



IN COOPERATION WITH NGI®

**N35200 Modbus
V20240115**

N35200 Series Programming Guide Modbus Protocol

Modbus

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1 Communication Configuration

Communication Protocol: Standard Modbus RTU communication protocol

Communication mode: LAN, serial port RS232, RS485

Factory Default IP Address:192.168.0.123

Factory default device ID: 1 (settable, reboot takes effect)

UDP port number:7000 (settable, reboot takes effect)

TCP port number: port 7000 is supported (settable, reboot takes effect)

Factory default serial port baud rate: 115200 (can be set, reboot takes effect)

2 Modbus Overview

Modbus protocol was originally developed by Modicon. At the end of 1979, Modicon became part of Schneider Automation. Now Modbus is the most popular protocol in industrial field. This protocol supports traditional serial link RS-232, RS-422, RS-485 and Ethernet. Many industrial equipment including PLC, DCS, smart meters, etc. are adopting Modbus protocol as the communication standard among them.

Modbus protocol includes ASCII, RTU, TCP, etc., which does not specify the physical layer. This protocol defines the message structure which the controller can recognize and use, regardless of what kind of network they communicate through. The standard Modicon controller uses RS232C to achieve serial Modbus. Modbus's ASCII and RTU protocols stipulate the structure of messages and data, the way of inquiry and answer. The data communication adopts master/slave method. The master station sends out a data request message. The slave station sends data to the master station for responding to the request after receiving the correct message. The master station can also directly send messages to modify the data of slave station to realize bidirectional reading and writing.

If the data format is not easy for understanding, it is recommended to use the tools "Modbus Poll", "Modbus Slave" to send and receive data packets, and "AccessPort" to capture the contents of data packets for analysis.

3 Modbus RTU Description

- 1) Multiple bytes apply **Big-Endian**.
- 2) The starting addresses of all readable and writable registers are **even** numbers.
- 3) The readable and writable numbers are **even** numbers.
- 4) 4 bytes are applied.

For example, the value of register address 2 is written as 0x12345678. Then the

hexadecimal number of the written data packet is:

01 10 00 02 00 02 04 56 78 12 34 EE 90

5) The read register adopts the function code 0x03. The write register adopts the function code 0x10. Other function codes are reserved.

6) ID in the following ranges from 1 to 250. Value 255 means a broadcast packet which does not need to be returned.

4 Modbus RTU Protocol Format

4.1 Master Computer Reading Multiple Registers (0x03)

4.1.1 Master Computer Sending

ID	FunctionCode	StartReg	RegCount	Checksum
----	--------------	----------	----------	----------

Field	No. of Bytes	Definition
ID	1	Device/card ID
FunctionCode	1	Fixed as 0x03
StartReg	2	To read start register
RegCount	2	To read register counts
Checksum	2	CRC value of all data except itself

3.1.2 Slave Computer Correct Return

ID	FunctionCode	RegDataBytes	RegData	Checksum
----	--------------	--------------	---------	----------

Field	No. of Bytes	Definition
ID	1	Device/card ID
FunctionCode	1	Fixed as 0x03
RegDataBytes	1	Register data bytes, RegCount*2 in practice
RegData	2* RegCount	Register data
Checksum	2	CRC value of all data except itself

4.2 Master Computer Writing Multiple Registers (0x10)

4.2.1 Master Computer Sending

ID	FunctionCode	StartReg	RegCount	RegDataBytes	RegData	Checksum
----	--------------	----------	----------	--------------	---------	----------

Field	No. of Bytes	Definition
ID	1	Device/card ID
FunctionCode	1	Fixed as 0x10
StartReg	2	To write start register
RegCount	2	To write register counts
RegDataBytes	1	Register data bytes, RegCount*2 in practice
RegData	2* RegCount	Register data
Checksum	2	CRC value of all data except itself

4.2.2 Slave Computer Correct Return

ID	FunctionCode	StartReg	RegCount	Checksum
----	--------------	----------	----------	----------

Field	No. of Bytes	Definition
ID	1	Device/card ID
FunctionCode	1	Fixed as 0x10
StartReg	2	To write start register
RegCount	2	To write register counts
Checksum	2	CRC value of all data except itself

5 Operation

5.1 Basic Operation

5.1.1 Status Register

Address: 10

Attribute: RO

Type: Uint32

Byte: 4Byte

Parameters:

Bit0	Bit, 0-OFF, 1-ON
Bit1	0-Voltage sampling normal, 1-Voltage Sampling Over Range
Bit2	0-Current sampling normal, 1-Current Sampling Over Range

Bit3	0-Source Mode, 1-LoadMode
Bit4-6	0-CV, 1-CC, 2-CP, 3-CR
Bit7-11	0-STATIC, 1-CR, 2-SEQ, 3-CHARGE, 4-DISCHARGE, 5-RAMP, 6-WAVE
Bit12	0-local terminal, 1-remote terminal
Bit13	0-local sense, 1-remote sense
Bit14	0-untested, 1-tested
Bit15	0-untesting, 1-testing
Bit16-21	0-No Protection, 1-MF, 2-OTP, 3-RV, 4-OC, 5-OV, 6-OP, 7-OCP, 8-OVP, 9-OPP, 10-LVP, 15-SLA1, 16-SLA2, 17-SLA3, 18-SLA4, 19-SLA5, 20-SLA6, 21-SLA7, 22-SLA8, 23-SLA9
Bit22-26	Bit 0-OFF, Bit1-ON BIT22-Voltage, BIT23-Source Current, BIT24-Load Current, BIT25-Source Power, BIT26-Load Power
Bit27	0-Parallelism OFF, 1-ParallelismON
Bit28	0-emergency return , 1-emergency occur
Bit29	Preserve
Bit30	0-uncalibrating, 1-calibrating
Bit31	0-unstarted, 1-started

5.1.2 Clear Protection

Address: 4

Attribute: WR

Type: Uint32

Byte: 4Byte

Parameters: 1 for clear protection

5.2 Output Setting

5.2.1 Voltage Setting

Address: 78

Attribute: WR

Type: Float

Byte: 4Byte

Parameters: Unit: V

5.2.2 Souce Current Setting

Address: 80

Attribute: WR

Type: Float

Byte: 4Byte

Parameters: Unit: A

5.2.3 Load Current Setting

Address: 82

Attribute: WR

Type: Float

Byte: 4Byte

Parameters: Unit: A

5.2.4 Souce Power Setting

Address: 84

Attribute: WR

Type: Float

Byte: 4Byte

Parameters: Unit: W

5.2.5 Load Power Setting

Address: 86

Attribute: WR

Type: Float

Byte: 4Byte

Parameters: Unit: W

5.2.6 Saving Test Parameters

Address: 92

Attribute: WR

Type: int

Byte: 4Byte

Parameters: saving setting voltage, Current, Power, range:1~20

5.2.7 Calling Test Parameters

Address: 94

Attribute: WR

Type: int

Byte: 4Byte

Parameters: calling setting voltage, Current, Power, range:1~20

5.2.8 Example

Example: Set Source to normal mode, voltage value is 5V, Source Current value is 1A, Load Current value is 1A, Source Power value is 10W, Load Power value is 10W, so that it outputs and reads the voltage, Current, Power, the instruction is as follows:

Address	Type	WR/RO	Register	Description
62	n	WR	0	Shut off output
60	n	WR	0	Set to V/I mode
144	n	WR	0	Set to CV priority
78	f	WR	5	Set voltage to 5V
80	f	WR	1	Set Current to 1A
82	f	WR	1	Set Load Current to 1A
84	f	WR	10	Set Source Power to 10W
86	f	WR	10	Set Source Power to 10W in V/I mode
62	n	WR	1	Turn on output
12	f	RO		Obtain readback Voltage
14	f	RO		Obtain readback Current
16	f	RO		Obtain readback Power

5.3 Readback

5.3.1 Readback Voltage

Address: 12

Attribute: RO

Type: Float

Byte: 4Byte

Parameters: Unit: V

5.3.2 Readback Current

Address: 14

Attribute: RO

Type: Float

Byte: 4Byte

Parameters: Unit: A

5.3.3 Readback Power

Address: 16

Attribute: RO

Type: Float

Byte: 4Byte

Parameters: Unit: W

5.3.4 Readback Resistance

Address: 18

Attribute: RO

Type: Float

Byte: 4Byte

Parameters: Unit: Ω

5.3.5 Readback Ah

Address: 20

Attribute: RO

Type: Float

Byte: 4Byte

Parameters: Unit: Ah

5.3.6 Readback Electric energy

Address: 22

Attribute: RO

Type: Float

Byte: 4Byte

Parameters: Unit: KWh

5.3.7 Loading Time

Address: 24

Attribute: RO

Type: int

Byte: 4Byte

Parameters: Unit: ms

5.3.7 Readback Temperature

Address: 26

Attribute: RO

Type: Float

Byte: 4Byte

Parameters: unit: °C

5.4 Protection Parameter

5.4.1 Voltage Upper Limit

Address: 214

Attribute: WR

Type: Float

Byte: 4Byte

Parameters: Unit: V

5.4.2 Voltage Lower Limit

Address: 216

Attribute: WR

Type: Float

Byte: 4Byte

Parameters: Unit: V

5.4.3 Source Current Upper Limit

Address: 218

Attribute: WR

Type: Float

Byte: 4Byte

Parameters: Unit: A

5.4.4 Source Current Lower Limit

Address: 220

Attribute: WR

Type: Float

Byte: 4Byte

Parameters: Unit: A

5.4.5 Load Current Upper Limit

Address: 222

Attribute: WR

Type: Float

Byte: 4Byte

Parameters: Unit: A

5.4.6 Load Current Lower Limit

Address: 224

Attribute: WR

Type: Float

Byte: 4Byte

Parameters: Unit: A

5.4.7 Source Power Upper Limit

Address: 226

Attribute: WR

Type: Float

Byte: 4Byte

Parameters: Unit: W

5.4.8 Source Power Lower Limit

Address: 228

Attribute: WR

Type: Float

Byte: 4Byte

Parameters: Unit: W

5.4.9 Load Power Upper Limit

Address: 230

Attribute: WR

Type: Float
Byte: 4Byte
Parameters: Unit: W

5.4.10 Load Power Lower Limit

Address: 232
Attribute: WR
Type: Float
Byte: 4Byte
Parameters: Unit: W

5.4.11 OVP

Address: 116
Attribute: WR
Type: Float
Byte: 4Byte
Parameters: Unit: V

5.4.12 OCP

Address: 118
Attribute: WR
Type: Float
Byte: 4Byte
Parameters: Unit: A

5.4.13 OPP

Address: 120
Attribute: WR
Type: Float
Byte: 4Byte
Parameters: Unit: W

5.4.14 UVP

Address: 122

Attribute: WR

Type: Float

Byte: 4Byte

Parameters: Unit: V

5.5 External Programming

5.5.1 Voltage Programming

Address: 298

Attribute: WR

Type: int

Byte: 4Byte

Parameters: 0-OFF; 1-ON

5.5.2 Current Programming

Address: 300

Attribute: WR

Type: int

Byte: 4Byte

Parameters: 0-OFF; 1-ON;

2-Source current programming; 3-Load current programming

5.5.3 Power Programming

Address: 302

Attribute: WR

Type: int

Byte: 4Byte

Parameters:

0-OFF

1-ON

2-Source power programming ON

3-Load power programming ON

5.5.4 External Control

Address: 146

Attribute: WR

Type: int

Byte: 4Byte

Parameters: 0-OFF

1-Toggle

2-Hold

5.5.5 External Voltage Programming

Address: 162

Attribute: WR

Type: int

Byte: 4Byte

Parameters:

0-5V

1-10V

5.5.6 Monitor Output Voltage

Address: 164

Attribute: WR

Type: int

Byte: 4Byte

Parameters:

0-5V

1-10V

5.6 Power ON

5.6.1 ON/OFF

Address: 62

Attribute: WR

Type: int

Byte: 4Byte

Parameters:

0-OFF

1-ON

5.6.2 Output Priority Setting

Address: 144

Attribute: WR

Type: int

Byte: 4Byte

Parameters:

0-Voltage priority

1-Current priority

5.6.3 Operation Mode

Address: 60

Attribute: WR

Type: int

Byte: 4Byte

Parameters:

0-V/I mode

1-CR mode

2-SEQ mode

3-Charge

4-Diacharge

5-Slow rise and fall

6-Preserve

7-Internal Resistance

5.7 SEQ Edit

5.7.1 File Edit

Address: 176
Attribute: WR
Type: int
Byte: 4Byte
Parameter: 1-10

5.7.2 Total Steps

Address: 178
Attribute: WR
Type: int
Byte: 4Byte
Parameter: 1-200

5.7.3 File Cycle Times

Address: 180
Attribute: WR
Type: int
Byte: 4Byte
Parameter: 0-60000, 0 for infinite cycle

5.7.4 Link to File

Address: 182
Attribute: WR
Type: int
Byte: 4Byte
Parameter: 0-10, 0 means no link

5.7.5 Step No.

Address: 184

Attribute: WR
Type: int
Byte: 4Byte
Parameter: 1-100

5.7.6 Voltage Setting

Address: 186
Attribute: WR
Type: Float
Byte: 4Byte
Parameter: unit- V

5.7.7 Source Current

Address: 188
Attribute: WR
Type: Float
Byte: 4Byte
Parameter: unit- A

5.7.8 Load Current

Address: 190
Attribute: WR
Type: Float
Byte: 4Byte
Parameter: unit- A

5.7.9 Source Power

Address: 192
Attribute: WR
Type: Float
Byte: 4Byte
Parameter: unit- W

5.7.10 Load Power

Address: 194
Attribute: WR
Type: Float
Byte: 4Byte
Parameter: unit- W

5.7.11 Delay Time of Editing Step

Address: 196
Attribute: WR
Type: Float
Byte: 4Byte
Parameter: unit- s

5.7.11 SEQ File Saving

Address: 198
Attribute: WR
Type: int
Byte: 4Byte
Parameter: 1-save

5.7.12 Example

SEQ mode will perform the operation steps one by one in the selected SEQ file. Links can be made between files. Cycle times can also be adjustable.

Set the power supply to SEQ mode and set SEQ file No. to 1, total steps to 3, cycle times to 1, link to file as 0 .

File No.	Total Steps	Cycle Times	Link to File	Step No.	Step Voltage	Source Current	Load Current	Source Power	Load Power	Delay Time for step
1	3	1	0	1	1V	1A	1A	10W	10W	10S
				2	2V	2A	2A	20W	20W	20S
				3	3V	3A	3A	30W	30W	30S

Address	Data Type	Read/Write	Register Value	Description
62	n	WR	0	Shut off output for the power supply
60	n	WR	2	Set operation mode to SEQ mode
176	n	WR	1	Set SEQ file No. to 1
178	n	WR	3	Set total steps to 3
180	n	WR	1	Set SEQ file cycle times to 1
182	n	WR	0	Set link file for SEQ file No. 1 to 0
184	n	WR	1	Set step No. to 1
186	f	WR	1	Set voltage to 1V for step 1
188	f	WR	1	Set source current to 1A for step 1
190	f	WR	1	Set load current to 1A for step 1
192	f	WR	10	Set source power to 10W for step 1
194	f	WR	10	Set load power to 10W for step 1
196	f	WR	10	Set dwell time to 10s for step 1
184	n	WR	2	Set step No. to 2
186	f	WR	2	Set voltage to 2V for step 2
188	f	WR	2	Set source current to 2A for step 2
190	f	WR	2	Set load current to 2A for step 2
192	f	WR	20	Set source power to 20W for step 2
194	f	WR	20	Set load power to 20W for step 2
196	f	WR	20	Set dwell time to 20s for step 2
184	n	WR	3	Set step No. to 3
186	f	WR	3	Set voltage to 3V for step 3
188	f	WR	3	Set source current to 3A for step 3
190	f	WR	3	Set load current to 3A for step 3
192	f	WR	30	Set source power to 30W for step 3
194	f	WR	30	Set load power to 30W for step 3
196	f	WR	30	Set dwell time to 30s for step 3
198	n	WR	1	Save SEQ file

5.6 SEQ Test

5.8.1 SEQ File No.

Address: 170
Attribute: WR
Type: int
Byte: 4Byte
Parameters: 1-10

5.8.2 SEQ Operation Status

Address: 34
Attribute: RO
Type: int
Byte: 4Byte
Parameters:
[7-0]: Step No.
[15-8]: Present file No.
[31-16]: cycle times

5.8.3 Total Steps for Present File

Address: 36
Attribute: RO
Type: int
Byte: 4Byte

5.8.4 Present Link to File

Address: 38
Attribute: RO
Type: int
Byte: 4Byte

5.8.5 Total Cycle Times

Address: 40
Attribute: RO
Type: int
Byte: 4Byte

5.8.6 Voltage for Present Step

Address: 42
Attribute: RO
Type: int
Byte: 4Byte

5.8.7 Source Current for Present Step

Address: 44
Attribute: RO
Type: Float
Byte: 4Byte

5.8.8 Load Current for Present Step

Address: 46
Attribute: RO
Type: Float
Byte: 4Byte

5.8.9 Source Power for Present Step

Address: 48
Attribute: RO
Type: Float
Byte: 4Byte

5.8.10 Load Power for Present Step

Address: 50
Attribute: RO
Type: Float
Byte: 4Byte

5.8.11 Dwell Time for Present Step

Address: 52
Attribute: RO
Type: Float
Byte: 4Byte

5.8.12 Dwell Time for Present File

Address: 52
Attribute: RO
Type: Float
Byte: 4Byte

5.6.4 Example

Address	Data Type	Read/Write	Register Value	Description
62	n	WR	0	Shut off output for the power supply
60	n	WR	2	Set operation mode to SEQ mode
170	n	WR	1	Set SEQ file No. to 1
62	n	WR	1	Shut on output for the power supply
34	n	RO		SEQ operation status
36	n	RO		Total steps for present file
38	n	RO		Present link to file
40	n	RO		Present total cycle times
42	f	RO		Voltage for present step
44	f	RO		Source current for present step

46	f	RO		Load current for present step
48	f	RO		Source power for present step
50	f	RO		Load power for present step
52	f	RO		Dwell Time for present step
24	n	RO		Dwell Time for present SEQ File

5.9 Parallelism Setting

5.9.1 Master&Slave Selection

Parameters: 308

Attribute: WR

Type: int

Byte: 4Byte

Parameter:

- 0-Mster computer;
- 1-No.1 Slave Computer;
- 2-No.2 Slave Computer;
- 3-No.3 Slave Computer;
- 4-No.4 Slave Computer;
- 5-No.5 Slave Computer;
- 6-No.6 Slave Computer;
- 7-No.7 Slave Computer;
- 8-No.8 Slave Computer;
- 9-No.9 Slave Computer;

5.9.2 Slaves

Parameters: 310

Attribute: WR

Type: int

Byte: 4Byte

Parameter: Range: 1~9;

Note: To modify the number of slaves, users need to disable the parallel control first.

5.9.3 Parallelism Control

Parameters: 312

Attribute: WR

Type: int

Byte: 4Byte

Parameter:

0-OFF

1-ON

5.10 Simulated Internal Resistance

5.10.1 Open Circuit Voltage

Parameters: 318

Attribute: WR

Type: float

Byte: 4Byte

Parameter: Unit: V

5.10.2 Maximum Current

Parameters: 320

Attribute: WR

Type: float

Byte: 4Byte

Parameter: Unit: A

5.10.3 Maximum Power

Parameters: 322

Attribute: WR

Type: float

Byte: 4Byte

Parameter: Unit: W

5.10.4 Internal Resistance Setting

Parameters: 324

Attribute: WR

Type: float

Byte: 4Byte

Parameter: Unit: Ω

5.11 CR Mode

5.11.1 Resistance Setting

Parameters: 342

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Unit: Ω

5.11.2 Current Setting

Parameters: 338

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Unit: A

5.11.3 Power Setting

Parameters: 340

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Unit: W

5.12 Charge Test

5.12.1 Charging Voltage

Parameters: 352

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Unit: V

5.12.2 Charging Current

Parameters: 354

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Unit: A

5.12.3 Charging Power

Parameters: 356

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Unit: W

5.12.4 Cut-off Voltage

Parameters: 358

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Unit: V

5.12.5 Cut-off Current

Parameters: 360

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Unit: A

5.12.6 Cut-off Power

Parameters: 362

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Range: 0~999999.0; Unit: Ah

5.12.7 Cut-off Time

Parameters: 364

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Range: 0~360000; Unit: s

5.13 Discharge Test

5.13.1 Discharge Current

Parameters: 370

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Unit: A

5.13.2 Discharge Power

Parameters: 372

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Unit: W

5.13.3 Cut-off Voltage

Parameters: 374

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Unit: V

5.13.4 Cut-off Power

Parameters: 376

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Range: 0~999999.0; Unit: Ah

5.13.5 Cut-off Time

Parameters: 378

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Range: 0~360000; Unit: s

5.14 Slow Rise and Fall

5.14.1 Voltage A Setting

Parameters: 384

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Unit: V

5.14.2 Voltage B Setting

Parameters: 386

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Unit: V

5.14.3 Voltage C Setting

Parameters: 388

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Unit: V

5.14.4 Voltage Slew AB

Parameters: 390

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Unit: V/S

5.14.5 Voltage Slew BC

Parameters: 392

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Unit: V/S

5.14.6 Current Setting

Parameters: 394

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Unit: A

5.14.7 Power Setting

Parameters: 396

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Unit: W

5.14.8 Holding Time (Setting A)

Parameters: 398

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Unit: s

5.14.9 Holding Time (Setting B)

Parameters: 400

Attribute: WR

Type: float
Byte: 4Byte
Parameters: Unit: s

5.14.10 Holding Time (Setting C)

Parameters: 402
Attribute: WR
Type: float
Byte: 4Byte
Parameters: Unit: s

5.15 Function Parameter

5.15.1 V-Rise Slew

Parameters: 100
Attribute: WR
Type: float
Byte: 4Byte
Parameters: Unit: V/S

5.15.1 V-Fall Slew

Parameters: 102
Attribute: WR
Type: float
Byte: 4Byte
Parameters: Unit: V/S

5.15.3 Source Current Rise Slew

Parameters: 104
Attribute: WR
Type: float

Byte: 4Byte

Parameters: Unit: A/S

5.15.4 Source Current Fall Slew

Parameters: 106

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Unit: A/S

5.15.5 Load Current Rise Slew

Parameters: 108

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Unit: A/S

5.15.6 Load Current Fall Slew

Parameters: 110

Attribute: WR

Type: float

Byte: 4Byte

Parameters: Unit: A/S

5.15.7 Timing Output Time

Parameters: 208

Attribute: WR

Type: float

Byte: 4Byte

Parameters: 0~999999.0, Unit: S

5.15.8 Voltage Fast Zero

Parameters: 156

Attribute: WR

Type: int

Byte: 4Byte

Parameters: 0-OFF; 1-ON

5.15.9 Power OFF Saving

Parameters: 152

Attribute: WR

Type: int

Byte: 4Byte

Parameters: 0-OFF; 1-ON

5.15.10 Output Priority

Parameters: 144

Attribute: WR

Type: int

Byte: 4Byte

Parameters:

0-Voltage priority

1-Current priority

5.15.11 Quick Call

Parameters: 154

Attribute: WR

Type: int

Byte: 4Byte

Parameters: 0-OFF; 1-ON

5.15.12 Autorun Enable

Parameters: 158

Attribute: WR

Type: int

Byte: 4Byte

Parameters: 0-OFF; 1-ON

5.15.13 Autorun Delay

Parameters: 160

Attribute: WR

Type: float

Byte: 4Byte

Parameters: 3~60.0, Unit: S

5.16 System

5.16.1 IP Address

Parameters: 242

Attribute: WR

Type: int

Byte: 4Byte

Parameters: Dot decimal representation: such as IP for 192.168.0.123, converted to hexadecimal: C0 A8 00 7B; then read the data as: 7B 00 A8 C0

Default: 192.168.0.123

5.16.2 Language

Parameters: 258

Attribute: WR

Type: int

Byte: 4Byte

Parameters: 0-Chinese; 1-English

5.16.3 Series Baud Rate

Parameters: 248

Attribute: WR

Type: int

Byte: 4Byte

Parameters:

0-4800

1-9600

2-19200

3-38400

4-115200

5.16.4 Calibration

Parameters: 250

Attribute: WR

Type: int

Byte: 4Byte

Parameters:

0-None

1-Odd

2-Even

5.16.5 Device Address

Parameters: 254

Attribute: WR

Type: int

Byte: 4Byte

Parameters: 1~248

5.16.6 Beeper

Parameters: 256

Attribute: WR

Type: int

Byte: 4Byte

Parameters: 0-OFF; 1-ON

5.16.7 CAN Baud Rate

Parameters: 252

Attribute: WR

Type: int

Byte: 4Byte

Parameters:

0-125K

1-250K

2-500K

3-666K

4-800K

5-1000K

6 Appendix

Modbus Address	Name	R/W	Type	Description
10	Status Register	OR	Uint32	Refer to the table
72	Clear protection	WO	Uint32	1 for clearing
78	Voltage Setting	WR	Float	Unit: V
80	Source current setting	WR	Float	Unit: A
82	Load current setting	WR	Float	Unit: A
84	Source power setting	WR	Float	Unit: W
86	Load power setting	WR	Float	Unit: W
92	Saving Test parameter	WR	Uint32	Saving the setting voltage current power; range :1-20
94	Calling Test parameter	WR	Uint32	Calling the setting voltage current power; range :1-20
12	Readback voltage	OR	Float	Unit: V
14	Readback current	OR	Float	Unit: A
16	Readback power	OR	Float	Unit: W
18	Readback resistance	OR	Float	Unit: Ω
20	Readback Ah	OR	Float	Unit: Ah
22	Readback electronic energy	OR	Float	Unit: kWh
24	Readback loading time	OR	Uint32	Unit: ms
26	Readback temperature	OR	Float	Unit: °C

214	Voltage upper limit	WR	Float	Unit: V
216	Voltage lower limit	WR	Float	Unit: V
218	Source current upper limit	WR	Float	Unit: A
220	Source current lower limit	WR	Float	Unit: A
222	Load current upper limit	WR	Float	Unit: A
224	Load current lower limit	WR	Float	Unit: A
226	Sourcepower upper limit	WR	Float	Unit: W
228	Source power lower limit	WR	Float	Unit: W
230	Load power upper limit	WR	Float	Unit: W
232	Load power lower limit	WR	Float	Unit: W
116	OVP	WR	Float	Unit: V
118	OCP	WR	Float	Unit: A
120	OPP	WR	Float	Unit: W
122	UVO	WR	Float	Unit: V
298	Voltage Programming	WR	Uint32	0-Off; 1-On
300	Current Programming	WR	Uint32	0-Off; 1-Both; 2-Sour; 3-Load
302	Power Programming	WR	Uint32	0-Off; 1-Both; 2-Sour; 3-Load
146	External Control	WR	Uint32	0-Off; 1-Toggle; 2-Hold
162	External Programming voltage	WR	Uint32	0-5V; 1-10V
164	Monitor output voltage	WR	Uint32	0-5V; 1-10V
62	ON/OFF	WR	Uint32	0-OFF; 1-ON
144	Output priority	WR	Uint32	0-Voltage priority; 1-current priority
60	Operation mode	WR	Uint32	0-V/I mode 1-CR mode 2-SEQ mode 3-Charge 4-Discharge 5-Slow rise and fall 6-Preserve 7-Internal resistance mode
176	File No.	WR	Uint32	Range: 1-10
178	Total steps	WR	Uint32	Range: 1-100
180	Cycle times	WR	Uint32	Range: 0-60000; 0 for infinite cycle
182	Link to file	WR	Uint32	Range: 0-10; 0 mens no link

				file
184	Step No.	WR	Uint32	Range: 1-100
186	Voltage for present step	WR	Float	Unit: V
188	Source current	WR	Float	Unit: A
190	Load current	WR	Float	Unit: A
192	Source power	WR	Float	Unit: W
194	Load power	WR	Float	Unit: W
196	Delay time for present step	WR	Float	Unit: s
198	Saving file No.	WR	Uint32	1 fr saving
170	Selection for SEQ file	WR	Uint32	Range: 1-10
34	Operation status	OR	Uint32	[7-0]: Step No. [15-8] : File No.for present step [31-16]: Cycle times
36	Total steps for present step	OR	Uint32	
38	Present link to file	OR	Uint32	
40	Total cycle times for present step	OR	Uint32	
42	Voltage for present step	OR	Float	Unit: V
44	Source current for present step	OR	Float	Unit: A
46	Load current for present step	OR	Float	Unit: A
48	Source power for present step	OR	Float	Unit: W
50	Load power for present step	OR	Float	Unit: W
52	Dwell time for present step	OR	Float	Unit: s
24	Dwell time for present SEQ	OR	Uint32	Unit: : ms
308	Master&slave selection	WR	Uint32	0-Master; 1-9 Slave
310	Slaves	WR	Uint32	Range: 1-9
312	Parallelism Enable	WR	Uint32	0-OFF; 1-ON
318	Open circuit voltage	WR	Float	Unit: V
320	Maximum current	WR	Float	Unit: A
322	Maximum power	WR	Float	Unit: W
324	Internal resistance setting	WR	Float	Unit: Ω
342	CR resistance setting	WR	Float	Unit: Ω
338	CR current setting	WR	Float	Unit: A

340	CR power setting	WR	Float	Unit: W
352	CHARGE Voltage	WR	Float	Unit: V
354	CHARGE Current	WR	Float	Unit: A
356	CHARGE Power	WR	Float	Unit: W
358	CHARGE Cut-off Voltage	WR	Float	Unit: V; 0 for enable
360	CHARGE Cut-off current	WR	Float	Unit: A; 0 for enable
362	CHARGE Cut-off power	WR	Float	Unit: Ah; 0 for enable
364	CHARGE Cut-off time	WR	Float	Unit: s; 0 for enable
370	Discharge current	WR	Float	Unit: A
372	Discharge power	WR	Float	Unit: W
374	Discharge Cut-off Voltage	WR	Float	Unit: V; 0 for enable
376	Discharge Cut-off power	WR	Float	Unit: Ah; 0 for enable
378	Discharge Cut-off time	WR	Float	Unit: s; 0 for enable
384	Voltage A setting	WR	Float	Unit: V
386	Voltage B setting	WR	Float	Unit: V
388	Voltage C setting	WR	Float	Unit: V
390	Voltage slew AB	WR	Float	Unit: V/s
392	Voltage slew BC	WR	Float	Unit: V/s
394	Current setting	WR	Float	Unit: A
396	Power setting	WR	Float	Unit: W
398	Setting A holding time	WR	Float	Unit: s
400	Setting B holding time	WR	Float	Unit: s
402	Setting C holding time	WR	Float	Unit: s
100	Voltage rise slew	WR	Float	Unit: V/s
102	Voltage fall slew	WR	Float	Unit: V/s
104	Source current rise slew	WR	Float	Unit: A/s
106	Source current fall slew	WR	Float	Unit: A/s
108	Load current rise slew	WR	Float	Unit: A/s
110	Load current fall slew	WR	Float	Unit: A/s
208	Timing output time	WR	Float	Unit: s, Range: 0-999999; 0 for infinite
156	Voltage fast zero	WR	Uint32	0-OFF; 1-ON
152	Power off saving	WR	Uint32	0-OFF; 1-ON
144	Output Priority setting	WR	Uint32	0-voltage priority; 1-current priority
154	Quick call	WR	Uint32	0-OFF; 1-ON
158	Autorun enable	WR	Uint32	0-OFF; 1-ON
160	Autorun delay	WR	Float	Unit: s; Range: 3-60
242	IP address	WR	Uint32	Example:0x7B00A8C0 indicates C0.A8.00.7B
258	Language	WR	Uint32	0-chinese; 1-English

248	Series baud rate	WR	Uint32	0-4800; 1-9600; 2-19200; 3-3840; 4-115200
250	Calibration	WR	Uint32	0-None; 1-Odd; 2-Even
254	Device address	WR	Uint32	Range: 1-248
256	Beeper	WR	Uint32	0-Off; 1-On
252	CAN Baud rate	WR	Uint32	0-125k; 1-250k; 2-500k; 3-666k; 4-800k; 5-1000k
70	Factory reset	WR	Uint32	1 for factory reset

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
started	calibrating	preserve	emergency stop	cascade enable	Analog Programming					Occurrence of protection indication					
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
testing	tested	Remote control	Voltage SENSEBit	Function Indication					Mode Indication		Source & load mode indication	current sampling over range	Voltage sampling over range	Output Indication	
Bit0		Bit0-OFF, 1-ON													
Bit1		0-Voltage sampling normal, 1-Voltage Sampling Over Range													
Bit2		0-Current sampling normal, 1-Current Sampling Over Range													
Bit3		0-Source mode, 1-load													
Bit4-6		0-CV, 1-CC, 2-CP, 3-CR													
Bit7-11		0-STATIC, 1-CR, 2-SEQ, 3-CHARGE, 4-DISCHARGE, 5-RAMP, 6-WAVE													
Bit12		0-local terminal, 1-remote terminal													
Bit13		0-local sense, 1-remote sense													
Bit14		0-untested, 1-tested													
Bit15		0-untesting, 1-testing													
Bit16-21		0-no protection, 1-MF, 2-OTP, 3-RV, 4-OC, 5-OV, 6-OP, 7-OCP, 8-OVP, 9-OPP, 10-LVP, 15-SLA1, 16-SLA2, 17-SLA3,													

	18-SLA4, 19-SLA5, 20-SLA6, 21-SLA7, 22-SLA8, 23-SLA9
Bit22-26	Bit0-ON, Bit1-ON BIT22-voltage, BIT23-Source current , BIT24-load current , BIT25-Source power, BIT26-load power
Bit27	0-Parallelism OFF, 1-Parallelism ON
Bit28	0-emergency return, 1-emergency occur
Bit29	Preserve
Bit30	0-uncalibrated, 1-calibrated
Bit31	0-unstarted, 1-started