Bit within the Modbus category (as depicted in Figure 4-340). Upon selection, the Modbus Bit variable will be displayed. This software supports Modbus Bit addresses ranging from 1 to 65535; however, the interface only showcases addresses 1 to 25. If users intend to use Modbus Bit variables beyond those displayed, they should manually input the Modbus Bit variable using the syntax "MODBUSBIT[n]", where n represents values from 0 to 65535.

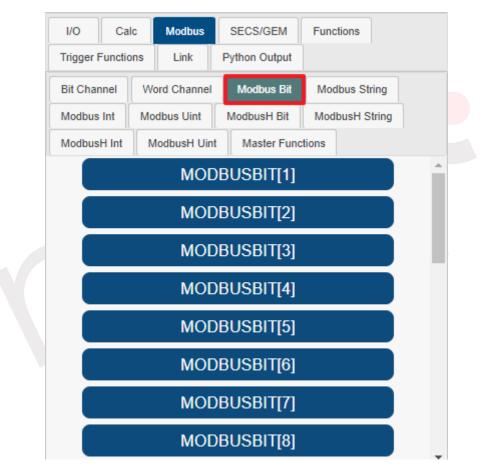


Figure 4-340 Selecting Modbus Bit for Variable and Function Input in Modbus



### 4.2.2.6.4 Modbus String

The Modbus String function facilitates local Input Register (3x) string read and write operations. To utilize this function, navigate to the variable and function input section, and choose the Modbus String option within the Modbus category (as shown in Figure 4-341). Upon selection, the Modbus String variable will be presented. This software supports Modbus String addresses ranging from 1 to 65535, while the interface displays addresses 1 to 25.

Should users require to work with Modbus String variables beyond those displayed, they should manually input the Modbus String variable using the syntax "MODBUSSTR[n]", where n corresponds to values ranging from 0 to 65535.

Please note: If the variable does not contain any data, the corresponding field will be displayed as "blank".

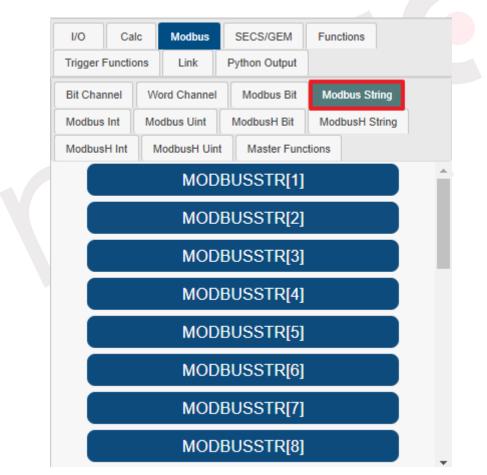


Figure 4-341 Selecting Modbus String for Variable and Function Input in Modbus

## 4.2.2.6.5 Modbus Int

The Modbus Int function facilitates local Input Register (3x) numeric read and write operations. To make use of this function, access the variable and function input section and select the Modbus Int option within the Modbus category (as shown in Figure 4-342). Upon selection, the Modbus Int variable will be displayed. This software allows for Modbus Int addresses ranging from 1 to 65535, with the interface presenting 25 addresses.

If users need to work with Modbus Int variables beyond the displayed range, they should manually input the Modbus Int variable using the syntax "MODBUSINT[n]", where n corresponds to values from 0 to 65535. A Modbus Int consists of 32 bits and represents a signed integer, with a range of -2,147,483,648 to 2,147,483,647.

Please be aware: If a situation arises where the provided data is in string format, the software will first attempt to convert the string to a numeric value. In cases where the conversion fails, the value will be represented as 0.

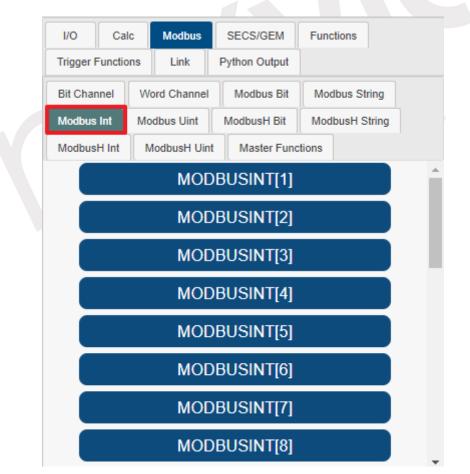


Figure 4-342 Selecting Modbus Int for Variable and Function Input in Modbus

## 4.2.2.6.6 Modbus Uint

The Modbus Uint function is designed for local Input Register (3x) numeric read and write operations, specifically for unsigned integers. To utilize this function, navigate to the variable and function input section and select the Modbus Uint option within the Modbus category (as shown in Figure 4-343). Upon selection, the Modbus Uint variable will be displayed. The software allows the use of Modbus Uint addresses ranging from 1 to 65535, with the interface presenting 25 addresses.

If users intend to work with Modbus Uint variables beyond the displayed range, they should manually input the Modbus Uint variable using the syntax "MODBUSUINT[n]", where n corresponds to values from 0 to 65535. A Modbus Uint consists of 32 bits and represents an unsigned integer, with a range of 0 to 4,294,967,295.

Please note: In scenarios where data is provided as a string, the software will first attempt to convert the string to a numeric value. If the conversion process fails, the value will be represented as 0.

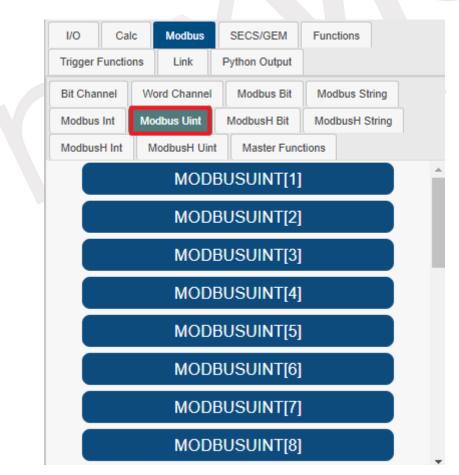


Figure 4-343 Selecting Modbus Uint for Variable and Function Input in Modbus



## 4.2.2.6.7 Modbus Uint16

The Modbus Uint16 function is designed for local Input Register (3x) numeric read and write operations, specifically for unsigned 16-bit integers. To utilize this function, navigate to the variable and function input section and select the Modbus Uint16 option within the Modbus category (as shown in Figure 4-344). Upon selection, the Modbus Uint16 variable will be displayed. The software allows the use of Modbus Uint16 addresses ranging from 1 to 65535, with the interface presenting 25 addresses.

If users intend to work with Modbus Uint16 variables beyond the displayed range, they should manually input the Modbus Uint16 variable using the syntax "MODBUSUINT16[n]", where n corresponds to values from 0 to 65535. A Modbus Uint16 consists of 16 bits and represents an unsigned integer, with a range of 0 to 65535.

Please note: In scenarios where data is provided as a string, the software will first attempt to convert the string to a numeric value. If the conversion process fails, the value will be represented as 0.

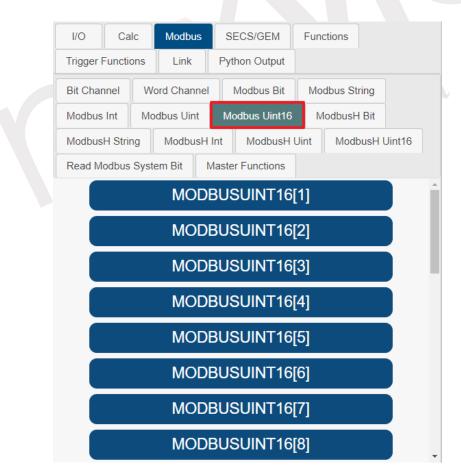


Figure 4-344 Selecting Modbus Uint16 for Variable and Function Input in Modbus

## 4.2.2.6.8 ModbusH Bit

ModbusH bits provide access to the local Coil Status (0x) bits for both reading and writing. For a comprehensive list of addresses for the local Coil Status, please refer to section 4.1.2.2. Within the realm of variables and function inputs, select the ModbusH bits of the Modbus protocol (as depicted in Figure 4-345). This action will promptly unveil the ModbusH bit variables. This software accommodates Modbus H bit addresses spanning from 1 to 65535, yet the interface exclusively showcases 25 at a time. Should a user aspire to employ ModbusH bit variables exceeding the limited interface depiction, diligent manual input of said variables is requisite. The method of input shall adhere to the format "MODBUSHBIT[n]," where n corresponds to integers ranging from 0 to 65535.

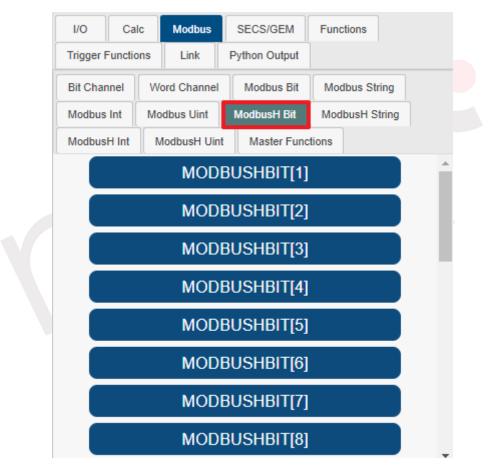


Figure 4-345 Selecting ModbusH Bit for Variable and Function Input in Modbus

### 4.2.2.6.9 ModbusH String

The ModbusH strings afford access to the local Holding Register (4x) strings for both reading and writing. The comprehensive listing of addresses for the local Holding Register can be found in section 4.1.2.3. Within the domain of variables and function inputs, opt for the ModbusH strings of the Modbus protocol (as depicted in Figure 4-346). This action shall promptly render the display of ModbusH string variables. This software facilitates utilization of Modbus H string addresses ranging from 1 to 65535. However, the interface exclusively accommodates the display of 25 at a given moment. In the event that a user intends to employ ModbusH string variables surpassing the limited interface display, personal entry of the ModbusH string variables is mandatory. The prescribed method of entry adheres to the format "MODBUSHSTR[n]," where n encompasses integers ranging from 0 to 65535.

Kindly note: If said variable lacks data, the corresponding field shall manifest as "blank."

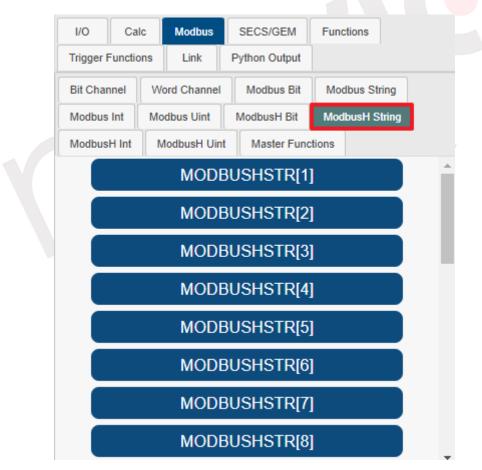


Figure 4-346 Selecting ModbusH String for Variable and Function Input in Modbus

#### 4.2.2.6.10 ModbusH Int

The ModbusH Int protocol facilitates access to the local Holding Register (4x) numeric values for both reading and writing. The comprehensive list of addresses for the local Holding Register can be found in section 4.1.2.3. Within the domain of variables and function inputs, choose the ModbusH Int from the Modbus protocol (as depicted in Figure 4-347). This selection shall promptly bring forth the presentation of ModbusH Int variables. This software extends its compatibility to embrace Modbus H Int addresses spanning from 1 to 65535. Nonetheless, the interface exclusively showcases 25 at any given point in time. In the event that a user seeks to employ ModbusH Int variables exceeding the interface's limited display, the user is compelled to undertake independent input of ModbusH Int variables. The method of input is delineated as "MODBUSHINT[n]," where n encompasses integers ranging from 0 to 65535. Each individual ModbusH Int consists of 32 bits, encapsulating an integer furnished with both positive and negative magnitudes. The permissible scope of values encompasses -2,147,483,648 to 2,147,483,647.

Please take note: When encountering instances where data is configured as strings, a preliminary conversion to numerical values shall occur. In cases where the conversion proves unsuccessful, a representation of 0 shall be employed.

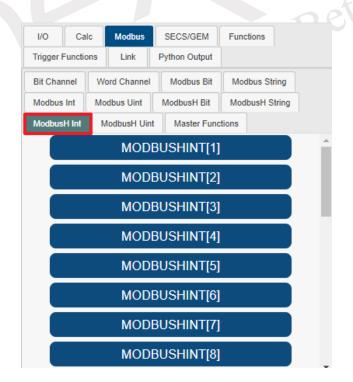


Figure 4-347 Selecting ModbusH Int for Variable and Function Input in Modbus



#### 4.2.2.6.11 ModbusH Uint

The ModbusH Uint protocol facilitates access to the local Holding Register (4x) numeric values for both reading and writing. The comprehensive list of addresses for the local Holding Register can be found in section 4.1.2.3. Within the realm of variables and function inputs, select the ModbusH Uint from the Modbus protocol (as depicted in Figure 4-348). This choice shall promptly reveal the display of ModbusH Uint variables. This software affords utilization of Modbus H Uint addresses spanning from 1 to 65535. However, the interface exclusively presents 25 at any single instance. In the scenario that a user intends to employ ModbusH Uint variables exceeding the confines of the interface's display, personal input of ModbusH Uint variables is necessitated. The mode of input is articulated as "MODBUSHUINT[n]," with n embodying integers ranging from 0 to 65535. Each individual ModbusH Uint comprises 32 bits, forming an integer void of both positive and negative qualities. The allowable range of values extends from 0 to 4,294,967,295.

Please take heed: In the presence of data configurations expressed as strings, a preliminary conversion into numerical values will transpire. In situations where the conversion meets an impasse, a representation of 0 shall be embraced.



Figure 4-348 Selecting ModbusH Uint for Variable and Function Input in Modbus

#### 4.2.2.6.12 ModbusH Uint16

The ModbusH Uint16 protocol provides the means for accessing local Holding Register (4x) numeric values, facilitating both reading and writing. The comprehensive list of addresses for the local Holding Register can be found in section 4.1.2.3. Within the realm of variables and function inputs, opt for the ModbusH Uint16 from the Modbus protocol (as depicted in Figure 4-349). This selection shall promptly manifest the display of ModbusH Uint16 variables. This software accommodates the utilization of Modbus H Uint16 addresses spanning from 1 to 65535. Nevertheless, the interface exclusively showcases a mere 25 at any single juncture. In the eventuality that a user aspires to employ ModbusH Uint16 variables exceeding the restricted interface display, personalized input of ModbusH Uint16 variables is incumbent. The prescribed method of input is rendered as "MODBUSHUINT16[n]," where n assumes integers ranging from 0 to 65535. Each distinct ModbusH Uint16 encompasses 16 bits, comprising an integer unburdened by both positive and negative attributes. The permissible spectrum of values extends from 0 to 65535.

Kindly note: When faced with scenarios involving data configurations expressed as strings, an initial conversion into numerical values will be undertaken. In instances where the conversion encounters an impasse, an embrace of 0 shall serve as representation.



Figure 4-349 Selecting ModbusH Uint16 for Variable and Function Input in Modbus

#### 4.2.2.6.13 Read Modbus System Bit

Reading nDAS system Modbus bits can be used to obtain the current status of the system. This software has a total of three system Modbus Bit planned, and their detailed descriptions are shown in the Table 4-35. The communication field is Input Status (1x).

Address(1x)	Content	
12001	Presence of user login: If a user is logged in, the value is	
12001	1; if no user is logged in, the value is 0.	
	System hard disk capacity of 0.5 gigabytes assessment:	
12002	If the capacity is lower, the value is 1; if higher, the	
	value is 0.	
	System hard disk capacity of 1 gigabyte assessment: If	
12003	the capacity is lower, the value is 1; if higher, the value	
	is 0.	
User Manual Beta		

Table 4-35 Modbus System Bit Table



#### 4.2.2.6.14 Master Functions

The Master Functions in Modbus can be utilized to read data from other Modbus Slave/Server. To access the function selection table, choose the Master Functions option in the Variables and Functions input area of Modbus (as shown in Figure 4-350).

Note : Before using this feature, it is necessary to configure the Modbus Master/Client connection in the communication page, for which the setup method can be found in section 4.4.2.1  $\circ$ 

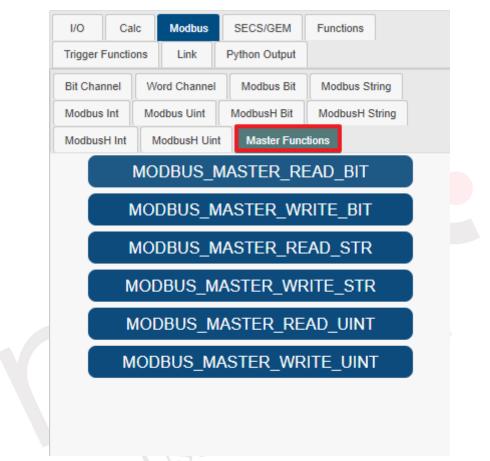


Figure 4-350 Selecting Function for Variable and Function Input in Modbus

### 4.2.2.6.14.1 MODBUS_MASTER_READ_BIT

This function can be used to read bit data from a Modbus TCP Server or Modbus RTU Slave. Prior to using this function, you must first set up the Modbus TCP Client or Modbus RTU Master connection by following the instructions provided in sections 4.4.1 of Link. Once the setup is complete, click on MODBUS_MASTER_READ_BIT under the Master Functions in the Modbus section of the variable and function input area (as shown in Figure 4-351), which will add the MODBUS_MASTER_READ_BIT function to the script editing area (as shown in Figure 4-352). MODBUS_MASTER_READ_BIT (id, prefix, regs, sec, device_id) function requires four parameters, each representing the following :

id : Select the Modbus Client/Slave connection to use by choosing the link in the variable and function input area (as shown in Figure 4-353) and clicking on the desired Modbus connection (as shown in Figure 4-354). This will add it to the script editor (as shown in Figure 4-355). prefix : The Modbus function code to read, where 0 represents Coil Status and 1 represents Input Status.

regs: The address of the registers to read.

sec : The time interval in seconds during which this funciton will not be executed again. If set to 0, there will be no time interval.

device_id : modbus slave id

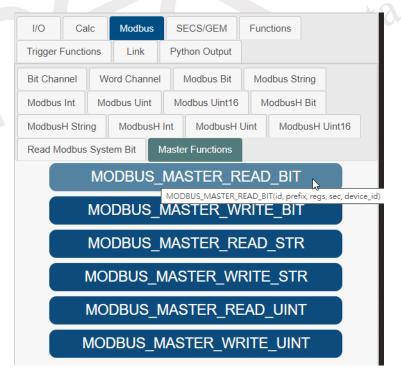


Figure 4-351 Click on "MODBUS_MASTER_READ_BIT"



Figure 4-352 Add the MODBUS_MASTER_READ_BIT function in the script editing area

C	C	Targets 01 Calc Modbus SECS/GEM
	_	Functions Control Functions Trigger Functions Link
		Control List Font List Pattern List Python Output
		MB00CMasterCSch

Figure 4-353 Choose the link in the variables and functions input area

	<b>b</b> C	Targets         01         Calc         Modbus         SECS/GEM
		Functions Control Functions Trigger Functions Link
		Control List Font List Pattern List Python Output
		MB00CMasterCSch
		modbus
	Figure 4-35	4 Click on the Modbus connection to be used.
24 25	MODBUS_MAS	STER_READ_BIT("MB00CMasterCSch",,,,)
26		

### Figure 4-355 Add the Modbus connection in the script editing area

#### 4.2.2.6.14.2 MODBUS_MASTER_WRITE_BIT

This function can be used to write bit data from a Modbus TCP Server or Modbus RTU Slave. Prior to using this function, you must first set up the Modbus TCP Client or Modbus RTU Master connection by following the instructions provides in section 4.4.1 of Link. Once the setup is complete, click on MODBUS_MASTER_WRITE_BIT under the Master Functions in the Modbus section of the variable and function input area (as shown in Figure 4-356), which will add the MODBUS_MASTER_WRITE_BIT function to the script editing area (as shown in Figure 4-357).

MODBUS_MASTER_WRITE_BIT (id, prefix, regs, value, sec, device_id) function requires five parameters, each representing the following :

id : Select the Modbus Client/Slave connection to use by choosing the link in the variable and function input area (as shown in Figure 4-358) and clicking on the desired Modbus connection (as shown in Figure 4-359). This will add it to the script editor (as shown in Figure 4-360).

prefix : The Modbus function code to write, where 0 represents Coil Status.

regs: The address of the register to be written.

value : The value to be written.

sec : The time interval in seconds during which this funciton will not be executed again. If set to 0, there will be no time interval.

device_id : modbus slave id

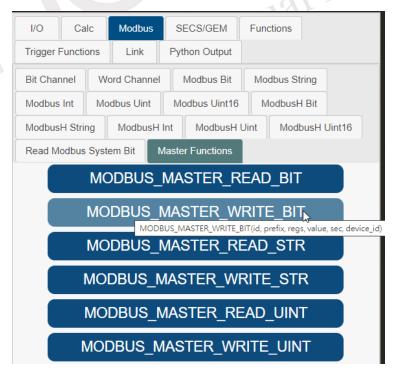


Figure 4-356 Click on "MODBUS_MASTER_WRITE_BIT"





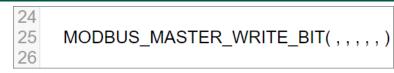


Figure 4-357 Add the MODBUS_MASTER_WRITE_BIT function in the script editing area

ຽ	C	Targets 01 Calc Modbus SECS/GEM
	_	Functions Control Functions Trigger Functions Link
		Control List Font List Pattern List Python Output
		MB00CMasterCSch

Figure 4-358 Choose the link in the variables and functions input area

<b>b</b> C	Targets	01 Cal	c Modbus	SECS/GEM
	Functions	Control Func	tions Trigger	Functions Link
	Control List	Font List	Pattern List	Python Output
	MB00CMasterCSch			
		modbus		

Figure 4-359 Click on the Modbus connection to be used.



#### Figure 4-360 Add the Modbus connection in the script editing area

### 4.2.2.6.14.3 MODBUS_MASTER_READ_STR

This function can be used to read string data from a Modbus TCP Server or Modbus RTU Slave in ASCII format. Prior to using this function, you must first set up the Modbus TCP Client or Modbus RTU Master connection by referring to sections 4.4.1 in the Link. Once the setup is complete, click on MODBUS_MASTER_READ_STR under the Master Functions in the Modbubs section of the variable and function input area (as shown in Figure 4-361), which will add the MODBUS_MASTER_READ_STR function to the script editing area (as shown in Figure 4-362).

MODBUS_MASTER_READ_STR (id, prefix, regs, regs_count, sec, device_id) function requires five parameters, each representing the following :

id : Select the Modbus Client/Slave connection to use by choosing the link in the variable and function input area (as shown in Figure 4-363) and clicking on the desired Modbus connection (as shown in Figure 4-364). This will add it to the script editor (as shown in Figure 4-365).

prefix : The Modbus function code to read, where 3 represents Input Register and 4 represents Holding Register.

regs: The address of the registers to read.

regs_count : Number of registers to be read in sequence, starting from the address.

sec: The time interval in seconds during which this funciton will not be executed again. If set

to 0, there will be no time interval.

device_id : modbus slave id

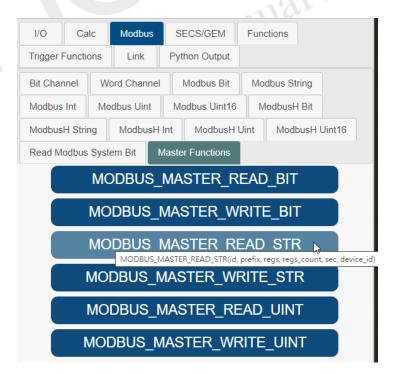


Figure 4-361 Click on "MODBUS_MASTER_READ_STR"





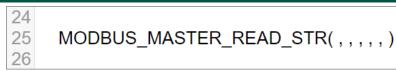


Figure 4-362 Add the MODBUS_MASTER_READ_STR function in the script editing area

Targets 01 Calc Modbus SECS/GEM
Functions Control Functions Trigger Functions Link
Control List Font List Pattern List Python Output
MB00CMasterCSch

Figure 4-363 Choose the link in the variables and functions input area

5		Tarrata 01 Cala Madhua SECS/CEM				
5	C	Targets 01 Calc Modbus SECS/GEM	_			
		Functions Control Functions Trigger Functions Link	<b>C</b>			
		Control List Font List Pattern List Python Output				
		MB00CMasterCSch				
		modbus				
	Figure 4-36	364 Click on the Modbus connection to be used.				

24		
25	MODBUS_MASTER_READ_STR("MB00CMasterCSch",,,,,)	
26		

Figure 4-365 Add the Modbus connection in the script editing area

### 4.2.2.6.14.4 MODBUS_MASTER_WRITE_STR

This function can be used to write string data to Modbus TCP Server or Modbus RTU Slave. The string data that can be written is in ASCII format. Prior to using this function, it is necessary to configure the connection to the Modbus TCP Client or Modbus RTU Master by following the instructions in sections 4.4.1. Once the is click setup complete, on MODBUS MASTER WRITE STR under the Master Functions in the Modbubs section of the variable and function input area (as shown in Figure 4-366, which will add the MODBUS MASTER WRITE STR function to the script editing area (as shown in Figure 4-367).

MODBUS_MASTER_WRITE_STR (id, prefix, regs, value, sec, device_id) function requires five parameters, each representing the following :

id : Select the Modbus Client/Slave connection to use by choosing the link in the variable and function input area (as shown in Figure 4-368) and clicking on the desired Modbus connection (as shown in Figure 4-369). This will add it to the script editor (as shown in Figure 4-370).

prefix : The Modbus function code to write, where 4 represents Holding Register.

regs: The address of the register to be written.

value : The value to be written.

sec : The time interval in seconds during which this funciton will not be executed again. If set to 0, there will be no time interval.

device_id : modbus slave id

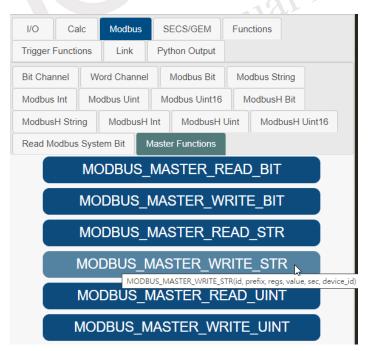


Figure 4-366 Click on "MODBUS_MASTER_WRITE_STR"





# MODBUS_MASTER_WRITE_STR(,,,,,)

Figure 4-367 Add the MODBUS_MASTER_WRITE_STR function in the script editing area

ຽ	C	Targets 01 Calc Modbus SECS/GEM
	_	Functions Control Functions Trigger Functions Link
		Control List Font List Pattern List Python Output
		MB00CMasterCSch

Figure 4-368 Choose the link in the variables and functions input area

С	C	Targets	01	Calc	Modbus	SECS/GE	M
		Functions	Contro	ol Functions	Trigger	Functions	Link
		Control List	Font	t List Pa	attern List	Python Out	tput
		MB00CMasterCSch					
			n	nodbus			
	_						

Figure 4-369 Click on the Modbus connection to be used.



### Figure 4-370 Add the Modbus connection in the script editing area

### 4.2.2.6.14.5 MODBUS_MASTER_READ_UINT

This function can be used to read unsigned integer data from a Modbus TCP Server or Modbus RTU Slave. The string data format that can be read is Uint16. Prior to using this function, it is necessary to configure the connection to the Modbus TCP Client or Modbus RTU Master by following the instructions in sections 4.4.1. Once the setup is complete, click on MODBUS_MASTER_READ_UINT under the Master Functions in the Modbubs section of the variable and function input area (as shown in Figure 4-371), which will add the MODBUS_MASTER_READ_UINT function to the script editing area (as shown in Figure 4-372).

MODBUS_MASTER_READ_UINT (id, prefix, regs, sec, device_id) function requires four parameters, each representing the following :

id : Select the Modbus Client/Slave connection to use by choosing the link in the variable and function input area (as shown in Figure 4-373) and clicking on the desired Modbus connection (as shown in Figure 4-374). This will add it to the script editor (as shown in Figure 4-375). prefix : The Modbus function code to read, where 3 represents Input Register and 4 represents Holding Register.

regs: The address of the registers to read.

sec : The time interval in seconds during which this funciton will not be executed again. If set to 0, there will be no time interval.

device_id : modbus slave id

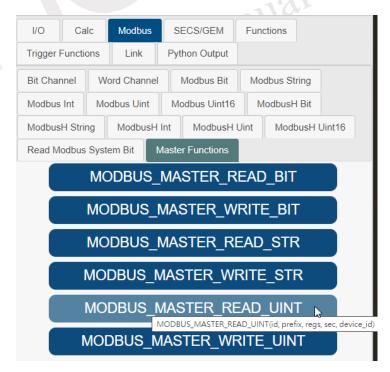


Figure 4-371 Click on "MODBUS_MASTER_READ_UINT"







Figure 4-372 Add the MODBUS_MASTER_READ_UINT function in the script editing area

<u>ວ</u> ຕ	Targets 01 Calc Modbus SECS/GEM
	Functions Control Functions Trigger Functions Link
	Control List Font List Pattern List Python Output
	MB00CMasterCSch

Figure 4-373 Choose the link in the variables and functions input area

<b>b</b> C	Targets	01 Ca	lc	Modbus	SECS/GEI	M
	Functions	Control Fun	ctions	Trigger	Functions	Link
	Control List Font List Pattern List				Python Output	
	MB00CMasterCSch					
	modbus					
Figure 4-37	Figure 4-374 Click on the Modbus connection to be used.					

24	
25	MODBUS_MASTER_READ_UINT("MB00CMasterCSch",,,,)
26	

Figure 4-375 Add the Modbus connection in the script editing area

### 4.2.2.6.14.6 MODBUS_MASTER_WRITE_UINT

This function can be used to write unsigned integer data to Modbus TCP Server or Modbus RTU Slave. The data format that can be written is Uint16. Prior to using this function, it is necessary to configure the connection to the Modbus TCP Client or Modbus RTU Master by following the instructions in sections 4.4.1. Once the is click setup complete, on MODBUS MASTER WRITE UINT under the Master Functions in the Modbubs section of the variable and function input area (as shown in Figure 4-376), which will add the MODBUS MASTER WRITE UINT function to the script editing area (as shown in Figure 4-377).

MODBUS_MASTER_WRITE_UINT (id, prefix, regs, value, sec, device_id) function requires five parameters, each representing the following :

id : Select the Modbus Client/Slave connection to use by choosing the link in the variable and function input area (as shown in Figure 4-378) and clicking on the desired Modbus connection (as shown in Figure 4-379). This will add it to the script editor (as shown in Figure 4-380).

prefix : The Modbus function code to write, where 4 represents Holding Register.

regs: The address of the registers to write.

value : The value to be written.

sec : The time interval in seconds during which this funciton will not be executed again. If set to 0, there will be no time interval.

device_id : modbus slave id

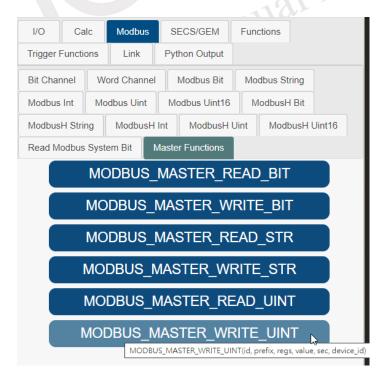


Figure 4-376 Click on "MODBUS_MASTER_WRITE_UINT"







Figure 4-377 Add the MODBUS_MASTER_WRITE_UINT function in the script editing area

<u>ວ</u> ຕ	Targets 01 Calc Modbus SECS/GEM					
	Functions Control Functions Trigger Functions Link					
	Control List Font List Pattern List Python Output					
	MB00CMasterCSch					

Figure 4-378 Choose the link in the variables and functions input area

C	C	Targets	01 Calc	Modbus	SECS/GEI	M	
	_	Functions	Control Functions	Trigger	r Functions	Link	
		Control List	Font List Pat	tern List	Python Out	put	
		MB00CMasterCSch					
		modbus					
Figure 4-379 Click on the Modbus connection to be used.							

24		
25	MODBUS_MASTER_WRITE_UINT("MB00CMasterCSch",,,,)	
26		

Figure 4-380 Add the Modbus connection in the script editing area

### 4.2.2.7 Link

This function represents the communication link to be used. To select a link in the variable and function input area, a list of links is displayed, as shown in Figure 4-381. The communication variables appearing here will be synchronized with the number of communication settings in the project link page (as shown in Figure 4-382).

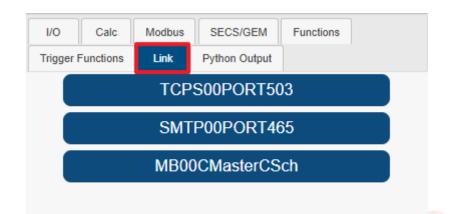


Figure 4-381 Choose the link in the variables and functions input area

TCP/IP	Connection: 0 Var Name: TCP800PORT503
SMTP	Var Name: SMTPDOPCRT465 Remove
Modbus	Var Name: MD00CMesterCSch Remove

Figure 4-382 Communication settings within the project Link

### 4.2.3 Custom Function Names and Input Parameters

Declare a function outside the MainLoop of nDAS script, which can be triggered and sent parameters to nDAS via RESTful, and the passed parameters can be executed together with the function. The writing method is as follows: In the example shown in Figure 4-383, he function content is to display the two received parameters in the Python output, then add and multiply the two parameters, and finally return the operation result. The example in the figure triggers the Demo_trigger function through RESTful, and passes in two parameters, Demo_1 and Demo_2 (as shown in Figure 4-384), and finally executes the result (as shown in Figure 4-385) and returns it (as shown in Figure 4-386).

Note : The supported data types for the return value are limited to Int, String, Double, Boolean, and Dictionary.

def Function_Name(**kwargs):
 Function_Content...
 print(kwargs['Parameter name'])
 return {'Return_Name_1':Return_Value_1,
 'Return_Name_2':Return_Value_2}

1	from vic import *
2	
3	def Demo_trigger(**kwargs):
4	print("Demo_1=", kwargs["Demo_1"])
5	print("Demo_2=", kwargs["Demo_2"])
6	add_result = int(kwargs["Demo_1"]) + int(kwargs["Demo_2"])
7	multi_result = int(kwargs["Demo_1"]) * int(kwargs["Demo_2"])
8	
9	return {"add_result":add_result, "multi_result":multi_result}
10	
11	def mainLoop(id, info, data):
12	pass

#### Figure 4-383 Example of nDAS script writing

PUT ~ 10.12.1.53/script								
Params       Authorization       Headers (10)       Body       Pre-request Script       Tests       Settings <ul> <li>none</li> <li>form-data</li> <li>x-www-form-urlencoded</li> <li>raw</li> <li>binary</li> <li>GraphQL</li> </ul>								
	KEY		VALUE	DESCRIPTION	000	Bulk Edit		
<	cmd		req_call_python_function					
<	func		Demo_trigger					
$\checkmark$	Demo_1		2					
Demo_2			6					
	Кеу		Value	Description				



Figure 4-384 RESTful Command

I/O	Calc	Modbus	SECS/GEM	Functions			
Trigger Functions		Link	Python Output				
Demo_1= 2							
Demo_2= 6							

Figure 4-385 Python Output

Body Coo	kies Hea	ders (2) Te	est Results			٢	Status: 200 OK	Time: 24 ms	Size: 143 B	Save R	lespo	nse
Pretty	Raw	Preview	Visualize	JSON 🗸	- <del>-</del> -						G	C
1 { 2 3 4 5 }	"multi_r	sult": 8, result": 12, success": "1										

Figure 4-386 Retrieving the Return Result via RESTful



### **4.2.4** Importing custom Python

The two ways of importing in Python are importing files and importing packages, which will be described in subsequent sections.

#### 4.2.4.1 Importing Files

nDAS is a Linux system, and the files should be placed in the /opt/nDAS/bin/py directory. Here's how to import your own pre-written (no longer modified) py file : Assuming the file name of the py file is Demo_Import.py, and its content is shown in Figure 4-387, the import method and execution are shown in Figure 4-388, and the execution result is shown in Figure 4-389.

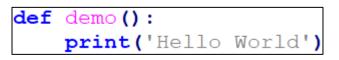


Figure 4-387 Demo_Import.py Content



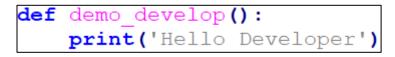
Figure 4-388 Importing and executing a py file

ModbusH Int	ModbusH	Uint	Read N	Nodbus System Bit	Lir
Control List	Font List	Patt	ern List	Python Output	
Hello World					

Figure 4-389 Result of executing nDAS



The following will introduce the import of a self-written and still under developme nt (subject to modification) py file: Assuming that the file name is Demo_Develop_Imp ort.py, the contents are shown in Figure 4-390. The import method and execution are s hown in Figure 4-391, and the execution result is shown in Figure 4-392.



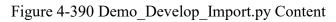




Figure 4-391 Importing method and executing

ModbusH Int	ModbusH	ISH Uint Read Modbus System		
Control List	Font List Pat		ern List	Python Output
Hello Develo	per			

Figure 4-392 Result of executing nDAS

### 4.2.4.2 Importing Package

nDAS offers users the capability to autonomously install Python packages (Python 3.7). The underlying operational process involves executing "pip3 install." The installation procedure is initiated by clicking the "Install Package" button (as illustrated in Figure 4-393), thereby prompting the display of a window dedicated to the installation of Python packages (as depicted in Figure 4-394). Upon entry of the package name and subsequent activation of the "install" command (as illustrated in Figure 4-395), the installation process shall commence.

5 4 8 ■
1 from vic import * Install Python Package
2 3
4 def mainLoop(id, info, data): 5 pass
6
7
Figure 4-393 Click on install Python package button
Install Python Package
Package Name:
Install Uninstall Cancel
Figure 4-394 Show Dialog of installing Python package
TICET
Install Python Package
Package Name: pyserial
Install Uninstall Cancel

Figure 4-395 Click on button to install Python package(example for pyserial)



# 4.3 Monitor

In administrator mode of the nDAS monitor, click on the monitor icon (as shown in Figure 4-396).

Monitor content has I/O status, and calculation.

Note: If the script page has no content, the calculation will be hidden.



Figure 4-396 Click on the monitor icon



# 4.4 Link

By clicking on the link icon and selecting from the drop-down menu, as shown in Figure 4-397, the page will automatically switch to the configuration for the selected communication method. The software supports various communication methods, including TCP/IP, Modbus TCP, SMTP, LINE Notify, WeChat, Microsoft Teams, SECS/GEM, OPCUA Client, and RESTful, which can be used for data logging and transmission.

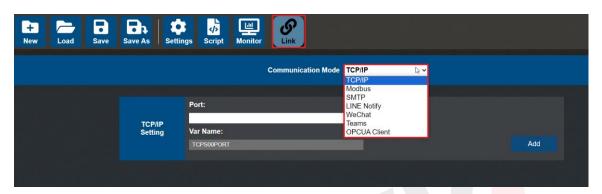


Figure 4-397 Click on link icon



## 4.4.1 TCP/IP

The configuration is shown in Figure 4-398, where the IP address is the computer's IP and the port is defined by the user (in this example, 503 is used as the port number). After completing the configuration, click the "Add" button to complete the connection. If the connection is successful, the connection count will change as shown in Figure 4-399. The TCP/IP output content of this software is in ASCII, which is parsed into a JSON string. The format of each data record is as follows (as shown in the structure table in Table 4-36) :

- 1. There is a header of one byte at the beginning, with the content "v".
- 2. The next 4 bytes represent the length of the recognition data for this record.



Figure 4-398 TCP/IP Configuration

Connection in u	se		
		Connection:	
	TCP/IP	t Var Name:	
		ICPS01PORTM0	Renove

Figure 4-399 Successful completion of TCP/IP configuration and establishment of a connection

Tuble + 56 Tel7 II output data structure tuble			
Header	Data Length	<b>Recognition Data</b>	
1 byte	4 bytes	recognition data length	



# **4.4.2** Modbus **4.4.2.1** TCP/IP Master

The Modbus TCP/IP configuration, as shown in Figure 4-400, allows users to set the IP address of the Modbus TCP/IP server to connect to, and the communication port can be defined by the user (default is 502). After completing the settings, click the "Add" button to add the connection. If the connection is successful, the system will display as shown in Figure 4-401. if the connection fails, the front block will turn red, as shown in Figure 4-402.

		Communicatio	n Mode Modbus	~	
	TCP/IP Maste	ar v			
	Device IP:		Port:		
Modbus Setting		16 (B)	502		
	Var Name:				
	MB00CMasterC	Sch			Add

### Figure 4-400 Modbus TCP/IP Master configuration

	Var Name:	
Modbus	MB00CMasterCSch	
		Remove

Figure 4-401 Modbus TCP/IP Master configuration completed and successfully connected

	1150	
Modbus	Var Name:	
Modbus	MB00CMasterCSch	
		Remove

Figure 4-402 Modbus TCP/IP Master configuration completed but connection failed

## 4.4.3 SMTP

This software provides the function of connecting to an SMTP server, allowing the user to send notifications via email. To do so, the "SEND.EMAIL" function in the script must be used (please refer to 4.2.2.3.4 for instructions on how to use this function). The configuration is shown in Figure 4-403, and the parameter settings are shown in Table 4-37. After all the parameter settings have been completed, clicking the "Add" button to complete the addition of the connection.

Parameter	Content
Server Address	SMTP server address
Port	Communication port for the
1011	SMTP server
User Name	Account for the sender's email
User Maine	address to be used
Password	Password for the sender's email
rassworu	address to be used
Email	Email address for the sender's
Email	email address to be used
Van Nama	Automatically generated
Var Name	variable name
	Manue

#### Table 4-37 SMTP parameter settings table

	Comn	nunication Mode SMTP	~	
	Server Address:	Port:		
	User Name:	Password:		
SMTP Setting	Email:			
	Var Name:			Add 📐



### 4.4.4 LINE Notify

This software provides LINE Notify, which allows users to send notifications through LINE. To do so, the "SEND.LINE" function in the script must be used (please refer to 4.2.2.3.6 for instructions on how to use this function). The configuration is shown in Figure 4-404, and the parameter settings are shown in Table 4-38. After all the parameter settings have been completed, clicking the "Add" button to complete the addition of the connection. For the LINE Notify Token acquisition process, please refer to section 5.2. Restrictions are listed in Table 4-39. Note : Official announcements should take precedence over this information.

Parameter	Content	
Token	LINE Notify Token	
GroupName	The final name of the generated variable	
Var Name	Automaticallygeneratedvariable name	

		Communication Mode	LINE Notify	~	
	Token:				
LINE Notify Setting	GroupName:				
	Var Name:				
					Add

Figure 4-404 LINE Notify configuration

Table 4-39 LINE Notity restrictions table		
Name	Limitations	
Transmitting pure text message	1000 times per hour	
Transmitting messages containing image	50 times per hour	
Maximum text length	1000 characters per message	

#### Table 4-39 LINE Notify restrictions table

### 4.4.5 Wechat

This software provides Wechat, which allows users to send notifications through WeChat. To do so, the "SEND.WECHAT" or "SEND.WECHAT_P"function in the script must be used (please refer to 4.2.2.3.7 and 4.2.2.3.8 for instructions on how to use this function). The configuration is shown in Figure 4-405, and the parameter settings are shown in Table 4-40. After all the parameter settings have been complete, clicking the "Add" button to complete the addition of the connection. Method to obrtain the appID and appsecret of Wechat can be found in section 5.3 of the documentation. The limitation of Wechat test accounts are illustrated in Table 4-41. Note : Official announcements should take precedence over this information.

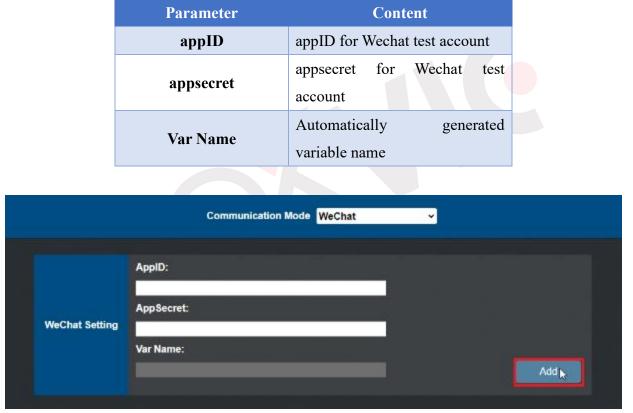


Table 4-40 Wechat parameter settings table

Figure 4-405 Wechat configuration

If there are any issues with the appID or appsecret, you can test them using the "WeChat Official Account Interface Debugging Tool" (<u>https://mp.weixin.qq.com/debug/</u>).

Name	Limitations		
Sending text message	100,000 times per day		
Updating the number of	500 times per dev		
followers for test account	500 times per day		

### Table 4-41 WeChat Test Account Limitations



Template	Maximum of 10	
Number of users that can	Maximum of 100	
be followed	Maximum of 100	



If a user follows this testing official account after creating the WeChat link, they should click the "Update Group" button (as shown in Figure 4-406) in the created WeChat link module to update the number of followers who have followed the testing official account.

Var Name:	
WECHAT00APPIDwx167	Update Group
Number of groups:1	Remove
	WECHAT00APPIDwx167

Figure 4-406 Click the "Update Group" button to update the number of followers



### 4.4.6 Teams

This software provides Microsoft Teams, which allows users to send notification through Teams. To do so, the "SEND.TEAMS" function in the script must be used (please refer to 4.2.2.3.9 for instructions on how to use this function). The configuration is shown in Figure 4-407, and the parameter settings are shown in Table 4-42. After all the parameter settings have been completed, clicking the "Add" button to complete the addition of the connection. To obtain a Teams Webhook, please refer to section 5.5.

Parameter	Content	
Name	Set the name of the Teams link	
Webhook	Teams Webhook	
Var Name	Automatically generated variable name	

		Communication Mode	Teams	~	
	Name:				
	Webhook:				
Teams Setting	Var Name:				
					Add _{be}

Figure 4-407 Teams configuration

## 4.4.7 OPCUA Client

This software offers OPCUA connection configuration, enabling it to act as a Host and connect to other OPCUA Servers. The configuration page is depicted in Figure 4-408, and the parameter settings are outlined in Table 4-43. Upon completing the configuration, clicking the "Add" button finalizes the new connection setup. If the connection is successful, the system will appear as shown in Figure 4-409; in the event of a failed connection, the respective section will turn red, as illustrated in Figure 4-410.

Parameter name	Content
Url	Enter the URL of the OPCUA Server.
<b>Security Policy</b>	Specify the security policy.
Security Mode	Set the security mode.
Authentication	Choose the authentication method, which includes options for anonymous, username, and certificate.
Var Name	Enable automatic variable name generation.
	12

#### Table 4-43 OPCUA parameter settings table

	Commu	nication Mode	OPCUA Client	~	
	Url:				
	Security Policy: Sec	curity Mode:	Authentication:		
OPCUA Client Setting	None 🗸 N	one 🗸	Anonymous	~	
	Var Name:				
					Add

Figure 4-408 OPCUA connection configuration

Connection in u	se		
		Status:	
	OPCUA Client	Connected Var Name:	
		OPCUA00_10_12_1_182_48010	Remove
			Remove

Figure 4-409 OPCUA Server configuration completed and successfully connected



Connection in u	se		
	OPCUA Client	Status: ConnectionErrorApiReconnect Var Name: OPCUA00_10_12_1_182_48010	Remove

Figure 4-410 OPCUA Server configuration completed but connection failed



# 4.5 RESTful

# 4.5.1 nDAS RESTful API

This software provides a RESTful API with JSON output format. To use the API, you need to enter the IP address of nDAS in the URL bar and add the following commands to view the data returned by nDAS. The explanation of the returned data content and format is provided in Table 4-45.

When using the RESTful API, you will need to input request authentication. The authentication method used is Basic Authentication. The parameters for RESTful API Basic Authentication are specified in Table 4-44 or can be referred to in section 4.1.1.1.2.

Table 4-44 KESTIM ATT Dasie Aumentication		
Parameter name	Content	
Username	admin	
Password	123456(default)	

### Table 4-44 RESTful API Basic Authentication

### Table 4-45 RESTful API and format

/di_value/slot_0/ch_n				
Ch	R	Channel		
En	R	Channel Mask		
Md	R	Mode		
Stat	R	DI Value		
Cnting	R/W	DI Counter Switch		
OvLch	R/W	Overflow Value		
CtFq	R	DI Counter		
Lch	R/W	Low to High Latch Value		
Hch	R/W	High to Low Latch Value		
/do_value/slot_0/ch_n				
Ch	R	Channel		
En	R	Channel Mask		
Md	R	Mode		
Stat	R	DO Value		
Val	R/W	DO Pulse		
PsCtn	R/W	Pulse outputting is continuous or not		
PsStop	R/W	DO Pulse Stop Status		
PsIV	R/W	Incremental Pulse Output Value		
	/ai_val	ue/slot_0/ch_n		
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# NEXXIOT

Ch	R	Channel
En	R	Channel Mask
Rng	R	Input Range
Val	R	AI Value
EgF	R	AI Enginnering Value
Evt	R	AI Status
LoA	R/W	Low Alarm Status
HiA	R/W	High Alarm Status
HVal	R	Maximum AI Value
HEgF	R	Maximum AI Enginnering Value
LVal	R	Minimum AI Value
LEgF	R	Minimum AI Enginnering Value
SVal	R	AI Value after Scaling
CLrL	R/W	Clear Minimum AI Value
CLrH	R/W	Clear Maximum AI Value
	/expansion	n_bit/com_m/ch_n
Ch	R	Channel
Val	R/W	Modbus Bit Value
Evt	R	Read Modbus Error Code
SID	R	Slave ID
Addr	R	Modbus Address
Prop	R	R, W, R/W mode
WEvt	R	Write Modbus Error Code
MAddr	R	Expansion Mapping address
	/expansio	n_bit/tcp_m/ch_n
Ch	R	Channel
Val	R/W	Modbus Bit Value
Evt	R	Read Modbus Error Code
SID	R	Slave ID
Addr	R	Modbus Address
Prop	R	R, W, R/W mode
WEvt	R	Write Modbus Error Code
MAddr	R	Expansion Mapping address
	/expansion_	_word/com_m/ch_n
Ch	R	Channel
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Wal	R/W	Mad	bus Word Volue	
Val Evt	R/W	Modbus Word Value		
		Read Modbus Error Code		
SID	R	Slave ID		
Addr	R		odbus Address	
Prop	R		W, R/W mode	
WEvt	R		Iodbus Error Code	
MAddr	R	Expansion Mapping address		
/expansion_word/tcp_m/ch_n				
Ch	R		Channel	
Val	R/W	Modbus Word Value		
Evt	R	Read Modbus Error Code		
SID	R	Slave ID		
Addr	R	Modbus Address		
Prop	R	R, W, R/W mode		
WEvt	R	Write Modbus Error Code		
MAddr	R	Expansion Mapping address		
	/calc	_value/ch_n		
CalcVal	R/W	Calc Operators Value		
	/log	g_message		
		1	DI Event form	
		2	DO Event form	
DE	RUSOT	4	AI Event form	
РЕ		8	AO Event form	
		16	WDT Event form	
		128	Periodic	
UID	R	Unique Identifier		
MAC	R	MAC address		
TIM	R	Timestamp		
Record	R	Index	Recording I/O-type of the	
			storage	
		0	Invalid	
		1	DI Logic status	
		2	DI counter value	
		3	DI Frequency value	
		4	DO Logic status	
NEXINT			<u> </u>	

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# NEXVIOT

Chapter	4
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5	Reserved
6	Reserved
7	AI value
8	Reserved
9	Reserved
10	Reserved
11	Reserved
12	Reserved
13	Reserved
14	Reserved
15	Reserved
16	Reserved
17	Reserved
18	Reserved
19	Reserved
20	Reserved
21	Reserved
22	Reserved
23	Reserved
30	Expansion bit data
31	Expansion bit error code
32	Expansion word data
33	Expansion word error code

If you wish to view the data for individual DI channels using the RESTful API, you need to append "/ch_n" to the API URL, where "n" represents the channel number. In the context of the example provided (Figure 4-411), to observe the data for the first DI channel (channel 0), you should input the following URL into the address bar: "10.12.1.228/di_value/slot_0/ch_0". This action will allow you to access the returned data specifically for the first DI channel.



{"Ch":0,"En":1,"Md":1,"Stat":0,"Cnting":1,"OvLch":0,"CtFq":127,"Lch":1,"Hch":1}

Figure 4-411 RESTful return data of DI channel

If you wish to retrieve data for all DI channels simultaneously using the RESTful API, you should exclude "/ch_n" from the API URL. Referring to the example from Figure 4-412, to access data for all DI channels, input the following URL into the address bar:

"10.12.1.228/di_value/slot_0". This will grant you access to the data returned by all DI channels within the specified slot.



Figure 4-412 RESTful return all data of DI channel

If you intend to view data for various DO channels using the RESTful API, you need to append "/ch_n" to the API URL, with "n" representing the channel number. In the context of the example provided (Figure 4-413), to access data for the first DO channel (channel 0), you should enter the following URL into the address bar: "10.12.1.228/do_value/slot_0/ch_0". This will allow you to view the returned data specifically for the first DO channel.



```
{"Ch":0,"En":1,"Md":1,"Stat":0,"Val":0,"PsCtn":0,"PsStop":1,"PsIV":0}
```

#### Figure 4-413 RESTful return data of DO channel

To retrieve data for all DO channels at once using the RESTful API, you should omit "/ch_n" from the API URL. In reference to the example shown in Figure 4-414, to access data for all DO channels, input the following URL into the address bar: "10.12.1.228/do_value/slot_0". This will allow you to view the data returned by all DO channels within the specified slot.



Figure 4-414 RESTful return all data of DO channel

To view data for individual AI channels using the RESTful API, you should add "/ch_n" to the API URL, where "n" represents the channel number. In the context of the example from Figure 4-415, to access data for the first AI channel (channel 0), you need to enter the following URL into the address bar: "10.12.1.53/ai_value/slot_0/ch_0". This will enable you to observe the data returned specifically for the first AI channel.

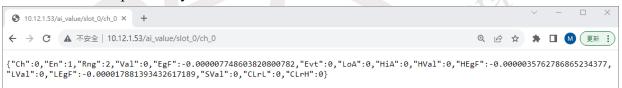


Figure 4-415 RESTful return data of AI channel

If you want to retrieve data for all AI channels simultaneously using the RESTful API, you should exclude "/ch_n" from the API URL. In reference to the example depicted in Figure 4-416, to access data for all AI channels, input the following URL into the address bar: "10.12.1.53/ai_value/slot_0". This will enable you to observe the data returned by all AI channels within the specified slot.



10.12.1.53/ai	_value/slot_0 ×	+									~	-		×
← → C	▲ 不安全   10.12.1.	53/ai_value/slot_0	)					8	€ €	È	☆ 🛔		M (	更新
{"AIVal":														
	":1,"Rng":2,"Va gF":-0.00001788						9,"HiA":0,"	HVal":0,'	'HEgF	":-0.	0000077	748603	82080	0782
"Ch":1,"En"	:1,"Rng":2,"Val	":0,"EgF":-0.	00000894069	96716308594	94,"Evt":	0,"LoA":0	,"HiA":0,"H	Val":0,"H	HEgF"	:-0.0	0000655	65109	25292	2969,
"Ch":2,"En"	F":-0.000017881 :1,"Rng":2,"Val	":0,"EgF":-0.	00001370906	6829833984	44,"Evt":	0,"LoA":0	,"HiA":0,"H	Val":0,"H	HEgF"	:-0.0	0000715	525573	373046	5875,
	F":-0.000017881 :1,"Rng":2,"Val						9."Hi∆":0."	HVal":0.'	'HFøF	":-0.	0000059	969464	47753	9062
"LVal":0,"L	EgF":-0.0000154	9720764160156	4,"SVal":0,	,"CLrL":0,	,"CLrH":0	)},		-	_					
	:1, "Rng":2, "Val -0.000017881393					),"LoA":0,'	"HiA":0,"HV	al":0,"HB	gF":	-0.00	0009536	574316	540625	5,"LV
"Ch":5,"En"	:1,"Rng":2,"Val	":0,"EgF":-0.	00001072883	3605957031	13,"Évt":		,"HiA":0,"H	Val":0,"H	HEgF"	-0.0	0000530	544186	29785	5156,
	F":-0.000012516 :1,"Rng":2,"Val						,"HiA":0,"H	Val":0,"H	IEgF"	-0.0	0000655	565109	25292	2969,
	F":-0.000017285 :1,"Rng":2,"Val					0 "1 0 "10	"""""""""""""""""""""""""""""""""""""""	V-1".0 "	IE aF "		0000651	CE 100	125202	0060
	F":-0.000016689						, HIA :0, H	vai .0, i	icgr	0.0	000005	005105	23232	.909,
	:1,"Rng":0,"Val 87e38,"SVal":0,			LoA":0,"Hi	iA":0,"HV	/al":0,"HE	gF":-3.4028	234663852	2887e	38,"L	Val":69	535,'	'LEgF"	':3.4

Figure 4-416 RESTful return all data of AI channel

To view data for individual Modbus TCP/RTU expansion bit channels using the RESTful API, you should add "/ch_n" to the API URL, where "n" represents the channel number. In the context of the example shown in Figure 4-417, to access data for the first Modbus RTU COM2 expansion bit channel (channel 0), you need to input the following URL into the address bar: "10.12.1.53/expansion_bit/com_2/ch_0". This will allow you to observe the data returned specifically for the first Modbus TCP/RTU expansion bit channel.



Figure 4-417 RESTful return data of Modbus TCP/RTU expansion bit channel

If you wish to retrieve data for all Modbus TCP/RTU expansion bit channels at once using the RESTful API, you should exclude "/ch_n" from the API URL. Referring to the example in Figure 4-418, to access data for all Modbus RTU COM2 expansion bit channels, input the following URL into the address bar: "10.12.1.53/expansion_bit/com_2". This will allow you to observe the data returned by all Modbus TCP/RTU expansion bit channels within the specified COM2 slot.

10.12.1.53/expansion_bit/com_ ×	+					$\sim$	_		
← → C ▲ 不安全   10.12.1.	3/expansion_bit/com_2	G	Q	Ê	☆	*		M	更新
["Ch":1, "Val":0, "Evt":0, "Si ["Ch":3, "Val":0, "Evt":0, "SI ["Ch":5, "Val":0, "Evt":0, "SI ["Ch":7, "Val":0, "Evt":0, "SI ["Ch":9, "Val":0, "Evt":0, "SI ["Ch":13, "Val":0, "Evt":0, "SI ["Ch":13, "Val":0, "Evt":0, "SI ["Ch":15, "Val":0, "Evt":0, "SI ["Ch":15, "Val":0, "Evt":0, "SI	<pre>'Evt":0, "SID":0, "Addr":0, "Prop":0, "WEvt":0, "MAddr":0}, D":0, "Addr":0, "Prop":0, "WEvt":0, "MAddr":0}, {"Ch":2, "Val":0, "Evt":0, "SID":0, "Addr":0, "Prop":0, "Addr":0, "Prop":0, "Kevt":0, "SID":0, "Addr":0, "Prop":0, "Mevt":0, "MAddr":0, "Frop":0, "Addr":0, "Prop":0, "Kevt":0, "SID":0, "Addr":0, "Prop":0, "Mevt":0, "MAddr":0, "Evt":0, "SID":0, "Addr":0, "Prop":0, "Mevt":0, "MAddr":0}, {"Ch":4, "Val":0, "Evt":0, "SID":0, "Addr":0, "Prop":0, "Mevt":0, "Maddr":0}, {"Ch":4, "Val":0, "Evt":0, "SID":0, "Addr":0, "Prop":0, "Mevt":0, "MAddr":0}, {"Ch":10, "Addr":0, "Frop":0, "Mevt":0, "MAddr":0}, {"Ch":10, "Val":0, "Evt":0, "SID":0, "Addr":0, "Prop":0, "Mevt":0, "MAddr":0}, {"Ch":10, "Val":0, "Evt":0, "SID":0, "Addr":0, "Prop":0, "Mevt":0, "MAddr":0}, {"Ch":11, "Val":0, "Evt":0, "SID":0, "Addr":0, "Frop":0, "Mevt":0, "Maddr":0}, {"Ch":11, "Val":0, "Evt":0, "SID":0, "Addr":0, "Frop":0, "Mevt":0, "Maddr":0}, {"Ch":14, "Val":0, "Evt":0, "SID":0, "Addr":0, "FroD":0, "Addr":0, "Frop":0, "Mevt":0, "Maddr":0}, {"Ch":14, "Val":0, "Evt":0, "SID":0, "Addr":0, "FroD":0, "Addr":0, "FroD":0, "Addr":0, "FroD":0, "Addr":0, "Kevt":0, "SID":0, "Addr":0, "FroD":0, "Addr":0, "Kevt":0, "SID":0, "Addr":0, "Kevt":0, "Kevt":0, "SID":0, "Addr":0, "Kevt":0, "SID":0</pre>	op": op": op": rop" Prop Prop Prop	0," 0," 0," (0," (:0," (:0," (:0," (:0," (:0,") (:0,")	VEvt VEvt 'WEv , "WE , "WE , "WE , "WE	":0, ":0, t":0 vt":0 vt": vt": vt": vt":	"MAd "MAd ,"MA 0,"M 0,"M 0,"M 0,"M	dr":@ dr":@ ddr": Addr' Addr' Addr' Addr'	<pre>&gt;}, &gt;), &gt;), :0), :0), ':0} ':0} ':0} ':0}</pre>	) ) )
"Ch":21, "Val":0, "Evt":0, "S: "Ch":23, "Val":0, "Evt":0, "S: "Ch":25, "Val":0, "Evt":0, "S: "Ch":27, "Val":0, "Evt":0, "S: "Ch":29, "Val":0, "Evt":0, "S: "Ch":31, "Val":0, "Evt":0, "S: "Ch":31, "Val":0, "Evt":0, "S:	LD":0, "Addr":0, "Prop":0, "WEvt":0, "MAddr":0), ("Ch":22, "Val":0, "Evt":0, "SID":0, "Addr":0, "F LD":0, "Addr":0, "Prop":0, "WEvt":0, "MAddr":0), ("Ch":24, "Val":0, "Evt":0, "SID":0, "Addr":0, "F DI":0, "Addr":0, "Prop":0, "WEvt":0, "MAddr":0), ("Ch":28, "Val":0, "Evt":0, "SID":0, "Addr":0, "F LD":0, "Addr":0, "Prop":0, "WEvt":0, "MAddr":0), ("Ch":28, "Val":0, "Evt":0, "SID":0, "Addr":0, "F LD":0, "Addr":0, "Prop":0, "WEvt":0, "MAddr":0), ("Ch":32, "Val":0, "Evt":0, "SID":0, "Addr":0, "F LD":0, "Addr":0, "Prop":0, "WEvt":0, "MAddr":0), ("Ch":32, "Val":0, "Evt":0, "SID":0, "Addr":0, "F LD":0, "Addr":0, "Prop":0, "WEvt":0, "MAddr":0), ("Ch":32, "Val":0, "Evt":0, "SID":0, "Addr":0, "F LD":0, "Addr":0, "Prop":0, "WEvt":0, "MAddr":0), ("Ch":32, "Val":0, "Evt":0, "SID":0, "Addr":0, "F LD":0, "Addr":0, "Prop":0, "WEvt":0, "MAddr":0), ("Ch":32, "Val":0, "Evt":0, "SID":0, "Addr":0, "F LD":0, "Addr":0, "Prop":0, "WEvt":0, "MAddr":0), ("Ch":32, "Val":0, "Evt":0, "SID":0, "Addr":0, "F LD":0, "Addr":0, "Prop":0, "WEvt":0, "MAddr":0), ("Ch":32, "Val":0, "Evt":0, "SID":0, "Addr":0, "F	Prop Prop Prop Prop Prop Prop	":0, ":0, ":0, ":0, ":0, ":0, ":0,	"WE "WE "WE "WE "WE "WE	vt": vt": vt": vt": vt": vt": vt":	0,"M 0,"M 0,"M 0,"M 0,"M 0,"M 0,"M	Addr' Addr' Addr' Addr' Addr' Addr'	:0} :0} :0} :0} :0} :0} :0}	- ) ) ) ) )
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Figure 4-418 RESTful return all data of Modbus TCP/RTU expansion bit channel Important Note: You can replace "com" with "tcp". Please note that you need to add a Modbus TCP Master first for this to take effect. Please refer to section 4.1.2.1 for detailed instructions. Important Note: The value of "m" in "com_m" should be determined according to the Port numbers included in nDAS, as indicated in section 4.1.2.1.

To view data for individual Modbus TCP/RTU expansion word channels using the RESTful API, you should add "/ch_n" to the API URL, where "n" represents the channel number. In the context of the example from Figure 4-419, to access data for the first Modbus RTU COM2 expansion word channel (channel 0), you need to input the following URL into the address bar: "10.12.1.53/expansion_word/com_2/ch_0". This will allow you to observe the data returned specifically for the first Modbus TCP/RTU expansion word channel.



Figure 4-419 RESTful return data of Modbus TCP/RTU expansion word channel

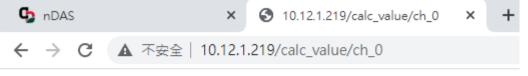
To retrieve data for all Modbus TCP/RTU expansion word channels at once using the RESTful API, you should exclude "/ch_n" from the API URL. Referring to the example in Figure 4-420, to access data for all Modbus RTU COM2 expansion word channels, input the following URL into the address bar: "10.12.1.53/expansion_word/com_2". This will allow you to observe the NEXIOT

#### data returned by all Modbus TCP/RTU expansion word channels within the specified COM2 slot.

10.12.1.53/expansion_word/cc × +					$\sim$	-	-	
- → C 🔺 不安全   10.12.1.53/expansion_word/com_2	Ø _K	Ð	Ê	☆	*		M	更新
"ExpWord":[{"Ch":0,"Val":0,"Evt":0,"SID":0,"Addr":0,"Prop":0,"WEvt":0,"MAddr":0},	D	-"-0	9.45.	LU.	0 "			
"Ch":1,"Val":0,"Evt":0,"SID":0,"Addr":0,"Prop":0,"WEvt":0,"MAddr":0},{"Ch":2,"Val":0,"Evt":0,"SID":0,"Addr":0," "Ch":3,"Val":0,"Evt":0,"SID":0,"Addr":0,"Prop":0,"WEvt":0,"MAddr":0},{"Ch":4,"Val":0,"Evt":0,"SID":0,"Addr":0,"								
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"Ch":17,"Val":0,"Evt":0,"SID":0,"Addr":0,"Prop":0,"WEvt":0,"MAddr":0},{"Ch":18,"Val":0,"Evt":0,"SID":0,"Addr":0	),"P	rop"	0,"W	Evt	":0,	, "МА	ddr'	":0},
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(ch : 4.7, Val : 0, Evt : 0, SID : 0, Addr : 0, Frop : 0, WEVt : 0, Maddr : 0), (ch : 4.8, Val : 0, Evt : 0, SID : 0, Addr : 0, (ch : 4.7, Val : 0, Evt : 0, SID : 0, Addr : 0, (ch : 4.7, Val : 0, Evt : 0, SID : 0, (addr : 0, (ch : 4.7, Val : 0, (								
Ch':49, Val':0, Evt":0, SID':0, Addr':0, Prop':0, WEvt":0, MAddr':0), (Ch':50, Val':0, Evt":0, SID':0, Addr':0, (Ch':49, SID':0, Addr':0, (Ch':49, SID':0, Addr':0, (Ch':49, SID':0, (Ch':49, SID								
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"Ch":61,"Val":0,"Evt":0,"SID":0,"Addr":0,"Prop":0,"WEvt":0,"MAddr":0},{"Ch":62,"Val":0,"Evt":0,"SID":0,"Addr":0	),"P	rop"	0,"W	Evt	":0,	, "МА	ddr'	":0},
"Ch":63,"Val":0,"Evt":0,"SID":0,"Addr":0,"Prop":0,"WEvt":0,"MAddr":0}]}								

Figure 4-420 RESTful return all data of Modbus TCP/RTU expansion word channel Important Note: You can replace "com" with "tcp". Please note that you need to add a Modbus TCP Master first for this to take effect. Please refer to section 4.1.2.1 for detailed instructions. Important Note: The value of "m" in "com_m" should be determined according to the Port numbers included in nDAS, as indicated in section 4.1.2.1.

To view data for individual CALC channels using the RESTful API, you should add "/ch_n" to the API URL, where "n" represents the channel number. In the context of the example from Figure 4-421, to access data for the first CALC channel (channel 0), you need to input the following URL into the address bar: "10.12.1.219/calc_value/ch_0". This will allow you to observe the data returned specifically for the first CALC channel.



{"CalcVal":121}

Figure 4-421 RESTful return data of CALC channel

The RESTful data structure of this software is delineated as follows, elaborating on the distinct RESTful requests for DI, DO, AI, and more.

#### 4.5.1.1 Digital Input

Description	Retrieves information about the digital input value resource on specific
	slot.
URL Structure	http://ip/di_value/slot_index
	http://ip/di_value/slot_index/ch_num
HTTP Method	GET: Returns the representation of all of digital input value resource.
	PUT: Replace all of digital input value resource.
	PATCH: Apply partial modifications to digital input value resource.

	Multiple channel Request:	
	GET ip/di_value/slot_index	
	Single channel Request:	
	GET ip/di_value/slot_index/ch_num	
	[Example]	
	Request: GET 10.12.1.159/di_value/slot_0	
	Content-type: application/json;charset=utf-8	
	Response: 200 OK	
	{	
	"DIVal": [	
GET	{	
	"Ch": 0,	
	"En": 1,	
	"Md": 0,	
	"Stat": 1,	
	"Cnting": 1,	
	"OvLch": 0,	
	"CtFq": 0,	
	"Lch": 0,	
	"Hch": 0	
	},	
NEXIOT	{	
	201	VIC7000 User Manual (Beta)

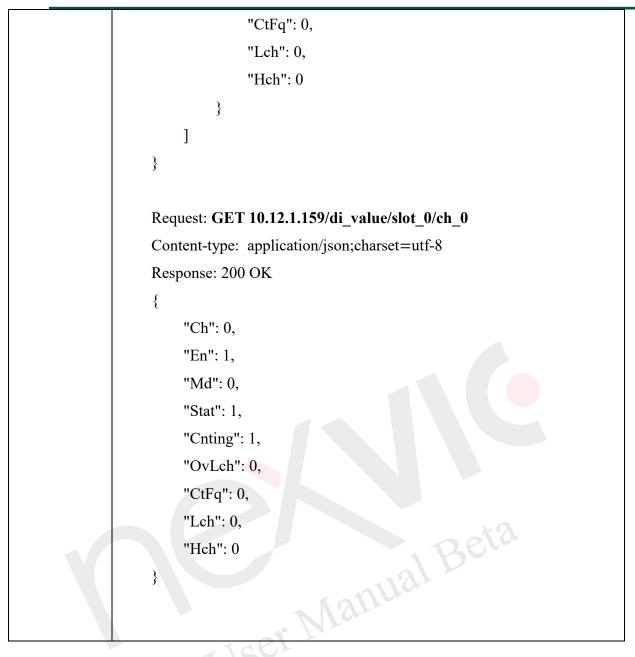
291



			Т
		"Ch": 1,	
		"En": 1,	
		"Md": 0,	
		"Stat": 1,	
		"Cnting": 1,	
		"OvLch": 0,	
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		"Lch": 0,	
		"Hch": 0	
	},		
	{		
		"Ch": 2,	
		"En": 1,	
		"Md": 0,	
		"Stat": 1,	
		"Cnting": 1,	
	-	"OvLch": 0,	
		"CtFq": 0,	
		"Lch": 0,	
		"Lch": 0, "Hch": 0	
	},	1181	
	{		
		"Ch": 3,	
	T	"En": 1,	
		"Md": 0,	
		"Stat": 1,	
		"Cnting": 1,	
		"OvLch": 0,	
		"CtFq": 0,	
		"Lch": 0,	
		"Hch": 0	
	},		
	{		
		"Ch": 4,	l
		"En": 1,	l
		"Md": 0,	l
NEXIOT			

<pre>"Cnting": 1, "OvLch": 0, "Lch": 0, "Lch": 0, "Hch": 0 }, { "Ch": 5, "En": 1, "Md": 0, "Stat": 1, "OvLch": 0, "Ctef": 0, "Lch": 0, "Lch": 0, "Hch": 0 }, { "Ch": 6, "En": 1, "OvLch": 0, "Hch": 0 }, { "Ch": 6, "En": 1, "OvLch": 0, "Hch": 0 }, { "Ching": 1, "OvLch": 0, "En": 1, "Md": 0, "Stat": 1, "OvLch": 0, "Ctefq": 0, "Ctefq": 0, "Lch": 0, "Ctefq": 0, "Ctefq": 0, "Lch": 0, "Hch": 0 }, { "Ch": 7, "En": 1, "Md": 0, "Hch": 0 }, { "Ch": 7, "En": 1, "Md": 0, "Stat": 1,</pre>			
<pre>"OvLch": 0, "CtFq": 0, "Lch": 0, "Hch": 0 }, { "Ch": 5, "En": 1, "Md": 0, "Stat": 1, "OvLch": 0, "CtFq": 0, "Lch": 0, "Hch": 0 }, { "Ch": 6, "En": 1, "Md": 0, "Stat": 1, "OvLch": 0, "CtFq": 0, "Lch": 1, "Md": 0, "Stat": 1, "Md": 0, "Stat": 1, "Stat": 1,</pre>			"Stat": 1,
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"Lch": 0, "Hch": 0 }, { "Ch": 5, "En": 1, "Md": 0, "Stat": 1, "Cuting": 1, "OvLch": 0, "Lch": 0, "Hch": 0 }, { "Ch": 6, "En": 1, "Md": 0, "Stat": 1, "OvLch": 0, "Lch": 0, "Cuting": 1, "OvLch": 0, "Cuting": 1, "OvLch": 0, "Lch": 0, "Lch": 0, "Lch": 0, "Cuting": 1, "OvLch": 0, "Cuting": 1, "OvLch": 0, "Lch": 0, "Lch": 0, "Lch": 0, "Lch": 0, "Cuting": 1, "OvLch": 0, "Cuting": 1, "OvLch": 0, "Cuting": 1, "OvLch": 0, "Lch": 0, "Lch": 0, "Lch": 0, "Lch": 0, "Lch": 0, "Lch": 0, "Lch": 1, "Md": 0, "Lch": 1, "Md": 0, "Lch": 1, "Ch": 7, "En": 1, "Md": 0, "Stat": 1,			"OvLch": 0,
<pre>"Heh": 0 }, {     "Ch": 5,     "En": 1,     "Md": 0,     "Stat": 1,     "OvLch": 0,     "CtFq": 0,     "Lch": 0,     "Hch": 0 }, {     "Ch": 6,     "En": 1,     "Md": 0,     "Stat": 1,     "OvLch": 0,     "CtFq": 0,     "Lch": 0,     "Lch": 0,     "Lch": 0,     "CtFq": 0,     "Lch": 1,     "Md": 0,     "Stat": 1,     "Stat": 1,     "Md": 0,     "Stat": 1,</pre>			"CtFq": 0,
<pre>}, {     "Ch": 5,     "En": 1,     "Nd": 0,     "Stat": 1,     "OvLch": 0,     "CtFq": 0,     "Lch": 0,     "Hch": 0     },     {         "Ch": 6,     "En": 1,         "Md": 0,         "Stat": 1,         "OvLch": 0,         "CtFq": 0,         "Lch": 0,         "CtFq": 0,         "Lch": 0,         "CtFq": 0,         "Lch": 0,         "CtFq": 0,         "Lch": 0,         "Lch": 0,         "Lch": 0,         "Lch": 0,         "Lch": 0,         "Lch": 0,         "CtFq": 0,         "Lch": 0,         "CtFq": 0,         "Lch": 0,         "CtFq": 0,         "Lch": 0,         "Lch": 0,         "Lch": 0,         "Lch": 0,         "Tteh": 0     },     {         "Cth": 7,         "En": 1,         "Md": 0,         "Stat": 1,         "Md": 0,</pre>			"Leh": 0,
<pre>{     "Ch": 5,     "En": 1,     "Md": 0,     "Stat": 1,     "OvLch": 0,     "CtFq": 0,     "Lch": 0,     "Hch": 0     },     {         "Ch": 6,         "En": 1,         "Md": 0,         "Stat": 1,         "OvLch": 0,         "CtFq": 0,         "Lch": 0,         "CtFq": 1,         "Md": 0,         "Stat": 1,         "Md": 0,     "Stat": 1,         "CtFq": 1,         "CtFtfq": 1,         "CtFtffty": 1,         "CtFtfty": 1,         "CtFty": 1,</pre>			"Hch": 0
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"OvLch": 0, "CtFq": 0, "Lch": 0, "Hch": 0 }, { "Ch": 6, "En": 1, "Md": 0, "Stat": 1, "OvLch": 0, "CtFq": 0, "Lch": 0, "Lch": 0, "Hch": 0 }, { "Ch": 7, "En": 1, "Md": 0, "Stat": 1,			"Stat": 1,
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"Lch": 0, "Hch": 0 }, { "Ch": 6, "En": 1, "Md": 0, "Stat": 1, "OvLch": 0, "CtFq": 0, "Lch": 0, "Lch": 0, "Hch": 0 }, { "Ch": 7, "En": 1, "Md": 0, "Stat": 1, "Md": 0, "Stat": 1, "Md": 0, "Stat": 1, "Md": 1, "Ch": 6, "En": 1, "OvLch": 1, "OvLch": 1, "OvLch": 1, "Stat": 1, "OvLch": 0, "Lch": 0, "Lch": 0, "Stat": 1, "Stat": 1, "Stat": 1, "Stat": 1, "Stat": 1, "OvLch": 0, "Lch": 0, "Lch": 0, "Lch": 0, "Lch": 1, "Stat": 1,			"OvLch": 0,
"Hch": 0 }, { "Ch": 6, "En": 1, "Md": 0, "Stat": 1, "OvLch": 0, "CtFq": 0, "Lch": 0, "Hch": 0 }, { "Ch": 7, "En": 1, "Md": 0, "Stat": 1,			"CtFq": 0,
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<pre>{     "Ch": 6,     "En": 1,     "Md": 0,     "Stat": 1,     "OvLch": 0,     "CtFq": 0,     "Lch": 0,     "Hch": 0     },     {         "Ch": 7,         "En": 1,         "Md": 0,         "Stat": 1,</pre>			"Hch": 0
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"Md": 0, "Stat": 1, "Cnting": 1, "OvLch": 0, "CtFq": 0, "Lch": 0, "Hch": 0 }, { "Ch": 7, "En": 1, "Md": 0, "Stat": 1,			"Ch": 6,
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"CtFq": 0, "Lch": 0, "Hch": 0 }, { "Ch": 7, "En": 1, "Md": 0, "Stat": 1,			"Cnting": 1,
"Lch": 0, "Hch": 0 }, { "Ch": 7, "En": 1, "Md": 0, "Stat": 1,			"OvLch": 0,
"Hch": 0 }, { "Ch": 7, "En": 1, "Md": 0, "Stat": 1,			"CtFq": 0,
<pre>}, {</pre>			"Lch": 0,
{ "Ch": 7, "En": 1, "Md": 0, "Stat": 1,			"Hch": 0
"Ch": 7, "En": 1, "Md": 0, "Stat": 1,		},	
"En": 1, "Md": 0, "Stat": 1,		{	
"Md": 0, "Stat": 1,			"Ch": 7,
"Stat": 1,			"En": 1,
			"Md": 0,
"Contine": 1			"Stat": 1,
Chung . 1,			"Cnting": 1,
"OvLch": 0,			"OvLch": 0,





	1 13	
	Multiple channel Request:	
	PUT ip/di_value/slot_index	
	Single channel Request:	
	PUT ip/di_value/slot_index/ch_num	
PUT	[Example]	
	Request: PUT 10.12.1.159/di_value/slot_0	
	Content-type: application/json;charset=utf-8	
	Body:	
	{	
	"DIVal":[	
NEXIOT		VIC7000 Hear Manual (Pata)



	{
	"Ch": 0,
	"En": 1,
	"Md": 0,
	"Stat": 0,
	"Cnting": 1,
	"OvLch": 0,
	"CtFq": 0,
	"Lch": 0,
	"Hch": 0
	},
	{
	"Ch": 1,
	"En": 1,
	"Md": 0,
	"Stat": 0,
	"Cnting": 1,
	"OvLch": 0,
	"CtFq": 0, "Lch": 0, "Hch": 0
	"Hch": 0
	$\},$ $\mathbb{R}^{1}$
	"Hch": 0 }, { "Ch": 2,
	"En": 1,
	"Md": 0,
	"Stat": 0,
	"Cnting": 1,
	"OvLch": 0,
	"CtFq": 0,
	"Lch": 0,
	"Hch": 0
	},
	{
	"Ch": 3,
	"En": 1,
IOT	

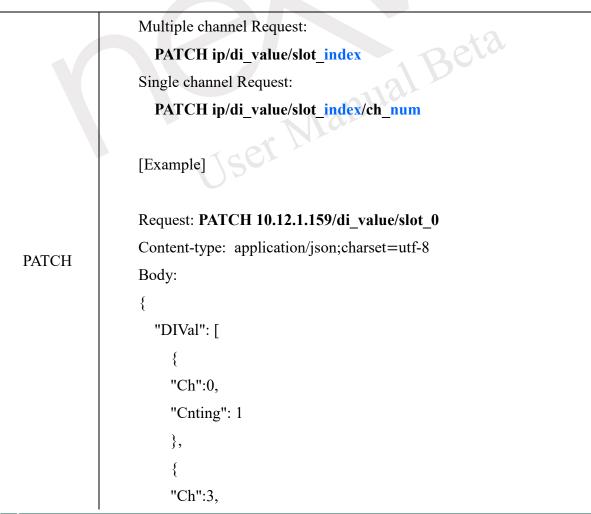


	"Md": 0,
	"Stat": 0,
	"Cnting": 1,
	"OvLch": 0,
	"CtFq": 0,
	"Lch": 0,
	"Hch": 0
	},
	{
	"Ch": 4,
	"En": 1,
	"Md": 0,
	"Stat": 0,
	"Cnting": 1,
	"OvLch": 0,
	"CtFq": 0,
	"Lch": 0,
	"Hch": 0
	},
	}, { "Ch": 5,
	"Ch": 5,
	"Ch": 5, "En": 1, "Md": 0, "Stat": 0,
	"Md": 0,
	"Stat": 0,
	"Cnting": 1,
	"OvLch": 0,
	"CtFq": 0,
	"Lch": 0,
	"Hch": 0
	},
	{
	"Ch": 6,
	"En": 1,
	"Md": 0,
	"Stat": 0,
	"Cnting": 1,
¢∕10T	

```
"OvLch": 0,
    "CtFq": 0,
    "Lch": 0,
    "Hch": 0
  },
  {
    "Ch": 7,
    "En": 1,
    "Md": 0,
    "Stat": 0,
    "Cnting": 1,
    "OvLch": 0,
    "CtFq": 0,
    "Lch": 0,
    "Hch": 0
  }
]
       User Manual Beta
}
Response: 200 OK
```



Request: PUT 10.12.1.159/di_value/slot_0/ch_0 Content-type: application/json;charset=utf-8 Body: { "Ch": 0, "En": 1, "Md": 0, "Stat": 0, "Cting": 1, "OvLch": 0, "CtFq": 0, "Lch": 0, "Hch": 0 } Response: 200 OK



"OvLch":0 } ] } Response: 200 OK Request: PATCH 10.12.1.159/di_value/slot_0/ch_3 Content-type: application/json;charset=utf-8 Body: { "Ch":3, "Cnting": 1 } Response: 200 OK User Manual Beta



#### 4.5.1.2 Digital Output

Description	Retrieves information about the digital output value resource on specific
	slot.
URL Structure	http://ip/do_value/slot_index
	http://ip/do_value/slot_index/ch_num
HTTP Method	GET: Returns the representation of all of digital output value resource.
	PUT: Replace all of digital output value resource.
	PATCH: Apply partial modifications to digital output value resource.

	Multiple channel Request:
	GET ip/do value/slot index
	Single channel Request:
	GET ip/do_value/slot_index/ch_num
	[Example]
	Request: GET 10.12.1.159/do_value/slot_0
	Content-type: application/json;charset=utf-8 Response: 200 OK { "DOVal": [
	{
CET	"DOVal": [
GET	
	"Ch": 0,
	"En": 1,
	"Md": 1,
	"Stat": 0,
	"Val": 0,
	"PsCtn": 1,
	"PsStop": 0,
	"PsIV": 0
	},
	{
	"Ch": 1,

	"En": 1,
	"Md": 0,
	"Stat": 0,
	"Val": 0,
	"PsCtn": 0,
	"PsStop": 1,
	"PsIV": 0
}	· ,
{	
	"Ch": 2,
	"En": 1,
	"Md": 0,
	"Stat": 0,
	"Val": 0,
	"PsCtn": 0,
	"PsStop": 1,
	"PsIV": 0
}	
	"Ch": 3,
	"Ch": 3, "En": 1,
	"Md": 0,
	"Stat": 0,
1	"Val": 0,
	"PsCtn": 0,
	"PsStop": 1,
	"PsIV": 0
}	,
{	
	"Ch": 4,
	"En": 1,
	"Md": 0,
	"Stat": 0,
	"Val": 0,
	"PsCtn": 0,
	"PsStop": 1,
NEXINT	



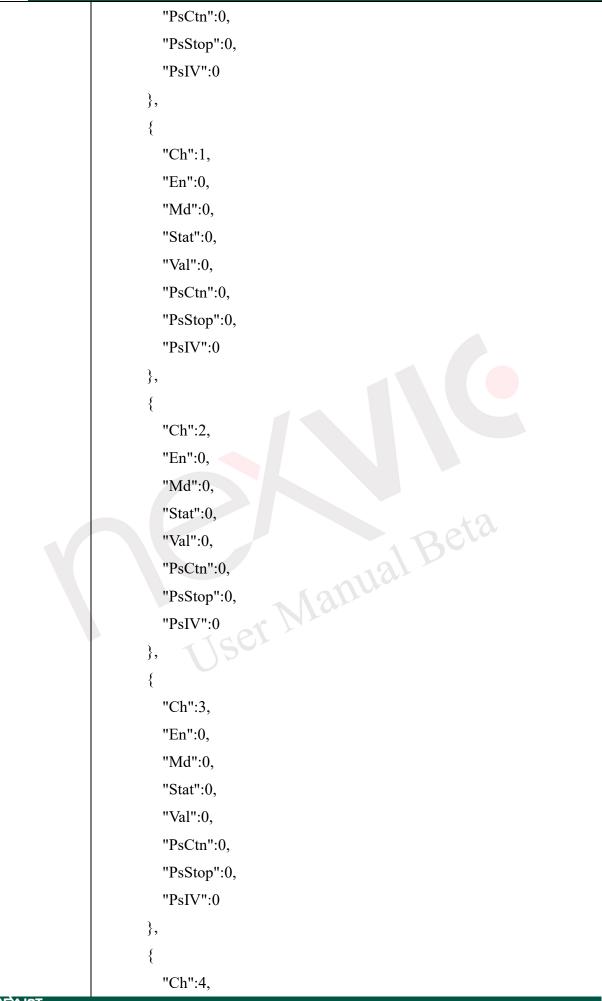
"PsIV": 0 }, { "Ch": 5, "En": 1, "Md": 0, "Stat": 0, "Val": 0, "PsCtn": 0, "PsStop": 1, "PsIV": 0 }, { "Ch": 6, "En": 1, "Md": 0, "Stat": 0, e o Manual Beta "Val": 0, "PsCtn": 0, "PsStop": 1, "PsIV": 0 }, "Ch": 7, "En": 1, "Md": 0, "Stat": 0, "Val": 0, "PsCtn": 0, "PsStop": 1, "PsIV": 0 } ] }



Request: GET 10.12.1.159/do_value/slot_0/ch_0
Content-type: application/json;charset=utf-8
Response: 200 OK
{
 "Ch": 0,
 "En": 1,
 "Md": 1,
 "Stat": 0,
 "Val": 4294967295,
 "PsCtn": 1,
 "PsStop": 0,
 "PsIV": 0
}

Multiple channel Request: PUT ip/do_value/slot_index Single channel Request: PUT ip/do_value/slot_index/ch_num [Example] Request: PUT 10.12.1.159/do_value/slot_0 Content-type: application/json;charset=utf-8 PUT Body: { "DOVal":[ { "Ch":0, "En":0, "Md":0, "Stat":0, "Val":0, NEXIOT







	"En":0,
	"Md":0,
	"Stat":0,
	"Val":0,
	"PsCtn":0,
	"PsStop":0,
	"PsIV":0
	},
	{
	"Ch":5,
	"En":0,
	"Md":0,
	"Stat":0,
	"Val":0,
	"PsCtn":0,
	"PsStop":0,
	"PsIV":0
	},
	1
	{ "Ch":6, "En":0,
	"En":0,
	"En":0, "Md":0, "Stat":0, "Val":0,
	"Stat":0,
	"Val":0,
	"PsCtn":0,
	"PsStop":0,
	"PsIV":0
	},
	{
	"Ch":7,
	"En":0,
	"Md":0,
	"Stat":0,
	"Val":0,
	"PsCtn":0,
È&IOT	"PsStop":0,

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"PsIV":0
}
]
}
Response: 200 OK
Request: PUT 10.12.1.159/do_value/slot_0/ch_0
Content-type: application/json;charset=utf-8
Body:
{
"Ch":0,
"En":0,
"Md":0,
"Stat":0,
"Val":0,
"PsCtn":0,
"PsStop":0,
"PsIV":0
3
} Response: 200 OK
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	ar Mon	
	Multiple channel Request:	
	PATCH ip/do_value/slot_index	
	Single channel Request:	
	PATCH ip/do_value/slot_index/ch_num	
	[Example]	
РАТСН		
	Request: PATCH 10.12.1.159/do_value/slot_0	
	Content-type: application/json;charset=utf-8	
	Body:	
	{	
	"DOVal": [	
	{	
NÈ&IOT		

"Ch":2,
"Md": 2
},
{
"Ch":3,
"PsStop":1
}
}
Response: 200 OK
Request: PATCH 10.12.1.159/do_value/slot_0/ch_3
Content-type: application/json;charset=utf-8
Body:
{
"Ch":3,
"PsCtn": 1
}
Response: 200 OK
Response: 200 OK
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n Mar
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#### 4.5.1.3 Analog Input

Description	Retrieves information about the analog input value resource on specific
	slot.
URL Structure	http://ip/ai_value/slot_index
	http://ip/ai_value/slot_index/ch_num
HTTP Method	GET: Returns the representation of all of analog input value resource.
	PUT:None
	PATCH: Apply partial modifications to analog input value resource.
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Multiple channel Request: GET ip/ai_value/slot_index Single channel Request: GET ip/ai_value/slot_index/ch_num [Example] Request: GET 10.12.1.159/ai_value/slot_0 Content-type: application/json;charset=utf-8 Response: 200 OK { "AIVal": [ { "Ch": 0, "En": 1, "Rng": 2, "Val": 0, GET "EgF": -0.00008881092071533203, "Evt": 0, "LoA": 0, "HiA": 0, "HVal": 0, "HEgF": -0.00008165836334228516, "LVal": 0, "LEgF": -0.00009834766387939453, "SVal": 0, "CLrL": 0, "CLrH": 0 }, { "Ch": 1, "En": 1, "Rng": 2, "Val": 0,

# NEXAIOT

"EgF": -0.00009059906005859375,
"Evt": 0,
"LoA": 0,
"HiA": 0,
"HVal": 0,
"HEgF": -0.00008046627044677734,
"LVal": 0,
"LEgF": -0.00009715557098388672,
"SVal": 0,
"CLrL": 0,
"CLrH": 0
},
{
"Ch": 2,
"En": 1,
"Rng": 2,
"Val": 0,
"EgF": -0.00008404254913330078,
"Evt": 0, "LoA": 0, "HiA": 0, "HVa!": 0
"LoA": 0,
"HiA": 0,
"HVal": 0,
"HEgF": -0.00008165836334228516,
"LVal": 0,
"LEgF": -0.00009775161743164063,
"SVal": 0,
"CLrL": 0,
"CLrH": 0
},
{
"Ch": 3,
"En": 1,
"Rng": 2,
"Val": 0,
"EgF": -0.00008940696716308594,
"Evt": 0,

		"LoA": 0,
		"HiA": 0,
		"HVal": 0,
		"HEgF": -0.00008165836334228516,
		"LVal": 0,
		"LEgF": -0.00009655952453613281,
		"SVal": 0,
		"CLrL": 0,
		"CLrH": 0
	},	
	{	
		"Ch": 4,
		"En": 1,
		"Rng": 2,
		"Val": 0,
		"EgF": -0.00009238719940185547,
		"Evt": 0,
		"LoA": 0,
		"HiA": 0,
		"H1A": 0, "HVal": 0,
		"HEgF": -0.00008404254913330078,
		"LVal": 0,
		"LEgF": -0.00009953975677490234,
	11	"SVal": 0,
		"CLrL": 0,
		"CLrH": 0
	},	
	{	
		"Ch": 5,
		"En": 1,
		"Rng": 2,
		"Val": 0,
		"EgF": -0.00009000301361083984,
		"Evt": 0,
		"LoA": 0,
		"HiA": 0,
NEXIOT		VIC7000 User Manual (Beta)

	"HVal": 0,
	"HEgF": -0.00007987022399902344,
	"LVal": 0,
	"LEgF": -0.00010132789611816406,
	"SVal": 0,
	"CLrL": 0,
	"CLrH": 0
	},
	{
	"Ch": 6,
	"En": 1,
	"Rng": 2,
	"Val": 0,
	"EgF": -0.0000864267349243164,
	"Evt": 0,
	"LoA": 0,
	"HiA": 0,
	"HVal": 0,
	"HEgF": -0.00008165836334228516,
	"LVal": 0,
	"LEgF": -0.00009775161743164063,
	"SVal": 0,
	"CLrL": 0,
	"CLrH": 0
	},
	{
	"Ch": 7,
	"En": 1,
	"Rng": 2,
	"Val": 0,
	"EgF": -0.00009059906005859375,
	"Evt": 0,
	"LoA": 0,
	"HiA": 0,
	"HVal": 0,
	"HEgF": -0.00007867813110351563,
JOT	

# NEXVIOT

	"LVal": 0,
	"LEgF": -0.00009775161743164063,
	"SVal": 0,
	"CLrL": 0,
	"CLrH": 0
},	
{	
	"Ch": 8,
	"En": 1,
	"Rng": 0,
	"Val": 0,
	"EgF": 0.0,
	"Evt": 0,
	"LoA": 0,
	"HiA": 0,
	"HVal": 0,
	"HEgF": -3.4028234663852887e38,
	"LVal": 65535,
	"LEgF": 3.4028234663852887e38,
	"SVal": 0,
	"LEgF": 3.4028234663852887e38, "SVal": 0, "CLrL": 0,
	"CLrH": 0
}	"CLrL": 0, "CLrH": 0
1	
}	

Request: GET 10.12.1.159/ai_value/slot_0/ch_0
Content-type: application/json;charset=utf-8
Response: 200 OK
{
"Ch": 0,
"En": 1,
"Rng": 2,
"Val": 0,
"EgF": -0.00008761882781982422,
"Evt": 0,
"LoA": 0,
"HiA": 0,
"HVal": 0,
"HEgF": -0.00008165836334228516,
"LVal": 0,
"LEgF": -0.00009834766387939453,
"SVal": 0,
"CLrL": 0,
"CLrH": 0
}

	Multiple channel Request:
	PATCH ip/ai_value/slot_index
	Single channel Request:
	PATCH ip/ai_value/slot_index/ch_num
	[Example]
РАТСН	Request: PATCH 10.12.1.159/ai_value/slot_0
	Content-type: application/json;charset=utf-8
	Body:
	{
	"AIVal": [
	{
	"Ch":2,
	"LoA": 2
NEXIOT	



},
{
"Ch":3,
"HiA":1
}
}
Response: 200 OK
Request: PATCH 10.12.1.159/ai_value/slot_0/ch_3
Content-type: application/json;charset=utf-8
Body:
{
"LoA": 1
}
Response: 200 OK
+2
Bett
1121
N 311Cm
ar hite
User Manual Beta

#### 4.5.1.4 Modbus Expansion Bit Data(Modbus RTU/TCP)

Description	Retrieves information about the expansion tag bit data resource, the data
	information is defined by user configuration.
URL Structure	http://ip/expansion_bit/com_x
	http://ip/expansion_bit/tcp_x
	http://ip/expansion_bit/com_x/ch_num
	http://ip/expansion_bit/tcp_x/ch_num
HTTP Method	GET: Returns the representation of all of expansion bit data resource.
	PUT: None
	PATCH: Apply partial modifications to expansion bit data resource.



Multiple channel Request: GET ip/expansion_bit/com_x Single channel Request: GET ip/expansion_bit/com_x/ch_num [Example] Request: GET 10.12.1.159/expansion_bit/com_2 Content-type: application/json;charset=utf-8 Response: 200 OK { "ExpBit": [ { "Ch": 0, "Val": 0, "Evt": 0, "SID": 0, GET "Addr": 0, "Prop": 0, "WEvt": 0, "MAddr": 0 "Ch": 1, "Val": 0, "Evt": 0, "SID": 0, "Addr": 0, "Prop": 0, "WEvt": 0, "MAddr": 0 }, ••• { "Ch": 127,

"Val": 0,
"Evt": 0,
"SID": 0,
"Addr": 0,
"Prop": 0,
"WEvt": 0,
"MAddr": 0
}
]
}
Request: GET 10.12.1.159/expansion_bit/com_2/ch_0
Content-type: application/json;charset=utf-8
Response: 200 OK
{
"Ch": 0,
"Val": 0,
"Evt": 0,
"SID": 0,
"Addr": 0,
"Prop": 0,
"SID": 0, "Addr": 0, "Prop": 0, "WEvt": 0, "MAddr": 0
"MAddr": 0
} 1)501

РАТСН	Single channel Request: PATCH ip/expansion_bit/com_x/ch_num
	[Example]



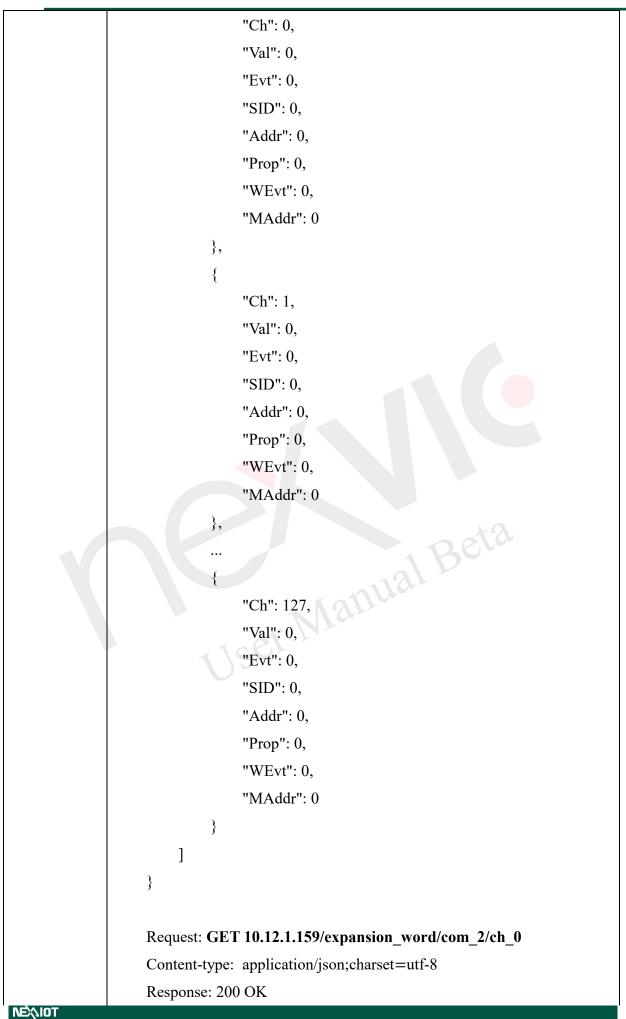
Request: PATCH 10.12.1.159/expansion_bit/com_2/ch_0 Content-type: application/json;charset=utf-8 Body: { "Val": 1 } Response: 200 OK

#### 4.5.1.5 Modbus Expansion Word Data(Modbus RTU/TCP)

Request: /expansion_word/com_x/ch_num

Request: /expansion_word/com_x/ch_num	
Request: /expansion_word/tcp_x/ch_num	
Description	Retrieves information about the expansion tag word data resource, the
	data information is defined by user configuration.
URL Structure	http://ip/expansion_word/com_x
	http://ip/expansion_word/tcp_x
	http://ip/expansion_word/com_x/ch_num
	http://ip/expansion_word/tcp_x/ch_num
HTTP Method	GET: Returns the representation of all of expansion word data resource.
	PUT: None
	PATCH: Apply partial modifications to expansion word data resource.
	11502

	Multiple channel Request:
	GET ip/expansion_word/com_x
	Single channel Request:
	GET ip/expansion_word/com_x/ch_num
	[Example]
GET	Request: <b>GET 10.12.1.159/expansion_word/com_2</b> Content-type: application/json;charset=utf-8
	Response: 200 OK
	{
	"ExpWord": [
	{
NEXXIOT	





{	
"Ch": 0,	
"Val": 0,	
"Evt": 0,	
"SID": 0,	
"Addr": 0,	
"Prop": 0,	
"WEvt": 0,	
"MAddr": 0	
}	

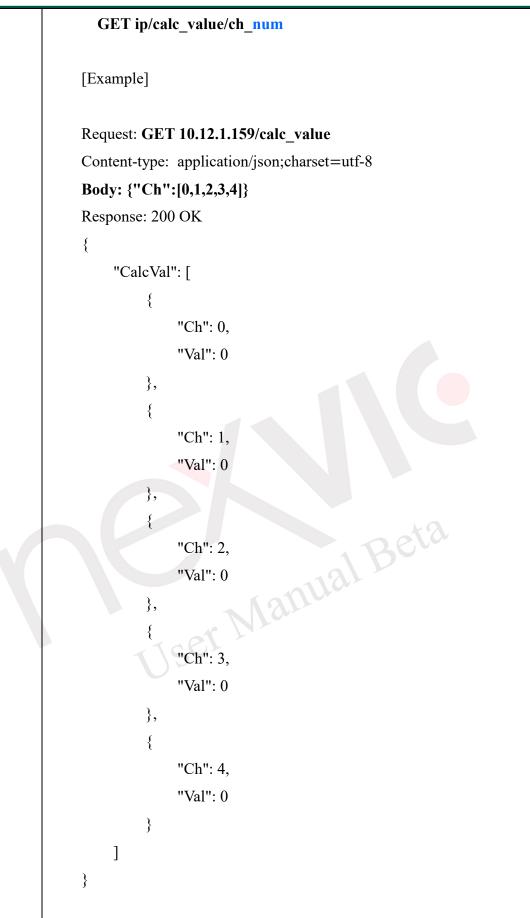
	Single channel Request:
РАТСН	PATCH ip/expansion_word/com_x/ch_num
	[Example]
	Request: <b>PATCH 10.12.1.159/expansion_word/com_2/ch_0</b> Content-type: application/json;charset=utf-8
	Body:
	"Val": 255
	}
	Response: 200 OK

#### 4.5.1.6 Calc Operator

Description	Retrieves information about the Calc operator value resource.
URL Structure	http://ip/calc_value/ch_num
HTTP Method	GET: Returns the representation of all of Calc operator value resource.
	PUT: Replace all of Calc operator value resource.
	PATCH: Apply partial modifications to Calc operator value resource.

GET	Multiple channel Request:
	GET ip/calc_value
	Single channel Request:
NEXIOT	





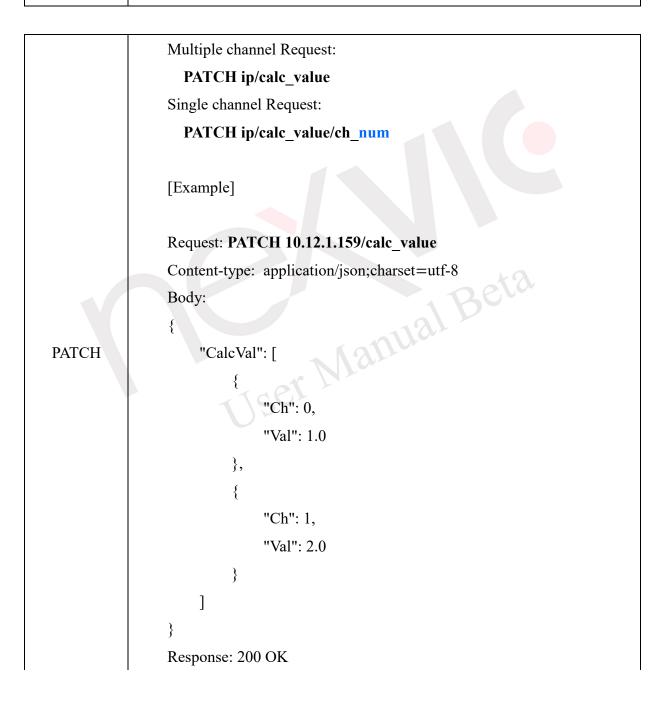


Request: GET ip/calc_value/ch_0
Content-type: application/json;charset=utf-8
Response: 200 OK
{
"CalcVal":0
}

	Multiple channel Request:
	PUT ip/calc_value
	Single channel Request:
	PUT ip/calc_value/ch_num
	[Example]
	Request: PUT 10.12.1.159/calc_value
	Content-type: application/json;charset=utf-8
	Body:
	{
PUT	"CalcVal": [
	{
	"Ch": 0,
	"Val": 1.0
	"CalcVal": [ { "Ch": 0, "Val": 1.0 }, {
	"Ch": 1,
	"Val": 2.0
	}
	]
	}
	Response: 200 OK



Request: **PUT 10.12.1.159/calc_value/ch_0** Content-type: application/json;charset=utf-8 Body: { "Val":1.0 } Response: 200 OK





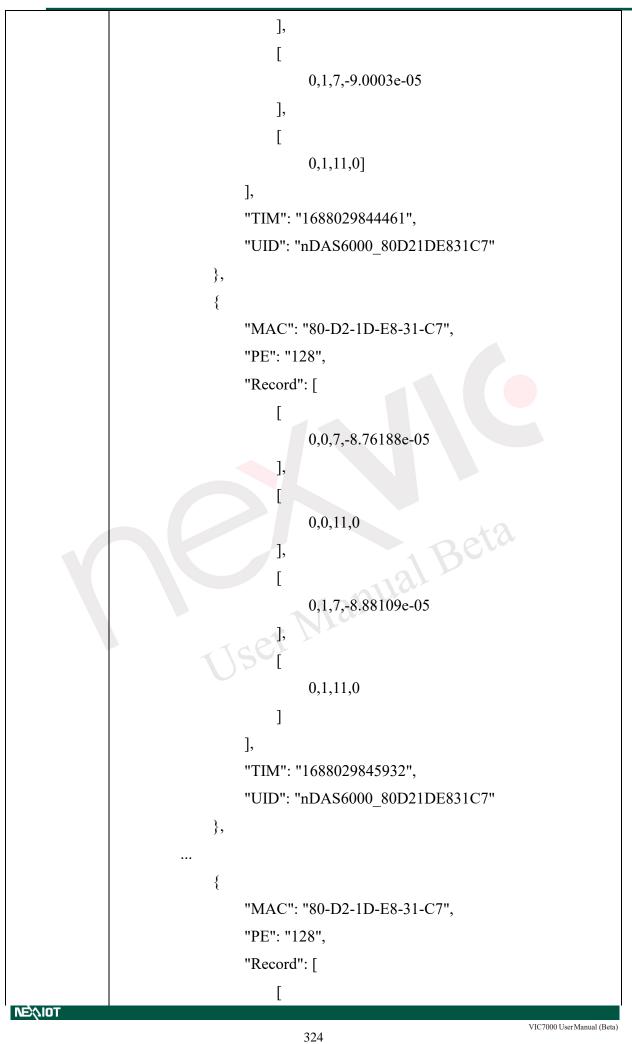
Request: PATCH 10.12.1.159/calc_value/ch_0
Content-type: application/json;charset=utf-8
Body:
{
"Val":1.0
}
Response: 200 OK

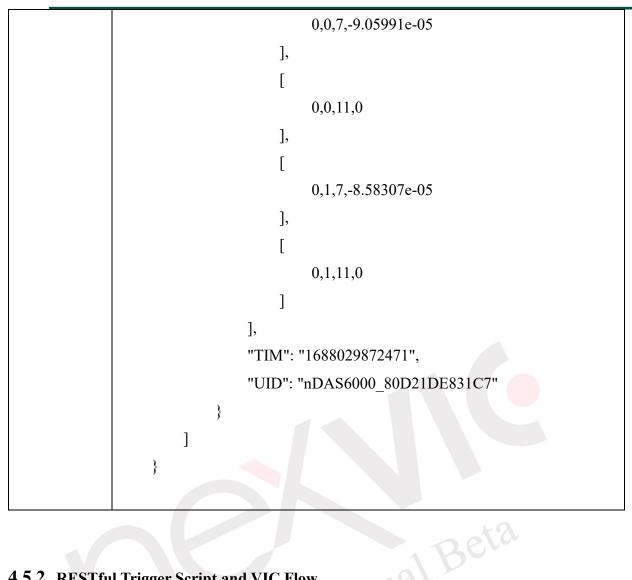
#### 4.5.1.7 Data Log

Request: /log_message

Description	Retrieves the log data in system memory.
URL Structure	http://ip/log_message
HTTP Method	GET: According to the setting of filtering, server returns the all/partial
	of logged data.

	GET ip/log_message
	[Example] Request: <b>GET ip/log_message</b> Content-type: application/json;charset=utf-8 Response: 200 OK
	Request: GET ip/log_message
	Content-type: application/json;charset=utf-8
	Response: 200 OK
	{
CET	"LogMsg": [
GET	{
	"MAC": "80-D2-1D-E8-31-C7",
	"PE": "128",
	"Record": [
	[
	0,0,7,-9.0003e-05
	],
	[
	0,0,11,0
NEQIOT	





#### 4.5.2 RESTful Trigger Script and VIC Flow

This software provides software control through the RESTful API, offering two types of control actions: triggering a custom function using a Python script (req_call_python_function) and triggering an operator within VIC Flow (req_call_flow). The required parameters are detailed in Table 4-46.

Table 4-46 Parameters of F	ESTful
----------------------------	--------

Parameter name	Content		
cmd	In accordance with the provided control content input, the placeholder "A" is utilized.		
func	The triggered function name is represented by the placeholder "B" in the following examples.		
trigger_id	The ID of the operator to be triggered is represented by the placeholder "C" in the following examples.		
params	The arguments passed into the triggered function are represented by the placeholder "D" in the following examples.		



The data structure of RESTful:

```
Request:PUT IP/restful/put

Headers

Content-type: application/x-www-form-urlencoded

Body

x-www-form-urlencoded

{

"cmd" : "A",

"func" : "B",

"trigger_id" : "C",

"params" : "D"

}

The example of trigger Python Script:
```

Request:PUT IP/restful/put Headers Content-type: application/x-www-form-urlencoded Body x-www-form-urlencoded { "cmd" : "req_call_python_function", "func" : "python function definition name", "parames" : "parameters passed to function" }

The example of trigger VIC Flow:

NEX/10T

Request:PUT IP/restful/put Headers Content-type: application/x-www-form-urlencoded Body



```
x-www-form-urlencoded
{
    "cmd" : "req_call_flow",
    "trigger_id" : "the ID of ON_RESTFUL operator",
    " parames " : "parameters passed to ON_RESTFUL operator"
}
```





#### 4.6 Toolbar

The toolbar of this software is located in the upper right corner, as shown in Figure 4-422. The introduction of each buton will be presented in the following section.



Figure 4-422 Toolbar of this software

#### 4.6.1 I/O Chart

You can switch to the Chart by clicking on the chart icon (as shown in Figure 4-423), where you can view the status of all open channels, as shown in Figure 4-424.

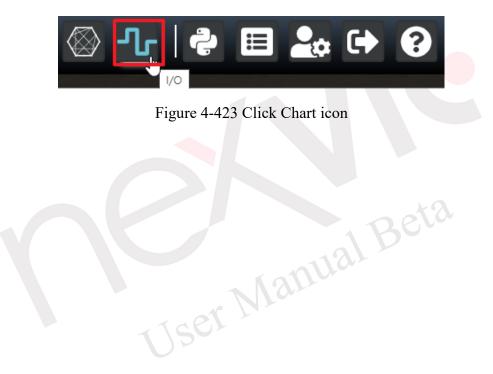




Figure 4-424 Chart

#### 4.6.2 Modbus Chart

By clicking on the Modbus Channel icon (as shown in Figure 4-425), you can switch to the Modbus Channel Chart. After setting the Modbus Rule and checking the Chart option, corresponding drawing data will be displayed (for settings, please refer to section 4.1.2.4.1). Here, you can view the status of the Modbus Channel, as shown in Figure 4-426.



Figure 4-425 Click Modbus Channel icon

Note: A maximum of 9 channels can be displayed.

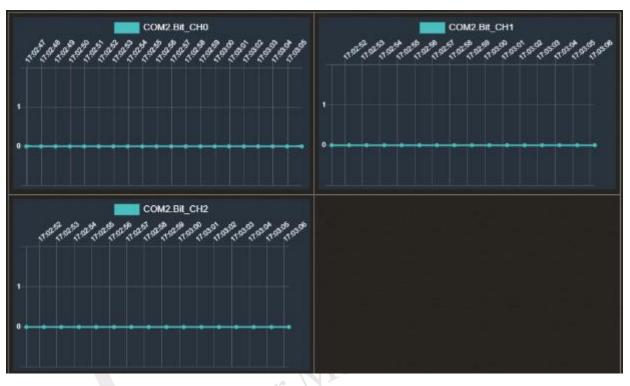


Figure 4-426 Modbus Channel Chart



#### 4.6.3 Python Output

By clicking on the Python output icon (as shown in Figure 4-427), a Python dialog will pop up, where one can view the output information of the Python script, as shown in Figure 4-428.



Figure 4-427 Click Python Output icon

		_		_
	Python Output	_	E l	×
Char				
Char				
Close				
Claar				
Villol Valleta	Clear	Cance	я	

Figure 4-428 Python Output dialog

#### 4.6.4 SECS/GEM Log

If the SECS/GEM connection is enabled, the toolbar will display the SECS/GEM log icon, as indicated by the red box in Figure 4-429. The "E" indicates passive mode, while "H" indicates active mode. Clicking the icon will display the SECS/GEM log dialog, as shown in Figure 4-430.

To write the log to a file, the "Use Log File" field must be checked, and the file will be stored according to rhe date.

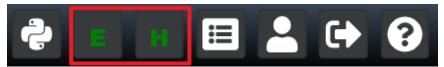


Figure 4-429 SECS/GEM Log icon

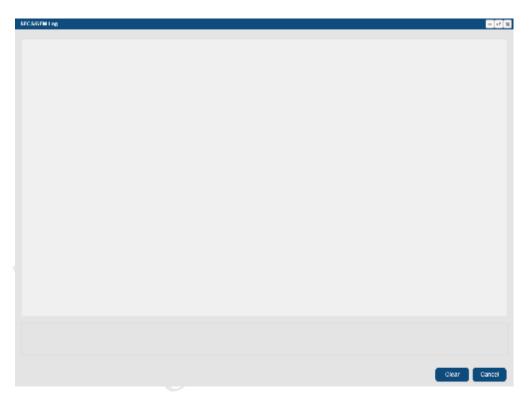


Figure 4-430 SECS/GEM Log dialog

Note : When lacking administrative privileges, it is not possible to browse SECS/GEM and SECS/GEM Host Logs.

Note : nDAS just support SECS/GEM Equipment

Moving the mouse cursor over the icon will display the current SECS/GEM status of the nDAS (as shown in Figure 4-431). The status descriptions are presented in Table 4-47.

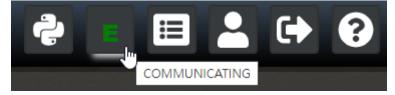
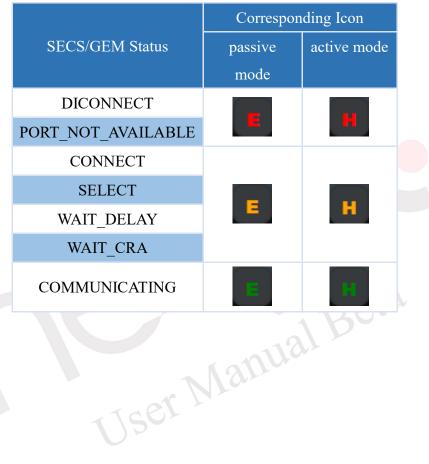


Figure 4-431 Hover over the icon

#### Table 4-47 Corresponding SECS/GEM status table for the icon



#### 4.6.5 System Log

This software includes a system log query function, which can record important software messages such as login/logout times and project loading times. Clicking on the system log icon (as shown in Figure 4-432) will display the system log dialog, as show in Figure 4-433. The system log can be exported as a txt file by clicking on the "Export" button in the dialog.

Note: The system log retains records for a maximum of 31 days, after which information beyond 31 days will be deleted.

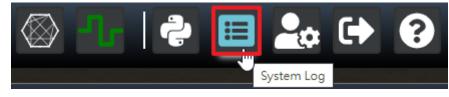


Figure 4-432 Click System Log icon

System Log	E ^a
< 1/1 > Module All   From Pick a date To Pick a date Resot	
[7/26/2022, 13:17:56] (webserver) WebServer started at port 80.	*
[7/26/2022, 13:18:04] {socket} A Client connected to server.(10.12.1.41, total connections: 1)	
[7/26/2022, 13:18:08] {ajax} Admin signed in.(10.12.1.41)	
[7/26/2022, 13:18:17] {project} Load project.(TEST_GOOGLE_UPLOAD.ndas)	
[7/26/2022, 13:18:19] {project} Load project successfully. (TEST_GOOGLE_UPLOAD.ndas)	
[7/26/2022, 13:18:20] {socket} A Client disconnected.(10.12.1.41, total connections: 0)	
[7/26/2022, 13:18:20] {socket} A Client connected to server.(10.12.1.41, total connections: 1)	
[7/26/2022, 15:17:05] {socket} A Client disconnected.(10.12.1.41, total connections: 0)	
[7/26/2022, 15:17:06] {socket} A Client connected to server.(10.12.1.41, total connections: 1)	
[7/26/2022, 16:51:12] {ajax} Admin signed out.(10.12.1.41)	
[7/26/2022, 16:51:18] {ajax} Admin signed in.(10.12.1.41)	-
Export Clear Cancel	

Figure 4-433 System Log dialog

#### 4.6.6 Mode Switch

By clicking on the mode switch icon, it is possible to switch between user and administrator mode. In user mode (with administrative privileges), clicking on the mode switch (as shown in Figure 4-434) will switch to the administrator mode of the software, as shown in Figure 4-435. If you click on the mode switch in administrator mode (as shown in Figure 4-436), it will switch to the user mode (with administrative privileges) of the software, as shown in Figure 4-437.



Figure 4-434 Clicking the mode switch in user mode (with administrative privileges)

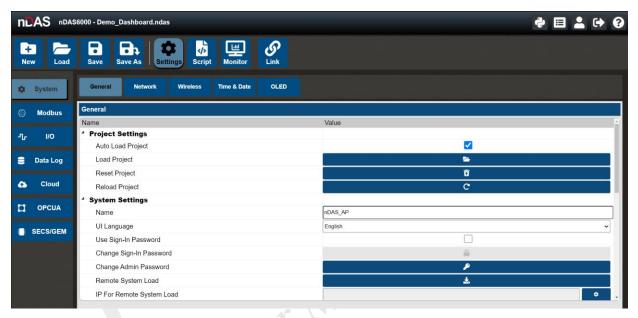


Figure 4-435 Administrator mode





Figure 4-436 Clicking the mode switch in administrator mode



Figure 4-437 User mode (with administrative privileges)



#### 4.6.7 Login/Logout

Clicking on the login icon, as shown in Figure 4-438, will display the login dialog, as shown in Figure 4-439.



Figure 4-438 Click the login icon

N Login	
Name:	
Password:	
·	
OK Cancel	
Figure 4-439 Login dialog	
Manual	
TISEL	

If the logout icon is clicked (as shown in Figure 4-440), a warning dialog (as shown in Figure 4-441) will first appear to confirm whether the user really wants to log out. After clicking "OK", the user will be logged out.



#### 4.6.8 About

Clicking on the About icon (as shown in Figure 4-442) will display the About dialog, which contains information such as the software version, user manual, software license, and nDAS storage information (as shown in Figure 4-443). The user manual will be displayed in the corresponding language based on the interface language, for example, the manual language corresponding to Japanese and English is English.





	Host URL
ost IP: 10.12.1.53 🗸	
ser Manual	
<u>C Flow User Manual</u>	
ree Disk Space: 11,471 MB	
	ок

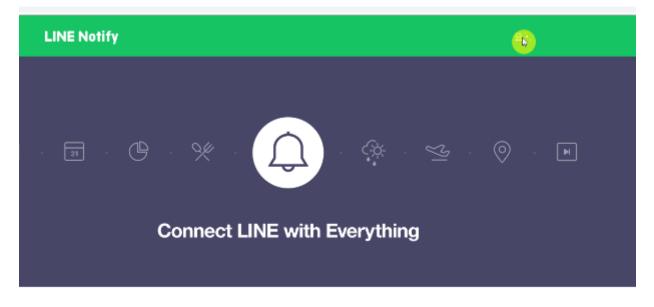
# Chapter 5. Appendix

#### 5.1 Software Icon Table

Icon	Introduction	Icon	Introduction
<b>-&gt;</b> ]	Login	€ <b>&gt;</b>	Logout
20	Switch to Administrator Mode	2	Switch to User Mode
	System Log	Ş	Python Output
ጌ	I/O Chart	$\bigotimes$	Modbus Chart
0	About		
New	New Project	Load	Load Project
Save	Save Project	Save As	Save As Project
Settings	Settings	Script	Script
Lul Monitor	Monitor	Link	Link
🗢 System	System Settings	Modbus	Modbus
പ്പം വം	I/O Settings	😑 🛛 Data Log	Database
Cloud	Cloud Upload	C OPCUA	OPCUA Server
E SEC S/GEM	SECS/GEM		

### **5.2 Application process for LINE Notify**

1. Go to the Line Notify website (<u>https://notify-bot.line.me/zh_TW/</u>) and click on "Log in".



#### 添温INE培修甘油细盐服数通知

2. Please input your username and password to process with the login.

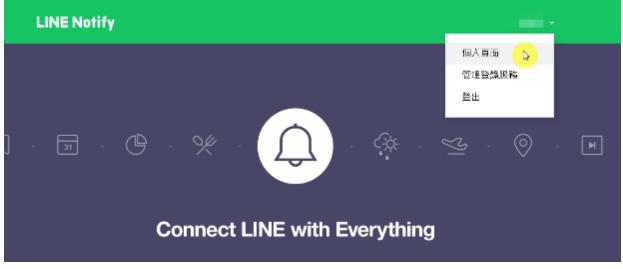
LINE	
電子都作物號 密碼	
<del>意</del> 入	
FilstLHC   © L'HC Coponition	

3. Once logged in, please click on the account name located on the upper left corner.

LINE Notify	
	個人真面 管理全錄服務 登出
Connect LINE with Everything	

4. Click on "Personal Profile".

NEXXIOT



5. Click on "Issue Token".

LINE Notify	,		
已連動的	服務		
沒有已連動的服務	ζ ].		
可連動的服務			
GitHub	IFTTT	$\sim$	
GitHub >	IFTTT>	Mackerel >	

## 發行存取權杖(開發人員用)

若使用個人存取權杖, 不須登錄網站服務, 即可設定通知。



6. Enter the name of the token and the chat room or group where you wish to receive the message, then click on "Publish". In this example, the token name is "VIC7000" and it uses the method of "receiving LINE Notify notifications in 1-on-1 chats".

發行權杖	
請填寫權杖名稱(將於傳送提醒時顯示)	
VIC7000	
請選擇您要接收通知的聊天室。	
Search by group name	
查過1對1聊天接收LINE Notify的通知	
2 ****	
B	
※若公開個人存取權杖, 第三者將能取得您所連動的聊天室名稱及個人資料上的姓名。	
發行 🛛 👆	

 Please find and record the token as indicated by the yellow box in the figure. This token is required for setting the value of the "Token" field in the LINE Notify settings on the link.
 Note: This token must be recorded carefully as it will not be displayed again once you leave this page.







#### 5.3 Application Process for Wechat Test Account

 Go to the WeChat Offical Accounts Platform website and click on the login button. The website URL is <u>https://mp.weixin.qq.com/debug/cgi-bin/sandbox?t=sandbox/login</u>.

🍋 微信	公众平台 🚥			esa
Ä	微信公众平台接口测试帐号申请 元素公众账号、快速申请接口测试号 直接体验和测试公众平台所有高级接口		in the	
		做信号扫————————————————————————————————————		

2. After logging in, record the appID and appsecret (as indicated in the yellow box in the figure), and fill in the corresponding fields in the WeChatSetting.

🏫 微信   公众 🎙	
管理测试	3
测试号信息	
appID	xxxxxxxxxxxxx
appsecret	****

#### 5.4 Application process for Wechat templateID and openID

#### 5.4.1 Setting templateID

 Go to the WeChat Offical Account Platform website and click on "Login". The URL is <u>https://mp.weixin.qq.com/debug/cgi-bin/sandbox?t=sandbox/login</u>.

🎭 微信 🗆	公众平台 🕮			435648
Ä	微信公众平台接口测试帐号申请 无需公众账号、快速申请接口测试号 直接体验和测试公众平台所有高级接口		·~_(	
		敬信号扫一扫登录 绝注册,方便快速		

(2) Navigate to the "Template Message API" and click on "Add Test Template".

模板消息接口 新增测试模标 最多10个,接受模板消息需要关注测试号							
序号	模板ID(用于接口调用)	模板标题	模板内容	操作			
暂无数据							
			Iser Manual L				

(3) Set the template title and content, then click submit. The output data format for the template is fixed and shown in the following table.

Sovint Dovomotor	Template Corresponding
Script Parameter	Content
keyword1	{{keyword1.DATA}}
keyword2	{{keyword2.DATA}}
keyword3	{{keyword3.DATA}}
Non-script	Template Corresponding
Parameter	Content
<b>Current Time</b>	{{currentTime.DATA}}

新增测试模板	×	
请注意: 1、测试模板的模板D·仅用于测试,不能用来给正式账号发送模板消息 2、为方便测试,测试模板可任急热走内容,但实际上正式账号的模板消息,只能从模板库中获得 3、需为正式账号申请就增符合要求的模板,需使用正式号登录公众平台,按指引申请 4、模板内容可设置参数(模板标题不可),供给口调用时使用,参数需以{(开头,以.DATA))结果 模板标题		
模板内容		
<b>经</b> 众 取消		

(4) Copy the template ID (as highlighted in the yellow box in the figure) to the "templateID" parameter in the script SEND.WECHAT or SEND.WECHAT_P function.

模板	模板消息接口						
新增	测试模板 最多10个,排	<b>接受模板消息需要关注测</b>	试号				
序号	模板ID(用于接口调用)	模板标题	模板内容	操作			
1	xxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxx	VIC7000	當前時間 {{currentTime.DATA}}keyword1 測試值為{{keyword1.DATA}} keyword2 測試值為{{keyw ord2.DATA}} keyword3 測試值為{{keyword3.DATA}}	删除			

#### 5.4.2 Setting openID

(1) Go to the WeChat Offical Account Platform website and click on "Login". The URL is <a href="https://mp.weixin.qq.com/debug/cgi-bin/sandbox?t=sandbox/login">https://mp.weixin.qq.com/debug/cgi-bin/sandbox?t=sandbox/login</a>

🏫 微信 🗄	公众平台 🔤			4350
Ä	微信公众平台接口测试帐号申请 无需公众帐号。快速申请接口测试号 直接体验和测试公众平台所有高级接口		10-1	
		敬信号扫一扫登录 		

(2) Proceed to the QR Code for Test Account and scan the QR code using WeChat to subscribe to the test public account for evaluation purposes.

测试号二维码				
	用户列表 (最多100个)			
	序号	昵称	微信号	操作
请用微信扫描关注测试公众号			暂无数据	

(3) If a user follows the testing public account, their corresponding "WeChat ID" will be displayed (as shown in the yellow box in the figure). Copy this ID and paste it into the "openID" parameter of the SEND.WECHAT_P function in the script.

测试号二维码						
请用微信扫描关注测试公众号	用户列表 (最多100个)					
	序号	昵称	微信号	操作		
	1		*****	移除		
南州MIG171世大注测试公 <b>次</b> 亏						



### 5.5 Process for Applying Teams Webhook

1. Go to the Microsoft Teams desktop application (or web verion) and click on the team you want to use.

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2. Click on the upper right corner and select "Connector".

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#### 3. Enter "Webhook" into the search field.

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4. Click on settings in the "Incoming Webhook" section.



5. Set the name of the webhook on the configuration, as indicated in the red box in the figure below. For example, name it "Teams_Demo".

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6. After setting the name, click on "Create".

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7. Once the webhook is created, a URL will appear (as indicated in the red box in the figure below). Copy the URL.

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8. Finally, click on "Finish" and enter the URL in the Teams webhook field to complete the Teams setup.

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#### 5.6 The communication ports required for nDAS

The currently utilized communication ports by nDAS are presented in Table 5-1 as follows.

	1 V		
Port	Content		
80	Default communication port for nDAS network server.		
502	Default communiction port for Modbus TCP.		
5000	Default communiction port for nDAS SECS/GEM.		
8001	Default communiction port for nDAS UDP.		
8002	Default communiction port for nDAS UDP multicast.		
8004	Default communiction port for nDAS TCP command.		

Table 5-1 Communication	ports used by nDAS
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