S15 Gateway
User Manual

Applicable model：
S15
S15-L
S15-F
S15-T
S15-G
S15-N
S15-F-L
S15-T-L
S15-G-L
S15-N-L

JIANGSU SFERE ELECTRIC CO., LTD.

Safety instructions

Thank you for choosing the products developed by Jiangsu Sfere Electric Co., Ltd. In order to facilitate your purchase and help you use this product safely, correctly and efficiently, please read this manual carefully and pay attention to the following points when using it.

CAUTION：

◆ Make sure only the qualified technicians perform the installation and maintenance;

◆ Before performing wiring operation to the meter, make sure the input signal and the power supply are switched off;

◆ The proper voltage detecting device should be used to guarantee no voltage in any part of the meter;

◆ The electrical parameters supplied should be within the rated range;

The following situations may result in damage to the device or cause mistakes in the operation of the device：

◆ The voltage of the auxiliary power supply goes beyond the rated range.

◆ The frequency of the power distribution system goes beyond the rated range.

◆ The input polarity of the voltage or the current is incorrect.

◆ Remove or connect the communication plugs without powering off.

◆ Connect the terminal wires against the related instructions.

Please don't touch the terminals when the meter is in operation!

The latest manual can be downloaded from the company's homepage and some corresponding test software downloads also provided.If you need an electronic user manual, you can obtain it from our technical service department.

Catalog

1 Product introduction

1.1 Summary

S15 gateway is a small gateway device that can collect multiple protocol bus devices and upload data to cloud platform or local HMI display. A complete set of SmartHMI tools supports the configuration of the device that hangs down and monitors its data or status.
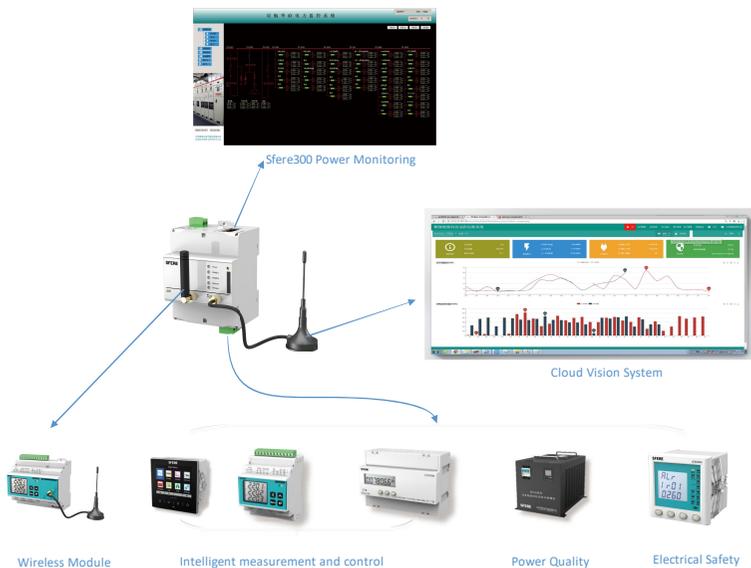
Figure 1.1 product physical figure

Figure 1.2 Product application

S15 is mainly used to collect intelligent measurement and control, power quality, electrical safety product data, communicate with Sfere3000 monitoring system through Ethernet port, realize wireless group network through LORA interface, and upload to cloud network platform by 2 G、4G、NB-IoT wireless mode.

1.2 Model Selection

Function		S15	S15-F	S15-T	S15-G	S15-N	S15-X-L
Communication Interface	RS485	√	√	√	√	√	√
	ENET	√	√	√	√	√	√
	NB-IoT					√	
	WiFi		√				
	2G				√		
	LoRa						√
	4G			√			
Interface Protocol	RS485	ModbusRTU DLT645	ModbusRTU DLT645	ModbusRTU DLT645	ModbusRTU DLT645	ModbusRTU DLT645	ModbusRTU DLT645
	ENET	ModbusTCP	ModbusTCP	ModbusTCP	ModbusTCP	ModbusTCP	ModbusTCP
	NB-IoT					HMU HJ212	
	WiFi		ModbusTCP				
	2G					HMU HJ212 AIMP	
	LoRa						ModbusRTU DLT645
	4G					HMU HJ212 AIMP	

Note: The above "√" indicates that this function is available.

Enhanced functional code: L(LoRa),F(WiFi),T(4G),G(2G),N(NB-IoT)

Note: S15-X-L X can be either F,T,G,N or empty

HMU: cloud platform, HJ212: environmental protection platform, AIMP: Nanjing cloud platform

2 Technical specifications
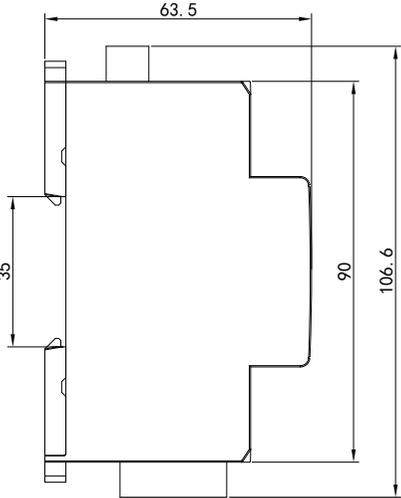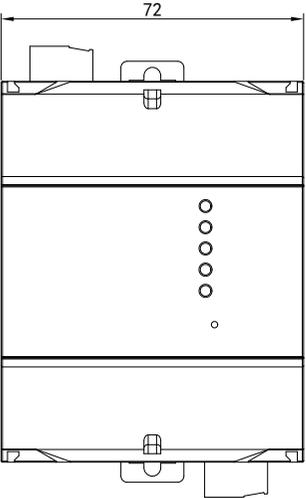
2.1 Technical parameters

Hardware resource	
LED	1Rd.running light ,2Rd. RS485 lights ,1Rd. Ethernet light ,1Rd. wireless light
RS485	2 Rd.
Ethernet	2 Rd.
Extension	2G、4G、NB-IoT、LORA、WIFI
Working environment conditions	
Working voltage	AC220V±20V 50Hz
Working temperature	-25...+70℃
Storage temperature	-40...+85℃
Relative humidity	≤95%RH，noncondensing
Work altitude	≤2000m
Protection level	IP20
Insulation	double insulation
Voltage withstand	2.5kV AC/1min
Communication interface	
Interface	Two RJ45(100M), electrostatic 6 KV
Standards	IEEE 802.3
Communications agreements	Modbus TCP/IP,Modbus RTU,MQTT etc.
Electromagnetic Compatibility	
Electrostatic discharge immunity	IEC 61000-4-2- III level
Radiofrequency electromagnetic radiation immunity	IEC 61000-4-3- III level
Immunity of electric fast transient pulse group	IEC 61000-4-4- IV level
Impact (surge) immunity	IEC 61000-4-5- IV level

2.2 Main function
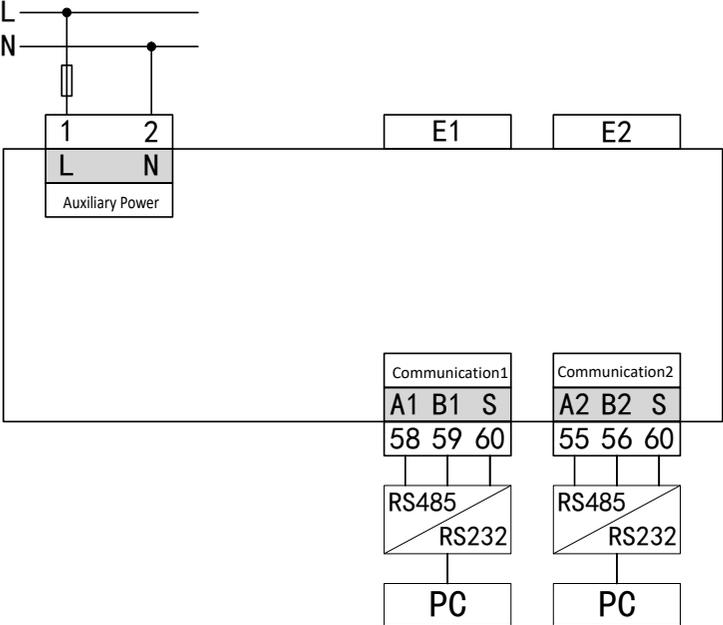
✧ Multi-agreement: support MODBUS-RTU、MODBUS-TCP、DLT645、MQTT etc.

✧ Support not less than 4000 data point acquisition.

✧ Status monitoring: you can see if the communication management machine under the hanging device is online.

✧ Value display: you can view the value of the specific point of the online device.

✧ Message debugging: manual message debugging.

✧ Firmware upgrade: update firmware can be implemented via ethernet.

✧ Configuration send: configuration update can be implemented via Ethernet.
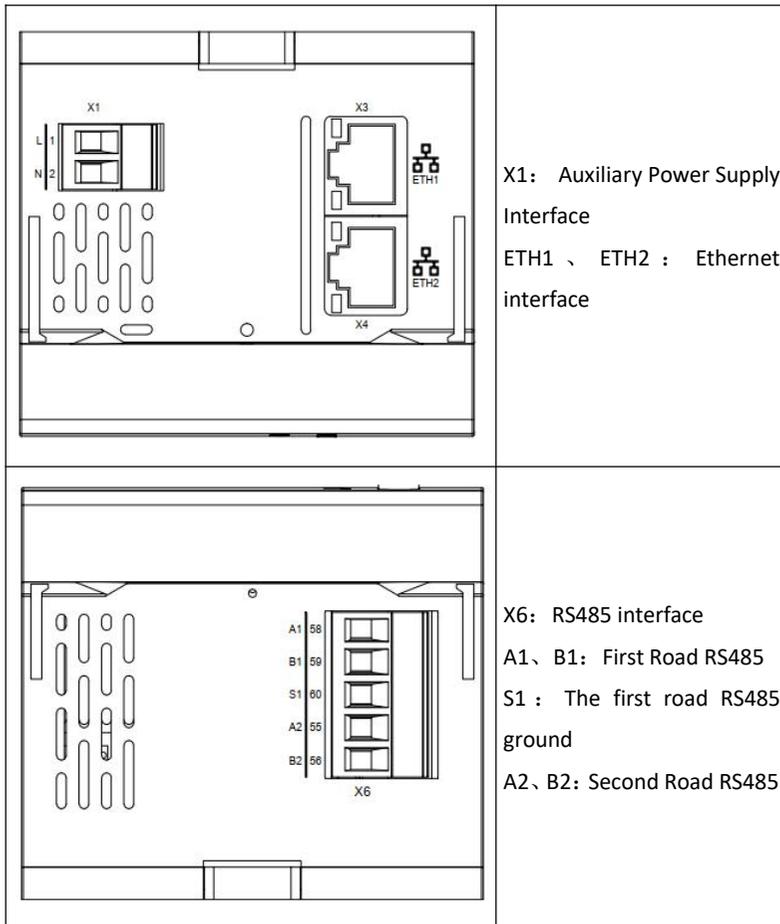
3 Dimensions and wiring diagrams

3.1 Size

3.2 Wiring
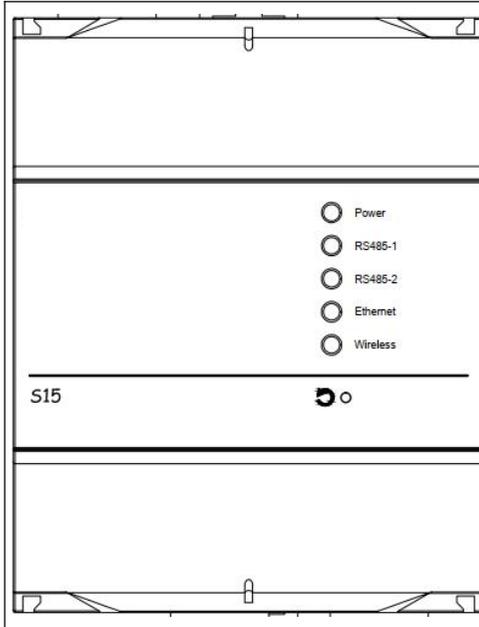
4 Operation

4.1 Panel

	X1： Auxiliary Power Supply Interface ETH1 、 ETH2 ： Ethernet interface
	X6：RS485 interface A1、B1：First Road RS485 S1 ： The first road RS485 ground A2、B2：Second Road RS485

	Power：Running light RS485-1：First road RS485 light RS485-2 ： Second road RS485 light Ethernet：Ethernet light Wireless： Wireless signal lamp ⟳：Function key

4.2 Use Preparation and Function Description

4.2.1 Hardware preparation

Prepare S15 gateway, power cord and a wire. The power cord is connected to the auxiliary power supply interface X1, and any network port in the ETH1、ETH2 is connected to the PC with the network cable, and then the power is powered on.

4.2.2 Lightlet Function Description

There are five small lights on the panel:Power、 RS485-1、 RS485-2、 Ethernet、 Wireless。

The function of each lamp is described in detail below.

1. All small lights flash once after power-on and then go out.

2. When performing the reset function, all small lights flash three times (4Hz).

3. When performing the factory reset function, all small lights flash at 1Hz.

4. The system runs normally, the configuration file is passed, and the Power light flashes at 0.5Hz, otherwise it is always on.

5. The first RS485 port has successfully collected data, and the RS485-1 lamp blinks at 10Hz. If the initialization of the first RS485 port is abnormal, it is always on.

6. The second RS485 port has successfully collected data, and the RS485-2 lamp blinks at 10Hz. If the initialization of the second RS485 port is abnormal, it is always on.

7. It is detected that any network port of ETH1, ETH2 Ethernet port is plugged into the network cable, and the Ethernet light is on.

8. Wireless lights retain the functions of the S15 basic version, and the functions of each enhanced version are as follows:

   ① -F series: WiFi initialization is successful, Wireless light is on, WiFi receives data, Wireless light blinks at 10Hz.

   ② -T、-G、-N series：The server is successfully connected, the Wireless light is on, and downlink data or report data is received, and the Wireless light blinks at 10Hz.

4.2.3 Key function description

Function keys have the following functions:

1. Press the key to power up, when the description 3 phenomenon in section 4.2.2 appears, release the key and perform the recovery factory setting function.

2. During operation, press the button for more than three seconds to loosen, the description 2 phenomenon in Section 4.2.2 appears, perform the reset function.

4.3 Function presentation

Detailed instructions for use are provided in the SmartHMI Instructions.