

# Inverter communication protocol V1.0

Compatible products: IP series, IP-Plus series, and NP series

Features:

1. Adopt the Modbus-RTU standard protocol
2. Default inverter ID is 3
3. Serial communication parameters: baud rate 115200bps, data bit 8, stop bit 1, no data flow control.
4. The register's address adopts the hexadecimal format, and the offset of the base address is 0x00.
5. All 32-bit length data is represented by two 16-bit length registers, represented by the L register and H register. For example, the actual value of the load output power is 3000, and the data multiple is 100 times. The value of the variable L register (address 0x310E) is 0x93E0, and the value of the variable H register (address 0x310F) is 0x0004.

✧ **Input register: ( Read only code0x04)**

| Variable              | Address | Unit | Times | Note   |
|-----------------------|---------|------|-------|--|
| Load input voltage    | 0x3108  | V    | 100   |  |
| Load input current    | 0x3109  | A    | 100   | If 0 is always displayed, it means that the hardware does not support this model.  |
| Load input power      | 0x310A  | W    | 100   | Low input power  |
| Load input power      | 0x310B  | W    | 100   | High input power   |
| Load output voltage   | 0x310C  | V    | 100   |  |
| Load output current   | 0x310D  | A    | 100   |  |
| Load output power     | 0x310E  | W    | 100   | Low output power   |
| Load output power     | 0x310F  | W    | 100   | High output power  |
| Device temperature    | 0x3111  | °C   | 100   |  |
| Heat sink temperature | 0x3112  | °C   | 100   |  |
| Load status           | 0x3202  |      |       | D15~ D14, 00 Normal input voltage, 01 Low input voltage, 02 High input voltage, 03 No connect to the input power, etc.<br>D13~D12, Output power 00-Light load, 01-Medium load, 02-Nominal Load, 03-Overload<br>D5 Output fail, D6 High voltage side short-circuit, D7 Input over-current, D8 Abnormal Output voltage, D9 Unable to stop discharging, D10 Unable to discharge, D11 short-circuit.<br>D0, 1 Run, 0 Standby<br>D1, 0 Normal, 1 Faults |

✧ **Discrete register: ( Read only, function code0x02)**

| Variable                | Address | Note  |
|-------------------------|---------|---|
| Device over temperature | 0x2000  | 1 The temperature inside the device is higher than the over-temperature protection value.<br>0 Normal |

✧ **Holding register: (Read and write, function code 0x03 and 0x10)**

| Variable                            | Address | Unit | Times | Note   |
|-------------------------------------|---------|------|-------|--|
| Low input voltage                   | 0x902F  | V    | 100   | Over-discharge, immediately (cannot be modified) |
| Low input voltage (5s)              | 0x9030  | V    | 100   | Over-discharge, 5 seconds                        |
| Low input voltage recovery voltage  | 0x9031  | V    | 100   | Over-discharge, recovery                         |
| High input voltage recovery voltage | 0x9032  | V    | 100   | Over-voltage, recovery                           |
| High input voltage (5s)             | 0x9033  | V    | 100   | Over-voltage, 5 seconds                          |
| High input voltage                  | 0x9034  | V    | 100   | Over-voltage, immediately (cannot be modified)   |
| High input current                  | 0x9035  | A    | 100   | It cannot be modified.                           |
| High input current recovery voltage | 0x9036  | A    | 100   | It cannot be modified.                           |

**Note:** The above eight variables' addresses need to be sent at one time. For the variables that cannot be modified, you can fill in the default value or 0.

✧ **Holding register: (Read and write, function code 0x03 and 0x10)**

|                           |        |   |     |   |
|---------------------------|--------|---|-----|---|
| Output AC voltage setting | 0x9022 | A | 100 | It can be set as 110V or 120V in the 110V system.<br>It can be set as 220V or 230V in the 220V system.<br>Other values are invalid. |
|---------------------------|--------|---|-----|---|

✧ **Holding register: (Read and write, function code 0x03 and 0x10)**

|                             |        |   |     |   |
|-----------------------------|--------|---|-----|---|
| Output AC frequency setting | 0x9023 | A | 100 | It can be set as 50Hz or 60Hz.<br>Other values are invalid. |
|-----------------------------|--------|---|-----|---|

**Note:** Only the IP-Plus series, NP4000-22, and NP5000-42, support the Output AC voltage setting and Output AC frequency setting. IP series and other NPower models adopt the hardware dial switches.

✧ **Coil register: Digital switch (Read and write) (function code 0x01 and 0x05)**

| Variable                 | Address | Note  |
|--------------------------|---------|---|
| Clear the faults         | 0x13    | 1 Clear the current and historical faults and resume normal operation.<br>0 No action   |
| Local/Remote control     | 0x11    | 1 Remote control<br>0 Local control   |
| Inverter ON/OFF          | 0xF     | In the remote control mode: (This function takes effect after the remote control is enabled.)<br>1 Turn on the inverter output<br>0 Turn off the Inverter output    |
| Power saving mode enable | 0x4     | In the remote control mode: (Only SHI series support this function, other products do not support it.)<br>1 Power saving mode enable<br>0 Power saving mode disable |