JNGE Wind and Solar Hybrid Controller Internal Communication Protocol V1.1

Version record

No	Version number	Modify content	Modifier	Refresh time
1	V1.0	Drafting	Xiaodong Qin	Dec 14,2020
2	V1.1	Add the FF function code, add the message examples, and modify the file format	Xiaodong Qin	Jan 11,2021

Content

One．Summary：

This article describes the wind and solar hybrid communication protocol standard, which is suitable for serial communication between the wind and solar hybrid controller produced by JNGE and the host computer. It is the basis for the development and testing of the wind-solar hybrid controller series product agreement.

Two．Physical interface ：

The interface standard is RS485, the communication method is asynchronous serial communication, the baud rate supports 9600, each frame of data 10 bits (including 1 start bit, 8 data bits, 1 stop bit, no parity), all The data are all unsigned hexadecimal numbers.

Three. Communication regulations：

1、Statute Description：

Communication format in standard MODBUS format

ADDR: Controller native address (range: 01H-FEH), FFH is the broadcast address, device default address 06H.

2、Message format description:

The type and format of communication data: The information transmission is asynchronous, and the unit is byte. The communication information transmitted between the master station and the slave station is a 10-bit word format:

Word format (serial data) 10-bit binary

1 start bit

8 data bits

No parity

1 stop bit

●Communication data (information frame) format

Data format: address code, function code, data area, error check

Data length: 1 byte, 1 byte, N byte, 16-bit CRC code low 8 bits, 16-bit CRC code high 8 bits,

★Note: 1 byte consists of 8-bit binary numbers (i.e. 8bit).

Four:function code ：

1、FF function code：

Broadcast address, query the modbus address command of the device。

defini-tion	address	function code	start register address	number of registers	CRC calibration
data	FF	03H	1030H	0001H	CRC16
number of Bytes	1	1	2	2	2

Controller return information：

definition	address	function code	return the number of data bytes	return to the Data	CRC calibration
data	06	03H	02H	DATA	CRC16
number of Bytes	1	1	1	2	2

（1）Message Example:

[send]FF 03 10 30 00 01 95 1B

[receive]06 03 02 00 06 8D 86

2、03 Function code：

(1)、Read the device type device number：

The upper computer downloads information: (the upper computer reads 2 factory parameters from the MCU, namely the device number information)

definition	address	function code	start register address	number of registers	CRC calibration
data	06H	03H	1060H	0002H	CRC16
number of Bytes	1	1	2	2	2

Controller return information：

definition	address	function code	return the number of data bytes	return to the Data	CRC calibration
data	06H	03H	04H	DATA	CRC16
number of Bytes	1	1	1	4	2

（1）Message Example：

[send]06 03 10 60 00 02 C1 62

[receive]06 03 04 41 00 00 69 58 E1

(2)、Read the current operating parameters：

The upper computer downloads information: (the upper computer reads 15

operating parameters to the MCU)

definition	address	function code	start register address	number of registers	CRC calibration
data	06	03H	1000H	0014H	CRC16
number of Bytes	1	1	2	2	2

Controller return information：

definition	address	function code	return the number of data bytes	return to the Data	CRC calibration
data	06	03H	28H	DATA	CRC16
number of Bytes	1	1	1	40	2

（1）Message Example：

[send]06 03 10 00 00 01 81 7D

[receive]06 03 02 00 75 CC 63

[send]06 03 10 00 00 14 40 B2

[receive]06 03 28 00 75 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 01 00 01 00 02 00 03 00 01 00 01 00 78 40 00 00 01 00 01 4E 45

(3)、Read the system setup parameters：

The upper computer downloads information: (the upper computer reads 25 setting parameters to the MCU)

definition	address	function code	start register address	number of registers	CRC calibration
data	06	03H	1024H	0019H	CRC16
number of Bytes	1	1	2	2	2

Controller return information：

definition	address	function code	return the number of data bytes	return to the Data	CRC calibration
data	06	03H	32H	DATA	CRC16
number of Bytes	1	1	1	50	2

（1）Message Example：

[send]06 03 10 24 00 01 C1 76

[receive]06 03 02 00 9B 4C 2F

[send]06 03 10 24 00 19 C1 7C

[receive]06 03 32 00 9B 00 96 00 90 00 8B 00 8A 00 85 00 6C 00 83 00 01 00

78 00 01 00 01 00 06 00 3C 00 32 00 01 00 0F 00 64 00 00 00 00 00 00 00 00 01 00 00 01 00 01 88 2D

2、Set up the function code：

(1)、Basic customer parameter settings：

The host computer sets the parameters to the MCU

definition	address	function code	set the parameter address	parameter value	CRC calibration
data	06	06H	1024H ~ 104AH	XXXXH	CRC16
number of Bytes	1	1	2	2	2

Controller return information：

definition	address	function code	set the parameter address	parameter value	CRC calibration
data	06	06H	1024H ~ 104AH	XXXXH	CRC16
number of Bytes	1	1	2	2	2

（1）Message Example：

[send]06 06 10 24 00 9D 0D 1F

[receive]06 06 10 24 00 9D 0D 1F

(2)、Factory parameters setting：

The host computer sets the parameters to the MCU

definition	address	function code	set the parameter address	parameter value	CRC calibration
data	06	06H	104BH ~ 1061H	XXXXH	CRC16
number of Bytes	1	1	2	2	2

Controller return information：

definition	address	function code	set the parameter address	parameter value	CRC calibration
data	06	06H	104BH ~ 1061H	XXXXH	CRC16
number of Bytes	1	1	2	2	2

（1）Message Example：

[send]06 06 10 4B 03 E9 3D D5

[receive]06 06 10 4B 03 E9 3D D5

Five.The device returns the data register address mapping table

attributes	word address	content	coactor (Unit)	byte length	remarks
operation parameters read-only	0x1000	battery voltage	0.1V	2	
	0x1001	pv panel voltage	0.1V	2	
	0x1002	fan voltage	0.1V	2	
	0x1003	pv charging current	0.1A	2	
	0x1004	fan charging current	0.1A	2	
	0x1005	pv charging power	1W	2	real-time calculation of lower computer
	0x1006	fan charging power	1W	2	real-time calculation of lower computer
	0x1007	total photovoltaic charging wattage	0.1KWh	2	lower computer calculation
	0x1008	total wattage of fan charging	0.1KWh	2	lower computer calculation
	0x1009	charged state	00：uncharged 01:constant-current charging 02：boost charging 03：float charging	2	
	0x100A	load Status	00：shut down 01：boot up	2	out1 out2 meanwhile
	0x100B	version number		2	the lower computer program is fixed
	0x100C	pv charging rating	100W	2	Ppv
	0x100D	fan charging rating	100W	2	Pfan
	0x100E	number of battery strings	String	2	
	0x100F	battery Type	1：lead-acid batteries 2：lifepo4 3：ternary lithium battery	2	

			4：customize		
	0x1010	battery voltage level	0.1V	2	12V、24V、48V
	0x1011	error code		2	
	0x1012	photovoltaic charging switch	0 shut down 1 boot up	2	
	0x1013	load switch machine	0 shut down 1 boot up	2	
	0x1014			2	reserved
	0x1015			2	reserved
	0x1016			2	reserved
	0x1017			2	reserved
	.....			2	reserved
	0x1023			2	reserved
customer setting parameters read and write	0x1024	overvoltage	0.1V	2	
	0x1025	overvoltage recovery	0.1V	2	
	0x1026	boost charging voltage	0.1V	2	
	0x1027	boost charging return voltage	0.1V	2	
	0x1028	floating charge voltage	0.1V	2	
	0x1029	floating charge return voltage	0.1V	2	
	0x102A	battery undervoltage	0.1V	2	
	0x102B	undervoltage recovery	0.1V	2	
	0x102C	Improve charging time	1~3H	2	reserved
	0x102D	battery voltage level	0.1V	2	reserved
	0x102E	battery type	1： lead-acid battery 2：lifepo4 3：ternary lithium battery 4：customize	2	
	0x102F	battery strings	string	2	

	0x1030	device modbus address	1~255	2	
	0x1031	light control opening voltage	0.1V		
	0x1032	light-controlled turn-off voltage	0.1V	2	
	0x1033	household and street light mode	0：household mode 1： Street lamp mode	2	
	0x1034	light control time period 1	1H	2	
	0x1035	light control time period 1 light intensity	10%	2	0% 、 10% 、 20%、 、 100%
	0x1036	light control time period 2	1H	2	
	0x1037	light control time period 2 light intensity	10%	2	0%、10%、 20%、 、100%
	0x1038	light control time period 3	1H	2	
	0x1039	light control time period 3 light intensity	10%	2	0%、10%、 20%、 、100%
	0x103A	fan unloading voltage point	0.1V	2	
	0x103B	charging switch machine	0 shut down 1 starting up	2	photovoltaic pwm control 0
	0x103C	load switch machine	0 shut down 1 starting up	2	out1 out2 at the same time
	0x103D			2	reserved
	0x103E			2	reserved
	0x103F			2	reserved
	0x1040			2	reserved
	0x1041			2	reserved
	0x1042			2	reserved
	0x1043			2	reserved
	0x1044			2	reserved
	.....			2	reserved
	0x104A			2	reserved

remarks：

Please convert the corresponding value of the enumeration type in the table into hexadecimal when actually transmitting and sending.

Manufacturer parameters are not open to customers, and

passwords are required when entering.

Device type definition：

device type code (bits)	type information
41	wind and solar hybrid controller

Fault
Code Definition：

fault code （bits）	fault message
0	pv charging overcurrent
1	short circuit fault
2	
3	pv charging battery overvoltage
4	pv array overvoltage (reverse)
5	fan input overvoltage
6	fan charging overcurrent
7	
8	
9	
10	
11	
12	battery undervoltage
13	
14	pv array undervoltage （under 6V）
15	