

**Gateway Module**

**GW712**

**User manual**

**IM23H24-E**

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# GW712 User Manual

## Section 1 Overview

Gateway module GW712 can be used to put old system (JX-300XP, ECS-100, etc) into the new one (ECS-700 or i-OMC), in order to realize the users' requirement that the old project can be uniformly monitored together with the new project. This manual is only a brief instruction. Please refer to 《VF Monitor Management》 for details.

### 1.1 Network Structure

The network structure of interlinking between JX-300XP/ECS-100 and ECS-700 (or i-OMC), by GW712 is shown as Figure 1-1 (take ECS-700 for example), the control network A# and B# are redundant.

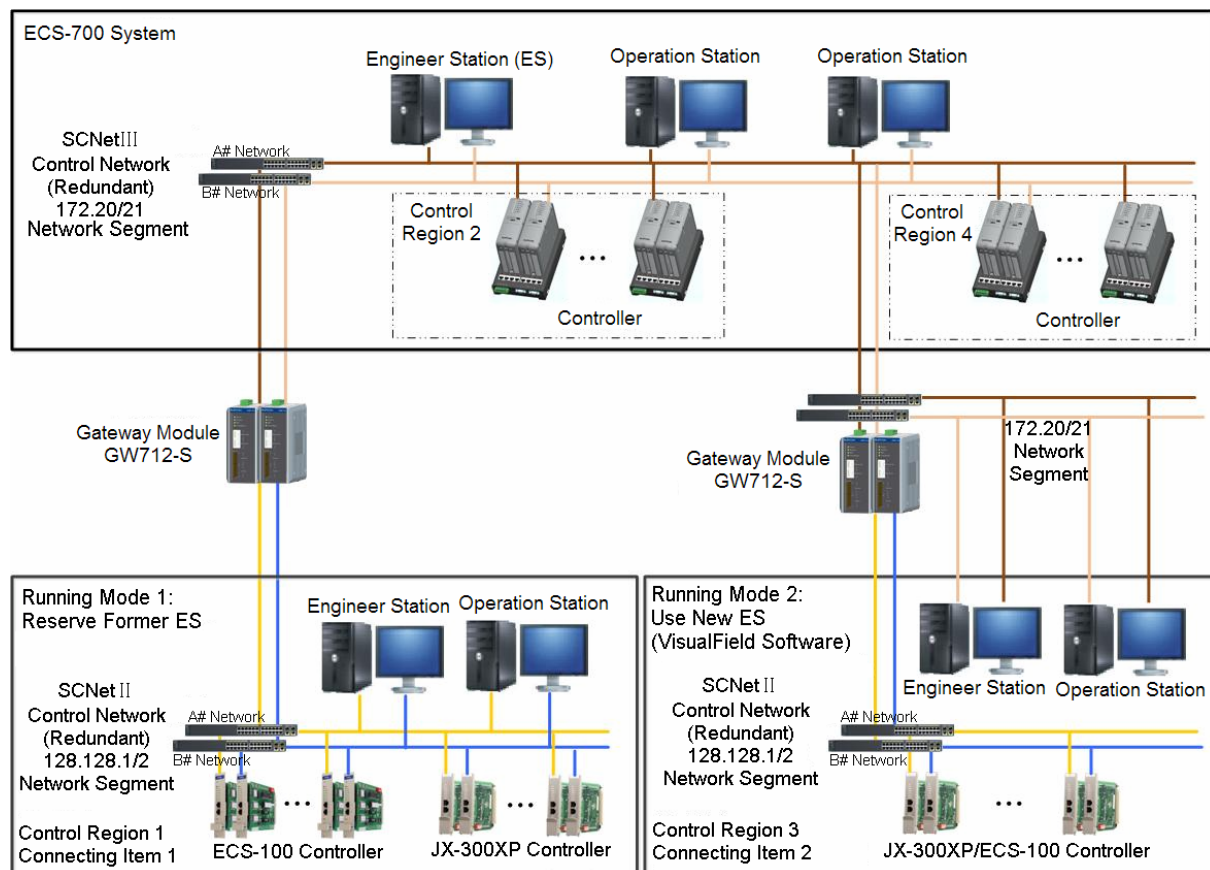


Figure 1-1 Network Structure

## 1.2 Technical Specification

- Power Supply: 24V DC $\pm$ 5% or 9V DC $\pm$ 5%
- Gateway supports time synchronization.
- The delay time of network is within 50 ms.
- The packet loss rate of communication is less than hundred thousandth.
- The throughput reaches 1000PPS at most.
- GW712 module supports to access 63 stations at the same time. The range of station IP address is from 2 to 127.
- Power Consumption: 7W.
- Operating Environment:
  - Operating Temperature: -20°C~70°C
  - Storage Temperature: -40°C~85°C
  - Operating Humidity: 10%RH~90%RH, no condensation
  - Storage Humidity: 5%RH~95%RH, no condensation
  - Vibration Frequency: (10~150)Hz
  - Vibration Displacement Amplitude: 0.075mm
- EMC: Industrial class 3B
- Enclosure Protection Class: IP20

## Section 2 Hardware Usage Instruction

GW712 can send real-time data, diagnostic data and SOE data of ECS-100 or JX-300XP to SCnetIII control network of ECS-700 system (or i-OMC), and show them in VisualField Real-time Monitor Software.

### 2.1 Appearance

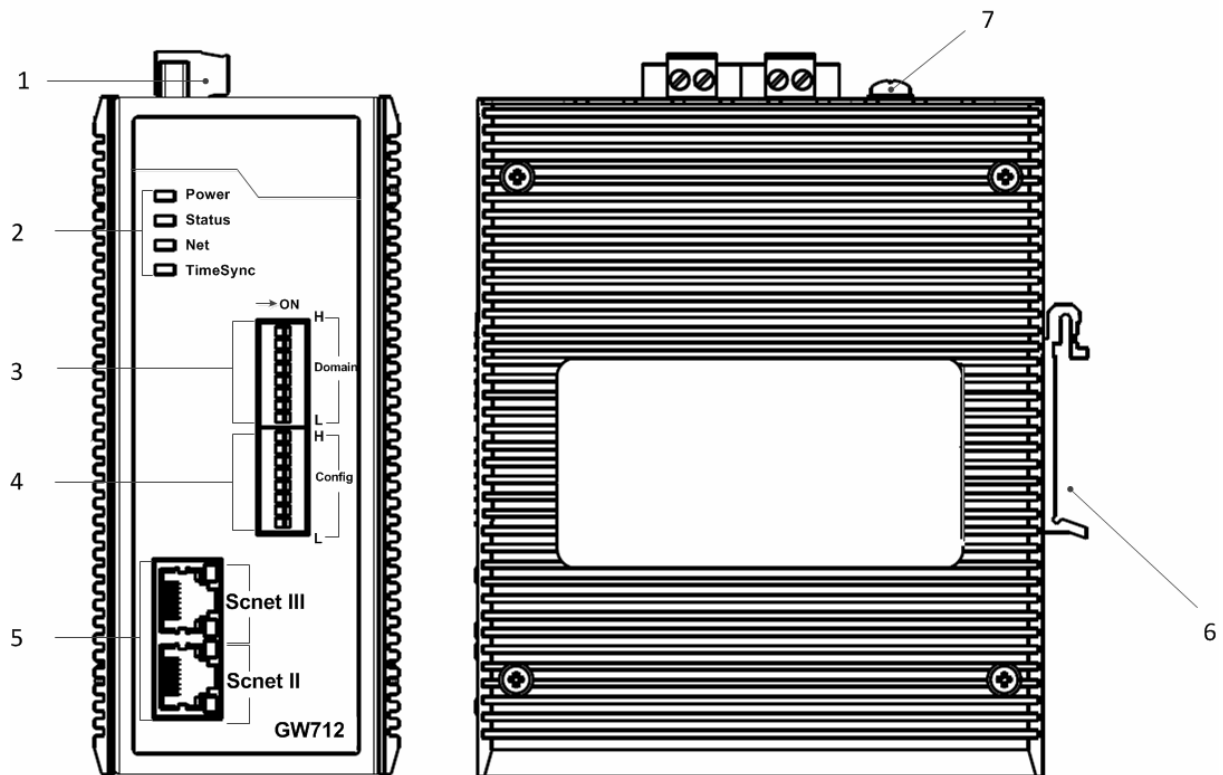


Figure 2-1 GW712 Appearance

Size (width×height×depth): 63mm×150mm×130mm

Weight: 600g

### 2.2 Interface Instruction

There is only instruction for interfaces which need to be used.

The appearance is shown in Figure 2-1 and the instruction of each interface is shown below:

**Table 2-1 Interface Instruction**

No.	Interface	Instruction
1	Power Terminal	9 to 24V DC power interface
2	Indicator Light	Refer to Table 2-2
3	Domain Address DIP Switch	Gateway domain address DIP switch setting (1 for high position, 8 for low position) Refer to the explanation of DIP Switch for details.
4	Gateway Configuration DIP Switch	Only the 7 <sup>th</sup> and 8 <sup>th</sup> positions are effective at present. <ul style="list-style-type: none"> <li>● The 7<sup>th</sup> position sets whether to open SCnetII time synchronization server.</li> <li>● The 8<sup>th</sup> position sets the network of gateway module (network A# or B#)</li> <li>● Refer to the explanation of DIP Switch for details</li> </ul>
5	RJ45 Interface	SCNetIII: connect to ECS-700(or i-OMC)control network switch SCNetII: connect to ECS-100 or JX-300XP control network switch
6	DIN Rail Installation	Fix gateway module in the DIN rail
7	Earthing Terminal	Close to power supply wiring terminal, for shell protective earthing

## 2.3 Indicator Light Instruction

**Table 2-2 Module Indicator Light Instruction**

Indicator Light	Define	State/Instruction
Power (Green)	Fault Light	ON: power on normally OFF: power off or be faulty (module or power fault and etc.)
Status (Green)	Status Light	ON: system works normally OFF: system works abnormally
Net (Green)	Network Light	ON: SCnetII network data is normal Flash: address conflict OFF: no network data
TimeSync (Green)	Time Synchronization Server Light	ON: time synchronization server light is on OFF: time synchronization server light is off

## 2.4 DIP Switch

The are 2 DIP switches on gateway module, which respectively are:

- Config: configure network of gateway module and SCnetII time synchronization server.
- Domain: configure region address of gateway module.

**Attention:**

Before configuring DIP switch, GW712 gateway module must be power off, and be power on after being configured; otherwise the setting will be ineffective.

### 2.4.1 Configure SCnetII Time Synchronization Server

**Attention:**

The gateway time can be synchronized by time synchronization server in SCnetIII side. Time synchronization server must be configured in SCnetIII side; otherwise there will be faults occurring in system diagnosis software.

If the time of the main processor in SCnetII needs to be synchronized with SCnetIII side, users can enable SCnetII time synchronization server function of gateway by Config DIP switch. As shown in Figure 2-2, the 7<sup>th</sup> position of Config DIP is ON means that time synchronization server is on; if it's OFF, time synchronization server is off.

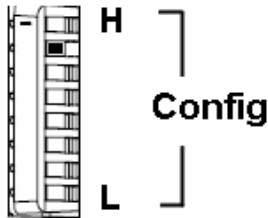


Figure 2-2 Turn on SCnetII time synchronization server

### 2.4.2 Configure Network and Region Address of Modules

- The IP address in SCnetIII side (connected to ECS-700(or OMC)) of GW712 module (i.e. region address) is 172.20/21.X.1. A# network: 172.20.X.1; B# network: 172.21.X.1.
- The range of X is 0~59 and can be set by Domain DIP, as shown in Table 2-3.

Table 2-3 Region address DIP settings

Domain DIP Switch Number: H→L								Region Address
1	2	3	4	5	6	7	8	
OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	0
OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	1
OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	2
OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	3
OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	4
OFF	OFF	...	...	...	...	...	...	...
OFF	OFF	ON	ON	ON	OFF	OFF	OFF	56
OFF	OFF	ON	ON	ON	OFF	OFF	ON	57
OFF	OFF	ON	ON	ON	OFF	ON	OFF	58
OFF	OFF	ON	ON	ON	OFF	ON	ON	59

- The IP address in SCnetII side (connected to ECS-100 or JX-300XP side) of GW712 module is 128.128.1/2.160. A# network: 128.128.1.160; B# network: 128.128.2.160.
- A# or B# network of gateway module can be set by the 8<sup>th</sup> position of Config DIP switch. If the 8<sup>th</sup> position is ON, it's B# network, otherwise it's A# network.

### 2.4.3 Example

Aim: connect gateway module to system B# network, and its address is 172.21.2.1 and start SCnetII time synchronization server.

Configuring steps:

1. Make gateway power off.
2. Set the 7<sup>th</sup> position of Config DIP switch as ON and start time synchronization server in SCnetII side.
3. Set the 8<sup>th</sup> position of Config DIP switch as ON and set the network as B# network.
4. Set the 7<sup>th</sup> position of Domain DIP switch as ON and set region address of gateway as 2. The DIP after being set is shown as Figure 2-3. The IP address in SCnetIII side is 172.21.2.1 and IP address in SCnetII side is 128.128.2.160.

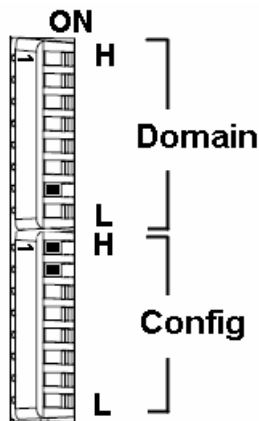


Figure 2-3 DIP switch example

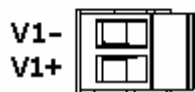
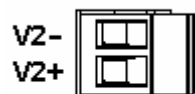
5. Make gateway power on.

## 2.5 Module Power

The power of module is 9 to 24VDC, containing 2-channel power supply circuits which are independent and supporting redundant power supply. The terminal is shown below:



**V1,V2 Inputs:  
9-24VDC**



**Figure 2-4 Power terminal**

## 2.6 Shell Earthing

There is an earthing terminal shown below near the power supply terminal on the top of module and it needs to be connected to the protective earth.



**Figure 2-5 Shell Protective Earthing Terminal**

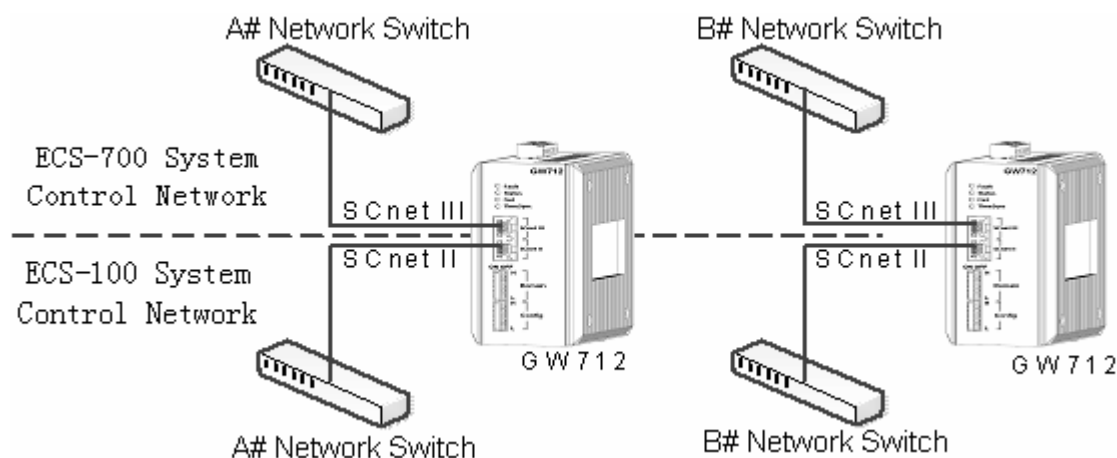
## 2.7 Reset Function

The button Reset is near the power terminal on the top of module and the mark is Reset. It's a reserved function.

## 2.8 Network Connection Address Mapping Relation

### Network Connection

GW712 module connects to ECS-100/JX-300XP system control network, which is shown as Figure 2-6. The interface of SCnetIII connects to A# or B# network of ECS-700(or OMC) system and the interface of SCnetII connects to the main processors of ECS-100 or JX-300XP system.



**Figure 2-6 Network Connection**

## Address Mapping Relation

The address mapping relations of SCnet II→SCnet III and SCnet III→SCnet II are respectively shown in Table 2-4 and Table 2-5.

**Table 2-4 Address mapping relation of SCnet II→SCnet III**

Network	Gateway Region Address	SCnet II Control Station Address	SCnet III Address after Mapping
A# Network	172.20.X.1	128.128.1.Y	172.20.X.Y
B# Network	172.21.X.1	128.128.2.Y	172.21.X.Y

**Table 2-5 Address mapping relation of SCnet III→SCnet II**

Network	SCnet III Control Station Address	SCnet II Address after Mapping
A# Network	172.20.X.Y	128.128.1.Y
B# Network	172.21.X.Y	128.128.2.Y

If address of the controller is 128.128.1.16 and region address of gateway is 172.20.4.1 in ECS-100 or JX-300XP side, the mapping address of the main processor in SCnet III side will be 172.20.4.16. If the control station in SCnet III side can ping 172.20.4.16 successfully, the connection to the main processor is normal.

## 2.9 Module Installation and Uninstallation

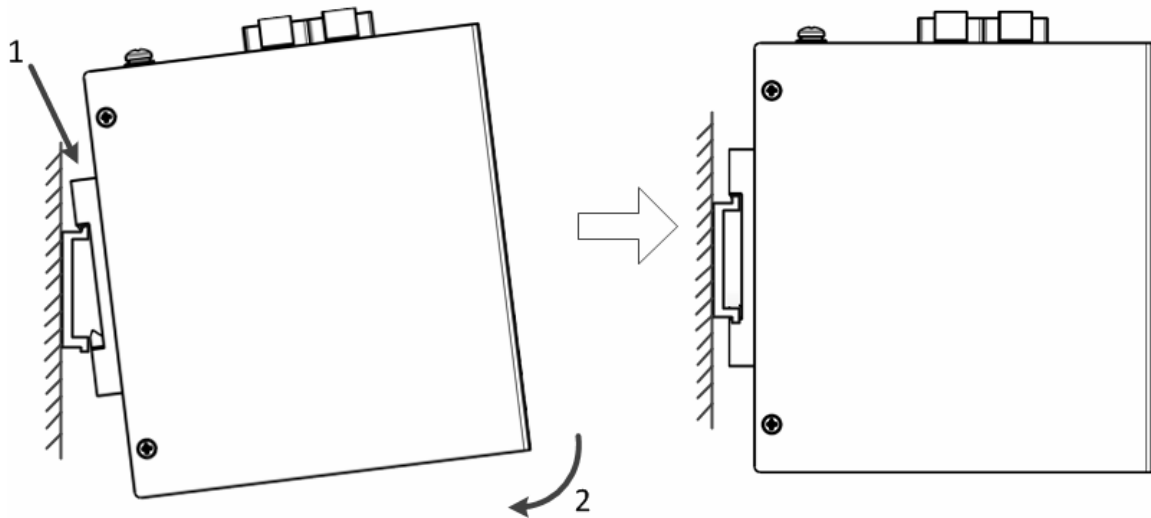


**ESD Hazard:**

**Power of module must be cut off before installation or uninstallation.**

The installation of module is standard DIN rail installation. The steps are shown below:

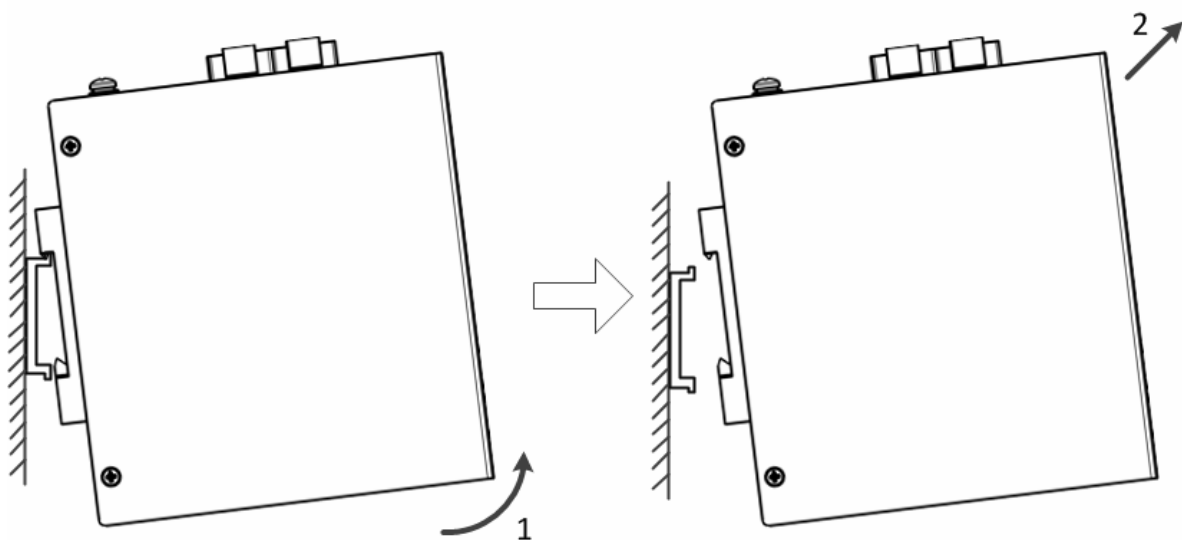
- 1) Align one end of the snap joint on the module with the rail first, as shown the 1<sup>st</sup> step in Figure 2-7;
- 2) Push the module with that end as the support point as shown the 2<sup>nd</sup> step in Figure 2-7, and make the other end of the snap joint also align with the rail, completing the installation;
- 3) Complete wiring.



**Figure 2-7 Module Installation**

The steps of uninstallation are shown below:

- 1) Cut off power and uninstall wires;
- 2) Pull the lower side of the module out of the rail with the higher end of the rail as the support point, as shown the 1<sup>st</sup> step in Figure 2-8;
- 3) Remove the module from the rail, as shown the 2<sup>nd</sup> step in Figure 2-8, completing uninstallation;



**Figure 2-8 Module Uninstallation**

## Section 3 Application Instruction

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### 3.1 Application Notes

- A gateway combined with its connected system is an independent control domain of ECS-700 (or OMC) and can't be put in the same control domain with other control stations.
- Gateway IP in control network can't be repeated in the same project.
- The gateway is a single-channel gateway, so that A# and B# network need 2 pieces of gateway. Please consider the DIP switch settings of A# or B# network.
- Before gateway is power-on, IP and A#/B# network must have been configured, otherwise DIP is ineffective.
- FW/XP243 only supports operation stations of address 128.128.1/2.129~160, so that when projects access FW/XP243 control station, the IP address of ECS-700 (or OMC) must satisfy the requirements below:
  - The address of ECS-700(or OMC) operation station visits FW/XP243 control station should be set as 172.20/21.\*.129~159 (mapping address in SCnetII side is 128.128.1.129~159), as gateway address of SCnetII side has taken up the address 128.128.1/2.160.
  - If JX-300XP/ECS-100 system holds operation station, address segment should be reserved for ECS-100&JX-300XP system (for example, the address segment 128.128.1/2.129~144 is for ECS-100&JX-300XP system and then IP address of ECS-700 (or OMC)system operation station can be set from 172.20/21.\*.145) in order to avert address conflict.

### 3.2 Application Steps

This section just instructs the application steps of how ECS-100 access to ECS-700(or OMC) via GW712 module.



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**Tip:**

**When taking operations according to the instruction in this section, please consider the limitations and application notes.**

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The steps are shown below (first 3 steps can exchange their orders as required):

1. Build network

Connect GW712 module to both the control network of ECS-100 system and ECS-700 (or OMC) system. For the way to connection, please refer to Network Connection Address Mapping Relation.

2. Power supply terminal

The power supply terminal of GW712 module should be connected to 24V DC. For the way of connection please refer to Module Power.

3. Set module working address

Set IP address of gateway and choose A#/B# network. For details, please refer to Configure Network and Region Address of Modules.

4. Turn on module power supply

Turn on power supply of GW712.

5. Configure gateway and transmission

Configure gateway, communication parameters, file transmission parameters and etc. respectively in the engineer stations of VF and PRO, in order to realize the normal communication between the two systems. For the methods, please refer to 《VF HMI Uniform Management User Manual》 in VisualField Software User Manual .

6. Configure in System Builder software.

Add GW712 gateway domain, and set module address which needs to be the same with GW712 address as required. Configure user authorization and monitor authorization of operation domain in VisualField System Builder software. The particular ways to configuration refer to 《VF HMI Uniform Management User Manual》 in VisualField Software User Manual .

7. Configure ECS-100 system

Enter SCConfig system from Configuration Explorer and configure the accessed system. For the ways please refer to 《VF HMI Uniform Management User Manual》 in VisualField Software User Manual.

The steps of settings in gateway configuration software are shown below:

- 1) Add a main processor

Add a main processor and set its address, and make sure the address of this processor is the same as the control stations to which the ECS-100 tags belong.

## 2) Configure control stations

After adding a main processor, add data transmission module, I/O module and tag information.

## 8. Download configuration

Download configuration into the main processor of ECS-100 by GW712 in SCConfig software. For the methods and notes please refer to 《VF HMI Uniform Management User Manual》 in VisualField Software User Manual .

## 9. Configure in HIM Builder

Group tags necessary to be monitored into data view, trend and graphics windows, and etc, in Monitor Configuration software. For the method to configuration please refer to 《HMI Config Software User Manual》 .

## 10. Publish configuration

Publish configuration. For the methods and notes please refer to instruction about publishing configuration in 《Configuration Explorer User Manual》 .

## 11. Monitor and operation

Monitor and operate in Real-time Monitor Software. For the usage of Monitor software please refer to 《HMI Config Software User Manual》 .

## Section 4 Revision

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*Table 4-1 Retrofit list of the version*

Document Version	Applicable Product Version	Remarks
V1.0 (20150910)	GW712-S01 V10.10.00 and later version	
V1.1 (20170302)	GW712-S01 V11.11.00 and later version	<ul style="list-style-type: none"><li>● Change outer structure figure</li><li>● Change position of DIP switch</li><li>● Change instruction of power supply</li><li>● Add instruction about operating environment, EMC, consumption, etc.</li><li>● Add configuration instruction of gateway and transmission when running in VF and PRO side</li><li>● Change usage instruction of VF software</li><li>● Delete application notes which don't belong to gateway module</li></ul>
V1.2 (20190319)	GW712-S01 V12.11.00 and later version	<ul style="list-style-type: none"><li>● Delete the explanation of software configuration and parameters.</li><li>● Change the explanation of module installation and uninstallation and appearance figure.</li><li>● Add code</li></ul>