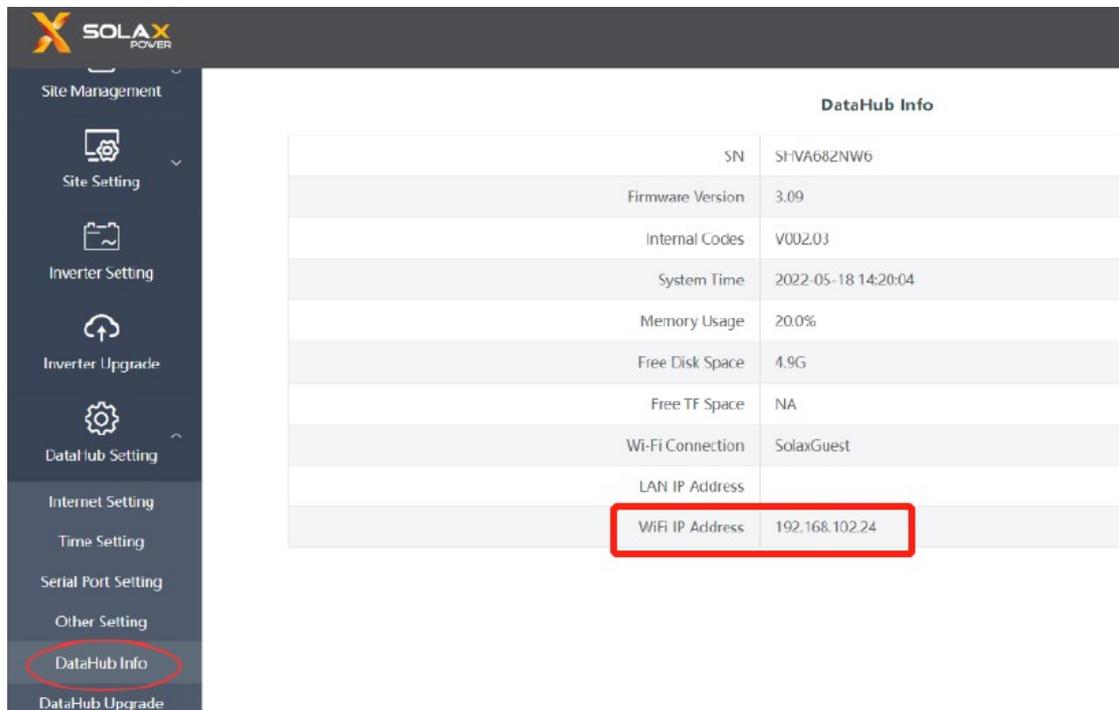


# Datahub Modbus\_TCP Protocol Illustration



# How to Build up Datahub ModbusTCP Connection

1. Follow datahub1000 installation guide to register Solaxcloud monitor account.
2. Get the datahub IP address. For WiFi connection, get the WiFi IP address, for LAN connection, get the LAN IP address. There are two ways to have the datahub IP address, you can login monitor account and follow below screen shot to check the IP address, or connect to datahub WiFi signal, use local mode to login <http://192.168.10.10> to check the IP address. (For the early generation datahub please login <http://5.8.8.8>, please contact us to confirm the generation). Port 502



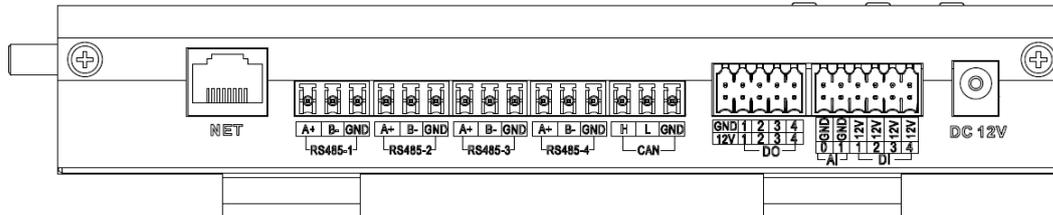
The screenshot shows the Solax Power DataHub web interface. On the left is a navigation menu with options: Site Management, Site Setting, Inverter Setting, Inverter Upgrade, DataHub Setting, Internet Setting, Time Setting, Serial Port Setting, Other Setting, DataHub Info (circled in red), and DataHub Upgrade. The main content area is titled 'DataHub Info' and contains a table with the following data:

Parameter	Value
SN	SHVA682NW6
Firmware Version	3.09
Internal Codes	V002.03
System Time	2022-05-18 14:20:04
Memory Usage	20.0%
Free Disk Space	4.9G
Free TF Space	NA
Wi-Fi Connection	SolaxGuest
LAN IP Address	
Wi-Fi IP Address	192.168.102.24

3. Use PC or laptop to connect to the same home router that datahub connected, open modbus software to input the IP address, start to inquiry the register data.

## Data Reading

DataHub has 4 485 ports, each string is connected to a maximum of 20 devices, of which each device has a common read register address of 40, so the total number of registers under each serial port is  $40 \times 20 = 800$ .



Reading RS485 communication address starts from **35000**, so the starting address of the four serial ports is: 35000, 35000+800, 35000+800\*2, 35000+800\*3, and the modbus address of the device needs to be calculated through the formula.

You can query the address of the parameter you want to know through this formula: **Start address + (serial port number-1) \* 800 + (device address-1) \* 40 + offset** The offset can be viewed by yourself according to the table below.

(This table is for modbus function code 04.)

number	Name	R/W	Size	Type	Units	Off set address	Descri pti on	byte
1	GridVoltage_LineAB	RO	1	Uint16	0.1V	0	Vab	2
2	GridVoltage_LineBC	RO	1	Uint16	0.1V	1	Vbc	2
3	GridVoltage_LineCA	RO	1	Uint16	0.1V	2	Vca	2
4	GridACurrent	RO	1	Int16	0.1A	3	AC phase A Current	2
5	GridBCurrent	RO	1	Int16	0.1A	4	AC phase B Current	2
6	GridCCurrent	RO	1	Int16	0.1A	5	AC phase C Current	2
7	GridFrequency	RO	1	Uint16	0.01HZ	6	AC Grid Frequency	2
8	ActivePower	RO	2	Int32	1W	7	Output Total Active Power	4
9	ReactivePower	RO	2	Int32	1Var	9	Output Total Reactive Power	4
10	PowerFactor	RO	1	Int16	0.001	11	Power factor	2

You can also read the data from meter directly, which refer to the table below.

Using an electricity meter to read parameters from the inverter								
number	Name	R/W	Size	Type	Units	address	Descri pti on	byte
1	GridVoltage_LineAB	RO	1	Uint16	0.1V	40440	Vab	2
2	GridVoltage_LineBC	RO	1	Uint16	0.1V	40441	Vbc	2
3	GridVoltage_LineCA	RO	1	Uint16	0.1V	40442	Vca	2
4	GridACurrent	RO	1	Int16	0.1A	40443	AC phase A Current	2
5	GridBCurrent	RO	1	Int16	0.1A	40444	AC phase B Current	2
6	GridCCurrent	RO	1	Int16	0.1A	40445	AC phase C Current	2
7	ActivePower	RO	2	Int32	1W	40446	Output Total Active Power	4
8	ReactivePower	RO	2	Int32	1Var	40448	Output Total Reactive Power	4
9	PowerFactor	RO	1	Int16	0.001	40450	Power factor	2
10	GridFrequency	RO	1	Uint16	0.01HZ	40451	AC Grid Frequency	2

For example,

1. Address query

Now I want to know the **start address** of the third device under serial port

2. The starting address should be:

$$35000 + (2-1) * 800 + (3-1) * 40 = 35880$$

( Since each device has a common read register address of 40, the 35880-35919 are all this device's address. Apparently, the next one's (the forth device under serial port 2) starting address is 35920. )

2. Parameter Address

Now I want to know the address of the **AC side grid frequency** of the third device under serial port 2. The address should be:

$$35000 + (2-1) * 800 + (3-1) * 40 + 6 = 35886$$



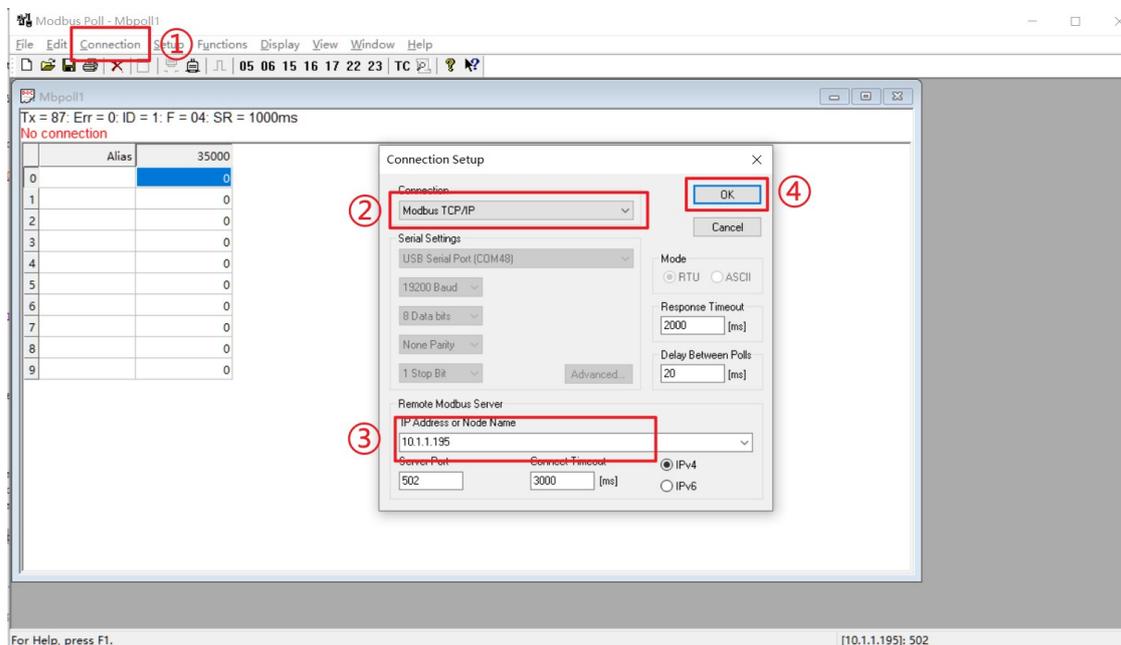
# Data Writing

At present, DataHub only supports 06 single write, enter the value to the corresponding offset address.

Function code is 06								
Number	Name	R/W	Size	Type	Units	Offset Address	Description	byte
1	Active Power	WO	1	Uint16	0.1%	40600	Percentage of active power[0-1000]	2
2	Reactive power cosφ	WO	1	Int16	0.1%	40601	Power Factor(PF) Positive: ahead, Negative: Hysteresis [-1000,-800] & [800,1000]	2

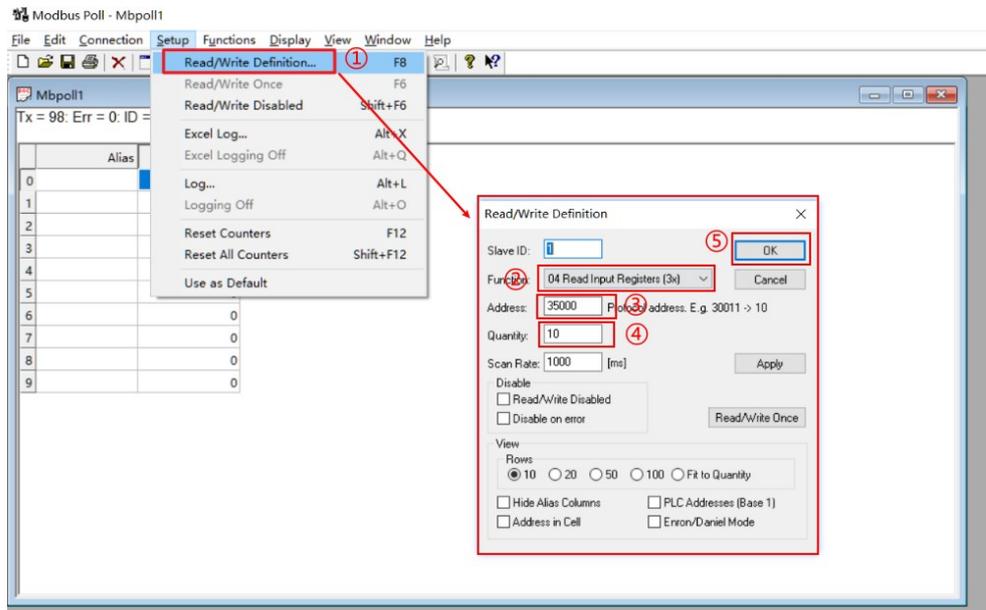
## Software Operation: Use the software Modbus Poll

1\ Connect to Datahub.



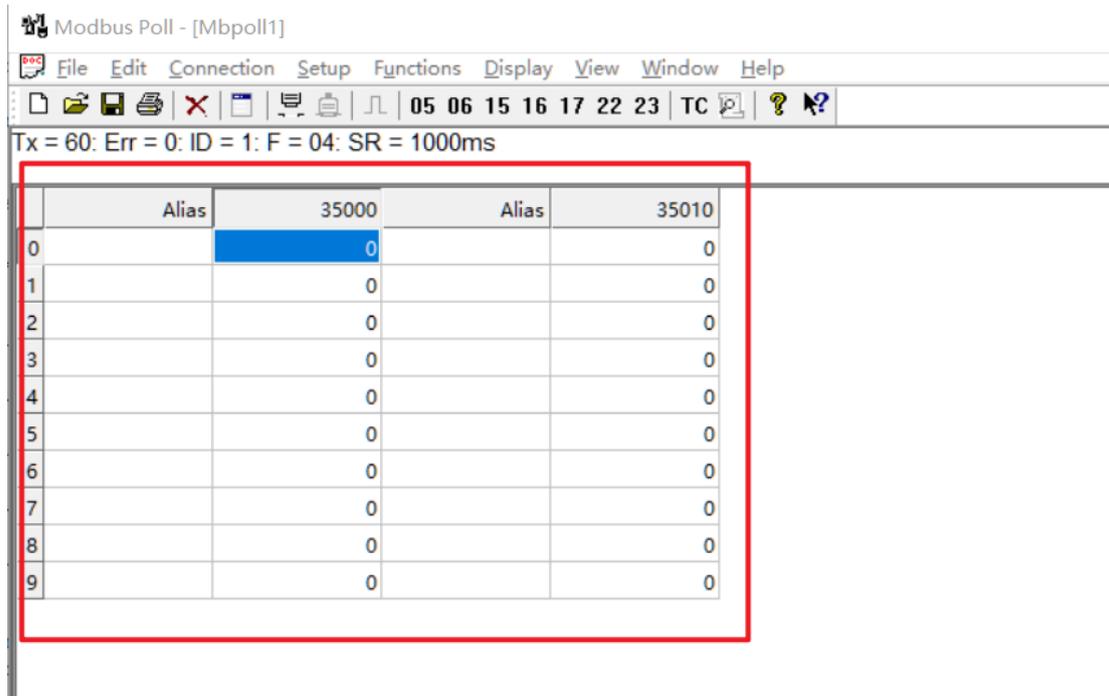
- (1) Click Connection, select Connect, and the interface will pop up
- (2) Select Modbus TCP/IP
- (3) Enter the IP of DataHub
- (4) Click OK

## 2\ Query Inverter Information

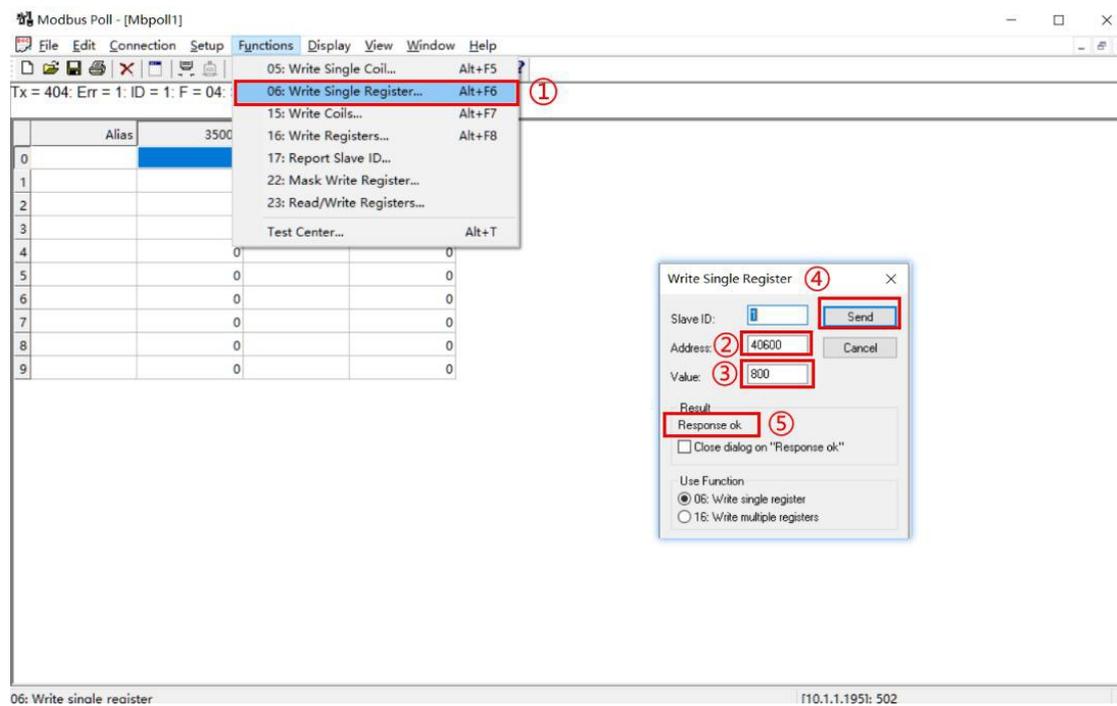


- (1) Select Read/Write Definition...
- (2) Select 04 Read Input Registers (3x)
- (3) Enter the calculated start address of the device you want to query
- (4) Enter the query length (40 registers per machine, up to 125 registers per query) (Which means you can query no more than 3 device at a time)
- (5) Click OK

## 3\ Returns the Results



#### 4\ Data Write



- (1) Select 06: Write Single Register
- (2) Enter the register address to be written
- (3) Enter the value written by the register address
- (4) Click Send
- (5) Return Response OK to write successfully.

## Compatibility

Device	Firmware
Datahub1000	V013.00