



# DataHub 1000 User Manual

SolaX Power Network Technology (Zhejiang) Co., Ltd.

614.00766.00

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# 1 Safety

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The DataHub produced by SolaX Power Network Technology (Zhejiang) Co., Ltd. has been designed and tested strictly in accordance with relevant safety regulations. The safety instructions must be followed when installing and maintaining the electrical and electronic equipment. Improper operation will cause personal injury and property damage to the operator and the third party.

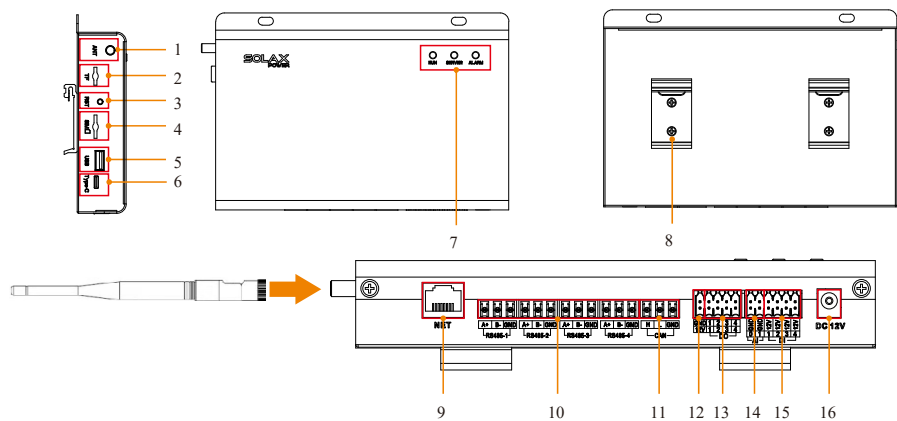
- Children should be supervised to ensure that they do not play with DataHub;
- Please do not open the top cover. Touching or replacing the components without authorization of SolaX may cause personal injury or damage to DataHub. SolaX does not assume any responsibility and warranty;
- Static electricity may damage the electronic components; therefore, appropriate anti-static measures should be taken.

# 2 Overview of DataHub

## 2.1 Introduction

DataHub, a special equipment of the monitoring platform of photovoltaic power generation system, has realized many functions, with details as follows: interface aggregation, data acquisition, data storage, output control, and centralized monitoring and centralized maintenance of inverters, electricity meters, environmental monitors and other equipment in photovoltaic power generation systems.

## 2.2 Appearance



- |  |                                 |
|--|---------------------------------|
| (1) Antenna jack                       | (2) TF card socket (TF)         |
| (3) RST button (RST)                   | (4) SIM card socket (SIM)       |
| (5) USB socket (USB)                   | (6) TYPE-C socket               |
| (7) LED indicator (RUN, SERVER, ALARM) | (8) Rail clip                   |
| (9) NET socket (NET)                   | (10) RS485 socket (RS485)       |
| (11) CAN socket (CAN)                  | (12) 12V power output (12V/GND) |
| (13) DO socket (DO)                    | (14) AI socket (AI)             |
| (15) DI socket (DI)                    | (16) 12V power input (DC12V)    |

## 2.3 LED Indicator

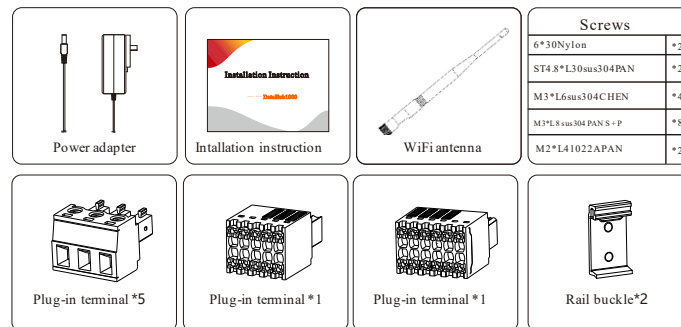
Sign	Status	Explanation
RUN (GREEN)	Flash	The program runs normally.
	Always on or always off	The program runs abnormally.
SERVE (GREEN)	ON	The network connection is normal.
	OFF	The network connection isn't normal.
ALARM (RED)	ON	Device alarms
	OFF	No alarm

# 3 Installation

## 3.1 Packing List

After receiving the package of DataHub, please check whether the accessories are complete and there is no obvious damage to the appearance. If there is any damage or items missing, please contact the dealer.

Packing List

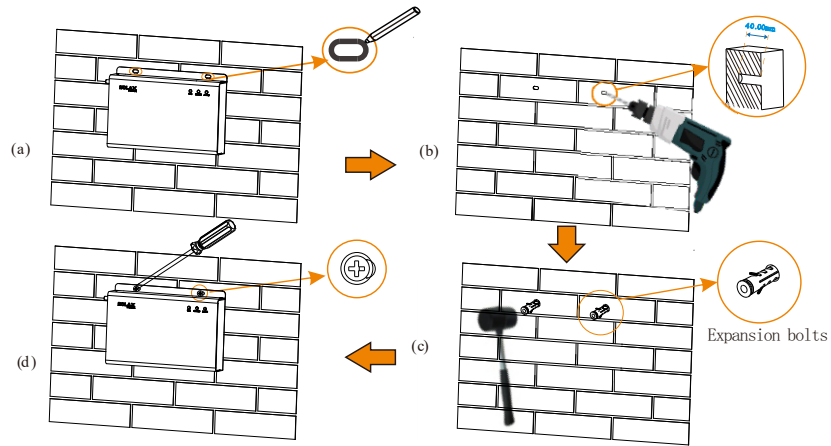


Line Specification	
RS485	Cross-sectional area 0.2mm <sup>2</sup> ~2.5mm <sup>2</sup> (24AWG ~ 14AWG) dual-core or multi-core cables
DO/DI/AI	Cross-sectional area 0.2mm <sup>2</sup> ~1.5mm <sup>2</sup> or (24AWG ~ 16AWG) dual-core or multi-core cables
NET Cable	Cat 5e or higher standard network cable

## 3.2 Device Installation

### 3.2.1 Indoor Wall Mounting

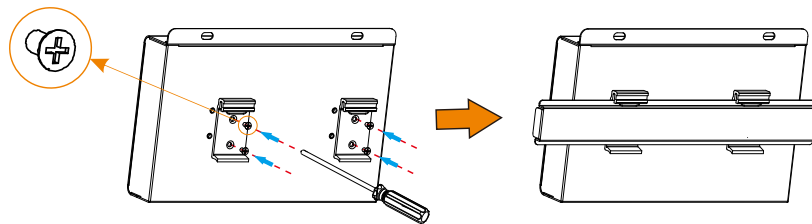
- 1) Choose a flat and solid indoor wall to drill for installation;
- 2) Hang the DataHub on the wall with the cable connection area facing down.



### 3.2.2 Guide Rail Mounting

- 1) Use the four M3\*L6 screws in the accessory bag to fix the buckle on the DataHub.
- 2) Please prepare 35mm standard rail (effective length  $\geq 230\text{mm}$ ) and install it firmly.

*\*Note: The outdoor installation must be in a waterproof housing.*

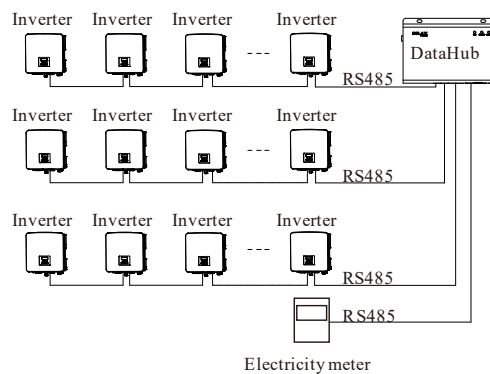




# 4 Electrical Connection

## 4.1 Inverter Connection

- 1) The inverter is connected to the DataHub through the RS485. For the connection method of the inverter, please refer to the inverter installation manual;
- 2) It is recommended that the number of devices connected to each channel of RS485 is less than 20;
- 3) The baud rate, communication protocol and verification method of the inverters connected to the same RS485 port of DataHub must be consistent, and the communication addresses of the inverters must be consecutive and not repeated.



## 4.2 Installation of RS485

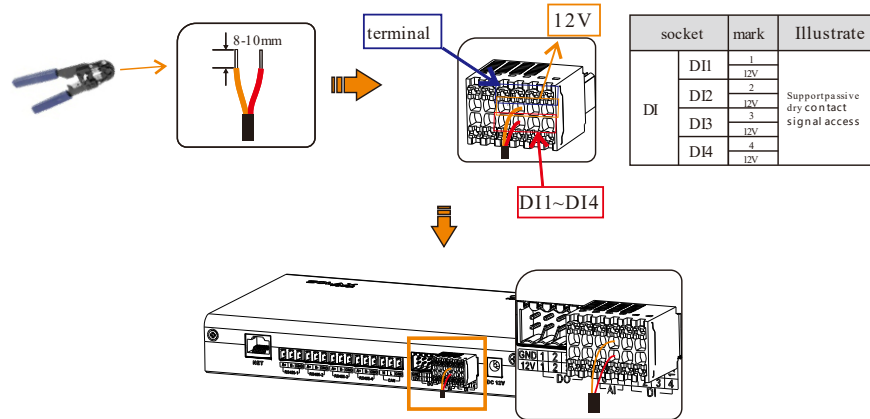
Make sure that RS485+ is connected to DataHub's RS485+, RS485- is connected to DataHub's RS485-, RS485 GND is connected to the GND of DataHub.

The diagram shows the physical installation steps: stripping the wires to 8-10mm, crimping them onto a terminal block, and then connecting the terminal block to the RS485 port of an inverter. A torque specification of 0.4-0.5N·m is provided for the crimping process.

Pocket	Sign	Illustrate
RS485-1	+	RS485A, RS485Differential signal+
RS485-2	-	RS485B, RS485Differential signal-
RS485-3		
RS485-4	GND	Ground wire

### 4.3 Installation of DI Signal Cable

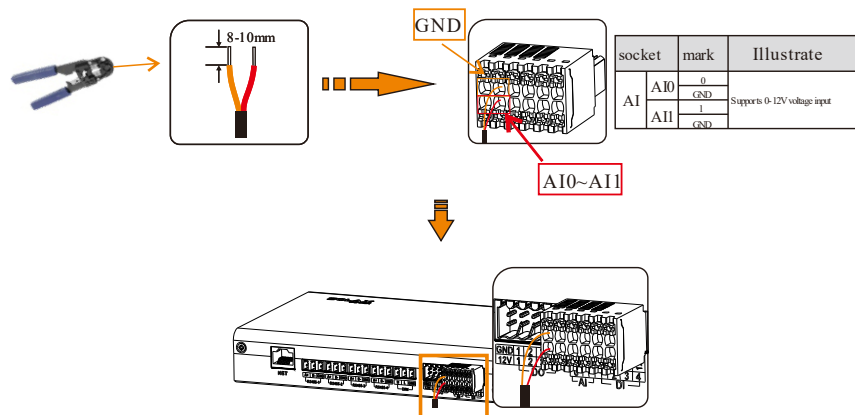
DataHub can access DI signals such as remote control and alarms through the DI port.



### 4.4 Installation of AI Signal Cable

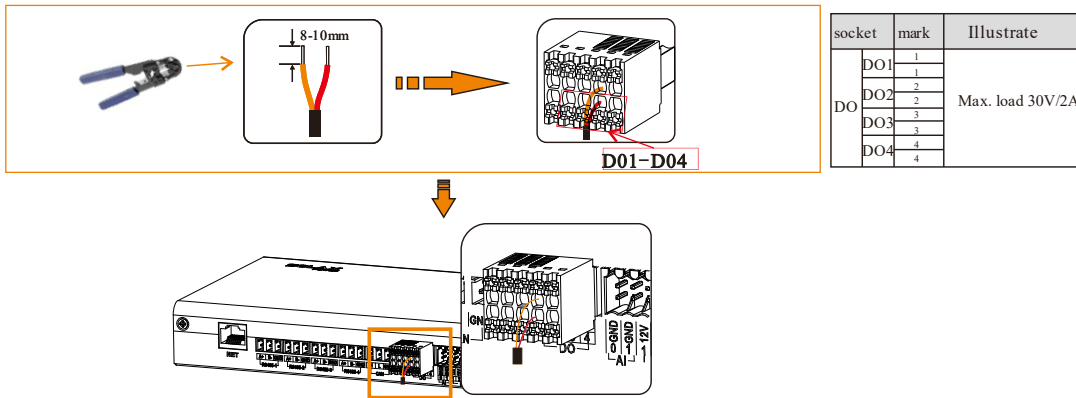
Installation advice:

- It is recommended that the transmission distance does not exceed 10 m;
- AI port 0 and AI port 1 are connected to AI signal +, and GND is connected to AI signal-.



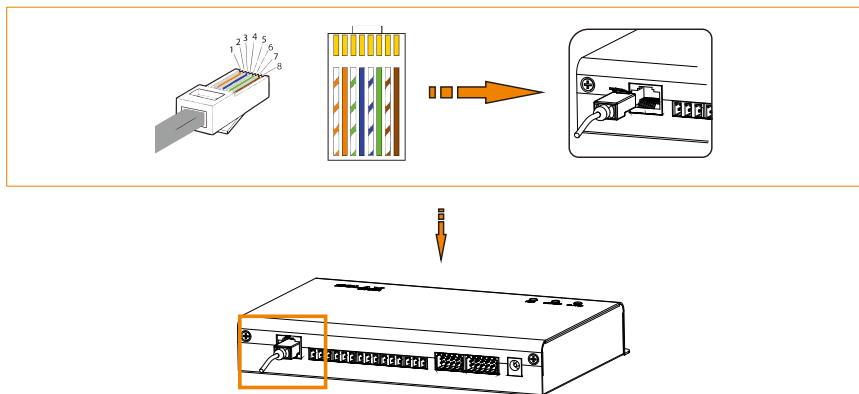
### 4.5 Installation of DO Signal Cable

The DO port supports 30V signal voltage in maximum. The contact of four-group output is on by default.

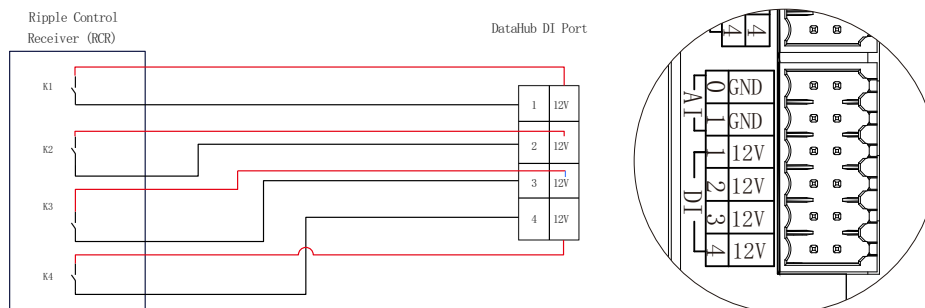


## 4.6 Installation of Network Cable

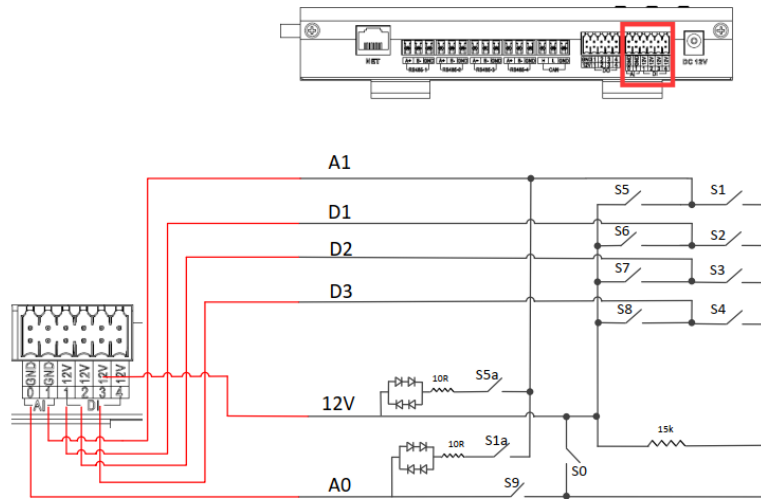
- Use Cat 5e or higher specifications and Shielded crystal head connectors to prepare the network cable.
- The communication distance does not exceed 100 m.
- When crimping the network cable, ensure that the shielding layer of the network cable is properly connected to the metal shell of the RJ45 connector.



## 4.7 Connecting to Ripple Control Receiver



## 4.8 Connecting to DRED



# 5 Configuration Function

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## 5.1 Login

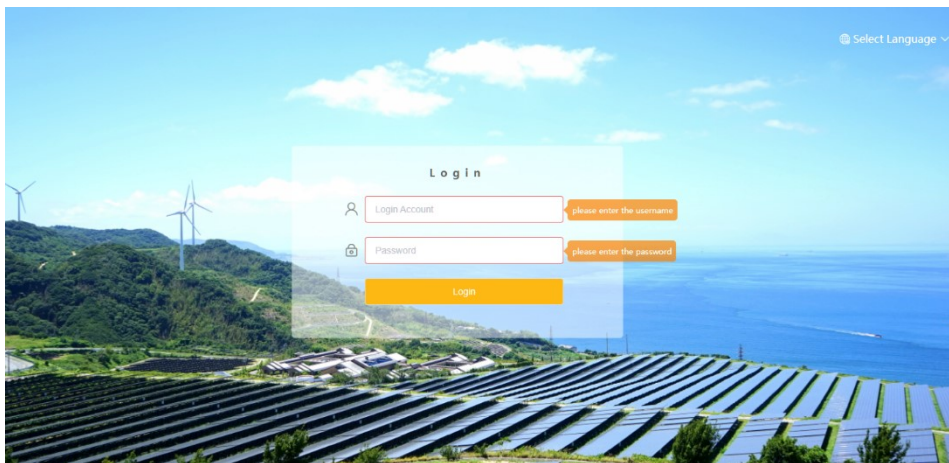
Local login: connect the computer to the DataHub hotspot (WiFi \_xxxxxxx), and use the computer to access 5.8.8.8 to enter the login interface.

LAN login: please refer to 5.6.1 Internet setting.

Administrator account: admin, initial Password: (the same as Registration Number).

User account: user, initial Password: 123456.

Visitor account: visitor, initial Password: 123456.



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*\*Note: To remotely monitor or set the device, please access <http://www.solaxcloud.com> and follow the user guide on the website to finish the registration. When connecting via hotspot (WiFi \_xxxxxxx), please check "Auto-connect".*

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## 5.2 Site Management

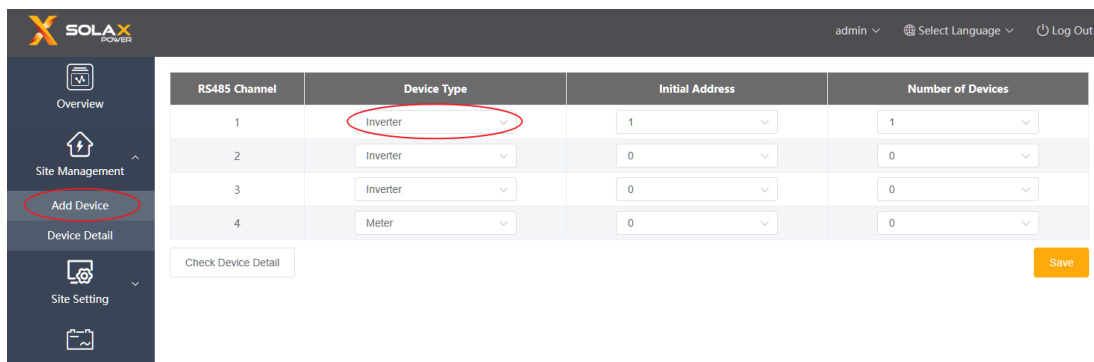
### 5.2.1 Add Device

The devices supported by DataHub are as follows: Inverters, Electricity Meters, and Environmental Monitors.

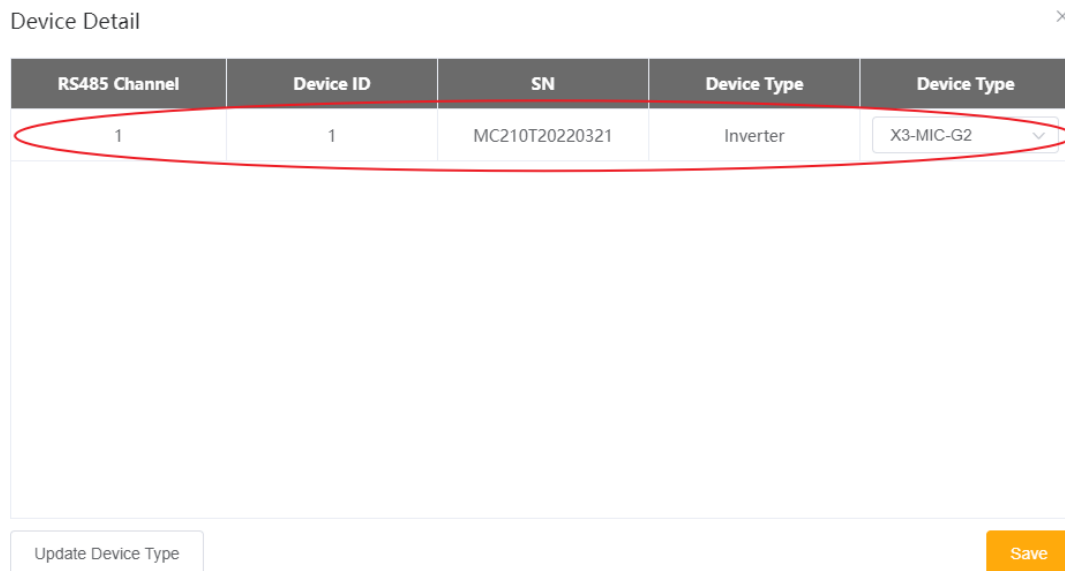
Select the device type under the serial port, set the starting address and the number of devices under the serial port, and save these settings.

*\*Note: Please refer to Appendix 1 to check whether the baud rate of the model is 19200 or not. If the baud rate is not 19200, please refer to 5.6.3 Serial port setting for more details of setting baud rate.*

*\*Note: When connecting to X3-MIC-G2, please make sure the meter is disabled.*

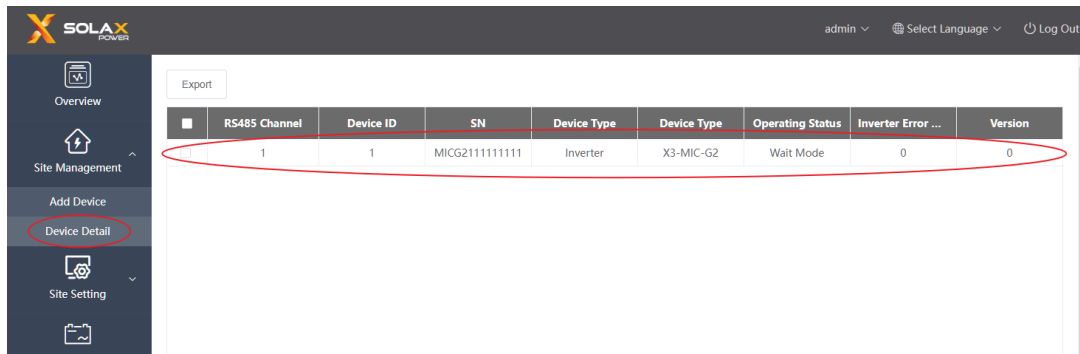


The device details will pop up. Please confirm whether the model is correct or not and then Click “Save”.



## 5.2.2 Device Detail

Click the corresponding device to query the device data, or select the device to export the device data.



RS485 Channel	Device ID	SN	Device Type	Device Type	Operating Status	Inverter Error ...	Version
1	1	MICG2111111111	Inverter	X3-MIC-G2	Wait Mode	0	0

## 5.3 Sits Setting

“Site Setting” is equipped with three modules, which are “Export Limit Control”, “Power Control” and “Meter Reversion”. The “Export Limit Control” and the “Power Control” are mutually exclusive so that only one can be enabled.

### 5.3.1 Export Limit Control

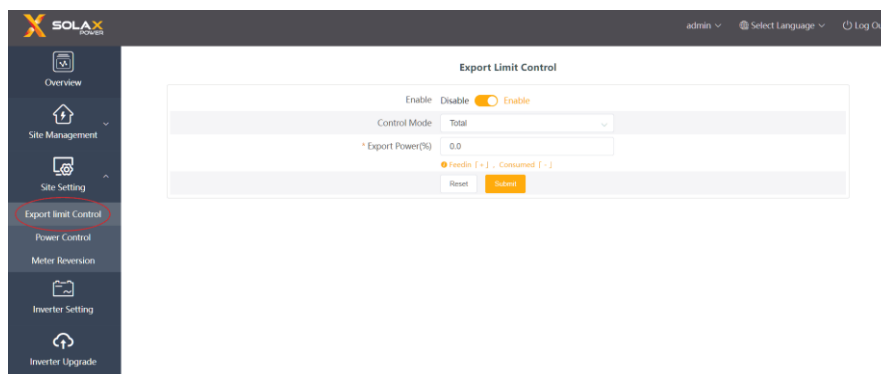
The purpose of the “Export Limit Control” is to limit the power supplied to the grid. The inverter generates electricity to the grid when the power source is positive, and takes electricity away from the grid when the power source is negative.

The control mode includes “Total” and “Per Phase”.

“Total”: The Site Limit is the total export power (the combined production minus the combined consumption) on all the phases combined. Reverse current on one phase will count as negative power and can compensate for another phase.

“Per Phase”: For three phase inverter connections, the inverter sets the limit on each phase to 1/3 of the total site limit. Use this mode if there is a limit on each individual phase.

*\*Note: Before using the “Export Limit Control” function, make sure that a meter has been connected to the DataHub. The output of device will be abnormal when connecting to three phase three wire under “Per Phase” mode.*

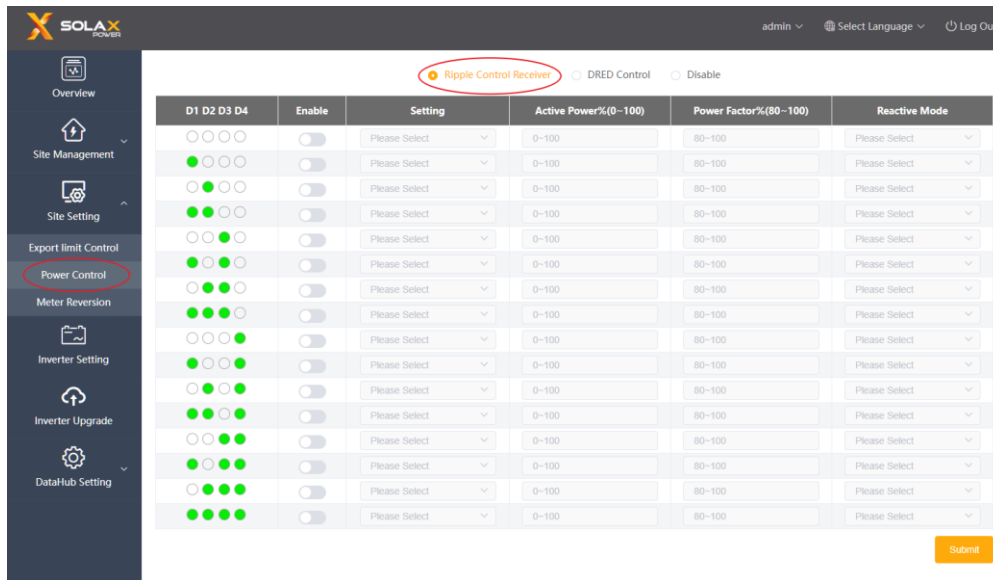


### 5.3.2 Power Control

Power control includes “Ripple Control Receiver” and “DRED Control” disable.

The “Ripple Control Receiver” is to control the input active power and reactive power, output active power and reactive power of the inverter and inverter off according to the high or low input of the DI port.

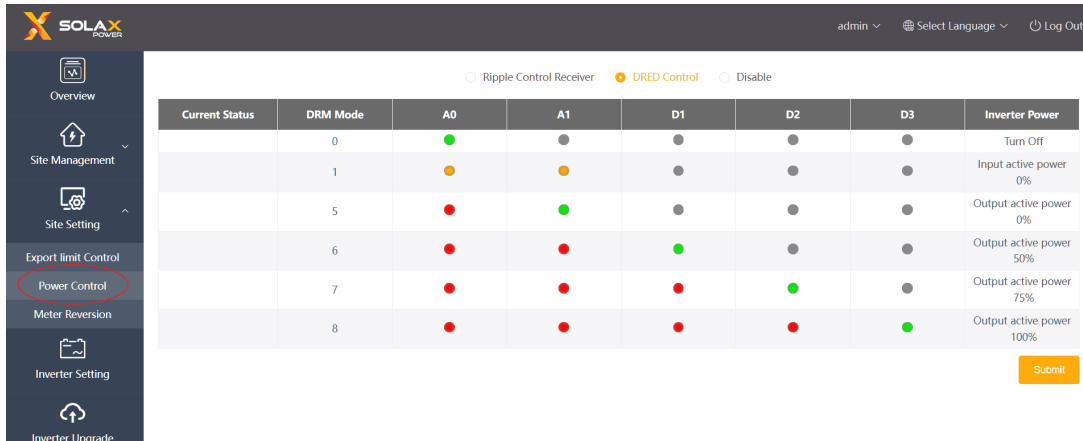
The green one indicates the high input of power; the white one indicates the low input of power. There are a total of 16 situations for users to set the active and reactive power according to each situation.



DRED control is applied to set the active power according to high or low input of the A0, A1, D1, D2 and D3 of DI ports.

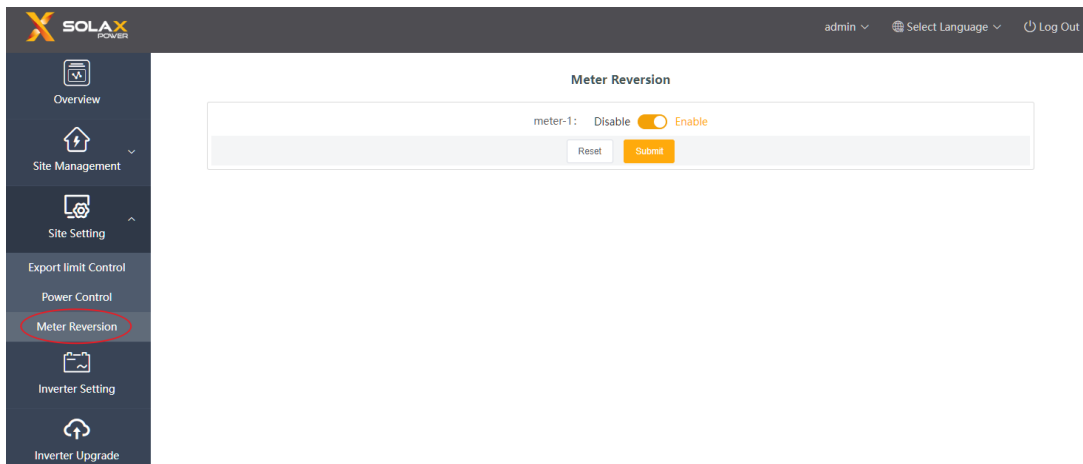
Mode	Operate	Explanation	Note
DRM0	Close S9,S0	Inverter shutdown	When two or more DRM modes work at the same time, take the optimal result that can satisfy both of them.
DRM1	Close S9,S1, disconnect S0	Close S1, charging power is 0%	
DRM5	Close S9,S5	Inverter does not output active power	
DRM6	Close S9,S6	The active power output by the inverter does not exceed 50% of the rated power	
DRM7	Close S9,S7	The active power output by the inverter does not exceed 75% of the rated power	
DRM8	Close S9,S8	The active power of the inverter output power starts to recover. Description: The inverter outputs according to the active power percentage set by DataHub.	





### 5.3.3 Meter Reversion

When the current direction of the user's meter is reversed, there is no need to rewire, just turn on the enable switch and submit this setting.

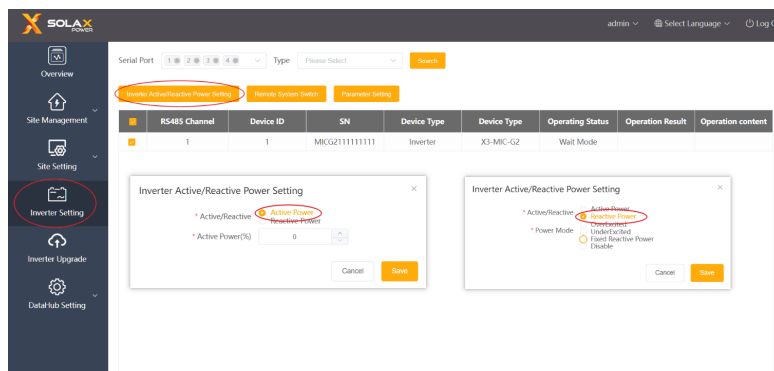


## 5.4 Inverter Setting

There are three functions under "Inverter Setting": "Inverter Active/Reactive Power Setting", "Remote System Switch" and "Parameter Setting".

### 5.4.1 Inverter Active/Reactive Power Setting

Remotely set the active or reactive power of the inverter. The reactive power mode is divided into "OverExcited", "UnderExcited", "Fixed Reactive Power" and "Disable" terms. (multiple selections are available)



## 5.4.2 Remote System Switch

Remote control of inverter switching. (Can be operated in batches)

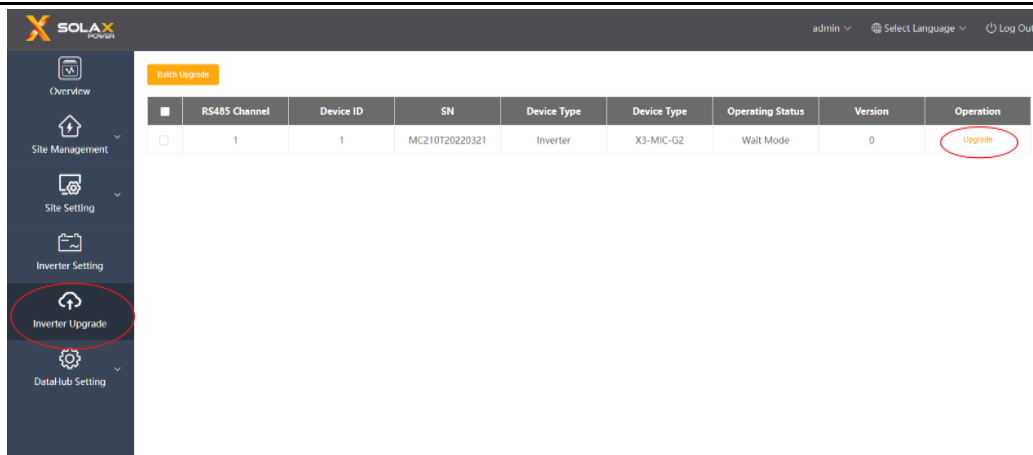
## 5.4.3 Parameter Setting

Professionals can read and write the inverter through the inverter's "Modbus Opcode", under which there are "READ\_HOLDING\_REGISTERS", "READ\_INPUT\_REGISTERS", "WRITE\_SINGLE\_REGISTER" and "WRITE\_MULTIPLE\_REGISTERS". (Can be operated in batches)

## 5.5 Inverter Upgrade

Using DataHub to upgrade the inverter. Click "Upgrade" to select the upgrade file types which include "ARM", "MDSP", "SDSP", "ARC", "ARM+DSP", "BMS\_M" and "BMS\_S". Select the corresponding file to upgrade the inverter.

*\*Note: It takes nearly 15-30 minutes to upgrade the inverter. During upgrading, no data will be uploaded.*



## 5.6 DataHub Setting

### 5.6.1 Internet Setting

Wired connection: connect the Datahub and router via network cable.

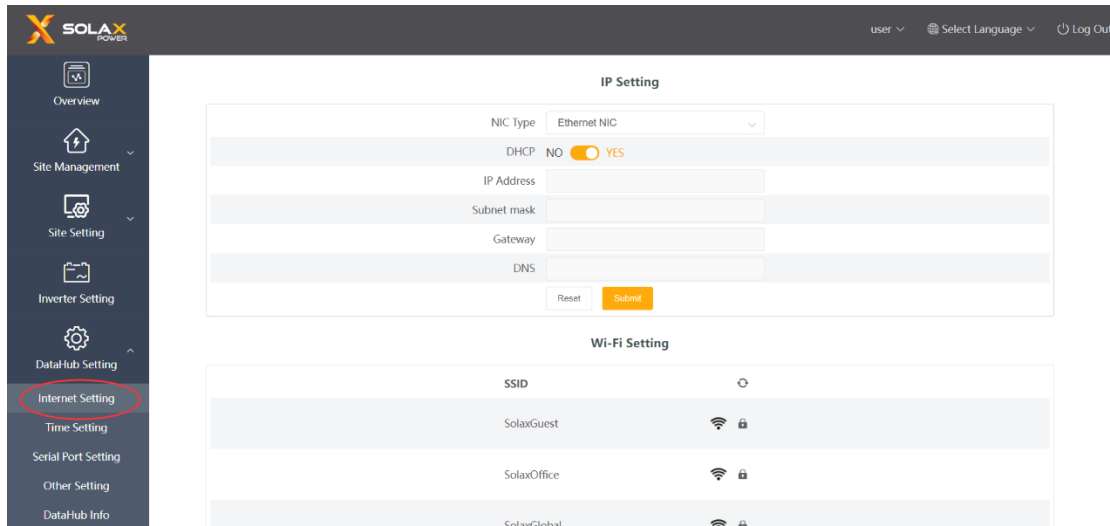
Wireless connection: After local login, please enter "System Setting"- "Internet Setting"- "WiFi Setting" to select the WiFi and enter the password.

Connect the computer and DataHub to the same WiFi, and then visit <http://datahub.local/> to log in. If the user cannot access, please install the Bonjour SDK, or log in through the DataHub LAN IP address. For the current IP address, please refer to "System Setting"- "System Information".

If there is no feedback of wireless connection within 30 seconds, please disconnect and reconnect the Datahub hotspot (WiFi\_XXXXXX). If the current connection is via WiFi and WiFi address already appears in the system information, it means the WiFi is successfully connected and you can login via LAN. Otherwise, try wireless connection again.

Fixed IP: If the user needs to fix the IP after completing wired or wireless connection via DHCP, select the correct network card type, turn off the automatic acquisition of IP address, and set the “IP Address”, “Subnet Mask”, “Gateway” and “DNS”.

*\*Note: Ordinary users do not need to perform any operations if they do not need a fixed IP.*



## 5.6.2 Time Setting

The time setting is to set the DataHub system time, including “Time Synchronization”, ”SolaXCloud Synchronization” and “Other Server Synchronization”.

“Time Synchronization”: The system corrects the time automatically.

“SolaXCloud Synchronization”: The platform of SolaX sends a synchronization command to change the time of system.

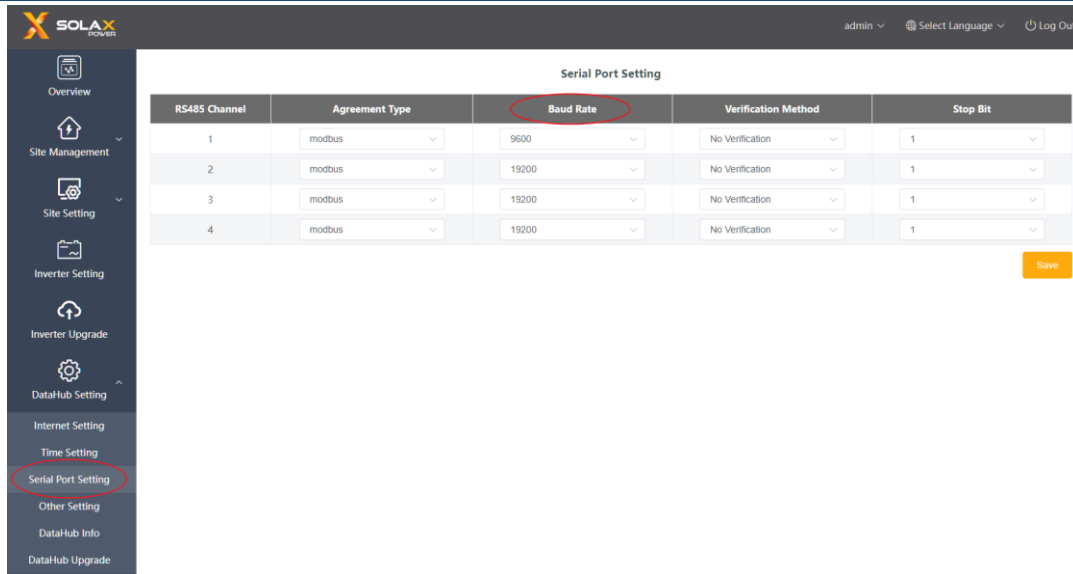
“Other Server Synchronization”: The IEC104 server sends a synchronization command to change the time of system.

*\*Note: When using SolaXCloud to set the time, please switch to “SolaXCloud Synchronization” mode.*

## 5.6.3 Serial Port Settings

Serial port settings is to set the baud rate of the four serial ports of DataHub, the default value of the baud rate is 19200. The user can change the baud rate under the serial port according to the model.

*\*Note: The baud rate of the model under the serial port is consistent, and it is consistent with the serial port baud rate set by datahub. The default value of the stop bit is 1.*



### 5.6.4 Other Setting

The “Platform Setting” is the setting to upload the data to the platform, the data is sent to SolaXCloud by default, and the other is sent to the IEC104 server.

The “Database Storage Setting” is a path for inverters to store data. There are two storage paths including the “Default” and the “TF Card”. The “Default” is to store data on the Datahub.

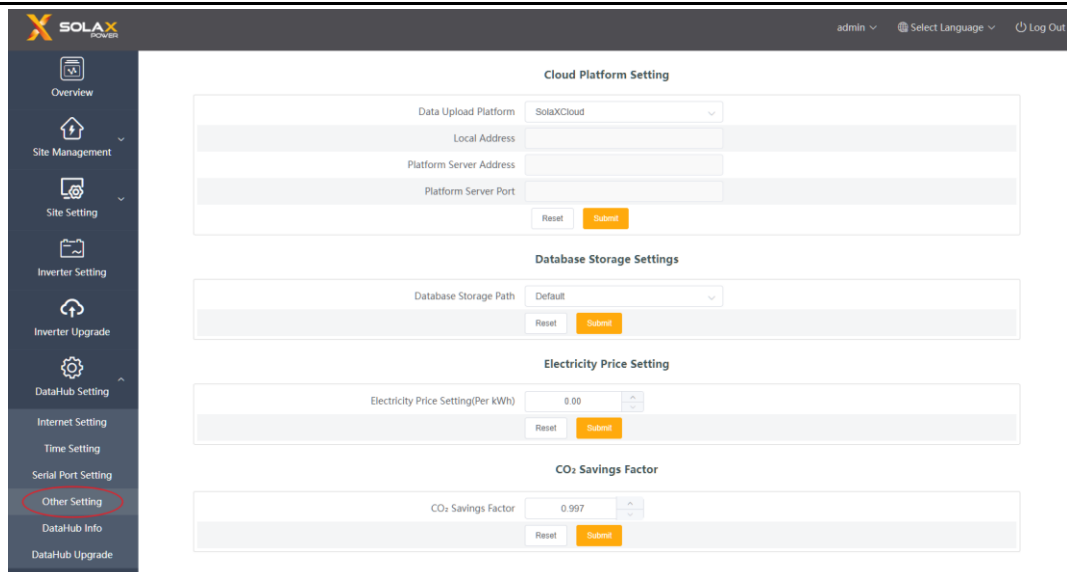
Electricity price setting: Calculate the income through the electricity price and display it in the overview interface.

“CO<sub>2</sub> Savings Factor”: Calculate the amount of CO<sub>2</sub> through the coefficient and display it in the overview interface.

*\*Note :*

*It is recommended to use a TF card with a capacity of 16G;*

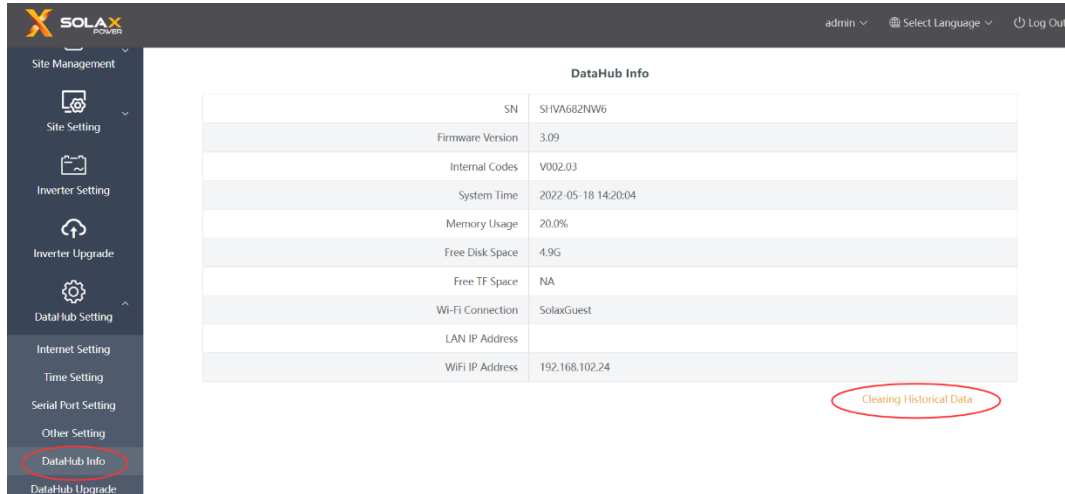
*If the database storage path is a TF card, the TF card cannot be pulled out when the system is running. If you want to pull out the TF card, you need to change the storage path to the default, and then pull out the TF card. (It is recommended to unplug after power off)*



### 5.6.5 Datahub Information

“Datahub Information” displays the basic information of datahub, including “Registration Number”, “Firmware Version”, “Internal Codes”, “System Time”, “Memory Usage”, “Free Disk Space”, “Free TF Space”, “Wi-Fi Connection”, “LAN IP Address”, and “WiFi IP Address”.

Clear historical data: Clear the historical data of the device.

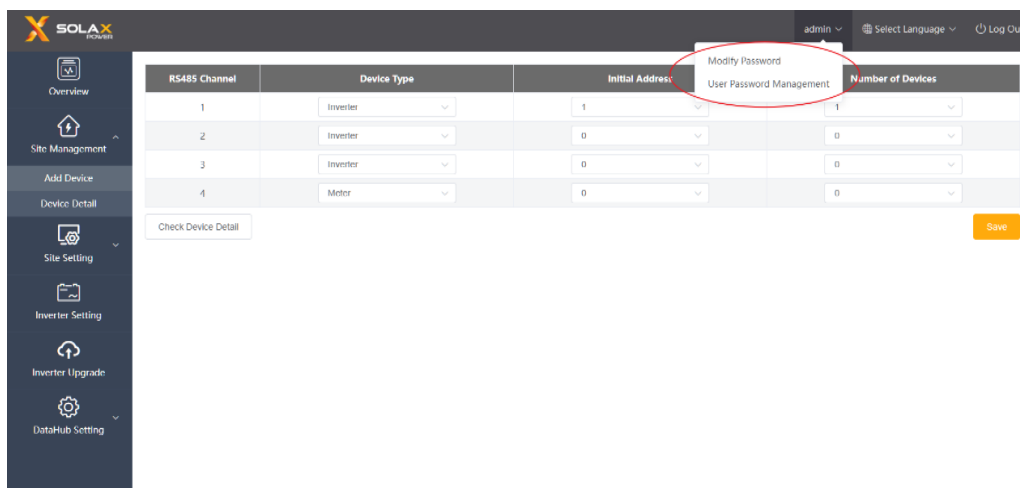


### 5.6.6 DataHub Upgrade

Click the “Click to Upload and Upgrade” button to upload and upgrade the DataHub, then select the upgrade file and wait for the upgrading. (Only one file can be uploaded at a time, and the interface needs to be refreshed for continuous operation.)

## 5.7 Password Modification

The system provides two methods for modification: “Modify Password” and “User Password Management”.



## 5.8 System Resetting

System resetting restores the system to factory settings, the historical data and the configuration information of datahub will be cleared.



Operation: press and hold the “Recover” button for 10 seconds until all three LEDs are off, and then release it. After completing the above operations, the service restarts and the system reset is complete.

## 6 Technical Specifications

Product	DataHub1000
<b>Hardware</b>	
Power adapter	100-240V 50/60HZ AC Input 12V 2A DC Input
Rated power	24W
Data transfer interval	5min
Storage capacity	8G/16G TFcard
The number of managed devices	60
<b>Communication</b>	
Inverter communication	3xRS485
wireless module	WiFi 2.4GHz
access network	WiFi
Communication of electricity meters and environmental detectors	1xRS485
Communication distance	wireless >10 m, LAN > 100m
DRM interface	Australia only
USB interface	1 USB Interface (For local upgrade and parameter setting)
Dry Node Control Receiver	2AI,4DI,4DO (Reserved for external expansion)
<b>General parameters</b>	
Dimensions (length*width*height)	205*124*33
Weight	<=500 g
Operating Temperature Range	-20°C ~ +60°C
Degree of Protection	IP20
Installation method	Wall-mounted, rail-mounted
Indicator light	LED
<b>standard</b>	
Certification	RED/FCC/CE/RoHS

## 7 Certified Quality Assurance

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### 7.1 Certification mark



### 7.2 Warranty

SolaX grants a standard 24-month warranty, if it is otherwise stipulated in the contract, the contract shall prevail.

### 7.3 Warranty Conditions

In case the product is operated according to the above instruction, SolaX will provide after-sales service during the product warranty period if any failure (error) is caused by product quality.

### 7.4 Exclusion of Liability

Warranty claims are excluded for direct or indirect damage due to:

- 1) Warranty period for the product or accessories have expired, but not extended;
- 2) Failure to operate the product in accordance with the installation and maintenance requirements described in the relevant manual;
- 3) Failure or damage caused by not operating, storing and using in the specified working environment;
- 4) Failures or damages caused by unforeseen unexpected factors, human factors or force majeure; and
- 5) Other failures or damages not caused by DataHub's own quality problems.



## **8 Contact Us**

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If you have any question or any technical question about DataHub, please contact us through the following methods, we will serve you wholeheartedly.

SolaX Power Network Technology (Zhejiang) Co., Ltd.

ADD: No.288 shizhu Road, Tonglu Economic Zone, Tonglu City, Zhejiang Province, China.

Tel: +86 571 56260011

FAX: +86 571 56075753

EMAIL: [service@solaxpower.com](mailto:service@solaxpower.com)

WEB: [www.solaxpower.com](http://www.solaxpower.com)

## **Appendix 1 Matched Model**

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Matched model	Baud rate
J1-ESS-HB	19200
X3-Hybrib-G4	19200
X1-Hybrid-G4	19200
X3-MIC-G2	9600
X3-PRO-G2	9600
X3-FTH	9600
X3-MGA-G2	9600