



Cybersecurity Industrial
Ethernet I/O Modules

ETS-7200 Series

User Manual



Warranty

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Email: service@icpdas.com

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Chapter 1. Introduction

The ETS-7200 is an Ethernet I/O module with a built-in web server (HTTP/HTTPS), allowing users to configure the module, monitor, and control I/O directly through a standard web browser, enabling remote control systems. The operation is as simple as regular web browsing. It supports logic function rule settings with IF, THEN, ELSE for configuring logical judgments between I/O and software points. It also features a scheduling function, allowing predefined rules to be executed at specific times. Equipped with dual-port Ethernet switches, it supports the construction of a Daisy Chain network topology, simplifying wiring configuration and reducing maintenance complexity, cabling costs, and the need for additional switches while enhancing network scalability. In the event of a power failure in an individual ETS-7200 module, the automatic LAN Bypass function ensures that the Daisy Chain network continues to communicate, maintaining the stability of Ethernet communication.

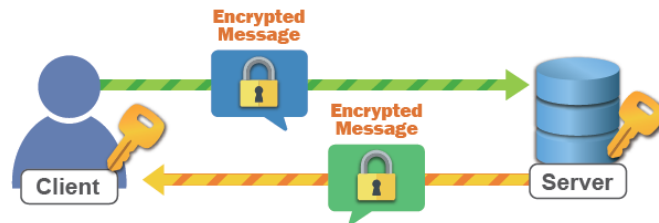


The ETS-7200 modules support RESTful API and Industrial IoT communication protocols, including Modbus TCP and MQTT client. These modules are designed with comprehensive cybersecurity mechanisms, such as support for SSL/TLS certificates for encryption, to ensure that sensor data is transmitted securely and protected from unauthorized access.

1.1. Features

SSL/TLS Encryption for Ensured Security and Data Protection

The ETS-7200 modules support SSL/TLS, offering continuous security from initial configuration to online operation. They provide comprehensive protection for communications, ensuring that data remains private, intact, and authentic, making the module ideal for building secure systems.



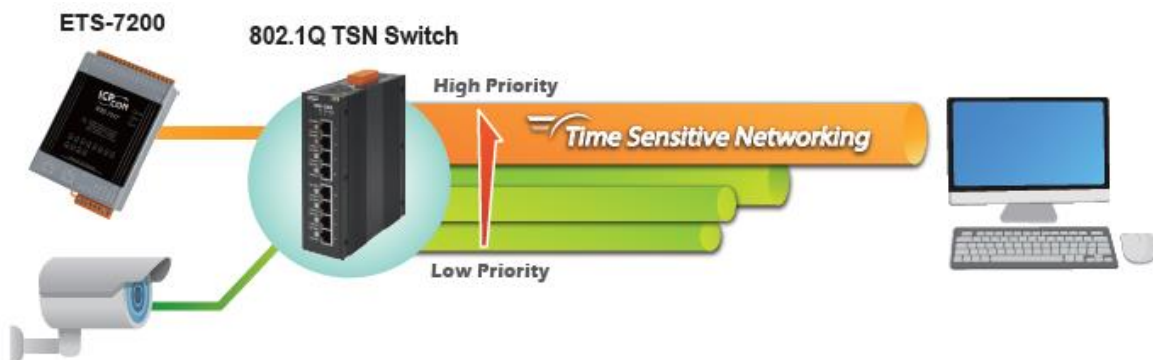
Denial-of-Service (DoS/DDoS) Attack Defense

Equipped with robust defense mechanisms, the ETS-7200 protects against DoS and DDoS attacks. It actively regulates network traffic to reduce the impact of large volumes of abnormal network packets on Ethernet operations, ensuring that the module remains functional and reliable.



802.1Q and 802.1p Tagging for Prioritized Network Transmission

The **ETS-7200** series modules provide a LAN bypass feature that guarantees the Ethernet communication. It will automatically active to continue the network traffic when the module loses its power.



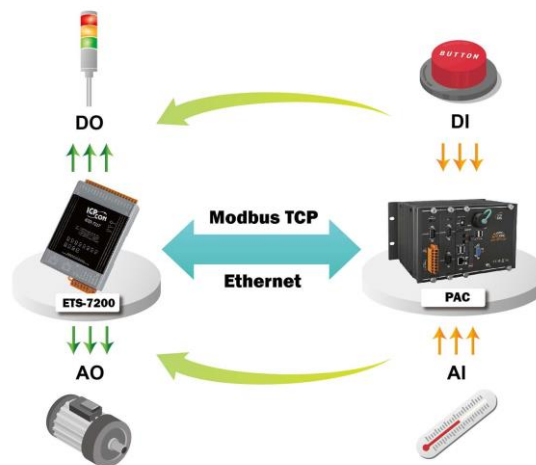
Rule Logic Engine for Streamlined Edge Control

Built-in logic engine that supports IF-THEN-ELSE rules to make decisions with physical I/O and software points. This capability enables stable and efficient execution of automated monitoring tasks.



Built-in I/O

The ETS-7200 modules support various I/O types, including optically isolated digital inputs, power relays, PhotoMOS relays, and open-collector outputs. The I/O Pair-Connection feature allows for the creation of corresponding digital input and output pairs through Ethernet, providing mirrored connections. Once configured, the ETS-7200 modules automatically read the local digital input status and write the data to remote digital output channels via the Modbus TCP communication protocol.

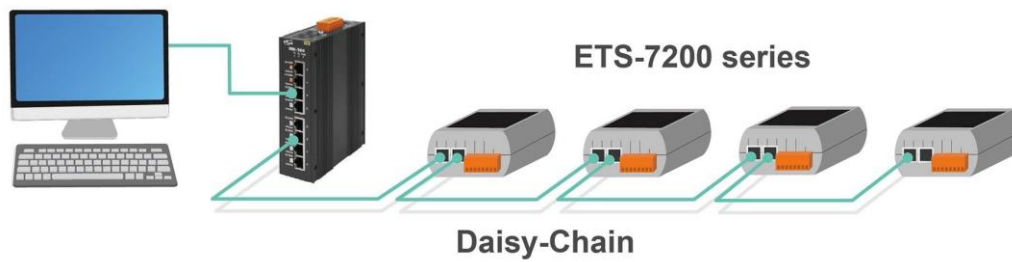


Power-on Values and Safe Values enhance system safety. The Power-on Values are applied under three conditions: during startup, after a watchdog-triggered reset, and following a reset command. When the communication watchdog is enabled and a timeout occurs, the Safe Values are loaded into AO and DO to ensure system reliability and safety.

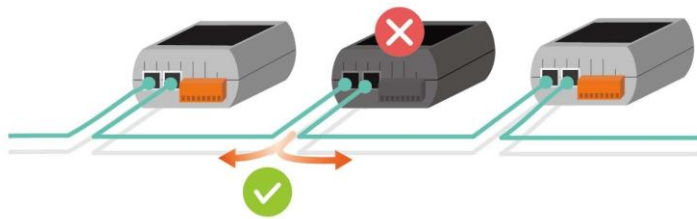
Support for both Modbus TCP and Modbus UDP Protocols

The Modbus TCP, Modbus UDP slave function on the Ethernet port can be used to provide data to remote SCADA software.

Dual Ethernet Ports, Supporting Daisy-Chain and LAN Bypass



The ETS-7200 series are equipped with a dual-port Ethernet switch, supporting the construction of a Daisy-Chain network topology. The benefits of using a Daisy-Chain topology include simplified wiring and maintenance complexity, reduced wiring and maintenance costs, and improved network scalability. Additionally, the ETS-7200 is equipped with a LAN Bypass function, which ensures Ethernet communication stability. If any ETS-7200 module loses power, this function automatically activates to maintain network connectivity.



Highly Reliable Under Harsh Environment

Wide Operating Temperature Range: -25 ~ +75°C

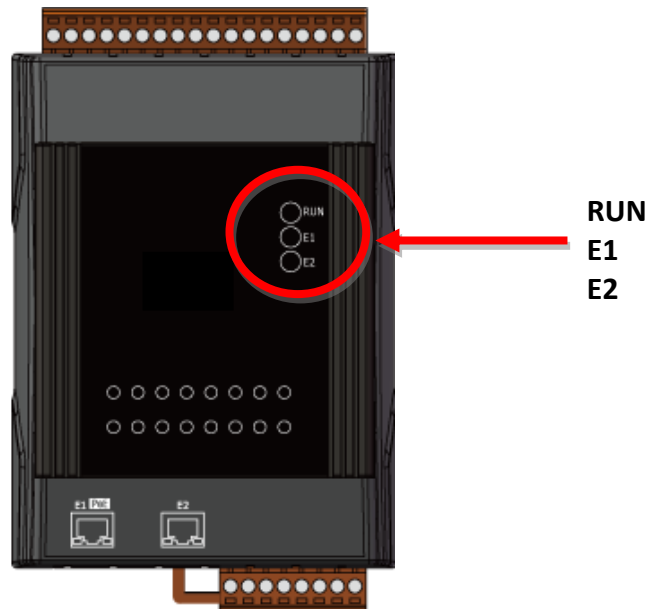
Storage Temperature: -30 ~ +80°C

Humidity 10 ~ 90% RH (Non-condensing)



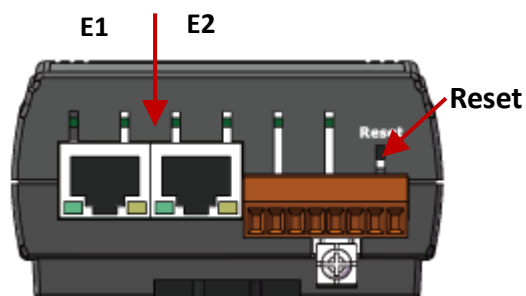
1.2. Overview

The front panel of the ETS-7200 series module contains the Ethernet Port, connectors and LEDs. Refer to below information:



Model	Label	Status	Description
ETS-7200	RUN	Flashing	The unit is turned on and is ready for use.
	E1	On	A link has been established on the E1 port.
		Off	No link is established on the E1 port.
		Flashing	Data transmission or receiving activity is occurring on the E1 port.
	E2	On	A link has been established on the E2 port.
		Off	No link is established on the E2 port.
		Flashing	Data transmission or receiving activity is occurring on the E2 port.

The bottom panel of the ETS-7200 module contains the Ethernet port and the “**Reset**”(recovery) button.



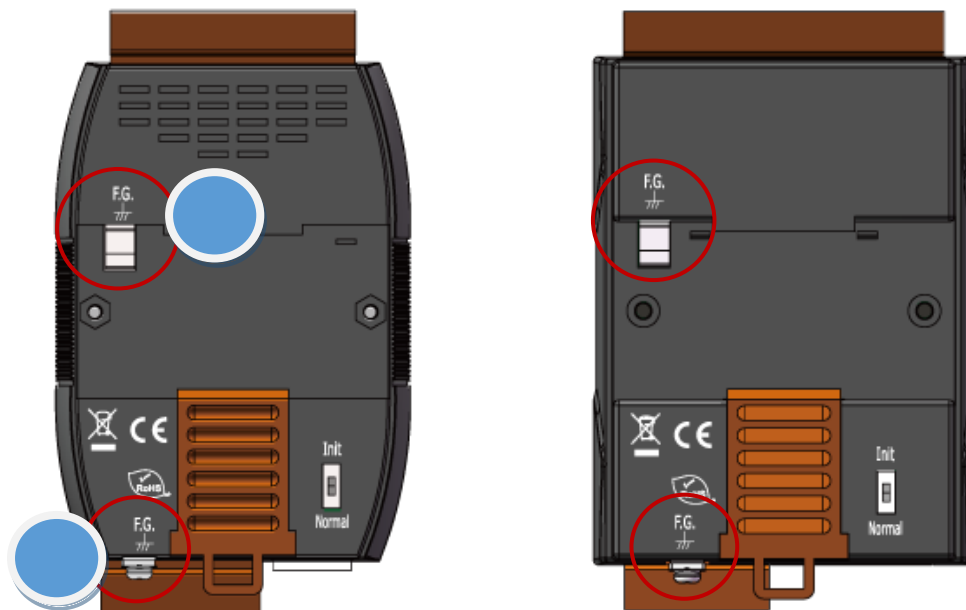
Reset button (for ETS-7200 series modules only)

The **“Reset”** button is used to go to the **“Recovery Mode”** restore by pressing and holding the **“Reset”** button for 5 seconds on boot time.

Frame Ground

Electronic circuits are constantly vulnerable to Electrostatic Discharge (ESD), which becomes worse in a continental climate area. The ETS-7200 series features a new design for the frame ground that provides a path for bypassing ESD, allowing enhanced static (ESD) protection capabilities and ensuring that the module is more reliable.

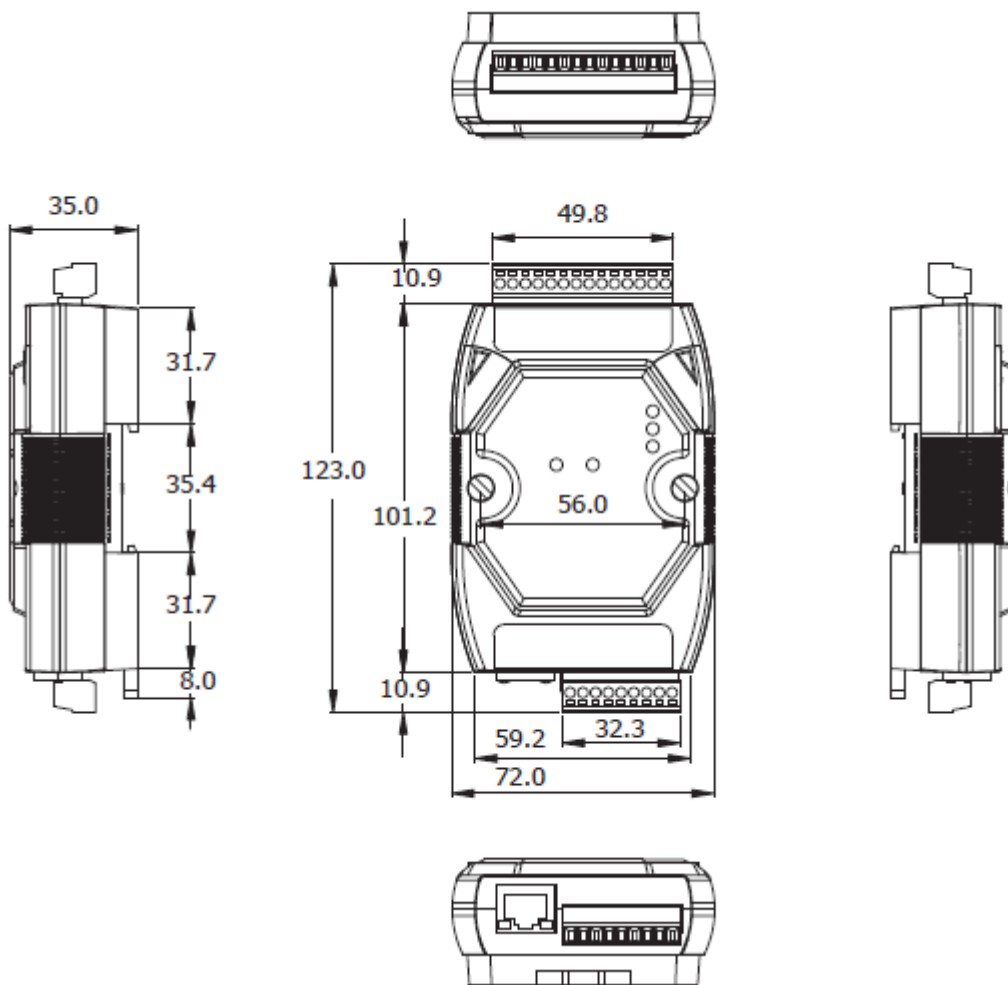
As the figure below, the user can choose one of frame grounds to provide a better level of protection for the module. These two frame grounds are conductive inside the module. When a DIN-Rail is mounted, it will in contact with the metallic board of the upper F.G., so a ground wire can be connected to either the lower F.G. or to the DIN-Rail.



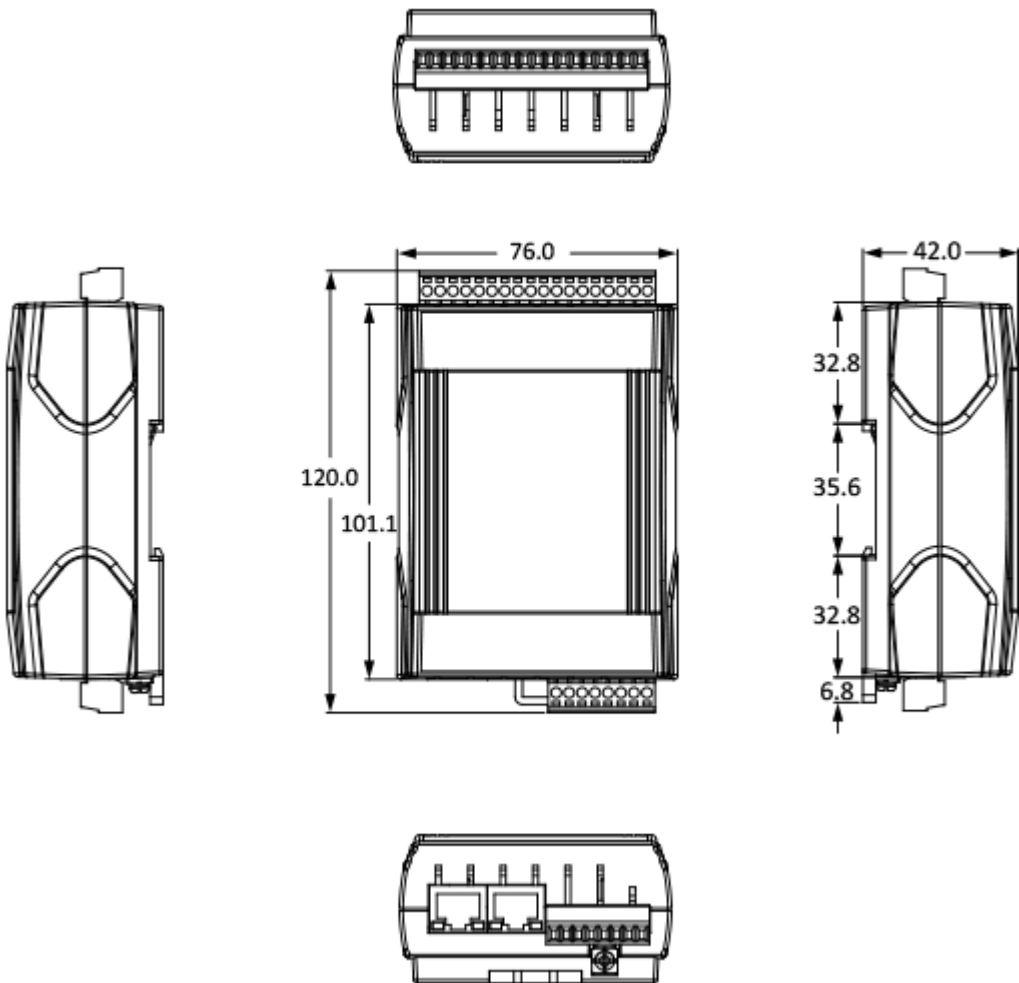
1.3. Dimensions

The following diagrams provide the dimensions of the ETS-7200 module and can be used as a reference when defining the specifications for any custom enclosures. All dimensions are in millimeters.

For the ETS-7000: 72 x 123 x 35



For the ETS-7200: 76 x 120 x 42

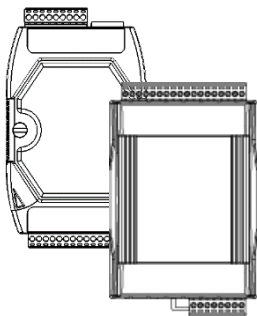


Chapter 2. Getting Started

If you are a new user, begin with this chapter as it includes a guided tour that provides a basic overview of how to install, configure and use the ETS-7200 module.

<https://www.icpdas.com/en/download/index.php?model=ETS-7255>

Before starting any task, please check the package contents. If any of the following items are either missing or damaged, contact your dealer or distributor.



ETS-7200



Quick Start Guide

Before operating the ETS-7200 module, a basic understanding of the hardware specifications is required, such as the dimensions of the module, the usable input voltage range of the power supply, and the type of communication interfaces.

2.1. Mounting the ETS-7200

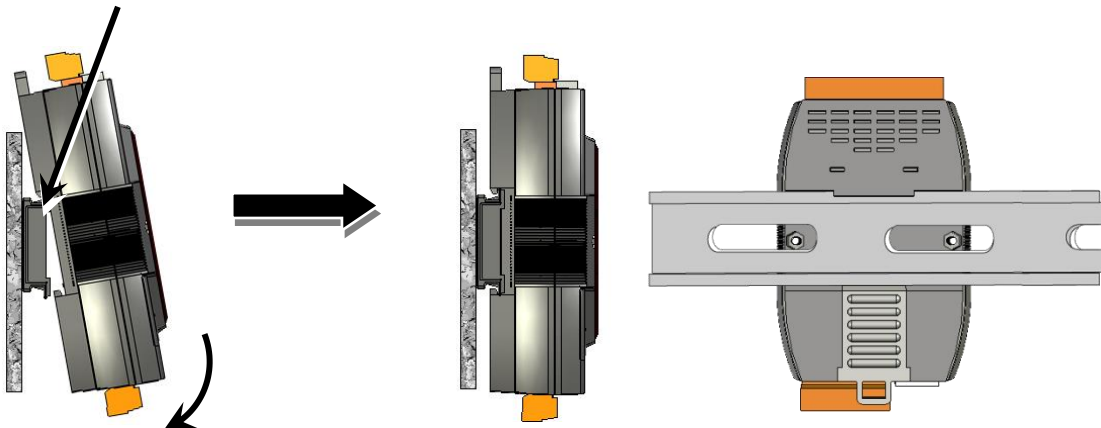
The ETS-7200 module can be mounted by attaching the bottom of the chassis to a DIN-Rail, to the wall, or by piggybacking it to another module.

DIN-Rail Mounting

The ETS-7200 module includes simple rail clips that can be used to reliably mount it on a standard 35 mm DIN-Rail.

Mounting the Chassis on a DIN-Rail

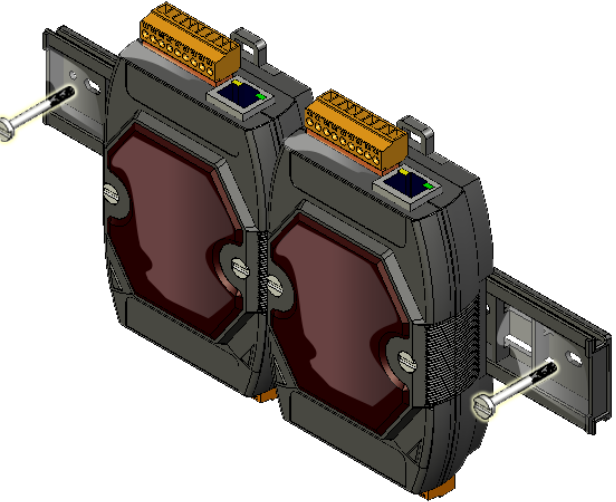
1. Hook the upper tab over the upper flange of the DIN-Rail.



2. Tilt the module toward the DIN-Rail until it snaps securely to rail.

Piggyback Mounting

The ETS-7200 module has a hole on either side of the casing that can be used for piggyback mounting.

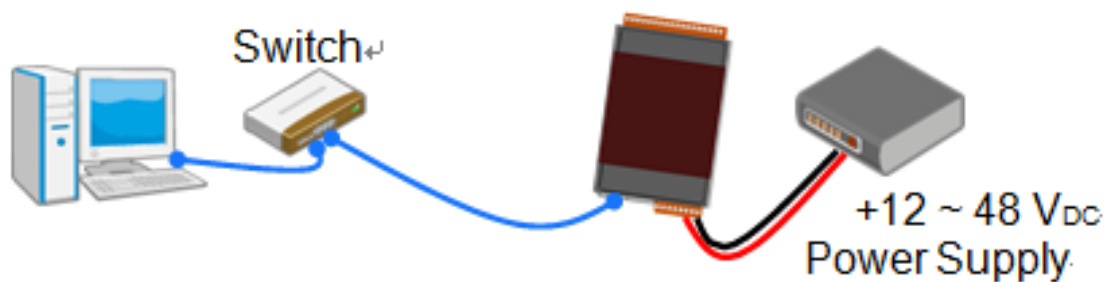


ETS-7200 Hardware Connections

ETS-7200 series modules provide a variety of communication interfaces to suit a range of applications. Below is a description of the configuration for simple applications using the ETS-7200 when implementing both Non-PoE and PoE solutions.

Non-PoE

1. Connect the PC to the Ethernet Port via the Hub or Switch.
2. Connect the positive of the power supply to the terminal marked “(R)+Vs” on the ETS-7x00.
3. Connect the negative of the power supply to the terminal marked “(B)GND” on the ETS-7x00.

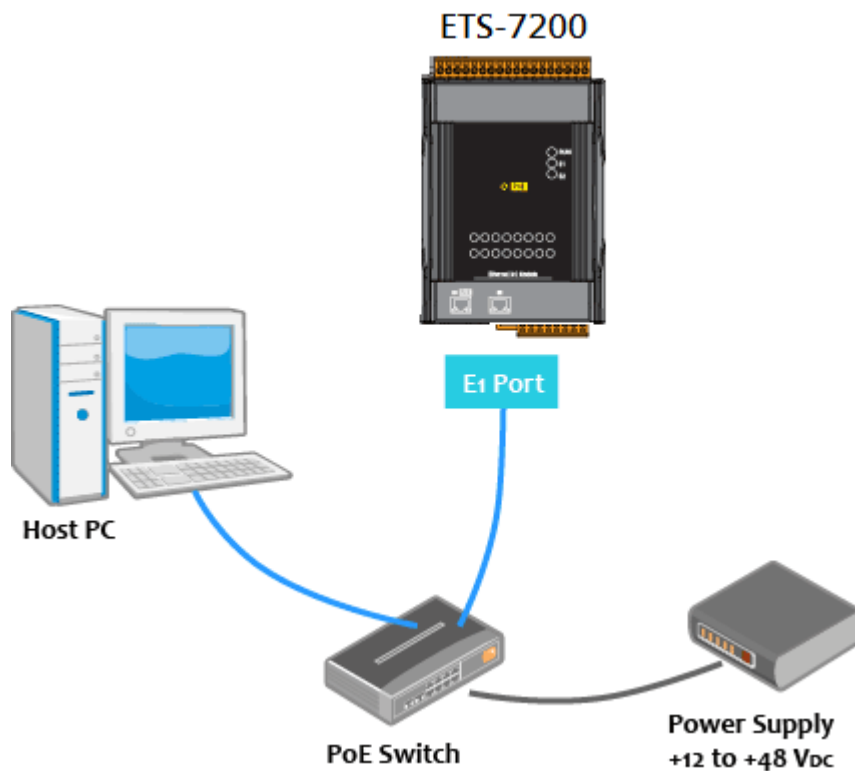


PoE

1. Connect the PC to the Ethernet Port via the PoE Switch.
2. Connect the power supply to the PoE Switch, which in turn supplies power to the ETS-7200.

Tips & Warnings

Only the E1 port of the ETS-720 supports the PoE feature.



2.2. Assigning a Valid IP Address

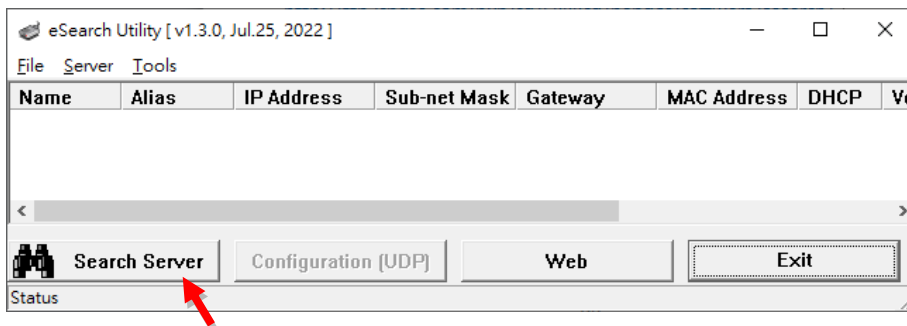
Please refer to below “Method 1” or “Method 2” to assign a valid IP address:

■ Method 1:

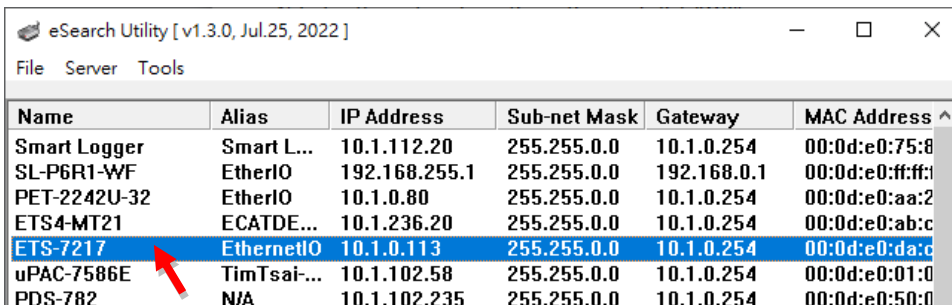
Step 1: Install “eSearch” from below web link:

<http://ftp.icpdas.com/pub/cd/6000cd/napdos/software/esearch/>

Step 2: Launch “eSearch” and click “Search Server”



Step 3: Double-click the name for your module on the list



Step 4: Enter the network configuration and click “OK”



Step 5: Repeat Step 2. to search the module again

To make sure your modifications take effect.

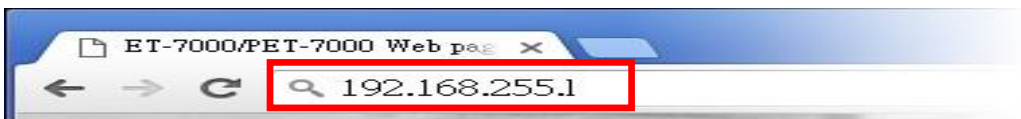
■ Method 2:

Step 1: Set the IP configuration on your computer

The ETS-7200 module comes with the default IP address of 192.168.255.1, you must chose an IP address for the computer in the range of 192.168.255.2 – 192.168.255.253 that is not in use.

Step 2: Launch your web browser to go to the ETS-7200 web interface

Enter the factory default IP address **192.168.255.1** for the ETS-7200 as the URL in browser and press **Enter**.

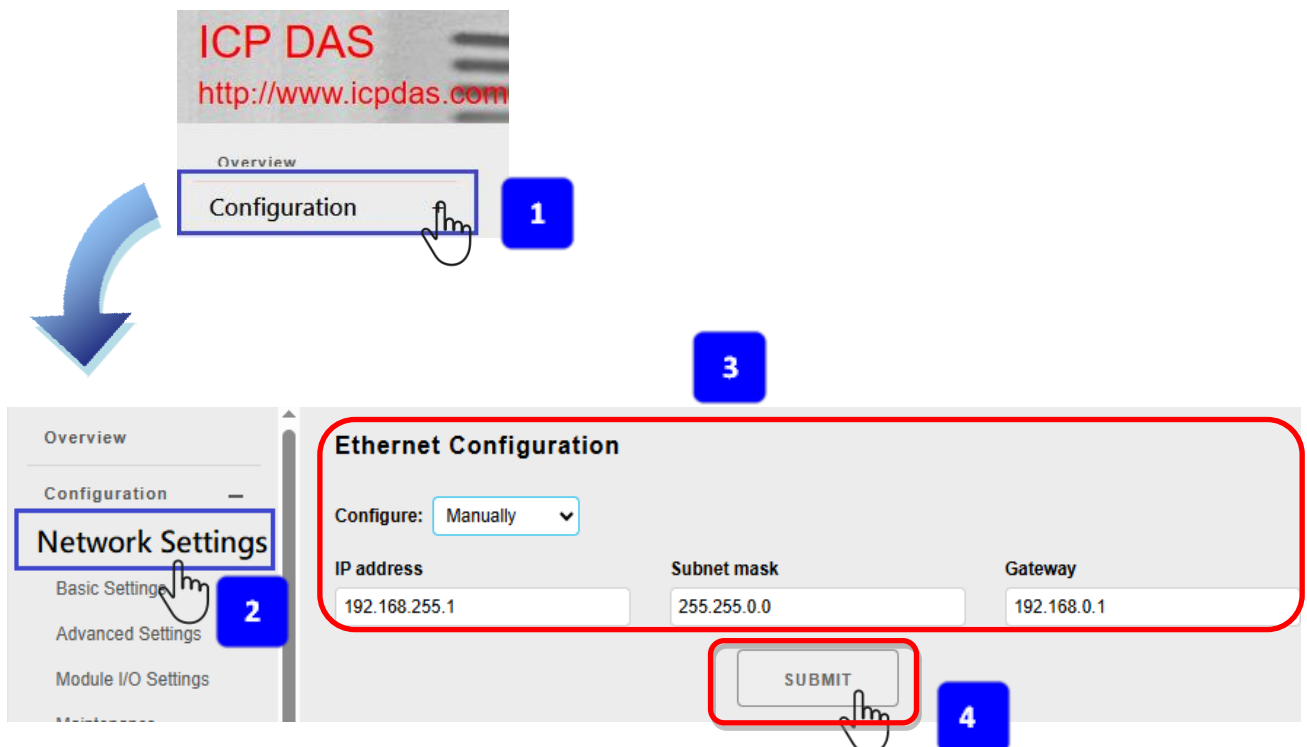


Step 3: Fill out the “User name” and “Password”

Input the factory default user name and password “Admin” and click “OK”.

Step 4: Assign a valid IP address for your ETS-7200 module

1. Click “**Configuration**”
2. Click “**Network Settings**” in the sub-menu
3. Enter a valid IP address for your ETS-7200 module.
4. Click the “**SUBMIT**” button.



Step 5: Restore the original IP address to your computer

2.3. Logging in to the ETS-7200 Module

Step 1: Enter the new IP for the ETS-7200 as the URL in browser

Step 2: Fill out the User name and Password “Admin” again

Step 3: Welcome to ETS-7200 web site

Chapter 3. Web Applications

The ETS-7200 contains an advanced web configuration system that provides users with access to ETS-7200 applications through a standard web browser.

Logging into the ETS-7200 web pages

You can log into the ETS-7200 web pages from any computer that has Internet access.

Step 1: Open a browser

Use a standard internet browser to view the ETS-7200 web pages, such as Google Chrome, Mozilla Firefox or Internet Explorer, etc.

Step 2: Enter the URL address for the ETS-7200

If you haven't changed the default IP address of the ETS-7200 module, please refer to section 2.32. "Assigning a Valid IP Address" to configure it.

Step 3: Enter your User name and Password

After entering the IP address, the login dialog box will appear, prompting you to enter your user name and password.

The factory default user name and password are as follows:

Item	Default
User name	Admin
Password	Admin

Step 4: Welcome to the ETS-7200 web interface

After logging into the ETS-7200 web interface, the “Overview” page will be displayed.

The screenshot shows the ETS-7200 web interface. The top header includes the ICP DAS logo and the URL <http://www.icpdas.com>. The main content area displays the title "ETS-7217" and a description: "An Ethernet module that is equipped with 4 digital outputs and 8 analog inputs." Below this, a table provides module information:

Module Information: EthernetIO	
Module Time:	October 28, 2025 at 17:48:49
MAC Address:	00:0D:E0:DA:CB:A1
Firmware Version:	1.0.2 (Jun. 16, 2025)
I/O Version:	D.0.3
Ethernet Version:	2.1.2
Web Server Version:	1.0.0
OS Version:	1.0.2

On the left side, there is a sidebar menu. A blue arrow points from the "More Information" link in the top sidebar to a detailed view of the menu below. The detailed menu shows two main sections: "Configuration" and "Authentication", both with minus signs indicating they are collapsed. The "Configuration" section includes: Network Settings, Basic Settings, Advanced Settings, Module I/O Settings, Maintenance, Netstat, and Logout. The "Authentication" section includes: Account Management and Accessible IP Settings. A red line and arrows explain the menu structure: a red arrow points to the "Configuration" and "Authentication" headers, labeled "Menu"; a blue arrow points to the sub-items like "Advanced Settings" and "Logout", labeled "Item".

3.1. Overview

The “**Overview**” page provides a brief introduction and explanation about the module.

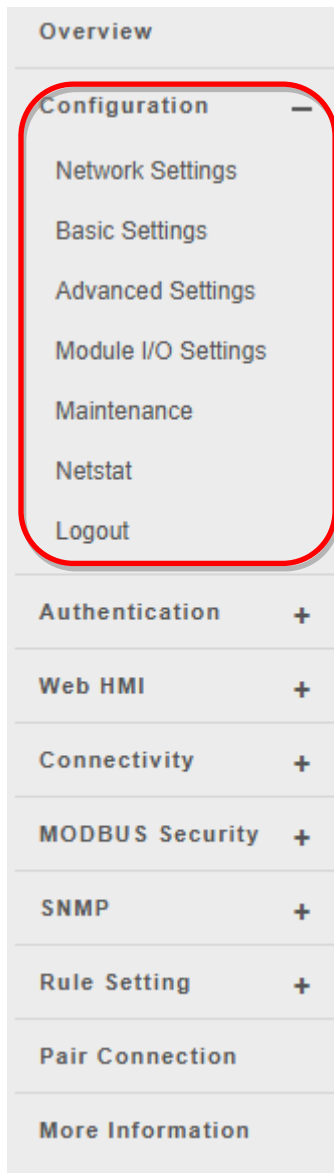
Overview	
Configuration	+
Authentication	+
Web HMI	+
Connectivity	+
MODBUS Security	+
SNMP	+
Rule Setting	+
Pair Connection	
More Information	

The page provides some basic information about both the ETS-7200 hardware and software.

ETS-7260	
An Ethernet module that is equipped with 6 digital outputs and 6 digital inputs.	
Module Information:	EthernetIO
Module Time:	February 25, 2026 at 01:33:23
MAC Address:	00:0D:E0:DA:CB:A1
Firmware Version:	1.0.2 (Jun. 16, 2025)
I/O Version:	A.0.1
Ethernet Version:	2.1.2
Web Server Version:	1.0.0
OS Version:	1.0.2

3.2. Configuration

The “Configuration” menu contains the following items:



Network Settings:

Provides access to the **Ethernet Configuration** section which allows you to access the IP settings and check the software version.

Basic Settings:

Provides access to the **Basic Settings** section which allows you to configure the basic information for the web interface. Also, the **Restore All Default Settings** section allows you to reset the module to factory settings.

Advanced Settings:

Provides access to the **Advanced Settings** section which allows you to configure the DNS, RTC, network protocol, Time-Sensitive, networking and IEEE 802.1X Authentication for the ETS-7200.

Module I/O Settings:

Provides access to **Common Functions**, **Modbus Definition**, and I/O related sections, which allows you to configure the I/O settings of the module.

Module I/O Settings:

Allows you to save/restore the ETS-7200 setting, Firmware update and reboot.

Netstat:

Shows the information of network security event, TCP connection and system logger.

Logout:

Allows you to logout the ETS-7200.

3.2.1. Network Settings

The “**Network Settings**” page provides the “**Ethernet Configuration**” section that allows you to perform the following functions.

(A) IPv4/IPv6 Settings

This section allows users to configure IPv4/IPv6 settings.

The screenshot displays the 'Ethernet Configuration' page. On the left is a sidebar menu with options: Overview, Configuration (selected), Network Settings, Basic Settings, Advanced Settings, Module I/O Settings, Maintenance, Netstat, Logout, Authentication, Web HMI, Connectivity, MODBUS Security, SNMP, Rule Setting, Pair Connection, and More Information. The main content area is titled 'Ethernet Configuration'. It features a 'Configure:' dropdown menu set to 'Using DHCP'. Below this are three input fields: 'IP address' (10.1.0.126), 'Subnet mask' (255.255.0.0), and 'Gateway' (10.1.0.254). A red box highlights the 'SUBMIT' button, with a red arrow pointing to it. Below the IPv4 section is the 'IPv6 Configuration' section. It includes a 'Stateless DHCPv6 (SLACC)' checkbox which is checked and labeled 'Enable'. There are three input fields for IPv6: 'IPv6 Link Local Address' (FE80::20D:E0FF:FEDA:CBA1), 'IPv6 SLAAC Address' (empty), and 'IPv6 User-defined Address' (fc00::1). A second red box highlights the 'SUBMIT' button at the bottom of the IPv6 section, with a red arrow pointing to it.

✧ Ethernet Configuration:

The user can enter the IPv4 assignment method, Mask, and Gateway addresses for the module and then click the “**SUBMIT**” button to finish the setting.

Configure:

Selects the IP address assignment method (**Using DHCP** or **Manually**).

IP address:

Specifies the device’s IPv4 address when **Manually(Static IP)** mode is selected.

Subnet mask:

Defines the subnet mask used to determine the network segment when **Manually(Static IP)**

mode is selected.

Gateway:

Specifies the default gateway IP address for external network communication when **Manually(Static IP)** mode is selected.

✧ **IPv6 Configuration:**

This section configures IPv6 network settings. The user click the “**SUBMIT**” button to finish the IPv6 setting. If your environment doesn’t support the IPv6, please ignore the “IPv6 User-defined Address” fields.

Stateless DHCPv6 (SLAAC):

Enables or disables Stateless Address Autoconfiguration (SLAAC).

IPv6 Link Local Address:

Displays the automatically generated link-local IPv6 address.

IPv6 SLAAC Address:

Displays the globally routable IPv6 address assigned through SLAAC.

IPv6 User-defined Address:

Allows manual configuration of a static IPv6 address.

(B) WireGuard VPN Configuration

This section allows users to configure a secure VPN tunnel.

WireGuard VPN Configuration

WireGuard VPN

☐ Enable

Interface

Private Key

aGkYKTK0BzSjvk77vUkCmxwOxuXMaQzp

REGENERATE

Public Key

Bb0nhk+ZM3PhbTfkzGofhSWrylzWIWTxL7

IP address

192.168.100.64

Subnet mask

255.255.0.0

Gateway

192.168.100.1

Listen Port

51820

DNS Server (option)

0.0.0.0

MTU (option)

1420

Peer

Public Key

Preshared Key (option)

Keep Alive (option)

25

Endpoint IP

Endpoint Port

60865

Allow IP

0.0.0.0

Allow Subnet Mask

0.0.0.0

Connection State _-

Disable

SUBMIT

✧ WireGuard VPN Configuration:

Allows users to enable or disable WireGuard VPN. After entering the parameters, click “**SUBMIT**” button to apply the settings and initiate a connection to the VPN.

WireGuard VPN:

Enables or disables the WireGuard VPN service.

✧ **Interface:**

The Interface section defines the local VPN tunnel parameters.

Private Key:

Specifies the private key of the local device.

Public Key:

Displays the corresponding public key derived from the private key.

IP address:

Defines the local VPN tunnel IP address..

Subnet mask:

Specifies the subnet mask for the VPN tunnel network.

Gateway:

Defines the VPN tunnel gateway, if required.

Listen Port:

Specifies the UDP port on which the device listens for incoming WireGuard connections.

DNS Server(Optional):

Specifies the DNS server used when the VPN tunnel is active.

MTU(Optional):

Defines the Maximum Transmission Unit size for the VPN interface.

✧ **Peer:**

The Peer section defines the remote VPN endpoint configuration.

Public Key:

Specifies the public key of the remote peer.

Preshared Key (Optional):

Adds an additional symmetric key for enhanced security.

Keep Alive (Optional):

Specifies the keep-alive interval (in seconds).

Endpoint IP:

Specifies the public IP address of the remote peer.

Endpoint Port:

Specifies the UDP port of the remote peer.

Allow IP:

Defines the IP address range that is allowed to pass through the VPN tunnel.

Allow Subnet Mask:

Specifies the subnet mask corresponding to the allowed IP range.

Connection State:

Displays the current VPN tunnel status.

3.2.2. Basic Settings

The “Basic Settings” page provides “Basic Settings” and “Restore All Default Setting” sections that allow you to perform the following functions.

(A) Basic Settings

Basic Settings

Module Name: ETS-7260

Module Information: EthernetIO Maximum of 16 characters (The content cannot include ' or " characters)

Page Header Information (First line): ICP DAS Maximum of 20 characters
Color: Red Font size: 1

Page Header Information (Second line): http://www.icpdas.com Maximum of 50 characters
Color: Red Font size: 1

More Information URL: http://www.icpdas.com Maximum of 100 characters

Web Server Port: 80

Modbus TCP Port: 502

Modbus TCP Port (WAN): 502 This setting can be ignored if ET-7000/PET-7000 is not behind a router

SUBMIT

✧ Basic Settings

Allows users to enter the desired ETS-7200 settings and then click “**SUBMIT**” button to finish configuring the module information.

Module Name:

The initial value for this field will depend on the model of the module and cannot be modified.

Module Information:

The module information field indicates the name of the alias that is used to identify the module.

✧ Configure the web interface information

Page Header Information (First line) and Page Header Information (Second line):

The title of the website that is displayed the top left-hand corner of the interface, for example the company name and web address as per the example below.

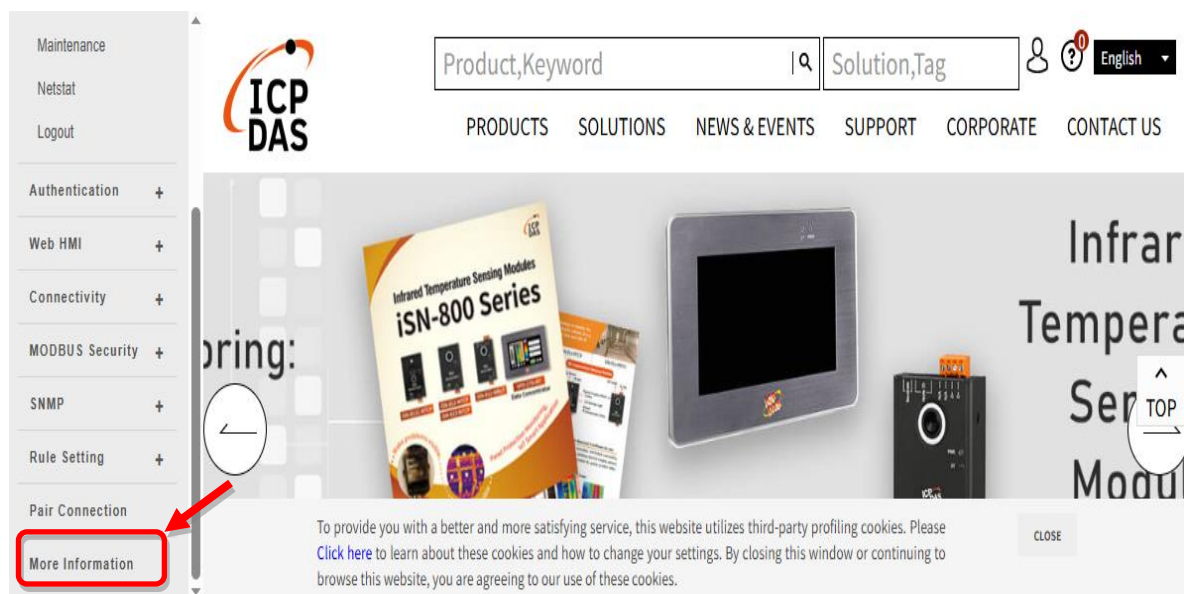
The screenshot shows the 'Basic Settings' page for the ETS-7260 module. The left sidebar contains a menu with 'Basic Settings' highlighted. The main content area has several fields:

- Page Header Information (First line):** A text box containing 'ICP DAS' with a 'Color' dropdown set to 'Red' and a 'Font size' dropdown set to '1'. A note indicates a maximum of 20 characters.
- Page Header Information (Second line):** A text box containing 'http://www.icpdas.com' with a 'Color' dropdown set to 'Red' and a 'Font size' dropdown set to '1'. A note indicates a maximum of 50 characters.
- More Information URL:** A text box containing 'http://www.icpdas.com' with a note indicating a maximum of 100 characters.

Red boxes and arrows highlight these three fields and the 'More Information' link in the sidebar menu.

More Information URL:

This item allows you to specify the URL that will be displayed when the “**More Information**” option is clicked in order to provide additional support for the ETS-7200.



Web Server Port:

This option specifies which port is to be used for the web server. By default, the HTTP port is 80.

Modbus TCP Port:

This option specifies which port is to be used for communication on the Modbus TCP. By default, the Modbus protocol uses port 502.

Modbus TCP Port (WAN):

This option specifies which port is to be used for Modbus communication between the remote host and local ETS-7200. This setting can be ignored if ETS-7200 is not located behind a router.

(B) Resetting All Settings to Default

The reset function is divided into categories based on the menu options for the web interface, and can be used to restore the individual settings to their factory default state.

Checks the relevant check boxes for the items you wish to reset and then click **“SUBMIT”** button to restore the default settings.

The screenshot displays a web interface for restoring default settings. On the left, a vertical sidebar contains a menu with the following items: Overview, Configuration (with a minus sign), Network Settings, Basic Settings (highlighted with a blue box), Advanced Settings, Module I/O Settings, Maintenance, Netstat, Logout, Authentication (+), Web HMI (+), and Connectivity (+). The main content area is titled 'Restore All Default Settings' and contains five rows, each with a checkbox and a label: Configuration, Authentication, Web HMI, Pair Connection, and All. At the bottom right of the main area, a 'SUBMIT' button is highlighted with a red rectangular box, and a red arrow points to it from the right.

3.2.3. Module I/O Settings

After completing the general configuration of the ETS-7200 module described in the previous section, the settings for the input and output channels need to be configured, such as the channel range and the alarm, etc.

Overview

Configuration

Network Settings

Basic Settings

Advanced Settings

Module I/O Settings

Maintenance

Netstat

Logout

Authentication

Web HMI

Connectivity

MODBUS Security

SNMP

Rule Setting

Pair Connection

More Information

Common Functions

Modbus Address	Function		
00226	Reset to Factory Default Settings	☐	
00233	Reboot ETS-7000	☐	
40555	Reset Status	1	1:Power-on, 2:Module Watchdog, 3:Reset command
40556	Reset Event Counter	33	
40557	Host Watchdog Timeout	0	0:Disabled, 1~65535:Enabled (units:0.1 seconds)
40558	WDT Event Counter	0	

SUBMIT

Modbus Definition

Modbus Address	Function		
40271	Modbus Unit ID	1	0~255 (default:1)

SUBMIT

Tips & Warnings



The contents displayed on this page will be depending on the Modbus functions applicable to the specific the ETS-7200 module. Please refer to the user manual for each module for details of how to configure the relevant I/O settings.

In this example, the ETS-7226 will be used in order to explain the I/O settings. (The ETS-7226 is a multi-function module that has 6 AI channels, 2 AO channels, 2 DI channels and 2 DO channels.)

(A) Common Functions

The **Common Functions** area provides options that allow the settings for the Modbus functions to be configured.

Common Functions			
Modbus Address	Function		
00226	Reset to Factory Default Settings	☐	
00233	Reboot ET-7000/PET-7000	☐	
40555	Reset Status	1	1:Power-on, 2:Module Watchdog, 3:Reset command
40556	Reset Event Counter	21	
40557	Host Watchdog Timeout	0	0:Disabled, 1~65535:Enabled (units:0.1 seconds)
40558	WDT Event Counter	0	
SUBMIT			

Modbus Definition			
Modbus Address	Function		
40271	Modbus Unit ID	1	0~255 (default:1)
SUBMIT			

(B) Digital Output Settings

The **Digital Output settings** area provides details of the configuration settings for all digital output channels.

Channel	Power-on Value	Safe Value
Ch0	☐ On ☒ Off	☐ On ☒ Off
Ch1	☐ On ☒ Off	☐ On ☒ Off

Power-on value:

Used to preset the power-on value of the DO.

Safe Value

When choosing the “Disabled – Maintain the current status” option

Whether the Host Watchdog or Pair-Connection feature is enabled, the Safe Value will not take effect (the DO remains in its original state).

When choosing the “Enabled – Host Watchdog” option

Remember to set a Host Watchdog timeout in the “Common Functions” section. Notice that the Host Watchdog will be enabled by entering a non-zero value.

40557	Host Watchdog Timeout	100	0:Disabled, 1~65535:Enabled (units:0.1 seconds)
-------	-----------------------	-----	---

If the Host Watchdog is enabled, the digital outputs will be set to the safe value when the communication between a Host PC and the ETS-72xx module is interrupted. In this case, the timeout is set to 10 seconds.

When choosing the “Enabled – Pair-Connection” option

Make sure that the Pair Connection function has been configured, refer to Section 3.5. If the communication between the module and the remote module is failed, the digital outputs will be set to the safe value.

Refer to “Appendix A. Description of I/O Functions” for more information.

(C) Digital Input Settings

All digital input channels in ETS-7200 modules can be used as 32-bit counters and each counter consists of two address values, the Low word and the High word. Specific individual DI channels can be counters via the Digital Input settings web page.

Digital Input Settings

Modbus Address	Function	
00350	Enable DI Latched Status	☐ Enable ☒ Disable

SUBMIT

Channel	Digital Input Counter	Preset Value for Digital Input Counter
Ch0	☐ Enable ☒ Disable	0 0~4294967294
Ch1	☐ Enable ☒ Disable	0 0~4294967294

SUBMIT

- **Enable DI Latched Status:**

When DI Latch function is enabled, once the digital input channel detects any change in input status, the input status will be latched until it is cleared by using the clear command manually.

- **Digital Input Counter:**

When Counter mode is selected, one counter will record the number of pulses from the digital signal for the selected channel, and will then record the count value in the register.

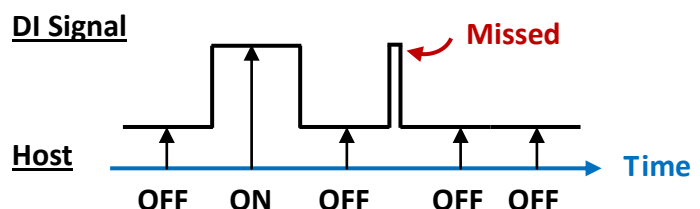
- **Preset Value for Digital Input Counter:**

This option allows the default values for the counters to be set.

Tips

When the signal occurs for a short time, the Host (Modbus TCP master) may not be in a hurry to read the changed state of DI, and will mistakenly think that DI has not changed all the time.

In this case, you can read the state of DI Latch or DI Input Counter to determine whether DI has ever changed.



(D) Analog Output Settings

The **Analog Output settings** section contains the Range, Slew Rate, Power-on Value, and Safe Values Settings that will be described in detail below.

Analog Output Settings

Channel **Range** **Slew Rate**

Ch0 32, 0 ~ 10 V 00, Immediate ☐ Apply the current settings to all channels

Ch1 32, 0 ~ 10 V 00, Immediate

SUBMIT

Channel **Power-on Value** **Safe Value**

Ch0 0.0 0 ~ 10 V 0.0 0 ~ 10 V Disabled - Maintain the current status

Ch1 0.0 0 ~ 10 V 0.0 0 ~ 10 V Disabled - Maintain the current status
Enabled - Host Watchdog
Enabled - Pair-Connection

SUBMIT

- **Range:**

In a manner, a different range can be set for each individual analog output channel. Select the required voltage/current range from the respective drop-down menus. For more detailed technical specifications related to the output range for each analog output channel, please refer to: "**Appendix C. Analog Output Type and Data Format Table**".

Tips & Warnings



For modules that support the Voltage/Current type (e.g., [ETS-7017](#)), the jumper is at the [Voltage/Thermocouple] position by defaults. To use the Current signal, you need to adjust the jumper(s).

Before selecting the range for each AIO channel, make sure that jumpers are set properly. For more detailed related to the jumper settings for each ETS-7200 module, please refer to "[ET7000 ET7200 Register Table](#)", which can be obtained from:

- **Slew Rate:**

This is the programmable output slew rate for the analog output channels, i.e., the rate of change in the analog output voltage/current as it changes from one output voltage/current to another. Select the most appropriate value from the respective drop-down menus.

- **Power-on Value:**

A power-on value can be set for a specific analog output channel. After rebooting the module, the analog output value will be set to the power-on value.

- **Safe Value:**

The Host Watchdog can be enabled or disabled by configuring the Host Watchdog Timeout setting in the (A) “Common Functions” section. When communication between the Host PC and the ETS-7200 module is interrupted, the analog output value will be set to a predefined safe value.

For a more detailed description of these Modbus functions, please refer to: “Appendix C. Modbus Application Notes”.

(E) Analog Input Settings

Analog Input Settings area contains two parts, the Range settings and Modbus function Settings, which will be described in detail below.

Analog Input Settings

Channel		Range	
Ch0	☒ Enable ☐ Disable	08, -10 ~ 10 V	☐ Apply the current settings to all channels
Ch1	☒ Enable ☐ Disable	08, -10 ~ 10 V	
Ch2	☒ Enable ☐ Disable	08, -10 ~ 10 V	
Ch3	☒ Enable ☐ Disable	08, -10 ~ 10 V	
Ch4	☒ Enable ☐ Disable	08, -10 ~ 10 V	
Ch5	☒ Enable ☐ Disable	08, -10 ~ 10 V	

SUBMIT

Modbus Address	Function	
00628	Normal Mode (10 Hz)/Fast Mode (50 Hz)	☒ Normal mode ☐ Fast mode
00629	60/50 Hz Rejection	☒ 60 Hz ☐ 50 Hz
00631	Data Format	☒ HEX 2's complement ☐ Engineering
00632	Restore Analog Calibration to Factory Settings	☐

SUBMIT

Modbus Address	Function	
40654	Open Wire Detection	If the measured value is below 4 mA, it defaults to a value of -32768 This feature is available only when the module is operating in the 4~20 mA current input mode and the data format is in engineering units.

SUBMIT

- **Enable/Disable:**

This section allows the user to enable or disable each analog input channel. For the ETS-7200 series module, all analog input channels share a single A/D Chip so the user can disable

unused channels to improve the sampling rate for each channel. For example, the sampling rate for a total of eight AI channels of an ETS-7017 is 10 Hz. If all channels are enabled, the sampling rate for each channel is 1.25 Hz. If three channels are disabled, the sampling rate for the enabled five channels is 2 Hz.

- **Range:**

ETS-7200 modules provide a programmable input voltage/current range on all analog inputs channels, where a different range can be set for each individual analog input channel. Select the required voltage/current range from the respective drop-down menus. For more detailed technical specifications related to the input range for each analog input channel, please refer to: “Appendix B. Analog Input Type and Data Format Table”.

Tips & Warnings



For modules that support the Voltage/Current type (e.g., [ETS-7017](#)), the jumper is at the [Voltage/Thermocouple] position by defaults. To use the Current signal, you need to adjust the jumper(s).

Before selecting the range for each AIO channel, make sure that jumpers are set properly. For more detailed related to the jumper settings for each ETS-7200 module, please refer to “[ET7000 ET7200 Register Table](#)” , which can be obtained from: <https://www.icpdas.com/en/download/show.php?num=2217>

- **Normal Mode/Fast Mode:**

ETS-7200 modules support sample rates in either “Normal” or “Fast” mode. Fast mode uses 60 Hz with a 12-bit resolution, while Normal mode uses 10 Hz with a 16-bit resolution.

- **60/50 Hz Rejection:**

In order to remove the noise from the power supply, ETS-7200 analog input modules feature two built-in rejection filters, that operate at different frequencies, 50 or 60 Hz, that are designed to remove noise generated by different power supplies.

- **Data Format:**

The analog value can be displayed in either hexadecimal or engineering.

Hexadecimal format:

All ranges of the Modbus 16-bit Register can be applied, where no resolution loss for the A/D or D/A value.

Engineering format:

Converting values is simple in this way, but there is some resolution loss when using the entire range of the Modbus 16-bit Register to express the value.

For example,

The input range of the ETS-7017 is set to +/-10V,

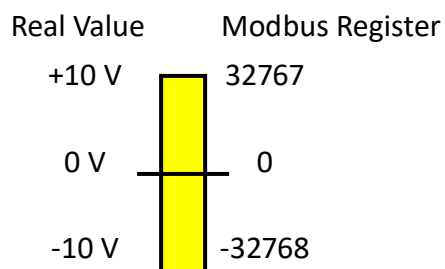
08	-10 ~ +10 V	Engineering Unit	+10000	-10000
		2's comp HEX	7FFF	8000

If the real value is +6 V, the Modbus data will be:

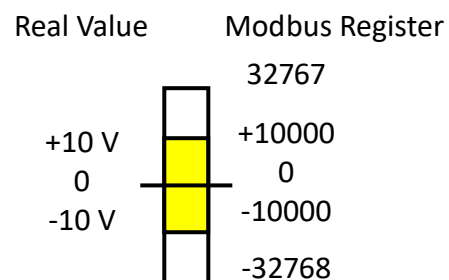
Value in Hexadecimal: $6/10 * 0x7FFF = 0.6 * 32767 = 19660$ (or 0x4CCC)
Each scale is $10 \text{ V} / 32767 = 0.305 \text{ mV}$

Value in Engineering: $6/10 * 10000 = 6000$ (or 0x1770)
Each scale is $10 \text{ V} / 32767 = 1 \text{ mV}$

2's comp HEX



Engineering Unit



(F) Alarm Settings

The ETS-7200 modules feature a built-in alarm function. The alarm setting includes two parts, the high limit value and the low limit value and each need to be configured for a specific channel.

Alarm Settings

Channel		High Limit Value		Mode	
Ch0	☐ Enable ☒ Disable	10.0	-10 ~ 10 V	Monetary ▼	☐ Apply the current settings to all channels
Ch1	☐ Enable ☒ Disable	10.0	-10 ~ 10 V	Monetary ▼	
Ch2	☐ Enable ☒ Disable	10.0	-10 ~ 10 V	Monetary ▼	
Ch3	☐ Enable ☒ Disable	10.0	-10 ~ 10 V	Monetary ▼	
Ch4	☐ Enable ☒ Disable	10.0	-10 ~ 10 V	Monetary ▼	
Ch5	☐ Enable ☒ Disable	10.0	-10 ~ 10 V	Monetary ▼	

SUBMIT

- **Enable/Disable:**

This section allows each analog input alarm to be set to enabled or disabled.

- **High/Low Limit Value:**

You can define both the high alarm value and the low alarm value using the High/Low Limit Value text box. When the analog input value is higher than the high alarm value, or lower than the low alarm value, an alarm occurs. The alarm status will then be activated and switched to on.

Channel		Low Limit Value		Mode	
Ch0	☐ Enable ☒ Disable	-10.0	-10 ~ 10 V	Monetary ▼	☐ Apply the current settings to all channels
Ch1	☐ Enable ☒ Disable	-10.0	-10 ~ 10 V	Monetary ▼	
Ch2	☐ Enable ☒ Disable	-10.0	-10 ~ 10 V	Monetary ▼	
Ch3	☐ Enable ☒ Disable	-10.0	-10 ~ 10 V	Monetary ▼	
Ch4	☐ Enable ☒ Disable	-10.0	-10 ~ 10 V	Monetary ▼	
Ch5	☐ Enable ☒ Disable	-10.0	-10 ~ 10 V	Monetary ▼	

SUBMIT

- **Mode:**

The ETS-7200 allows the alarm to be selected as either Momentary or Latch mode, which can be set using the Mode combo box for both the low alarm and the high alarm.

- **Latch Mode:**

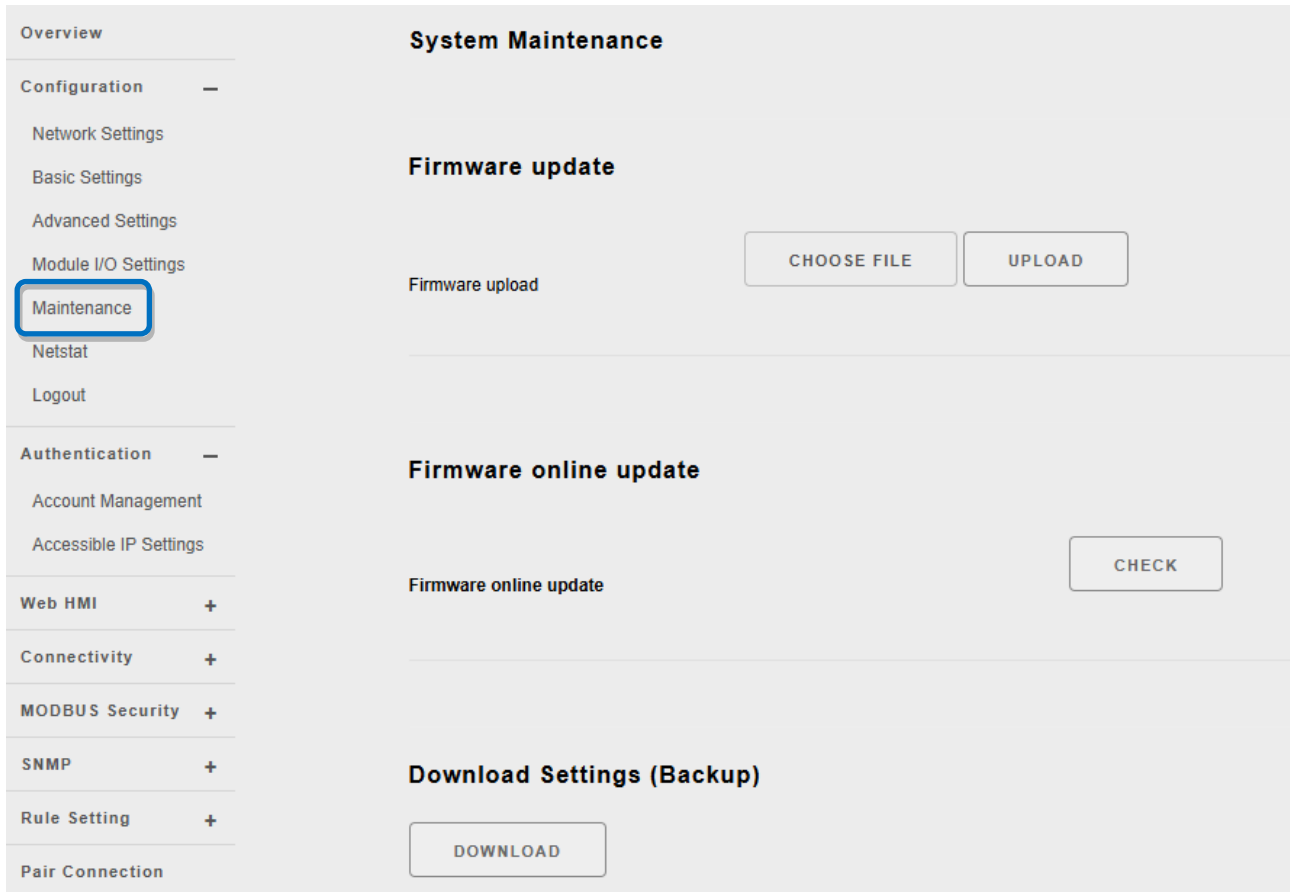
An alarm will be triggered when the analog input value exceeds alarm limits. When the AI value is back to normal, the alarm status will keep until the clear command is sent to the specific address.

- **Momentary Mode:**

An alarm will be triggered when the analog input value exceeds alarm limits. When the AI value is back to normal, the alarm status will automatically be cleared.

3.2.4. Maintenance

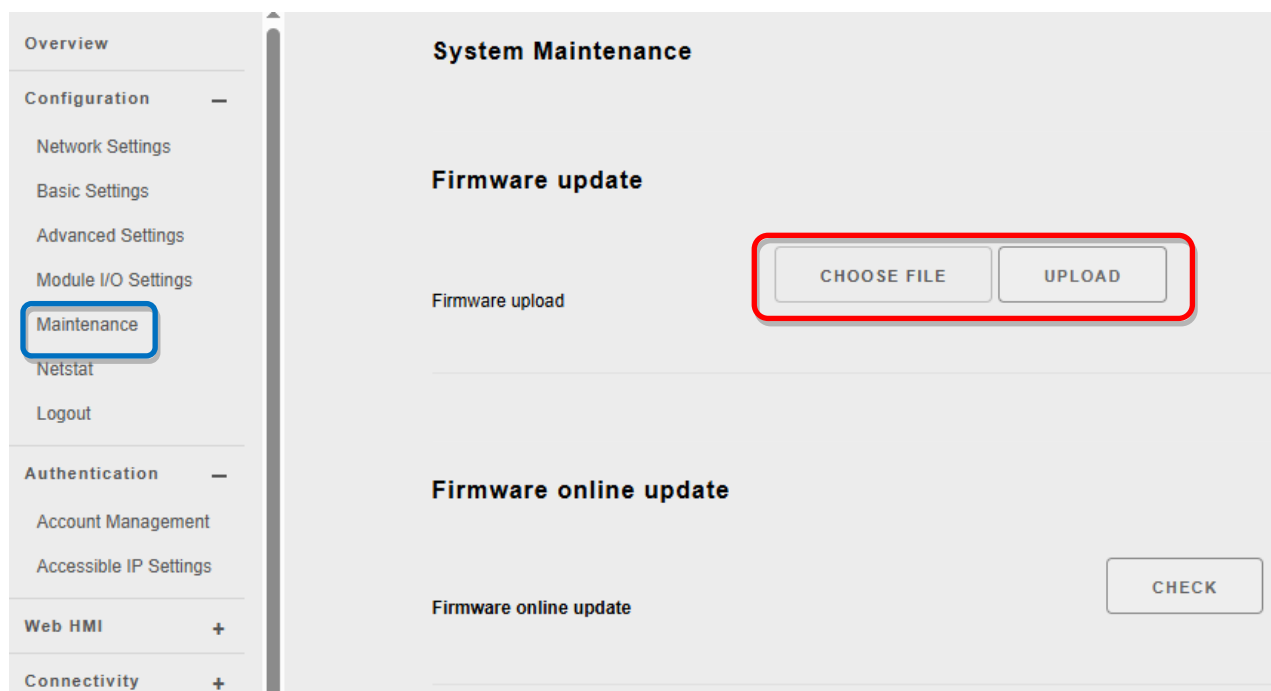
The “**Maintenance**” page allows you to quickly update the firmware, backup/restore the settings of the ETS-7200 device. .



(A) Firmware update/Firmware online update

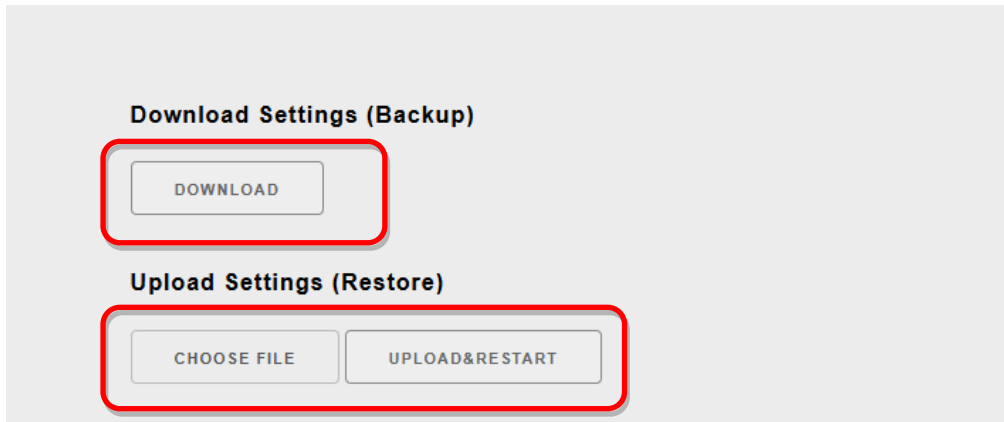
Firmware update requires initialization and local network operations. Firmware update allows user to initialize the module via web interface without adjusting the hardware switch. Initialization via web is useful when module is installed in remote site and can be accessed by a remote PC.

The user can click the **“CHOOSE FILE”** button to choose the ETS-7200 firmware file(e.g., ets72xxfw-vX.XX.hex) first and the click **“UPLOAD”** button to install ETS-7200 firmware.



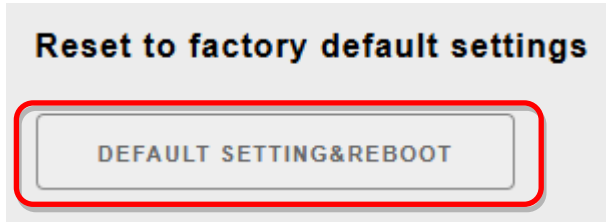
(B) Download/Upload Settings

The user can click the **“DOWNLOAD”** button to backup the settings of the ETS-7200 device or clicke **“CHOOSE FILE”**, **“UPLOAD&RESTART”** button to restore the settings.



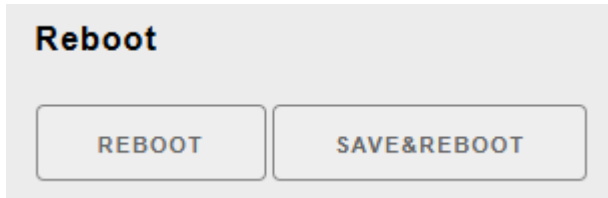
(C) Reset to factory default settings

The user can click the “**DEFAULT SETTING&REBOOT**” button to restore the factory settings of the ETS-7200 device.



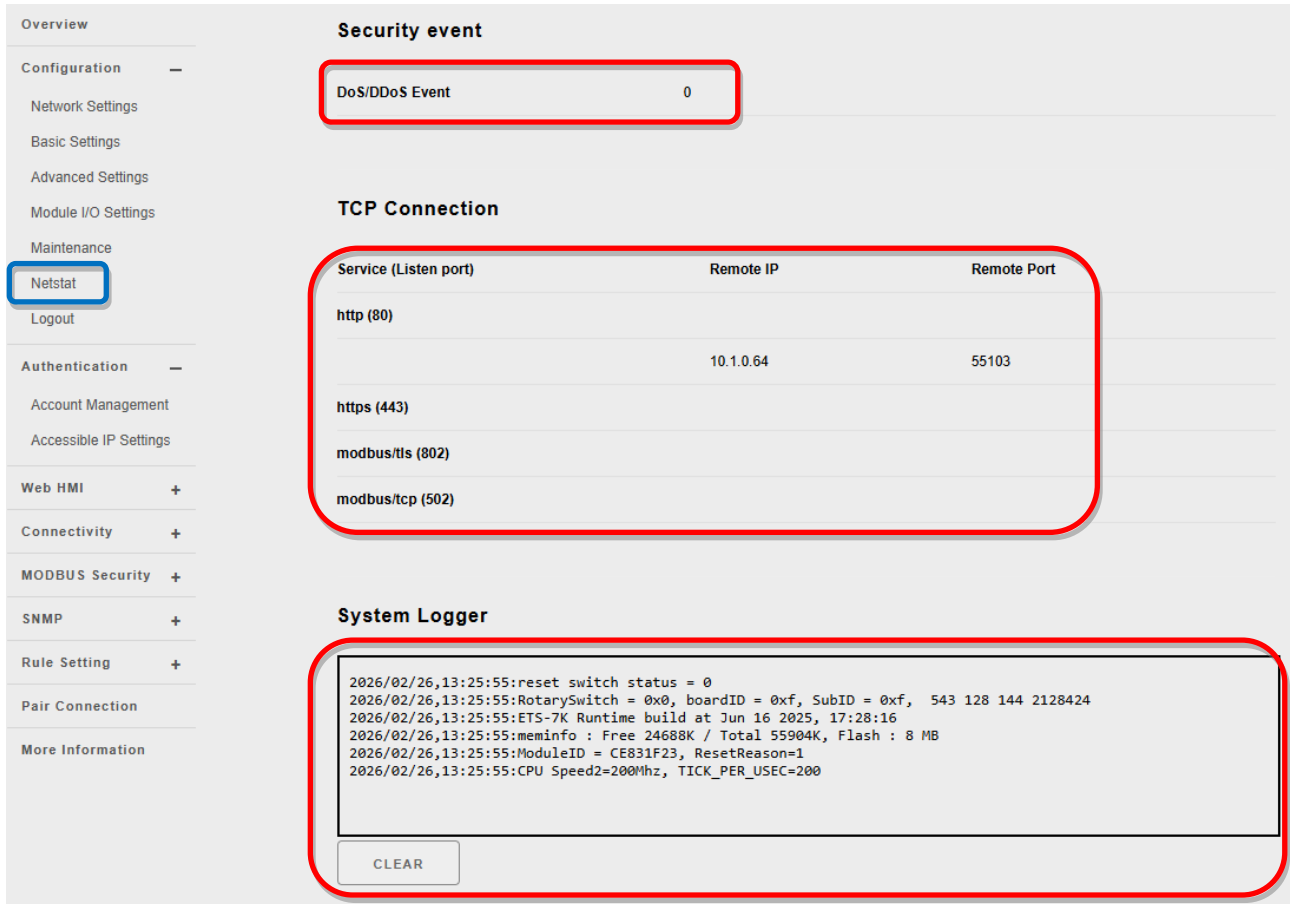
(D) Reboot

If the user modify the settings of the ETS-7200 device, the user can click the **“REBOOT”** button to reboot without saving the new settings or click the **“SAVE&REBOOT”** button to save the new settings and reboot the ETS-7200 device.



3.2.5. Netstat

The “**Netstat**” page shows the current network connection status, including Security event, TCP Connection and System Logger:



The screenshot displays the Netstat page with a sidebar on the left containing various navigation options. The main content area is divided into three sections, each highlighted with a red border:

- Security event**: A box containing the text "DoS/DDoS Event" and the value "0".
- TCP Connection**: A table showing active connections. The table has three columns: "Service (Listen port)", "Remote IP", and "Remote Port". The data rows are: "http (80)" with Remote IP "10.1.0.64" and Remote Port "55103"; "https (443)"; "modbus/tls (802)"; and "modbus/tcp (502)".
- System Logger**: A box containing a log of system events. The log text is: "2026/02/26,13:25:55:reset switch status = 0", "2026/02/26,13:25:55:RotarySwitch = 0x0, boardID = 0xf, SubID = 0xf, 543 128 144 2128424", "2026/02/26,13:25:55:ETS-7K Runtime build at Jun 16 2025, 17:28:16", "2026/02/26,13:25:55:meminfo : Free 24688K / Total 55904K, Flash : 8 MB", "2026/02/26,13:25:55:ModuleID = CE831F23, ResetReason=1", and "2026/02/26,13:25:55:CPU Speed2=200Mhz, TICK_PER_USEC=200". Below the log is a "CLEAR" button.

✧ **Security event:**

Displays the number of DoS and DDoS attacks.

✧ **TCP Connection:**

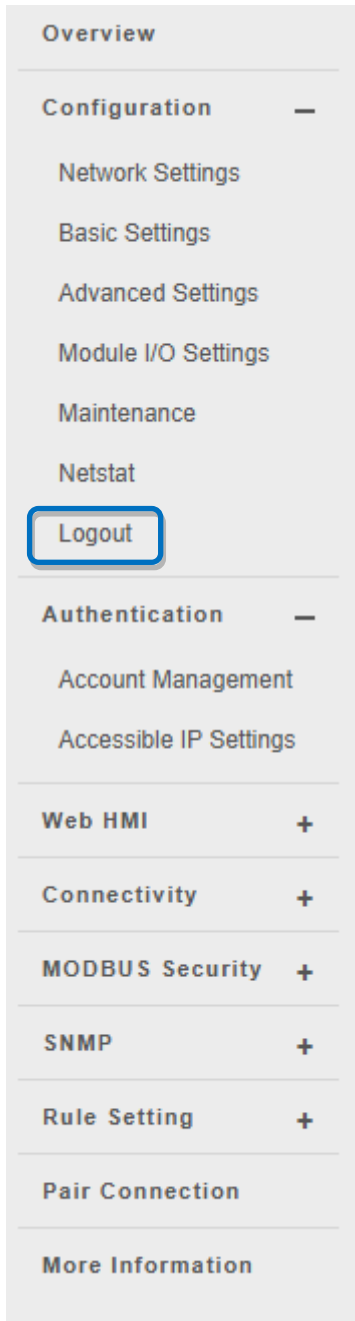
Displays the IP addresses of remote devices connected via HTTP, HTTPS, Modbus/tls or Modbus/TCP protocols.

✧ **System Logger:**

Displays real-time system information.

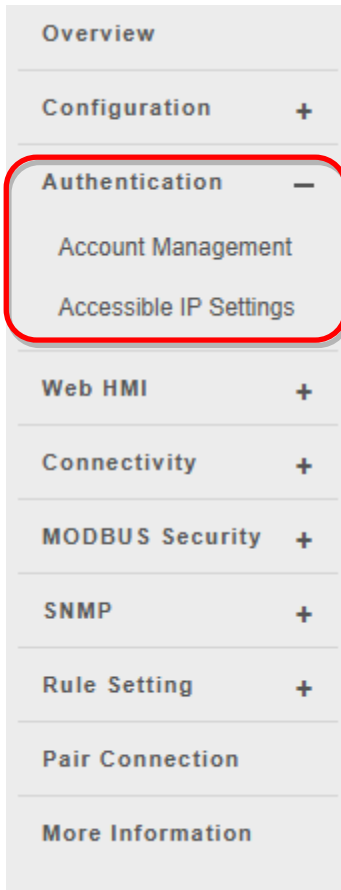
3.2.6. Logout

The user can click the **“Logout”** to log out of the management interface and returns to the **“login”** page.



3.3. Authentication

The “**Authentication**” menu contains the following options:



Account Management:

Provides access to the Privilege Management and Reset Settings sections. The user can manage user accounts and their associated privileges, also reset the settings.

Accessible IP Settings:

Provides access to the IP Filter Settings page, which allows you to control access to the web page.

3.3.1. Account Management

The “**Account Management**” page provides functions that allow the following tasks to be performed:

Privilege Management

No.	Account	Password	Confirm Password	Authority	Enabled
1	Admin			Admin ▾	☒
2				Admin ▾	☐
3				Admin ▾	☐
4				Admin ▾	☐
5				Admin ▾	☐

SUBMIT

Reset Settings

Restore settings to the defaults

RESET SETTINGS

(A) Configuring the User Accounts

The ETS-7200 interface supports a maximum of five user accounts, including:

- A Built-in Administrator Account
The built-in Administrator account is basically a setup and disaster recovery account that cannot be deleted. You can, however, change the password for the administrator account.
- Four User-defined Accounts
Each user account consists of an account name, a password and an authority level. There are two types of authority levels: Admin and User.

➤ **Admin:**

With the highest authority, the user has full access to all functions on the ETS-7200 web page, including modifying or reviewing all settings.

➤ **User:**

This level only allows the user to view some of the module settings. The user cannot modify any settings through the ETS-7200 web page.

Once a user account has been created, it can be either enabled or disabled.

No.	Account	Password	Confirm Password	Authority	Enabled
1	Admin			Admin ▾	☒
2	user			User ▾	☒
3				Admin ▾	☐
4				Admin ▾	☐
5				Admin ▾	☐

1.

2.

SUBMIT

To add a new user account, perform the followings:

Step 1: Enter the user account information into the relevant text fields, and then select the “**Enabled**” checkbox.

Step 2: Click the “**SUBMIT**” button to complete the user account configuration and save the details.

(B) Restoring the Factory Default User Accounts

The ETS-7200 has a built-in administrator account named **Admin** that is created by default. The default account cannot be deleted. To restore the factory default user accounts, click the “**RESET SETTINGS**” button.

Reset Settings

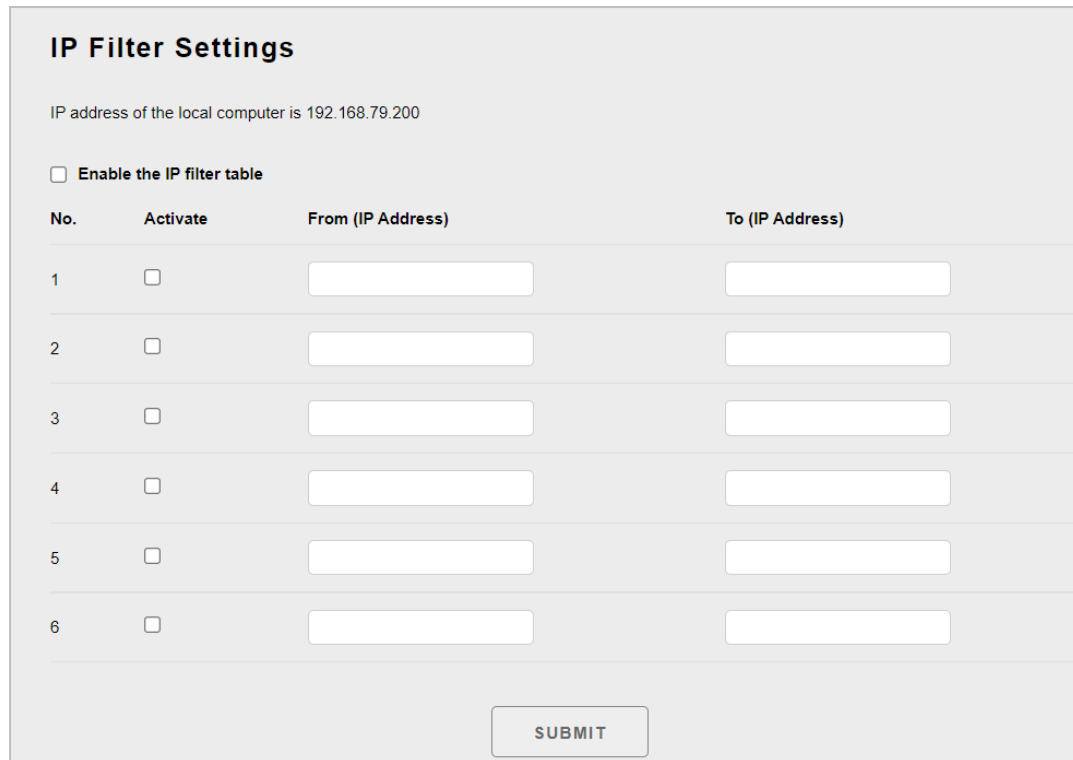
Restore settings to the defaults

RESET SETTINGS

3.3.2. Accessible IP Settings

The “**IP Filter Settings**” page provides functions that allow the following tasks to be performed:

- Configuration of the connection filtering



IP Filter Settings

IP address of the local computer is 192.168.79.200

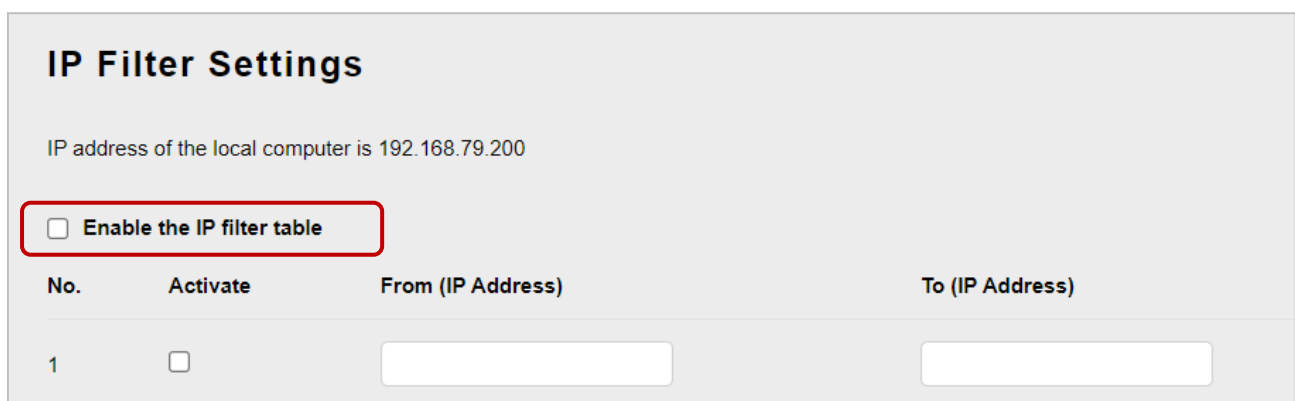
☐ Enable the IP filter table

No.	Activate	From (IP Address)	To (IP Address)
1	☐		
2	☐		
3	☐		
4	☐		
5	☐		
6	☐		

(A) Enabling the IP Filter Table

The ETS-7200 includes an IP filter that enables you to restrict or grant user access based on a custom IP filter list that you create.

The filter can be enabled by selecting the “**Enable the IP filter table**” checkbox. After this option is selected, only requests from the IP addresses included in the list will be allowed access to the module.



IP Filter Settings

IP address of the local computer is 192.168.79.200

☐ Enable the IP filter table

No.	Activate	From (IP Address)	To (IP Address)
1	☐		

Tips & Warnings



By default, there is no restriction on outgoing access.

Each filter list entry can be either activated or deactivated by ticking or unticking the “**Activate**” checkbox.

IP Filter Settings

IP address of the local computer is 192.168.79.200

☒ Enable the IP filter table

No.	Activate	From (IP Address)	To (IP Address)
1	☒	192.168.79.200	192.168.79.200

(B) Configuring the IP Filters

Two methods are provided for configuring the IP filter, allowing filtering for either individual IP addresses, or across a range (group) of IP addresses.

Method 1: Allow access from a single IP address

The screenshot shows the 'IP Filter Settings' form. At the top, it states 'IP address of the local computer is 192.168.79.200'. Below this is a checkbox labeled 'Enable the IP filter table' with a red circle and the number '1.' next to it. Below the checkbox is a table with four columns: 'No.', 'Activate', 'From (IP Address)', and 'To (IP Address)'. The first row of the table has a red circle with the number '3.' next to the 'Activate' checkbox, which is checked. The 'From (IP Address)' and 'To (IP Address)' text boxes in the first row contain '192.168.79.200' and are enclosed in a red box with a red circle and the number '2.' next to it. The remaining rows (2-6) have empty text boxes. At the bottom of the form is a 'SUBMIT' button, which is enclosed in a red box with a red circle and the number '4.' next to it.

No.	Activate	From (IP Address)	To (IP Address)
1	☒	192.168.79.200	192.168.79.200
2	☐		
3	☐		
4	☐		
5	☐		
6	☐		

SUBMIT

Step 1: Select the “Enable the IP filter table” checkbox.

Step 2: Enter the same IP address in both the “From (IP Address)” and the “To (IP Address)” text boxes. (The IP address may be the address of the PC currently being used or others)

Step 3: Select the “Activate the Rule” checkbox.

Step 4: Click the “SUBMIT” button to complete the configuration of the IP filter list and save the settings.

Method 2: Allow access from a group of IP addresses

IP Filter Settings

IP address of the local computer is 192.168.1.200

☒ **Enable the IP filter table** **1.**

No.	Activate	From (IP Address)	To (IP Address)
1	☒ 3.	192.168.1.200	192.168.1.210 2.
2	☐		
3	☐		
4	☐		
5	☐		
6	☐		

SUBMIT **4.**

Step 1: Select the “Enable the IP filter table” checkbox

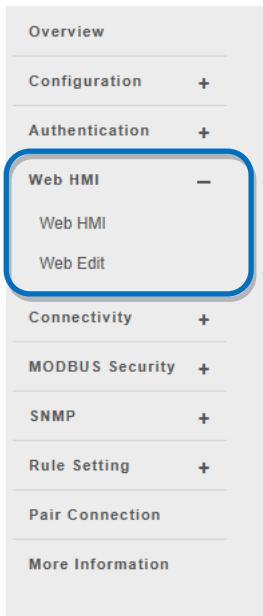
Step 2: Enter the first IP address in the range in the “From (IP Address)” and enter the final IP address in the range in the “To (IP Address)” text boxes.

Step 3: Select the “Activate the Rule” checkbox.

Step 4: Click the “SUBMIT” button to complete the configuration of the IP filter list and save the settings.

3.4. WebHMI

The “**Web HMI**” menu contains the following options:



Web HMI:

Provides access to the I/O monitor page, which allows you to remotely monitor and control the I/O status of the ETS-7200 module.

Web Edit:

Provides access to the “**Web Page Configuration**” page, which allows you to create up to dynamic web HMI pages and set one of them as the start page so that it will be displayed when logging in to an ETS-7200.

3.4.1. Web HMI

The ETS-7200 module features a Web HMI web interface that can be used to display real-time I/O data values and alarms via the LAN or the Internet. Real-time I/O data values and alarms can be monitored at either the local or remote site using any web browser. Also, the Web HMI is completed immediately without requiring any programming skills (HTML or Java).

First, you can see the default I/O monitoring page (Main Page), which displays the supported I/O tabs for the module.

THIS COMPUTER -  - ETS-7000

AI AO DI DO

Analog Inputs

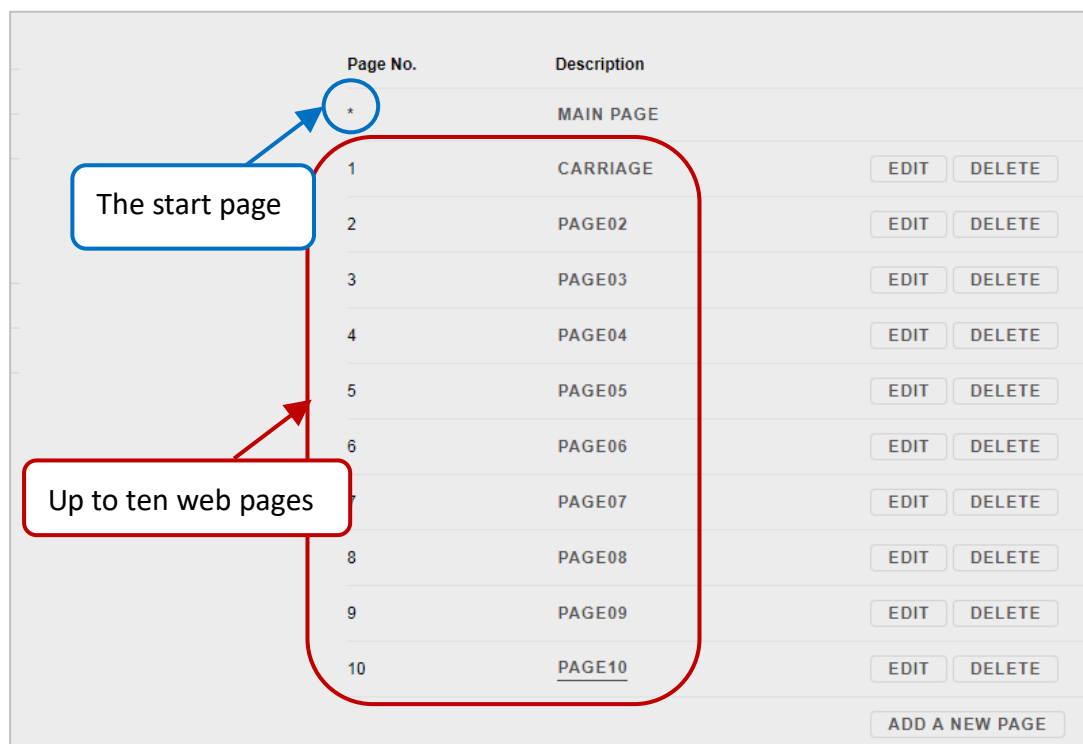
Channel No.	Actual Value	Historical Max/Min Value		High/Low Alarm	
AI0	-0.0 V Modbus 30000: FFFF	Max: 0.0 V Modbus 30236: 0000	Min: -0.0 V Modbus 30268: FFFE	High Alarm: OFF Modbus 10224: 0	Low Alarm: OFF Modbus 10256: 0
AI1	-0.0 V Modbus 30001: FFFF	Max: 0.0 V Modbus 30237: 0000	Min: -0.0 V Modbus 30269: FFFE	High Alarm: OFF Modbus 10225: 0	Low Alarm: OFF Modbus 10257: 0
AI2	-0.0 V Modbus 30002: FFFF	Max: 0.0 V Modbus 30238: 0000	Min: -0.0 V Modbus 30270: FFFE	High Alarm: OFF Modbus 10226: 0	Low Alarm: OFF Modbus 10258: 0
AI3	-0.0 V Modbus 30003: FFFF	Max: 0.0 V Modbus 30239: 0000	Min: -0.0 V Modbus 30271: FFFE	High Alarm: OFF Modbus 10227: 0	Low Alarm: OFF Modbus 10259: 0
AI4	-0.0 V Modbus 30004: FFFF	Max: 0.0 V Modbus 30240: 0000	Min: -0.0 V Modbus 30272: FFFE	High Alarm: OFF Modbus 10228: 0	Low Alarm: OFF Modbus 10260: 0
AI5	-0.0 V Modbus 30005: FFFF	Max: 0.0 V Modbus 30241: 0000	Min: -0.0 V Modbus 30273: FFFE	High Alarm: OFF Modbus 10229: 0	Low Alarm: OFF Modbus 10261: 0
		RESET ALL MAX. VALUES		RESET ALL MIN. VALUES	

3.4.2. Web Edit

The ETS-7200 module provides functions that enable users to create customized web pages. Users can upload specific I/O layout diagrams in either **bmp, jpg, or gif** format and can define a description for each page.

By default, there is only a Main page, you can click the **“Add a new page”** button to add a page. Up to 10 user-defined web pages can be created.

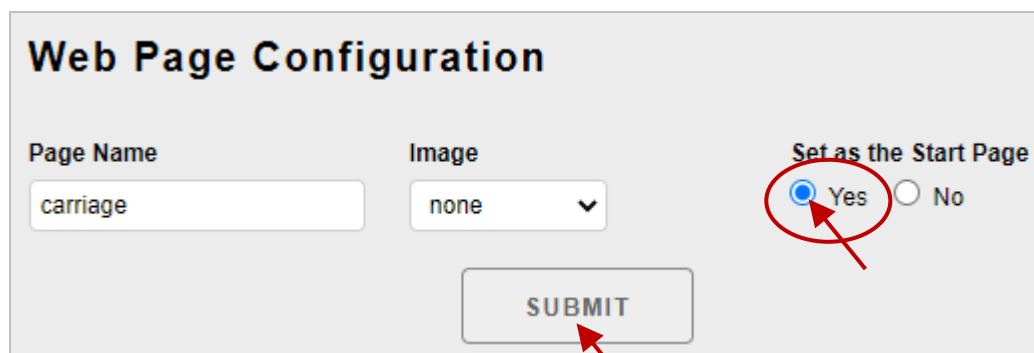
Note: An asterisk indicates that the page is the start page.



The screenshot shows a table with two columns: 'Page No.' and 'Description'. The first row is 'MAIN PAGE'. The subsequent rows are numbered 1 to 10, with descriptions 'CARRIAGE', 'PAGE02', 'PAGE03', 'PAGE04', 'PAGE05', 'PAGE06', 'PAGE07', 'PAGE08', 'PAGE09', and 'PAGE10'. Each row has 'EDIT' and 'DELETE' buttons. A blue circle with an asterisk is around the 'Page No.' of the 'MAIN PAGE' row, with a blue arrow pointing to it and a text box saying 'The start page'. A red rounded rectangle encloses rows 1 through 10, with a red arrow pointing to it and a text box saying 'Up to ten web pages'. At the bottom right is an 'ADD A NEW PAGE' button.

Page No.	Description	
*	MAIN PAGE	
1	CARRIAGE	EDIT DELETE
2	PAGE02	EDIT DELETE
3	PAGE03	EDIT DELETE
4	PAGE04	EDIT DELETE
5	PAGE05	EDIT DELETE
6	PAGE06	EDIT DELETE
7	PAGE07	EDIT DELETE
8	PAGE08	EDIT DELETE
9	PAGE09	EDIT DELETE
10	PAGE10	EDIT DELETE
ADD A NEW PAGE		

Next, you can also set the new page (e.g., Carriage) as a start page so that it will be displayed when logging in to an ETS-7200. Click **“Yes”** under the **“Set as the Start Page”** section and click the **“SUBMIT”** button.



The screenshot shows a form titled 'Web Page Configuration'. It has three fields: 'Page Name' with the value 'carriage', 'Image' with a dropdown menu showing 'none', and 'Set as the Start Page' with radio buttons for 'Yes' and 'No'. The 'Yes' radio button is selected and circled in red, with a red arrow pointing to it. Below these fields is a 'SUBMIT' button, also with a red arrow pointing to it.

Page Name	Image	Set as the Start Page
carriage	none	☒ Yes ☐ No
SUBMIT		

Click the **“Web HMI”** item to see the start pages (e.g., Carriage).

Overview

Configuration

Network Settings

Basic Settings

Module I/O Settings

Authentication

Account Management

Accessible IP Settings

Web HMI

Web HMI

Web Edit

Pair Connection

More Information

THIS COMPUTER - - ET-7000

AI AO DI DO **CARRIAGE** PAGE02 PAGE03

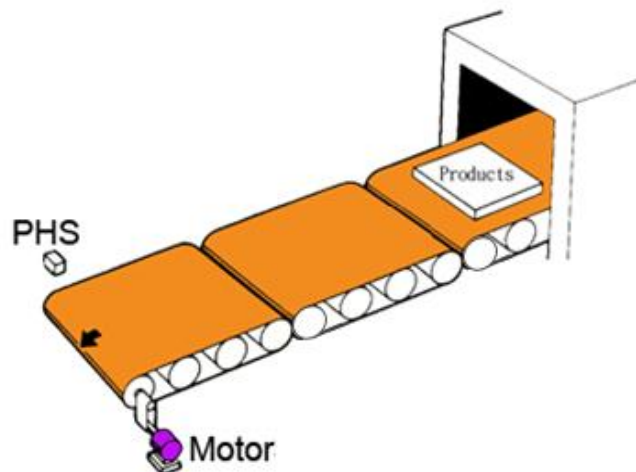
Carriage

Channel No.	Alias	Status	Action
DI0	PHS1	OFF	
DO0	Motor	OFF	OFF ON

Example

Objective:

Create a Web page to monitor the I/O status of a conveyor system, as shown below. The I/O system contains a sensor that is used to detect the products and a switch that is used to turn the conveyor motor on and off.



Step 1: Add a New Page

Click the “Add a new Page” button to begin creating a new page.

Web Page Configuration

Page No.	Description
*	MAIN PAGE

ADD A NEW PAGE

Step 2: Upload an Image

Click the “Choose File” button to select an image, and then click the “**UPLOAD**” button to upload the image to the ETS-7200 module, as shown in the figure below.

Web Page Configuration

Page Name:

Image:

Set as the Start Page: ☐ Yes ☒ No

SUBMIT

DELETE ALL IMAGES

Choose File (1.)

UPLOAD (2.)

The total space available for storing images is only 64Kb, so the file size for the image must be less than 64K bytes.



The image can be in either **.jpg**, **.gif**, or **.bmp** format with a maximum file size of 64 KB. The recommended resolution for the image to be displayed on the editing Web page is 340 * 250 pixels.

After the upload is completed, you can see the image. Also, the file name will be added to the “Image” dropdown list box. (See the step3)

no image



The total space available for storing images is only 64Kb, so the file size for the image must be less than 64K bytes.

Step 3: Set the Page Name and Select the Image

Enter a name for the page in the **“Page Name”** field and then select an image from the **“Image”** dropdown list box. After selecting the image, it will be displayed in the preview window. Then, click the **“SUBMIT”** button.

Web Page Configuration

Page Name

1.

Image

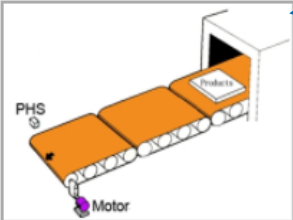
2.

conveyor.jpg ▼
none
conveyor.jpg

3.

Set as the Start Page

☐ Yes
☒ No

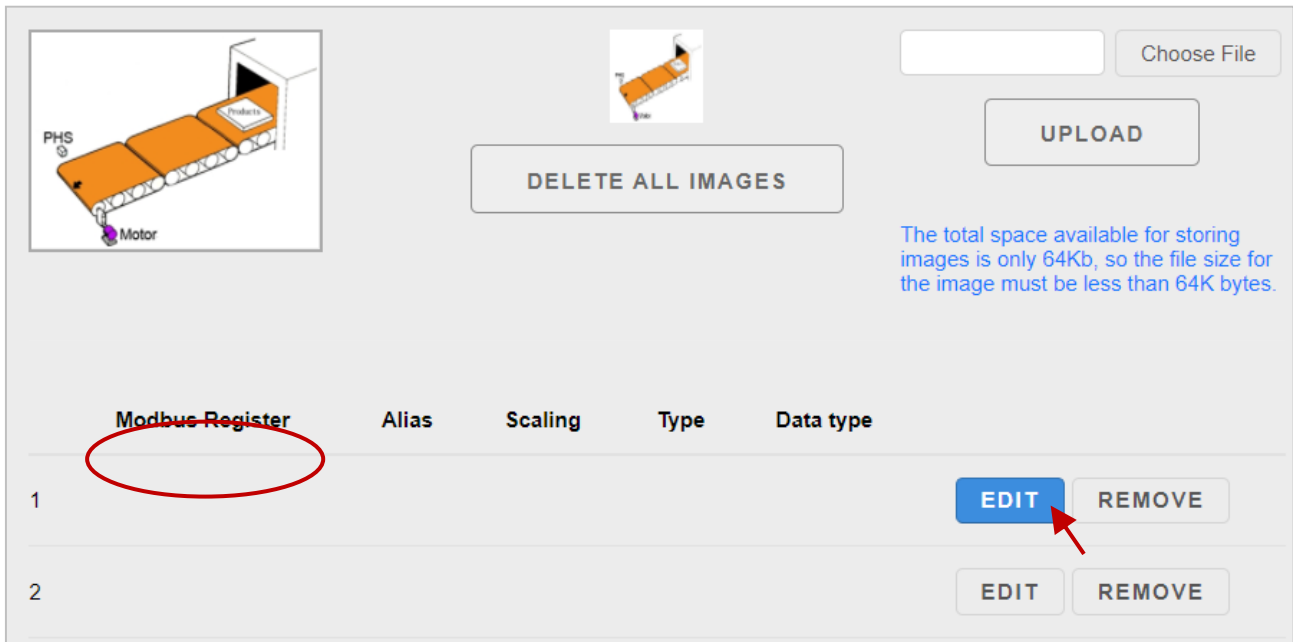




The total space available for storing images is only 64Kb, so the file size for the image must be less than 64K bytes.

Step 4: Add a Modbus Register Item to be used to read the selected sensor input

On the **Carriage** page, click the "Edit" button in the first row to display the "Edit Group Register" page.



The Carriage page displays a table of Modbus Register items. The first row is selected, and the "EDIT" button is highlighted with a red arrow. The table has columns: Modbus Register, Alias, Scaling, Type, and Data type. The first row has the value "1" in the Modbus Register column. The second row has the value "2" in the Modbus Register column. The "EDIT" and "REMOVE" buttons are visible for each row.

PHS
Motor

DELETE ALL IMAGES

Choose File

UPLOAD

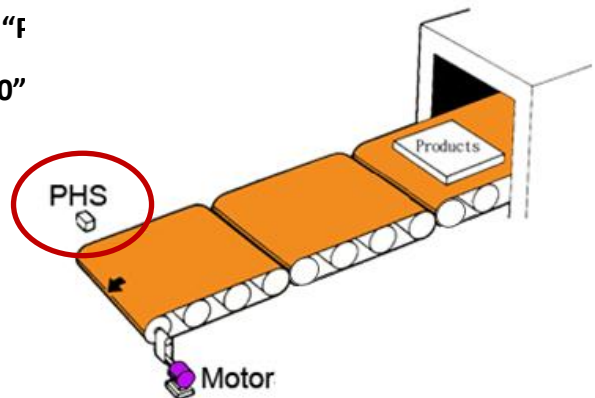
The total space available for storing images is only 64Kb, so the file size for the image must be less than 64K bytes.

Modbus Register	Alias	Scaling	Type	Data type	
1					EDIT REMOVE
2					EDIT REMOVE

Step 5: Add a DI register that is to be used to read "f

Set the PHS as an DI tag (use the **Modbus Register "0"**

Set the **Register Type** to "Discrete Input" (Read) and enter "PHS1" in the **Alias** field. Then, click the "SUBMIT" button to save the settings.



Edit Group Register

Register Type **2.**

Discrete Input Read

Modbus Register **1.**

0

Modbus Address (Base 0)

Alias **3.**

PHS1

The maximum length for the alias is 8 characters

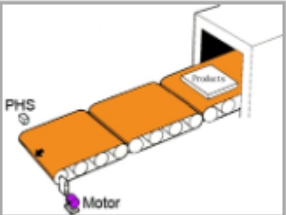
Scaling

Disabled

Scaled value = (A/D value) * Gain. Gain ranges from 0.01 to 655.35

4.

SUBMIT



The total space available for storing images is only 64Kb, so the file size for the image must be less than 64K bytes.

	Modbus Register	Alias	Scaling	Type	Data type	
1	00000	PHS1	0	Coil	Boolean	EDIT REMOVE

Step 6: Add a Modbus Register Item to be used to write the selected motor output

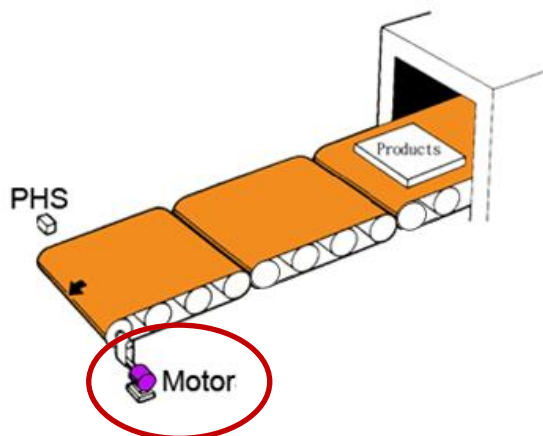
Click the **“Edit”** button in the second row of the list, and the **“Edit Group Register”** page will be displayed.

	Modbus Register	Alias	Scaling	Type	Data type	
1	10000	PHS1	0	Discrete Input	Boolean	EDIT REMOVE
2						EDIT REMOVE
3						EDIT REMOVE

Step 7: Add a DO that is to be used to write the **“Motor”** output to turn the conveyor motor on and off

Set the Motor as an DO tag (use the **Modbus Register “0”** in DO)

Set the **Register Type** to **“Coil”** and **“Write”** and enter **Alias** field. Then, click the **“SUBMIT”** button to save



Edit Group Register

Register Type
Coil

Modbus Register
0

Alias
Motor

Scaling
Disabled

The maximum length for the alias is 8 characters

Scaled value = (A/D value) * Gain. Gain ranges from 0.01 to 655.35

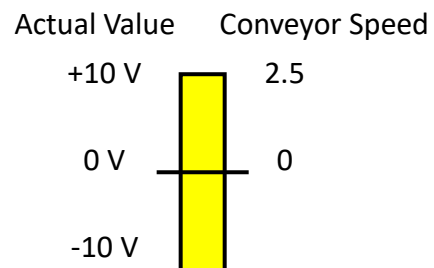
SUBMIT

Step 8: Add a AI that is to be used to read the speed of the conveyor (In this case, 0 - 2.5 m/s)

Set the Speed as an AI tag (use the **Modbus Register "0"**, i.e., AI0).

(See the figure on next page)

1. Set the **Register Type** to **"Input"** (Read).
2. Enter **"Speed"** in the **Alias** field.
3. Set the **Scaling** as **"Enabled"** and enter the **Gain** value as **"0.25"** (i.e., $2.5/10 = 0.25$).



In this example, the **Range** of AIO is set to **"-10 ~ 10V"** and the **Data Format** is set to **"Engineering"**. For more information about the setting, refer to Section 3.2.3 – (E) Analog Input Settings (P49).

Overview

Analog Input Settings

Configuration

- Network Settings
- Basic Settings
- Module I/O Settings

Channel	Range
Ch0 ☒ Enable ☐ Disable	08, -10 ~ 10 V
Ch1 ☒ Enable ☐ Disable	08, -10 ~ 10 V

Modbus Address	Function
00628	Normal Mode (10 Hz)/Fast Mode (50 Hz) ☒ Normal mode ☐ Fast mode
00629	60/50 Hz Rejection ☒ 60 Hz ☐ 50 Hz
00631	Data Format ☐ HEX 2's complement ☒ Engineering

4. Click the “**SUBMIT**” button to save the settings.

Edit Group Register

Register Type

Input

Read

Modbus Register

0

Modbus Address (Base 0)

Alias

Speed

The maximum length for the alias is 8 characters

Scaling

Enabled

0.25

Scaled value = (A/D value) * Gain. Gain ranges from 0.01 to 655.35

SUBMIT

Step 9: Browse the “Carriage” web page

After clicking the Web HMI item, you can click on the **Carriage** tab to see the added page.

Overview

Configuration +

Authentication +

Web HMI -

Web HMI

Web Edit

Pair Connection

More Information

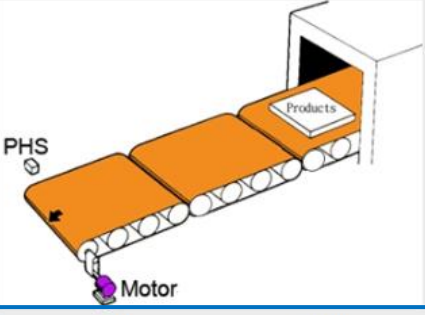
DELETE ALL IMAGES

The total space available for storing images is only 64Kb, so the file size for the image must be less than 64K bytes.

	Modbus Register	Alias	Scaling	Type	Data type	
1	10000	PHS1	0	Discrete Input	Boolean	EDIT REMOVE
2	00000	Motor	0	Coil	Boolean	EDIT REMOVE
3	30000	Speed	0.25	Input	Signed 16	EDIT REMOVE

AI AO DI DO **CARRIAGE**

carriage



Channel No.	Alias	Status	Action
DI0	PHS1	OFF	
DO0	Motor	OFF	OFF ON
AI0	Speed	0.0	

On the “**Carriage**” page, you can click the control button of the motor to set it as ON. For testing, when the AI value is “5”, the value will be converted to a conveyor speed of $5 \times 0.25 = 1.25$ (m/s)

AI

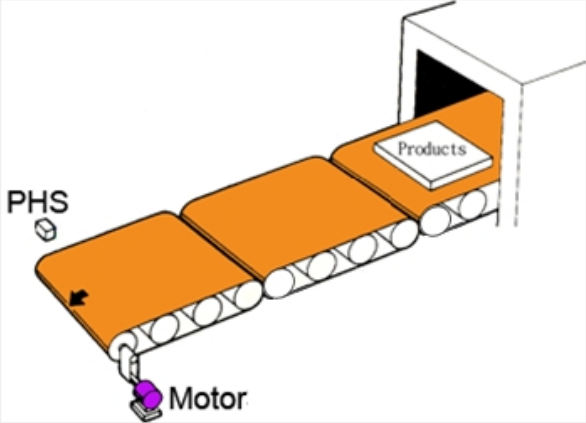
AO

DI

DO

CARRIAGE

carriage

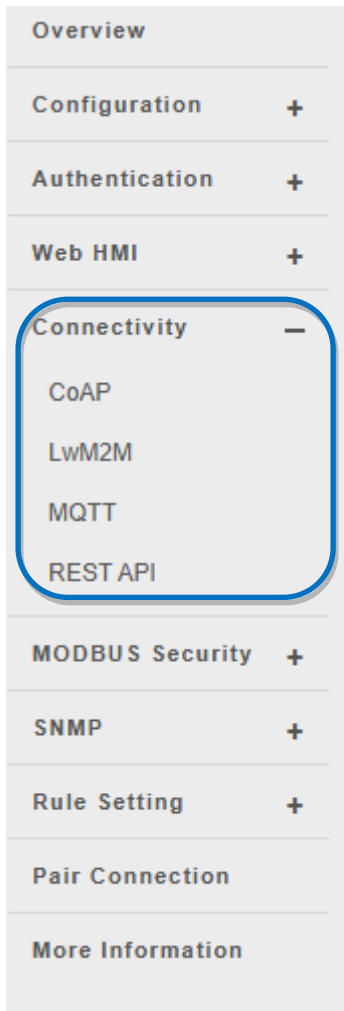


The diagram shows a 3D perspective of a conveyor belt system. It consists of a series of rollers supporting a belt. A motor is connected to the rollers. A product is shown on the belt, moving towards the right. A PHS sensor is positioned above the belt. The entire system is housed within a frame.

Channel No.	Alias	Status	Action
DI0	PHS1	OFF	
DO0	Motor	ON	OFFON
AI0	Speed	1.25	

3.5. Connectivity

The “**Connectivity**” menu contains the following options:



CoAP:

Allows you to set the configuration of CoAP server.

LwM2M:

Allows you to configure the Lightweight M2M (LwM2M) client settings.

MQTT:

Allows you to configure the MQTT client settings for transmitting device data to an MQTT broker.

REST API:

Allows you to enable/disable the REST API server.

3.5.1. CoAP

The “CoAP” page provides the “CoAP Server Settings” section that allows you to set the CoAP Server:

CoAP Server Settings

Enable☒

CoAP Port

SUBMIT

Nodes List

I/O	Read (GET)	Write (PUT)
Local.DiscreteInput 0	Local.DI_0	
Local.DiscreteInput 1	Local.DI_1	
Local.Coil 0	Local.DO_0	Local.DO_0=value
Local.Coil 1	Local.DO_1	Local.DO_1=value
Local.Input 0	Local.AI_0	
Local.Input 1	Local.AI_1	
Local.Input 2	Local.AI_2	
Local.Input 3	Local.AI_3	
Local.Input 4	Local.AI_4	

✧ CoAP Server Settings:

The user can click the “Enable” check box to enable/disable CoAP server or enter the CoAP

server's port(default port is 5683) for the module and then click the **"SUBMIT"** button to finish the setting.

Enable:

Enables or disables the CoAP server function.

CoAP Port:

Allows you to enter CoAP server's port.

✧ **Nodes List**

The device provides I/O control resources via CoAP URI. The client software can read the status of I/O, via send a GET/PUT request(**coap://10.1.0.18:5683/variable**) to the server.

To send a GET request(**coap://10.1.0.18:5683/variable/Local.DO_0**) from the CoAP client to read the status of ETS-7226's DO channel 0, the CoAP server will return 0(DO OFF) or 1(DO ON).

3.5.2. LwM2M

The “LwM2M” page provides the “LwM2M Client Settings” section that allows you to configure the LwM2M client:

LwM2M Client Settings	
Enable	☐
Endpoint Name	EthernetIO_CE831F23
Bootstrap requested	☐
Server Address	leshan.eclipseprojects.io
Local UDP Port	56830
Server UDP Port	5683
Server ID	7971
Using (D)TLS Security mode : PSK Authentication	☐
PSK identity	
Pre-Shared-Key	
Lifetime	300
Connection State .	Disable
SUBMIT	

✧ LwM2M Client Settings:

This page configures the Lightweight M2M (LwM2M) client parameters. After entering the LwM2M configuration parameters, click “**SUBMIT**” button to apply the settings and initiate a connection to the LwM2M server.

Enable:

Enables or disables the LwM2M client function.

Endpoint Name:

Specifies the unique identifier of this device during registration. The Endpoint Name must be unique on the LwM2M server.

Bootstrap Requested:

Enables or disables the bootstrap procedure.

Server Address:

Specifies the IP address or hostname of the LwM2M server.

Local UDP Port:

Defines the local UDP port used by the device for LwM2M communication.

Server UDP Port:

Specifies the UDP port of the LwM2M server..

Server ID:

Defines the short server identifier used in the LwM2M registration process.

Using (D)TLS Security mode : PSK Authentication:

Enables/ Disable secure communication.

PSK Identity:

Specifies the identity string used for PSK authentication..

Pre-Shared Key:

Specifies the secret key used for DTLS encryption.

Lifetime:

Defines the registration lifetime in seconds.

Connection State:

Displays the current connection status of the LwM2M client.

3.5.3. MQTT

The “MQTT” page allows you to set the MQTT settings:

(A) MQTT Client

MQTT Client

[Broker1 Setting](#)

[Broker2 Setting](#)

Message Settings

Topic Prefix

Topic Settings

Topic Name I/O

MQTT Broker1

Broker Attribute Settings

Enable ☐

Broker Address

Port

Anonymous Login ☒

Username

Password

Client ID

Authentication ☒ Disable ☐ One-way ☐ Two-way

Last Will ☐ Enable

Will Topic

Will

Periodical Publish Interval 0 represent disable periodical publish

Connection State

SUBMIT

✧ MQTT Attribute Settings:

The user can click the “**Broker1 Setting**” or “**Broker2 Setting**” to configure the MQTT Broker connection. After entering the “**Broker Attribute Settings**” configuration parameters, click “**SUBMIT**” button to apply the settings and initiate a connection to the MQTT Broker.

Enable:

Enables or disables the MQTT Broker connection..

Broker Address:

Specifies the IP address or domain name of the MQTT broker server.

Port:

Specifies the network port number used to connect to the MQTT broker.

Anonymous Login:

Specifies whether to use anonymous authentication.

Username:

Specifies the username used for broker authentication (required if Anonymous Login is disabled)..

Password:

Specifies the password used for broker authentication (required if Anonymous Login is disabled).

ClientID:

Specifies the unique identifier of the MQTT client.

Authentication:

Specifies the TLS authentication mode.

Last Will:

Enables or disables the MQTT Last Will and Testament (LWT) function.

Will Topic:

Specifies the topic used for the Last Will message.

Will:

Specifies the payload message that will be published to the Will Topic if the client disconnects unexpectedly.

Periodical Publish Interval:

Specifies the time interval (in seconds) for periodically publishing messages to the broker.

Connection State:

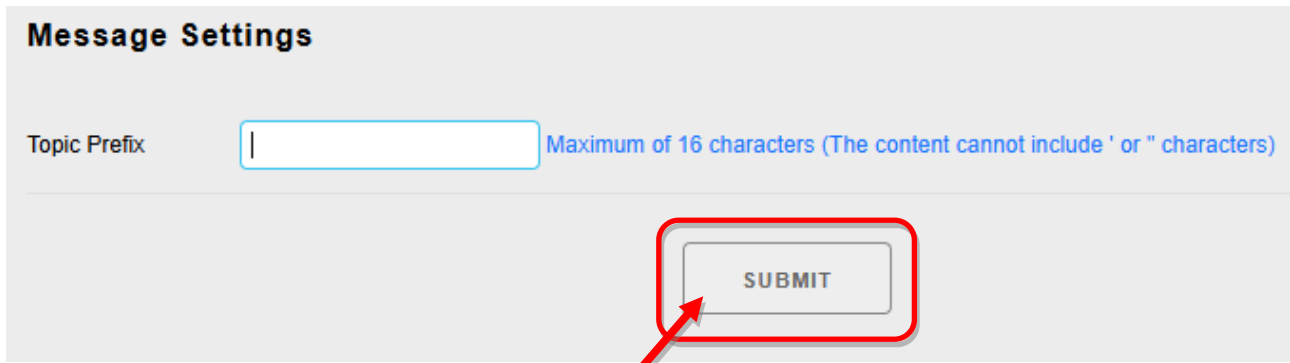
Displays the current connection status of the MQTT client.

✧ **MQTT Authentication Certificate:**

This section allows users to configure TLS/SSL certificates for secure MQTT communication.

The user can click the **“CHOOSE FILE”**, **“UPLOAD”** and **“REMOVE”** button to finish setting.

(B) Message Settings



Message Settings

Topic Prefix Maximum of 16 characters (The content cannot include ' or " characters)

SUBMIT

Specifies the **Topic Prefix** string that will be automatically added to the beginning of all MQTT topics published or subscribed by the device. After entering the configuration parameters, click **"SUBMIT"** button to apply the settings.

(C) Topic Settings

The user can click **“NEW”** button to add Topic settings, click **“EDIT”** button to modify the Topic settings or click **“REMOVE”** button to remove the Topic Setting.

Topic Settings					
Topic Name	I/O	Trigger Type	Publish	Subscribe	
DO0_ON	Local.Coil.0	ON	mytest	DO	EDIT REMOVE
					NEW

Edit Topic

Topic Alias

Topic1

The maximum length for the alias is 8 characters

Target Type

Local I/O

Register Type

Coil

0

ON

Publish & Subscribe

Topic

☐ Enable Publish

☐ Enable Subscribe

Publish Topic

Publish QoS

0 : most once

Subscribe Topic

Subscribe QoS

0 : most once

JSON Format

☐ Enable

Retain

☐ Enable

SUBMIT

✧ EDIT Topic:

The user can click the **“NEW”** or **“EDIT”** button to configure the Topic settings. After entering the configuration parameters, click **“SUBMIT”** button to apply the settings.

Topic Alias:

The user can define a custom name for the Topic.

Target Type:

The user can select the event type from drop-down menu.

Register Type:

The user can select the Modbus object type, I/O channel and I/O status from the drop-down menu.

✧ Publish & Subscribe:

Specifies the MQTT topic used when the device publishes messages to the broker.

Topic:

Enables or disables the MQTT Broker connection..

Publish Topic:

Specifies the MQTT topic used when the device publishes messages to the broker.

Publish QoS:

Specifies the Quality of Service (QoS) level used when publishing messages.

Subscribe Topic:

Specifies the MQTT topic that the device subscribes to for receiving messages from the broker.

Subscribe QoS:

Specifies the QoS level used for message subscription.

JSON Format:

Specifies whether published messages are formatted in JSON structure.

Retain:

Specifies whether the broker should retain the last published message.

3.5.4. REST API

The “REST API” page provides the “REST API Server Settings” section that allows you to enable or disable the REST API Server:

REST API

Enable

☐

SUBMIT

Nodes List

http://10.1.0.18:80/variable?

I/O	Read (GET)	Write (POST)
Local.DiscreteInput 0	type=1&channel=0	
Local.DiscreteInput 1	type=1&channel=1	
Local.Coil 0	type=2&channel=0	type=2&channel=0
Local.Coil 1	type=2&channel=1	type=2&channel=1
Local.Input 0	type=3&channel=0	
Local.Input 1	type=3&channel=1	
Local.Input 2	type=3&channel=2	
Local.Input 3	type=3&channel=3	
Local.Input 4	type=3&channel=4	
Local.Input 5	type=3&channel=5	
Local.Holding 0	type=4&channel=0	type=4&channel=0

✧ **REST API:**

The user can click the “**Enable**” check box to enable/disable REST API server for the module and then click the “**SUBMIT**” button to finish the setting.

Enable:

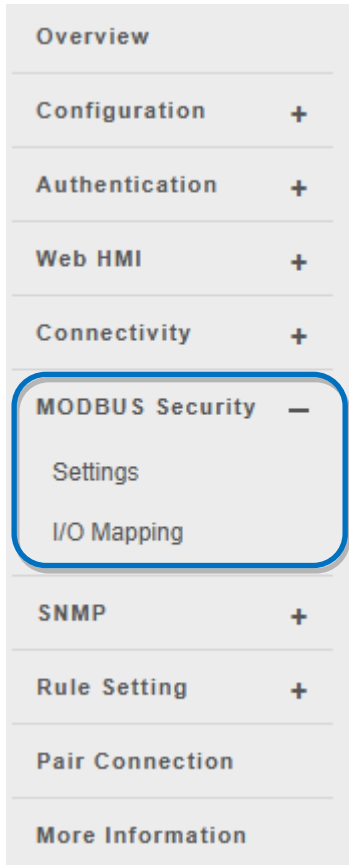
Enables or disables the REST API server function.

✧ **Nodes List**

The device provides I/O control resources via REST API URI. The client software can read the status of I/O, via send a GET/POST request(**http://10.1.0.18:80/variable?**) to the server.

3.6. MODBUS Security

The “**MODBUS Security**” menu contains the following options:



Settings:

Allows users to configure security settings for the MODBUS/TCP service.

I/O Mapping:

Displays the mapping relationship between the device’s internal I/O nodes and their corresponding Modbus addresses.

3.6.1. Settings

The “Settings” page provides allows you to set the MODBUS/TCP security settings:

MODBUS/TCP Security Settings

Enable ☒

Port

Certificate Login ☐

SUBMIT

MODBUS/TCP Security Authentication Certificate

Trusted Certificate (Default)

Private Key (Default)

Certificate (Default)

✧ MODBUS/TCP security settings :

The user can enter the following MODBUS/TCP security parameters and then click the “SUBMIT” button to finish the setting.

Enable:

Enables or disables the MODBUS/TCP security function.

Port:

Allows you to enter MODBUS/TCP security port.

Certificate Login:

Enables or disables certificate-based authentication for MODBUS/TCP connections.

✧ MODBUS/TCP Security Authentication Certificate:

This section allows users to configure TLS/SSL certificates for secure MODBUS/TCP

communication. The user can click the **“CHOOSE FILE”**, **“UPLOAD”** and **“REMOVE”** button to finish setting.

3.6.2. I/O Mapping

The “**I/O Mapping**” page displays the mapping relationship between the device’s internal I/O nodes and their corresponding Modbus addresses.

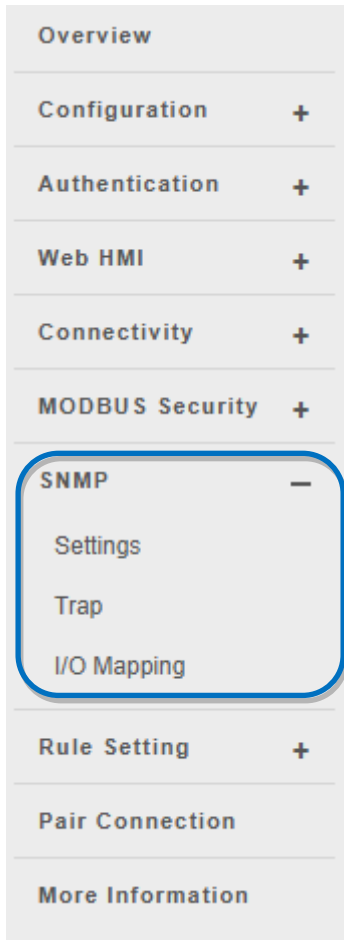
Nodes List	
I/O	Modbus Address
Local.DiscreteInput 0	10000
Local.DiscreteInput 1	10001
Local.Coil 0	00000
Local.Coil 1	00001
Local.Input 0	30000
Local.Input 1	30001
Local.Input 2	30002
Local.Input 3	30003
Local.Input 4	30004
Local.Input 5	30005
Local.Holding 0	40000
Local.Holding 1	40001

✧ Nodes List

The table shows the I/O nodes and their Modbus address assignments.

3.7. SNMP

The “**SNMP**” menu contains the following options:



Settings:

Allows users to configure SNMP settings.

Trap:

Allows users to configure SNMP Trap settings.

I/O Mapping:

Displays the mapping between internal I/O nodes and SNMP OIDs.

3.7.1. Settings

The “SNMP Settings” page allows users to configure the SNMP(v1/v2c) and SNMPv3 settings:

The screenshot displays the 'SNMP Settings' configuration page. It is divided into two main sections: 'SNMP' and 'SNMPv3'. The 'SNMP' section includes an 'Enable' checkbox, a 'Contact' field with the value 'User', a 'Location' field with the value 'Site', a 'Read Community' field with the value 'public', and a 'Write Community' section with an 'Enable' checkbox and a 'private' value. The 'SNMPv3' section includes an 'Enable' checkbox, an 'Engine ID' field with the value '8611081DA2DACBA1', a 'Security Level' dropdown set to 'None', an 'Auth protocol' dropdown set to 'MD5', and a 'Privacy protocol' dropdown set to 'DES'. Both sections have a 'SUBMIT' button highlighted with a red rectangle and a red arrow pointing to it.

SNMP Settings	
SNMP	☐ Enable
Contact	User
Location	Site
Read Community	public
Write Community	☐ Enable private
SUBMIT	
SNMPv3	
SNMPv3	☐ Enable
Engine ID	8611081DA2DACBA1
Security Level	None ▼
Auth protocol	MD5 ▼
Privacy protocol	DES ▼
SUBMIT	

✧ **SNMP settings :**

The user can enter the following SNMP(v1/v2c) parameters and then click the “**SUBMIT**” button to finish the setting.

SNMP:

Enables or disables the SNMP service.

Contact:

Specifies the contact information of the device administrator.

Location:

Defines the physical location of the device.

Read Community:

Sets the community string with read-only access permission.

Write Community:

Sets the community string with read-write access permission.

✧ **SNMPv3:**

The user can enter the following SNMPv3 parameters and then click the “**SUBMIT**” button to finish the setting.

SNMPv3:

Enables or disables the SNMPv3 service.

Engine ID:

Specifies the unique SNMP engine identifier of the device.

Security Level:

Defines the security level for SNMPv3 communication.

Auth Protocol:

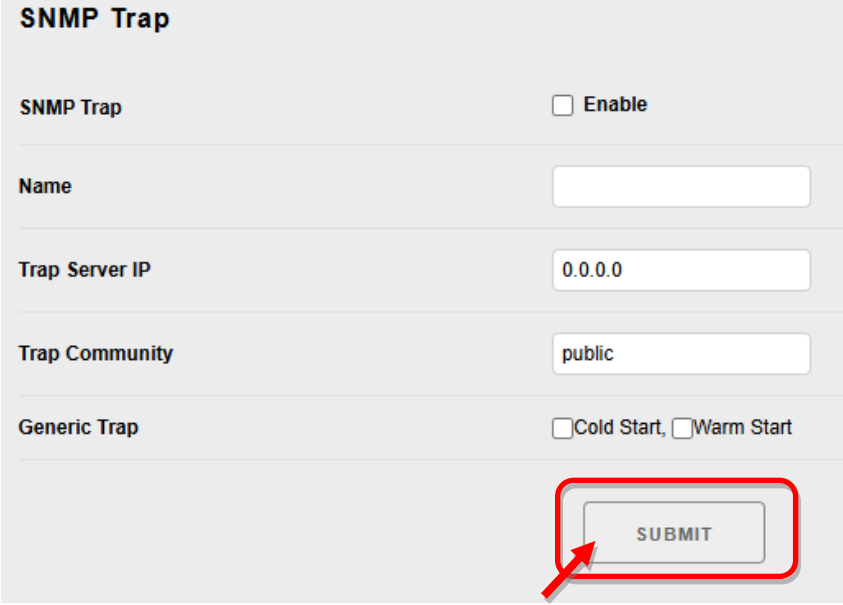
Specifies the authentication protocol used for user verification.

Privacy Protocol:

Specifies the encryption protocol used to protect data transmission.

3.7.2. Trap

This page allows users to configure SNMP Trap settings:



The image shows a web form titled "SNMP Trap". It contains several fields: "SNMP Trap" with an "Enable" checkbox, "Name" with a text input field, "Trap Server IP" with a text input field containing "0.0.0.0", "Trap Community" with a text input field containing "public", and "Generic Trap" with two checkboxes, "Cold Start" and "Warm Start". A red rectangle highlights the "SUBMIT" button at the bottom right, with a red arrow pointing to it.

✧ **SNMP Trap:**

The user can enter the following SNMP Trap parameters and then click the “**SUBMIT**” button to finish the setting.

SNMP Trap:

Enables or disables the SNMP Trap function.

Name:

Specifies a user-defined name for this trap configuration entry.

Trap Server IP:

Defines the IP address of the SNMP management station that will receive trap notifications.

Trap Community:

Specifies the community string used for SNMP Trap authentication (SNMP v1/v2c).

Generic Trap:

Specifies the generic trap type that will be sent when an event occurs.

3.7.3. I/O Mapping

The “I/O Mapping” page displays the SNMP Node List supported by the device:

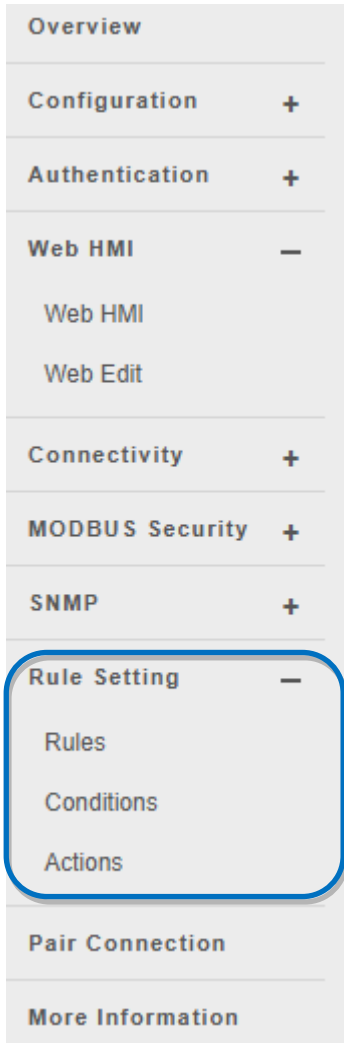
Nodes List	
I/O	OID
Local.DiscreteInput 0	1.3.6.1.4.1.34321.8.7586.1.1.1.1
Local.DiscreteInput 1	1.3.6.1.4.1.34321.8.7586.1.1.1.2
Local.Coil 0	1.3.6.1.4.1.34321.8.7586.2.1.1.1
Local.Coil 1	1.3.6.1.4.1.34321.8.7586.2.1.1.2
Local.Input 0	1.3.6.1.4.1.34321.8.7586.3.1.1.1
Local.Input 1	1.3.6.1.4.1.34321.8.7586.3.1.1.2
Local.Input 2	1.3.6.1.4.1.34321.8.7586.3.1.1.3
Local.Input 3	1.3.6.1.4.1.34321.8.7586.3.1.1.4
Local.Input 4	1.3.6.1.4.1.34321.8.7586.3.1.1.5
Local.Input 5	1.3.6.1.4.1.34321.8.7586.3.1.1.6
Local.Holding 0	1.3.6.1.4.1.34321.8.7586.4.1.1.1
Local.Holding 1	1.3.6.1.4.1.34321.8.7586.4.1.1.2

✧ Nodes List

The table represents a manageable I/O object and its corresponding SNMP Object Identifier (OID).

3.8. Rule Setting

The “**Rule Setting**” menu contains the following options:



Rules:

Allows you to quickly setup a IF-THEN-ELSE rules to make decisions with physical I/O and software points.

Conditions:

Allows you to setup IF-THEN-ELSE rules's condition settings.

Actions:

Allows you to setup IF-THEN-ELSE rules's action settings.

3.8.1. Rules

The “**Rules**” page provides the “**Rules Configuration**” section that allows you to click the “**NEW**” button to into the next page “**Edit Rule**”:

The screenshot displays the 'Rules Configuration' section of a web interface. On the left, a sidebar menu lists various settings: Overview, Configuration, Authentication, Web HMI, Connectivity, MODBUS Security, SNMP, Rule Setting, Rules, Conditions, and Actions. The 'Rules' option is highlighted with a blue box. The main area shows a table with columns for Tag Name, IF, THEN, and ELSE. A 'NEW' button is highlighted with a red box in the top right corner. A blue arrow points from this button to the 'Edit Rule' modal window. The modal window contains a 'Rule Name' field with the value 'DO1_2-1' and a note: 'The maximum length for the alias is 8 characters'. Below this are three sections: 'IF' with a dropdown menu showing 'DO_ON', 'THEN' with a list box showing 'DO1_ON' and 'DO1_OFF', and 'ELSE' with a list box showing 'DO1_ON' and 'DO1_OFF'. A 'SUBMIT' button is highlighted with a red box at the bottom right of the modal, with a red arrow pointing to it.

✧ Edit Rules:

The user can enter the Rules Name, IF(Condition) and THEN(Action) for the module and then click the “**SUBMIT**” button to finish the setting.

Rules Name:

The user can define a custom name for the rule.

IF:

The user can click the dropdown to select a action that be defined in the “**Conditions**” page.

THEN:

The user can click the action name to select a action that be defined in the **“Actions”** page.

ELSE:

The user can click the action name to select a action that be defined in the **“Actions”** page.

After the user finish the **“MyRule”** setting(DO1 mirrors the state of DO0.), the **“Rules”** page will show the rules. The user can click the **“EDIT”** button to modify the rule or click **“REMOVE”** button to remove the rule.

Tag Name	IF	THEN	ELSE	
MyRule	DO0_ON	DO1_ON	DO1_OFF	<button>EDIT</button> <button>REMOVE</button>

NEW

3.8.2. Conditions

The “**Conditions**” page provides the “**Conditions Configuration**” section that allows you to click the “**NEW**” button to into the next page “**Edit Rule**”:

The screenshot displays the 'Conditions Configuration' interface. On the left is a sidebar menu with categories: Overview, Configuration, Authentication, Web HMI, Connectivity, MODBUS Security, SNMP, Rule Setting, Rules, Actions, Pair Connection, and More Information. The 'Rules' category is expanded, and 'Conditions' is selected. The main area is titled 'Conditions Configuration' and contains a table with columns 'Tag Name' and 'Condition'. A blue 'NEW' button is located in the top right corner of this section. A blue arrow points from the 'NEW' button to the 'Edit Condition' form. The 'Edit Condition' form includes a 'Tag Name' text input field containing 'DO0_ON', with a note below it stating 'The maximum length for the alias is 8 characters'. Below this is a 'Target Type' dropdown menu set to 'Local I/O'. Underneath is a 'Register Type' section with three dropdown menus: 'Coil', '0', and 'ON'. A red arrow points to a grey 'SUBMIT' button at the bottom right of the form.

✧ **Edit Condition:**

The user can enter the Tag Name, Target Type and Register type for the module and then click the “**SUBMIT**” button to finish the setting.

Tag Name:

The user can define a custom name for the condition.

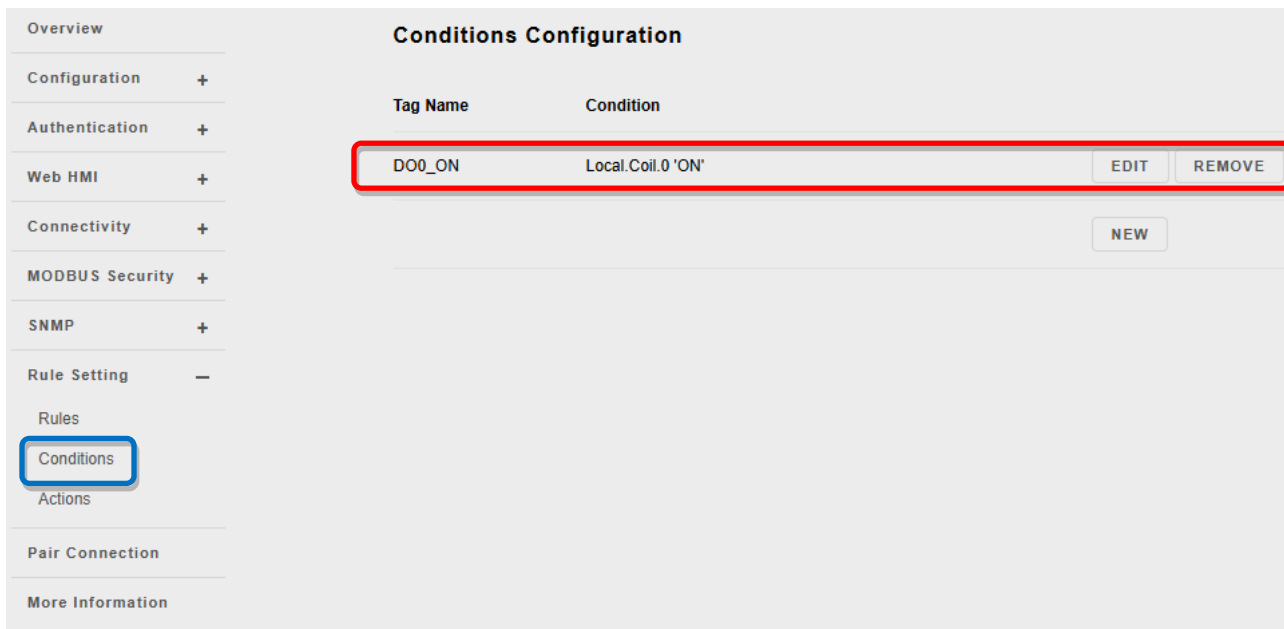
Target Type:

The user can select the condition from drop-down menu..

Register Type:

The user can select the Modbus object type, I/O channel and I/O status from the drop-down menu.

After the user finish the setting, the **“Conditions”** page will show the condition information. The user can click the **“EDIT”** button to modify the rule or click **“REMOVE”** button to remove the rule. The new condition’s tag name will show in the **“Rules”** page.



3.8.3. Actions

The “**Actions**” page provides the “**Actions Configuration**” section that allows you to click the “**NEW**” button to into the next page “**Edit Action**”:

The screenshot displays the 'Actions Configuration' interface. On the left is a sidebar menu with options: Overview, Configuration, Authentication, Web HMI, Connectivity, MODBUS Security, SNMP, Rule Setting, Rules, Conditions, Actions (highlighted with a blue box), Pair Connection, and More Information. The main area is titled 'Actions Configuration' and contains a table with columns 'Tag Name' and 'Condition'. A 'NEW' button in the top right corner is highlighted with a red box, and a blue arrow points from it to the 'Edit Action' modal. The modal has a title 'Edit Action' and contains the following fields: 'Tag Name' with a text input containing 'aTag0' and a note 'The maximum length for the alias is 8 characters'; 'Target Type' with a dropdown menu showing 'Local I/O'; and 'Register Type' with three dropdown menus showing 'Coil', '0', and 'ON'. A 'SUBMIT' button at the bottom right of the modal is highlighted with a red box, and a red arrow points to it.

✧ **Edit Action:**

The user can enter the Tag Name, Target Type and Register type for the module and then click the “**SUBMIT**” button to finish the setting.

Tag Name:

The user can define a custom name for the action.

Target Type:

The user can select the action from drop-down menu.

Register Type:

The user can select the Modbus object type, I/O channel and I/O status from the drop-down menu.

After the user finish the setting, the “Actions” page will show the condition information. The user can click the “**EDIT**” button to modify the rule or click “**REMOVE**” button to remove the rule. The new action’s tag name will show in the “**Rules**” page.

The screenshot shows a web application interface for configuring actions. On the left is a sidebar menu with the following items: Overview, Configuration (+), Authentication (+), Web HMI (+), Connectivity (+), MODBUS Security (+), SNMP (+), Rule Setting (-), Rules, Conditions, Actions (highlighted with a blue box), Pair Connection, and More Information. The main content area is titled 'Actions Configuration' and contains a table with the following data:

Tag Name	Condition	
DO1_ON	Local.Coil.1 'ON'	EDIT REMOVE
DO1_OFF	Local.Coil.1 'OFF'	EDIT REMOVE

Below the table is a 'NEW' button. A red rectangular box highlights the table content.

3.9. Pair Connection

The **“Pair Connection”** option provides access to the configuration page for the pair connection function.

Overview	
Configuration	+
Authentication	+
Web HMI	+
Connectivity	+
MODBUS Security	+
SNMP	+
Rule Setting	+
Pair Connection	
More Information	

The **“Pair Connection”** function is a particular feature of the ETS-7200 module that can be used to enable a pair of DI-to-DO (or AI-to-AO) via Modbus TCP.

With the pair connection function enabled, the ETS-7200 module can poll the status of remote input devices using the Modbus/TCP protocol and then continuously write to its output channels in the background.

The **Pair Connection** function consists of the following parameters:

Configuration of Communication

Connection Timeout (ms)	Reconnect Interval (ms)
2000	3000

Connection Timeout: The length of time that the ETS-7200 module should wait for a connection to the remote input module.

Reconnect Interval: The amount of time between attempts by the ETS-7200 module to reconnect with the remote input module.

Remote DI to Local DO

☐ Disable

Communication Timeout (ms)	IP Address of the Remote Device
1000	192.168.255.200
Scan Time (ms)	Modbus TCP Port
1000	502
Local DO Base Address	Modbus ID
0	1
I/O Count	Remote DI Base Address
8	0

Communication Timeout (ms):

The period of time that the ETS-7200 module will wait for a response from the remote input module.

IP Address of the Remote Device:

The IP address of the remote input module.

Scan Time (ms):

The frequency that the remote input module will be polled.

Modbus TCP Port:

The Modbus/TCP Port of the remote input module.

Local DO Base Address:

The DO base address of the local DO register that will be mapped to the remote DI module.

Modbus ID:

The Modbus Net ID of the remote input module.

I/O Count:

The I/O count mapped from the base address.

Remote DI Base Address:

The DI base address of the remote DI module that will be mapped to the local DO register.

Remote AI to Local AO

☐ Disable

Communication Timeout (ms): 1000

IP Address of the Remote Device: 192.168.255.200

Scan Time (ms): 1000

Modbus TCP Port: 502

Local AO Base Address: 0

Modbus ID: 1

I/O Count: 8

Remote AI Base Address: 0

SUBMIT

Except for these two items, all descriptions are the same as noted before.

Local AO Base Address:

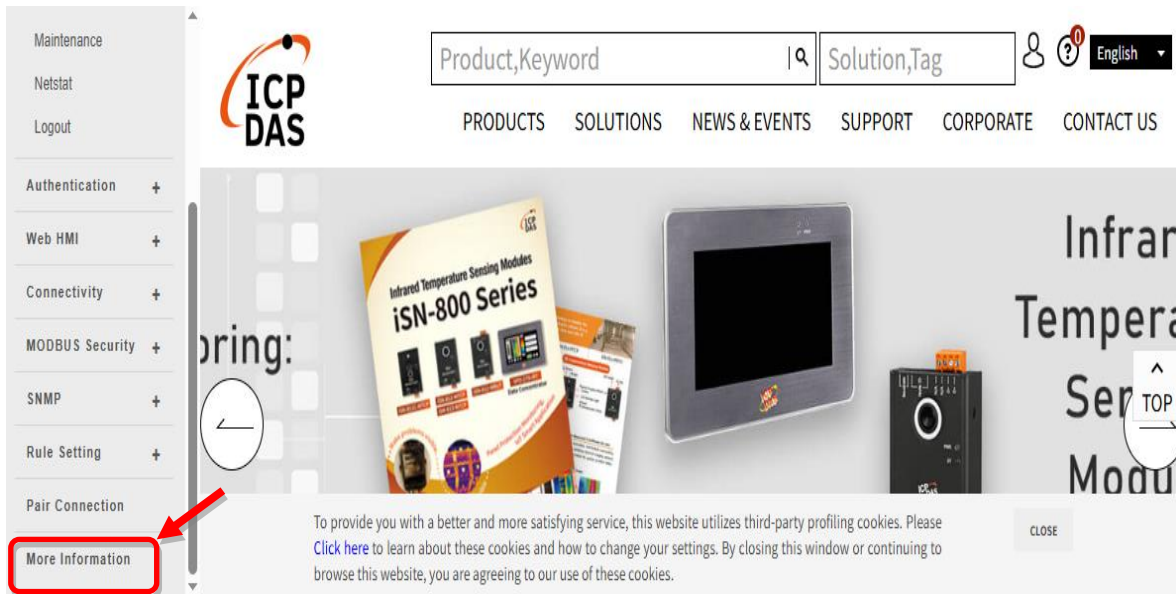
The AO base address of the local AO register that will be mapped to the remote AI module.

Remote AI Base Address:

The AI base address of the Remote AI module that will be mapped to the local AO register.

3.10. More Information

The “More Information” option in the main menu can be used to open the ICP DAS site in your browser. The default URL is <http://www.icpdas.com>. Please refer to Section 3.2.2 Basic Settings to modify the URL if it is necessary.

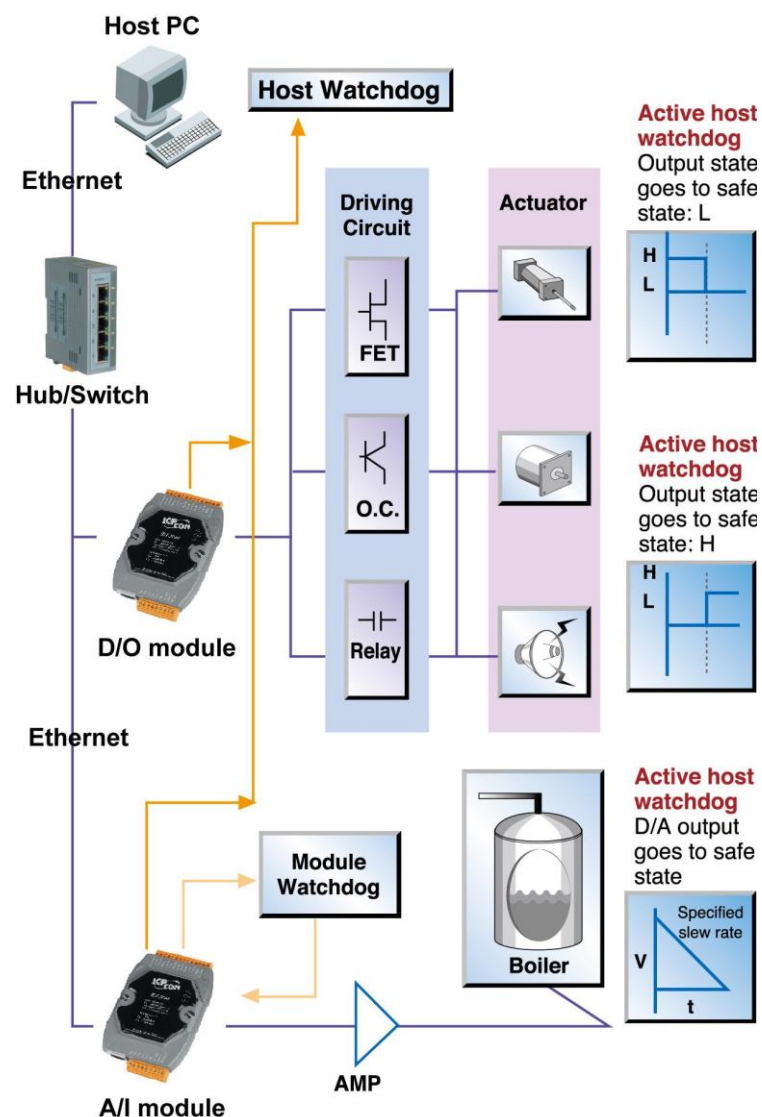


Appendix A Description of I/O Functions

A.1. Dual Watchdog

The Dual Watchdog consists of Module Watchdog and Host Watchdog.

1. **The Module Watchdog** is a built-in hardware circuit that will reset the CPU module if a failure occurs in either the hardware or the software. If the application does not refresh the watchdog timer within 0.8 seconds, the watchdog circuit will initiate a reset of the CPU.
2. **The Host Watchdog** is a software function that can be used to monitor the operating status of the host. Its purpose is to prevent network communication problems or a host failure. If the Watchdog timeout interval expires, the module will return all outputs to a predefined Safe value (Refer to the Safe Value application note), which can prevent the controlled target from unexpected situation.



A.2. Power-on Value

Many industrial applications require a **"safe"** start-up condition to prevent accidents at critical points in the process. Each ETS-7200 contains an initial power-on value which is used to configure the analog/digital outputs on power up. In other words, power-on value can be considered as a start-up value. The power-on value is loaded into the output modules under 3 conditions: power on, reset by Module Watchdog, reset by the reset command.

User can set the power-on value of the specific analog/digital output channel and the power-on value is stored in EEPROM.

Setting the Power-on Value for a Specific Digital Output Channel

The screenshot displays the 'Digital Output Settings' page. On the left, the 'Configuration' menu is expanded, and 'Module I/O Settings' is selected (Step 1). The main table lists digital output channels (Ch0 to Ch7). For Ch0, the 'Power-on Value' is set to 'On' (Step 2). A dropdown menu for Ch0 is open, showing options: 'Disabled - Maintain the current status', 'Enabled - Host Watchdog', and 'Enabled - Pair-Connection'. The 'SUBMIT' button is highlighted with a red arrow (Step 3).

Channel	Power-on Value	Value
Ch0	☒ On ☐ Off	Disabled - Maintain the current status
Ch1	☐ On ☒ Off	Disabled - Maintain the current status
Ch2	☐ On ☒ Off	Disabled - Maintain the current status
Ch7	☐ On ☒ Off	Disabled - Maintain the current status

Step 1: Log into the ETS-7200 web page, and then click the **"Module I/O Settings"** option in the **"Configuration"** section of the Main Menu.

Step 2: Enable the Power-on Value by checking the **"ON"** radio button.

Step 3: Click the **"SUBMIT"** button to complete the configuration of the power-on Value.

Setting the Power-on Value for a Specific Analog Output Channel

The screenshot shows the 'Analog Output Settings' page. On the left, the 'Configuration' menu is expanded, and 'Module I/O Settings' is selected (callout 1). The main area has two sections. The first section, 'Range', shows settings for Ch0 and Ch1, both set to '35, -5 ~ 5 V' and '00, Immediate'. The second section, 'Power-on Value', shows settings for Ch0 and Ch1, both set to '0.0' (callout 2). Below this is a 'SUBMIT' button (callout 3).

Channel	Range	Slew Rate
Ch0	35, -5 ~ 5 V	00, Immediate
Ch1	35, -5 ~ 5 V	00, Immediate

Channel	Power-on Value	Safe Value	Status
Ch0	0.0	0.0	Disabled - Maintain the current status
Ch1	0.0	0.0	Disabled - Maintain the current status

Step 1: Log into the ETS-7200 web page, and then click the “**Module I/O Settings**” option in the “**Configuration**” section of the Main Menu.

Step 2: Set the Power-on Value in the “**Power-on Value**” text box.

Step 3: Click the “**SUBMIT**” button to complete the configuration of the Power-on Value and save the settings to the EEPROM.

A.3. Safe Value

When the Host Watchdog is enabled and the communication between host PC and ETS-7200 modules is broken, the analog/digital output channels can generate a predefined value to prevent unpredictable damage of the connected devices. By default, this feature is disabled. User can enable this feature by configuring the Host WDT Timeout.

Setting the Safe Value for a Specific Digital Output Channel

Channel	Power-on Value	Safe Value
Ch0	☐ On ☒ Off	☒ On ☐ Off
Ch1	☐ On ☒ Off	☐ On ☒ Off

Disabled - Maintain the current status ▼
Disabled - Maintain the current status
Enabled - Host Watchdog
Enabled - Pair-Connection

SUBMIT

Step 1: Log into the ETS-7200 web page, and then click the “**Module I/O Settings**” option in the “**Configuration**” section of the Main Menu.

Step 2: Enable the Safe Value by checking the “**ON**” radio button.

Step 3: Click the “**SUBMIT**” button to complete the configuration of the Safe Value.

Setting the Safe Value for a Specific Analog Output Channel

Configuration —

Network Settings

Basic Settings

Module I/O Settings

Authentication +

Web HMI +

Pair Connection

More Information

Analog Output Settings

Channel	Range	Slew Rate
Ch0	35, -5 ~ 5 V	00, Immediate
Ch1	35, -5 ~ 5 V	00, Immediate

☐ Apply the current

SUBMIT

Channel	Power-on Value	Safe Value	
Ch0	0.0 -5 ~ 5 V	0.0 -5 ~ 5 V	Disabled - Maintain the current status
Ch1	0.0 -5 ~ 5 V	0.0 -5 ~ 5 V	Disabled - Maintain the current status

SUBMIT

Step 1: Log into the ETS-7200 web page, and then click the “**Module I/O Settings**” option in the “**Configuration**” section of the Main Menu.

Step 2: Set the Safe Value in the “**Safe Value**” text box.

Step 3: Click the “**SUBMIT**” button to complete the configuration of the Safe Value and save the settings to the EEPROM.

A.4. AI High/Low Alarm

ETS-7200 module equip with the High/Low Alarm function. When the alarm function is activated, the value of the specified registers is 1. The status of the alarm is the result of comparing the analog input value with a given high alarm value or a low alarm value.

Address 00636 to 00667 can be used to enable/disable the AI High Alarm function.

Address 00668 to 00699 can be used to enable/disable the AI Low Alarm function.

AI High/Low Alarm Switch Table

Channel Number	AI High Alarm		AI Low Alarm	
	Register	Description	Register	Description
AI0	00636	0: Disable/1: Enable	00668	0: Disable/1: Enable
AI1	00637	0: Disable/1: Enable	00669	0: Disable/1: Enable
AI2	00638	0: Disable/1: Enable	00670	0: Disable/1: Enable
AI3	00639	0: Disable/1: Enable	00671	0: Disable/1: Enable
AI4	00640	0: Disable/1: Enable	00672	0: Disable/1: Enable
AI5	00641	0: Disable/1: Enable	00673	0: Disable/1: Enable
AI6	00642	0: Disable/1: Enable	00674	0: Disable/1: Enable
AI7	00643	0: Disable/1: Enable	00675	0: Disable/1: Enable
AI8	00644	0: Disable/1: Enable	00676	0: Disable/1: Enable
AI9	00645	0: Disable/1: Enable	00677	0: Disable/1: Enable

Address 40296 to 40327 records the High Alarm value. Address 40328 to 40359 records the Low Alarm value. By default, the High Alarm value is +32767 (0x7FFF) and the low alarm value is -32768 (0xFFFF).

AI High/Low Alarm Value Table

Channel Number	High Alarm Value of AI		Low Alarm Value of AI	
	Register	Description	Register	Description
AI0	40296	-32768 ~ 32767	40328	-32768 ~ 32767
AI1	40297	-32768 ~ 32767	40329	-32768 ~ 32767
AI2	40298	-32768 ~ 32767	40330	-32768 ~ 32767
AI4	40300	-32768 ~ 32767	40332	-32768 ~ 32767
AI5	40301	-32768 ~ 32767	40333	-32768 ~ 32767
AI6	40302	-32768 ~ 32767	40334	-32768 ~ 32767
AI7	40303	-32768 ~ 32767	40335	-32768 ~ 32767
AI8	40304	-32768 ~ 32767	40336	-32768 ~ 32767
AI9	40305	-32768 ~ 32767	40337	-32768 ~ 32767

The analog input High/Low Alarm contains two alarm types, Momentary Alarm and Latch Alarm. Address 00700 of Modbus register can be used to set the High Alarm type of channel 0 and the total number of channels depends on the type of module. Address 00732 of Modbus register can be used to set the Low Alarm type of channel 0.

AI High/Low Type Value Table

Channel Number	AI High Alarm Type		AI Low Alarm Type	
	Register	Description	Register	Description
AI0	00700	0: Momentary Mode 1: Latch Mode	00732	0: Momentary Mode 1: Latch Mode
AI1	00701	0: Momentary Mode 1: Latch Mode	00733	0: Momentary Mode 1: Latch Mode
AI2	00702	0: Momentary Mode 1: Latch Mode	00734	0: Momentary Mode 1: Latch Mode
AI3	00703	0: Momentary 1: Latched	00735	0: Momentary 1: Latched
AI4	00704	0: Momentary 1: Latched	00736	0: Momentary 1: Latched
AI5	00705	0: Momentary 1: Latched	00737	0: Momentary 1: Latched
AI6	00706	0: Momentary 1: Latched	00738	0: Momentary 1: Latched
AI7	00707	0: Momentary 1: Latched	00739	0: Momentary 1: Latched
AI8	00708	0: Momentary 1: Latched	00740	0: Momentary 1: Latched
AI9	00709	0: Momentary 1: Latched	00741	0: Momentary 1: Latched

The following are the descriptions for two alarm types.

Momentary Alarm

An alarm will be triggered when the analog input value exceeds alarm limits. When the AI value is back to normal, the alarm status will automatically be cleared.

For example:

If analog input value of channel 0 (Address: 30000) > High Alarm value (Address: 40296), the address 10224 is 1, else it is 0.

If analog input Value of channel 0 (30000) < Low Alarm value (40328), the address 10256 is 1, else it is 0.

The address 10224 to 10255 is used to read the status of the high alarm. If a high alarm occurred, the Register value is 1. Under normal conditions, the value is 0. The address 10256 to 10287 is used to read the status of the low alarm. If a low alarm occurred, the Register value is 1. Under normal conditions, the value is 0.

Latch Alarm

An alarm will be triggered when the analog input value exceeds alarm limits. When the AI value is back to normal, the alarm status will keep until the clear command is sent to the specific address.

For example:

If analog input value of channel 0 (30000) > High Alarm value (40296), the address 10224 is 1. If analog input value of channel 0 (30000) < Low Alarm value (40328), the address 10256 is 1.

The address 10224 to 10255 is used to read the status of the high alarm. In normal condition, the value of register is 0. If a High alarm occurred, the Register value stays 1 until the status of the address(es) 00764 to 00795 is cleared. The address 10256 to 10287 is used to read the status of the Low alarm. In normal condition, the value of register is 0. If a low alarm occurred, the value of register stays 1 until status of the address(es) 00796 to 00827 is cleared.

Setting the High Alarm and Low Alarm for a Specific Analog Input Channel

Channel	High Limit Value	Mode
Ch0	10.0 -10 ~ 10 V	Monemtary
Ch1	10.0 -10 ~ 10 V	Latch
Ch2	10.0 -10 ~ 10 V	Monemtary
Ch3	10.0 -10 ~ 10 V	Monemtary
Ch4	10.0 -10 ~ 10 V	Monemtary
Ch5	10.0 -10 ~ 10 V	Monemtary

Step 1: Log into the ETS-7200 web page, and then click the “**Module I/O Settings**” option in the “**Configuration**” section of the Main Menu.

Step 2: Set the High Alarm and Low Alarm information in the relevant field.

Step 3: Click the “**SUBMIT**” button to complete the configuration of the High Alarm and the Low Alarm.

Channel	Low Limit Value	Mode
Ch0	-10.0 -10 ~ 10 V	Monemtary
Ch1	-10.0 -10 ~ 10 V	Latch
Ch2	-10.0 -10 ~ 10 V	Monemtary
Ch3	-10.0 -10 ~ 10 V	Monemtary
Ch4	-10.0 -10 ~ 10 V	Monemtary
Ch5	-10.0 -10 ~ 10 V	Monemtary

A.5. AI High/Low Latch

The address 30236 to 30267 records the maximum value of analog inputs and stays the value until another maximum input enters. The address 30268 to 30299 records the minimum value of analog inputs and stays the value until another minimum input enters.

Monitoring the Alarm Status for a Specific Analog Input Channel

Click the “Web HMI” item from the “Web HMI” menu.

THIS COMPUTER - ETS-7000

AI AO DI DO

Analog Inputs

Channel No.	Actual Value	Historical Max/Min Value		High/Low Alarm	
AI0	-0.0 V Modbus 30000: FFFF	Max: -0.0 V Modbus 30236: FFFF	Min: -0.0 V Modbus 30268: FFFE	High Alarm: OFF Modbus 10224: 0	Low Alarm: OFF Modbus 10256: 0
AI1	-0.0 V Modbus 30001: FFFF	Max: 0.0 V Modbus 30237: 0000	Min: -0.0 V Modbus 30269: FFFE	High Alarm: OFF Modbus 10225: 0	Low Alarm: OFF Modbus 10257: 0
AI2	-0.0 V Modbus 30002: FFFF	Max: 0.0 V Modbus 30238: 0000	Min: -0.0 V Modbus 30270: FFFE	High Alarm: OFF Modbus 10226: 0	Low Alarm: OFF Modbus 10258: 0
AI3	-0.0 V Modbus 30003: FFFF	Max: 0.0 V Modbus 30239: 0000	Min: -0.0 V Modbus 30271: FFFE	High Alarm: OFF Modbus 10227: 0	Low Alarm: OFF Modbus 10259: 0
AI4	-0.0 V Modbus 30004: FFFF	Max: -0.0 V Modbus 30240: FFFF	Min: -0.0 V Modbus 30272: FFFE	High Alarm: OFF Modbus 10228: 0	Low Alarm: OFF Modbus 10260: 0
AI5	-0.0 V Modbus 30005: FFFF	Max: -0.0 V Modbus 30241: FFFF	Min: -0.0 V Modbus 30273: FFFE	High Alarm: OFF Modbus 10229: 0	Low Alarm: OFF Modbus 10261: 0

[RESET ALL MAX. VALUES](#) [RESET ALL MIN. VALUES](#)

Step 1: Log into the ETS-7200 web page, and then click the “Module I/O Settings” option in the “Configuration” section of the Main Menu.

Step 2: Monitor the alarm status by viewing the “Analog Inputs” group table.

Appendix B Analog Input Type and Data Format Table

Type Code	Input Range	Data Format	+F.S	-F.S
00	-15 ~ +15 mA	Engineering Unit	+15000	-15000
		2's comp HEX	7FFF	8000
01	-50 ~ +50 mA	Engineering Unit	+5000	-5000
		2's comp HEX	7FFF	8000
02	-100 ~ +100 mV	Engineering Unit	+10000	-10000
		2's comp HEX	7FFF	8000
03	-500 ~ +500 mV	Engineering Unit	+5000	-5000
		2's comp HEX	7FFF	8000
04	-1 ~ +1 V	Engineering Unit	+10000	-10000
		2's comp HEX	7FFF	8000
05	-2.5 ~ +2.5 V	Engineering Unit	+25000	-25000
		2's comp HEX	7FFF	8000
06	-20 ~ +20 mA	Engineering Unit	+20000	-20000
		2's comp HEX	7FFF	8000
07	+4 ~ +20 mA	Engineering Unit	+20000	+4000
		2's comp HEX	FFFF	0000
08	-10 ~ +10 V	Engineering Unit	+10000	-10000
		2's comp HEX	7FFF	8000
09	-5 ~ +5 V	Engineering Unit	+5000	-5000
		2's comp HEX	7FFF	8000
0A	-1 ~ +1 V	Engineering Unit	+10000	-10000
		2's comp HEX	7FFF	8000
0B	-500 ~ +500 mV	Engineering Unit	+5000	-5000
		2's comp HEX	7FFF	8000
0C	-150 ~ +150 mV	Engineering Unit	+15000	-15000
		2's comp HEX	7FFF	8000
0D	-20 ~ +20 mA	Engineering Unit	+20000	-20000
		2's comp HEX	7FFF	8000

Type Code	Input Range	Data Format	+F.S	-F.S
1A	0 ~ +20 mA	Engineering Unit	+20000	0
		2's comp HEX	FFFF	0000
0E	Type J Thermocouple -210 ~ 760°C	Engineering Unit	+7600	-2100
		2's comp HEX	7FFF	DCA2
0F	Type K Thermocouple -270 ~ 1372°C	Engineering Unit	+13720	-2700
		2's comp HEX	7FFF	E6D0
10	Type T Thermocouple -270 ~ 400°C	Engineering Unit	+4000	-2700
		2's comp HEX	7FFF	A99A
11	Type E Thermocouple -270 ~ 1000°C	Engineering Unit	10000	-2700
		2's comp HEX	7FFF	DD71
12	Type R Thermocouple 0 ~ 1768°C	Engineering Unit	+17680	0
		2's comp HEX	7FFF	0000
13	Type S Thermocouple 0 ~ 1768°C	Engineering Unit	+17680	0
		2's comp HEX	7FFF	0000
14	Type B Thermocouple 0 ~ 1820°C	Engineering Unit	+18200	0
		2's comp HEX	7FFF	0000
15	Type N Thermocouple -270 ~ 1300°C	Engineering Unit	+13000	-2700
		2's comp HEX	7FFF	E56B
16	Type C Thermocouple 0 ~ 2320°C	Engineering Unit	+23200	0
		2's comp HEX	7FFF	0000
17	Type L Thermocouple -200 ~ 800°C	Engineering Unit	+8000	-2000
		2's comp HEX	7FFF	E000
18	Type M Thermocouple -200 ~ 100°C	Engineering Unit	+10000	-20000
		2's comp HEX	4000	8000
19	Type L DIN43710 Thermocouple -200 ~ 900°C	Engineering Unit	9000	-2000
		2's comp HEX	FFFF	E38E
20	Platinum 100 $\alpha=0.00385$ -100 ~ 100°C	Engineering Unit	+10000	-10000
		2's comp HEX	7FFF	8000
21	Platinum 100 $\alpha=0.00385$ 0 ~ 100°C	Engineering Unit	+10000	0
		2's comp HEX	7FFF	0000

Type Code	Input Range	Data Format	+F.S	-F.S
22	Platinum 100 $\alpha=0.00385$ 0 ~ 200°C	Engineering Unit	+20000	0
		2's comp HEX	7FFF	0000
23	Platinum 100 $\alpha=0.00385$ 0 ~ 600°C	Engineering Unit	+6000	0
		2's comp HEX	7FFF	0000
24	Platinum 100 $\alpha=0.003916$ -100 ~ 100°C	Engineering Unit	+10000	-10000
		2's comp HEX	7FFF	8000
25	Platinum 100 $\alpha=0.003916$ 0 ~ 100°C	Engineering Unit	+10000	0
		2's comp HEX	7FFF	0000
26	Platinum 100 $\alpha=0.003916$ 0 ~ 200°C	Engineering Unit	+20000	0
		2's comp HEX	7FFF	0000
27	Platinum 100 $\alpha=0.003916$ 0 ~ 600°C	Engineering Unit	+6000	0
		2's comp HEX	7FFF	0000
28	Nickel 120 -80 ~ 100°C	Engineering Unit	+10000	-8000
		2's comp HEX	7FFF	999A
29	Nickel 120 0 ~ 100°C	Engineering Unit	+10000	0
		2's comp HEX	7FFF	0000
2A	Platinum 1000 $\alpha=0.00385$ -200 ~ 600°C	Engineering Unit	+6000	-2000
		2's comp HEX	7FFF	D556
2B	Cu 100 $\alpha=0.00421$ -20 ~ 150°C	Engineering Unit	+15000	-2000
		2's comp HEX	7FFF	EEEE
2C	Cu 100 $\alpha=0.00427$ 0 ~ 200°C	Engineering Unit	+20000	0
		2's comp HEX	7FFF	0000
2D	Cu 1000 $\alpha=0.00421$ -20 ~ 150°C	Engineering Unit	+15000	-2000
		2's comp HEX	7FFF	EEEE
2E	Platinum 1000 $\alpha=0.00385$ -200 ~ 200°C	Engineering Unit	+20000	-20000
		2's comp HEX	7FFF	8000
2F	Platinum 1000 $\alpha=0.003916$ -200 ~ 200°C	Engineering Unit	+20000	-20000
		2's comp HEX	7FFF	8000
60	PreCon Type III 10K@25°C, -30°F ~ 240°F	Engineering Unit	+24000	-3000
		2's comp HEX	7FFF	F000
61	Fenwell Type U 2K@25°C, -50°C ~ 150°C	Engineering Unit	+15000	-5000
		2's comp HEX	7FFF	D556

Type Code	Input Range	Data Format	+F.S	-F.S
62	Fenwell Type U 2K@25°C, 0°C ~ 150°C	Engineering Unit	+15000	0
		2's comp HEX	7FFF	0000
63	YSI L Mix 100@25°C, -80°C ~ 100°C	Engineering Unit	10000	-8000
		2's comp HEX	7FFF	999A
64	YSI L Mix 300@25°C, -80°C ~ 100°C	Engineering Unit	+10000	-8000
		2's comp HEX	7FFF	999A
65	YSI L Mix 1000@25°C, -70°C ~ 100°C	Engineering Unit	+10000	-7000
		2's comp HEX	7FFF	A667
66	YSI B Mix 2252@25°C, -50°C ~ 150°C	Engineering Unit	+15000	-5000
		2's comp HEX	7FFF	D556
67	YSI B Mix 3000@25°C, -40°C ~ 150°C	Engineering Unit	+15000	-4000
		2's comp HEX	7FFF	DDDE
68	YSI B Mix 5000@25°C, -40°C ~ 150°C	Engineering Unit	+15000	-4000
		2's comp HEX	7FFF	DDDE
69	YSI B Mix 6000@25°C, -30°C ~ 150°C	Engineering Unit	+15000	-3000
		2's comp HEX	7FFF	E667
6A	YSI B Mix 10000@25°C, -30°C ~ 150°C	Engineering Unit	+15000	-3000
		2's comp HEX	7FFF	E667
6B	YSI H Mix 10000@25°C, -30°C ~ 150°C	Engineering Unit	+15000	-3000
		2's comp HEX	7FFF	E667
6C	YSI H Mix 30000@25°C, -10°C ~ 200°C	Engineering Unit	+20000	-1000
		2's comp HEX	7FFF	F99A
70	User-defined, -50°C ~ 150°C	Engineering Unit	+15000	-5000
		2's comp HEX	7FFF	D556
71	User-defined, -50°C ~ 150°C	Engineering Unit	+15000	-5000
		2's comp HEX	7FFF	D556
72	User-defined, -50°C ~ 150°C	Engineering Unit	+15000	-5000
		2's comp HEX	7FFF	D556
73	User-defined, -50°C ~ 150°C	Engineering Unit	+15000	-5000
		2's comp HEX	7FFF	D556
74	User-defined, -50°C ~ 150°C	Engineering Unit	+15000	-5000
		2's comp HEX	7FFF	D556

Type Code	Input Range	Data Format	+F.S	-F.S
75	User-defined, -50°C ~ 150°C	Engineering Unit	+15000	-5000
		2's comp HEX	7FFF	D556
76	User-defined, -50°C ~ 150°C	Engineering Unit	+15000	-5000
		2's comp HEX	7FFF	D556
77	User-defined, -50°C ~ 150°C	Engineering Unit	+15000	-5000
		2's comp HEX	7FFF	D556
80	Platinum 100 $\alpha=0.00385$ -200 ~ 600°C	Engineering Unit	+6000	-2000
		2's comp HEX	7FFF	D556
81	Platinum 100 $\alpha=0.003916$ -200 ~ 600°C	Engineering Unit	+6000	-2000
		2's comp HEX	7FFF	D556
82	Cu 50 -50 ~ 150°C	Engineering Unit	+15000	-5000
		2's comp HEX	7FFF	D556
83	Nickel 100 -60 ~ 180°C	Engineering Unit	+18000	-6000
		2's comp HEX	7FFF	D556

Appendix C Analog Output Type and Data Format Table

Type Code	Output Range	Data Format	+F.S	-F.S
30	0 ~ +20 mV	Engineering Unit	+20000	0
		2's comp HEX	FFFF	0000
31	4 ~ +20 mV	Engineering Unit	+20000	4000
		2's comp HEX	FFFF	0000
32	0 ~ +10 V	Engineering Unit	+10000	0
		2's comp HEX	7FFF	0000
33	-10 ~ +10 V	Engineering Unit	+10000	-10000
		2's comp HEX	7FFF	8000
34	0 ~ +5 V	Engineering Unit	+5000	0
		2's comp HEX	7FFF	0000
35	-5 ~ +5 V	Engineering Unit	+5000	-5000
		2's comp HEX	7FFF	8000

Appendix D Convert Modbus Data to the Actual Value

This chapter describes how to convert Modbus raw data read by ETS-7000 into actual voltage, current, or temperature values.

On the **Module I/O Settings** page, check the **Range** and **Data Format** settings in the **Analog Input Setting** section.

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<http://www.icpdas.com>

Overview
Configuration —
Network Settings
Basic Settings
Module I/O Settings
Authentication +
Web HMI +
Pair Connection
More Information

Analog Input Settings

Channel	Range	Data Format
Ch0	08, -10 ~ 10 V	HEX 2's complement
Ch1	08, -10 ~ 10 V	HEX 2's complement
Ch2	08, -10 ~ 10 V	HEX 2's complement
Ch3	08, -10 ~ 10 V	HEX 2's complement
Ch4		

Modbus Address Function

00628	Normal Mode (10 Hz)/Fast Mode (50 Hz)	☒ Normal mode ☐ Fast mode
00629	60/50 Hz Rejection	☒ 60 Hz ☐ 50 Hz
00631	Data Format	☒ HEX 2's complement ☐ Engineering
00632	Restore Analog Calibration to Factory Settings	☐

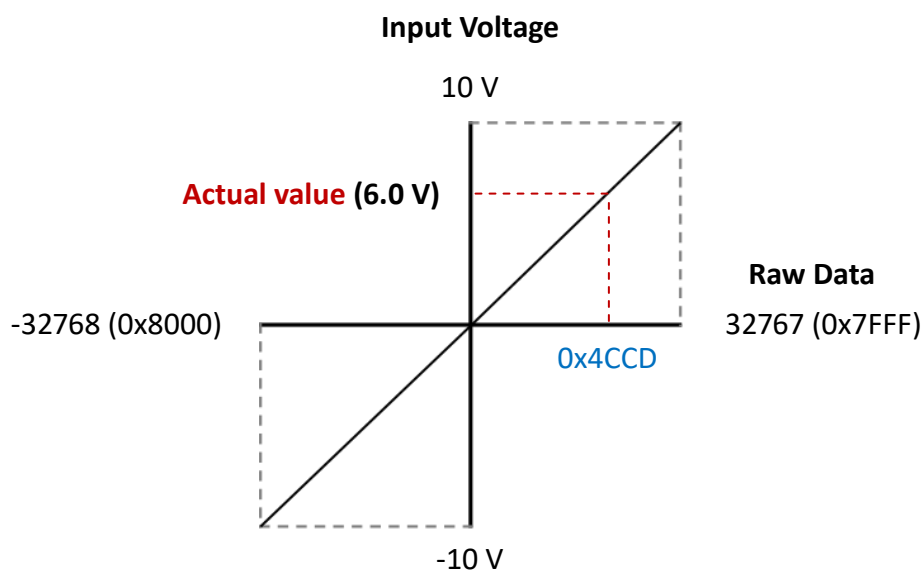
The following example shows how to convert the Modbus data to a **voltage** value.

Type Code	Input Range	Data Format	Min.	Max.
08	-10 ~ +10 V	Engineering	-10000	+10000
		2's Complement	8000	7FFF

The user can get the input voltage with the following formula.

$$\frac{\text{Actual value}}{\text{Max. value of input range}} = \frac{\text{Modbus Raw Data (decimal)}}{\text{Max. raw data value (decimal)}}$$

$$\frac{\text{Actual value}}{10} = \frac{19661 \text{ (4CCD in hexadecimal)}}{32767 \text{ (7FFF in hexadecimal)}} \Rightarrow \text{Actual value} = 6.0 \text{ (V)}$$



For example, if the **Modbus Raw Data** read by the module is **0x200E**, the **Actual Value** of the input voltage is 2.5 (V).

$$\frac{\text{Actual value}}{10} = \frac{8206 \text{ (200E in hexadecimal)}}{32767 \text{ (7FFF in hexadecimal)}} \Rightarrow \text{Actual value} = 2.5 \text{ (V)}$$

Analog Inputs					
Channel No.	Actual Value	Historical Max/Min Value		High/Low Alarm	
AI0	2.5 V Modbus 30000: 200E	Max: 10.0 V Modbus 30236: 7FFF	Min: -0.0 V Modbus 30268: FFDD	High Alarm: OFF Modbus 10224: 0	Low Alarm: OFF Modbus 10256: 0
AI1	-0.0 V Modbus 30001: FFFF	Max: 0.0 V Modbus 30237: 0001	Min: -0.0 V Modbus 30269: FFDD	High Alarm: OFF Modbus 10225: 0	Low Alarm: OFF Modbus 10257: 0

The following example shows how to convert the Modbus data to a **current** value.

Type Code	Input Range	Data Format	Min.	Max.
07	4 ~ 20 mA	Engineering	4000	20000
		2's Complement	0x0000	0xFFFF

For example, if the **Modbus Raw Data** read by the module is **0x7FFF**, the **Actual Value** of the input current is 12.0 (mA).

$$\text{Actual value} = 4 + (20 - 4) \times \frac{32767 \text{ (7FFF in hexadecimal)}}{65535 \text{ (FFFF in hexadecimal)}} \Rightarrow \text{Actual value} = 12.0 \text{ (mA)}$$

Analog Inputs					
Channel No.	Actual Value	Historical Max/Min Value		High/Low Alarm	
AI0	12.0 mA Modbus 30000: 7FFF	Max: 12.0 mA Modbus 30236: 8002	Min: 4.0 mA Modbus 30268: 0000	High Alarm: OFF Modbus 10224: 0	Low Alarm: OFF Modbus 10256: 0
AI1	4.0 mA Modbus 30001: 0000	Max: 4.0 mA Modbus 30237: 0000	Min: 4.0 mA Modbus 30269: 0000	High Alarm: OFF Modbus 10225: 0	Low Alarm: OFF Modbus 10257: 0

The following example shows how to convert the Modbus data to a **temperature** value.

Type Code	Input Range	Data Format	Min.	Max.
0F	Type K Thermocouple -270 ~ 1372°C	Engineering	-2700	13720
		2's Complement	0xE6D0	0x7FFF

The user can get the input temperature with the following formula.

$$\frac{\text{Actual value}}{\text{Modbus Raw Data (decimal)}} = \frac{\text{Max. value of input range}}{\text{Max. raw data value (decimal)}}$$

For example, if the **Modbus Raw Data** read by the module is **0x00EE**, the **Actual Value** of the input current is 23.8 (°C).

$$\frac{\text{Actual value}}{238 \text{ (00EE in hexadecimal)}} = \frac{1372}{13720} \Rightarrow \text{Actual value} = 23.8 \text{ (°C)}$$

Appendix E Revision History

The table below shows the revision history.

Revision	Date	Description
1.0.1	March 2026	Added product feature description.
1.0.0	October 2025	Initial issue