IT6000 DC Power Supply

CANOPEN Programming Guide

Content

Chapter1 CANOpen Introduction

1.1 Introduction of Communication Process

IT6000 CAN communication is based on CANopen protocol. Connect CAN interface of the IT6000 rear panel to CAN analysis tool, configure CAN interface information in the menu before start CAN communication. For example, set CAN address as 01, baudrate as 125kHz, and CAN protocol to DeviceNet. Please refer to the IT6000 series user manual.

1. PC sends startup message to power supply.
2. After the power supply receives the startup message, it switches to the remote control mode (at this time, the front panel of IT6000 shows that the instrument enters the “Rmt” state). Only the instrument enters the remote control mode, the power supply can send and receive messages successfully with PC.
3. Then, IT6000 periodically send TPDO parameters to PC.
4. Users can also send RPTO or SDO message to control IT6000 by PC.

   If users want to switch to local working mode, send stop message to instrument. The following sections will describe the specific interactive and setup messages in detail.

1.2 Intrduction of CAN Format

Different CAN analysis tools have different requirements and fields, please refer to the specific CAN tool. Some main fields in different tools are explained below for your reference.

In common CAN tools, users need to focus on Frame ID and DATA (Hex) of CAN message. For example, send voltage setting meassage:

Frame ID	Data (HEX)	Remarks
0601	23 03 30 02 70 17 00 00	Set the transfer type of TPD01 to 254

Frame ID

There are four kinds of **Frame ID.** When send commands, the Frame ID is 0000 or 0601, and 0000 is the Frame ID for enable or disable the CAN communication, this command no response.

0601 is the Frame ID for communication command, every command has a respond message. Calculation method of Frame ID: 0x600+CAN address. In this context, we will always use the CAN address 01. Here, 0x600 is the constant address of IT6000.

The Frame ID of respond message is 0581, the calculation method: 0x580+CAN address. CAN Address is 01，0x580 is the constant address of IT6000.

The Frame ID of regular report message refer to TPDO addresses instruction.

Data (HEX)

Different functions correspond to different messages and different parameter values. Please refer to the command introduction in the following chapters for details.

The response message for setting command and querying command is different. If the setting command is executed normally, the response message beginning with 60 will be returned, and if the command is executed incorrectly, the response message beginning with 80 will be returned. The response message of query command is beginning with 43.

For other CAN tools' setting, take an example of CANPro analysis tool:

- Node ID: Node ID: hexadecimal 0x01
- Object Index: Main Index
- Object Sub-Index: Sub-Index
- Transfer Type: Default Expedited
- Size Indicator: Default Indicated
- Bytes Not Data: Bytes Not Data: Invalid bytes, if data type is "int", 4 bytes, Bytes Not Data is 0. If data type is "char", one byte, Bytes Not Data is 3.
- SDO Data SDO: SDO data message

Chapter2 Common commands

2.1 Enable CAN

In this context, we will always use the address 01.

In the following message, high byte 01 means to startup CAN communication and switch the instrument to remote control mode, low byte 01 means the address of the instrument.

The instrument will not response to this startup message, but it will periodically send TPDO parameters to PC, like voltage, current, power, etc.

Frame ID	Data (HEX)
00000000	01 01

2.2 Disable CAN

Send stop message can exit CAN communication status. High byte 02 means disable CAN communication. Low byte 01 means the address of the instrument.

After the instrument receives the stop message, it will switch to local mode and not report any message to PC.

Frame ID	Data (HEX)
00000000	02 01

2.3 Regular Report the Message

After CAN start, the TPDO instrument starts to send related parameters to PC, details are as follows:

Frame ID	Data (HEX)	Remarks
00000181	00 00 40 40 00 00 E0 40	Report the message

Remarks: Frame ID=0x180+CAN address (Here is 0x01), 0x180 is the address of instrument TPDO1, the real value is 181.

Other TPDO addresses are as follows:

Name	Address	Data (HEX)

TPDO1	0x180+CAN Address	V_rms(0-3byte) I_rms(4-7byte)
TPDO2	0x280+CAN Address	P_rms(0-3byte) oper_reg(4-5byte) state_reg(byte6)
TPDO3	0x380+CAN Address	ques_reg(byte0 - byte1)
TPDO4	0x480+CAN Address	Null

- V_rms: Average voltage value
- I_rms: Average current value
- P_rms: Average power value
- oper_reg: Operation status regesiter
- state_reg: Standard status register
- ques_reg: Questionable Status Register

Information of other TPDO indexs:

Name	Index	Sub-index	Function description
TPDO1	0x1800	0x02	Set the transmission type
TPDO1	0x1800	0x05	Set time period (ms)
TPDO2	0x1801	0x02	Set the transmission type
TPDO2	0x1801	0x05	Set time period (ms)
TPDO3	0x1802	0x02	Set the transmission type
TPDO3	0x1802	0x05	Set time period (ms)
TPDO4	0x1803	0x02	Set the transmission type
TPDO4	0x1803	0x05	Set time period (ms)

2.4 Modify Time Period

There are four timers for IT6000 instrument, TPDO1, TPDO2, TPDO3, TPDO4. The value of each timer needs to be set separately. The default four timer cycles of the machine are all 1000ms. Users can turn off the timer reporting function or modify the timer reporting cycle time according to demands.

Modify TPDO reporting cycle function

If users want to modify reporting cycle function, then they need to do two steps. Here we take an example of TPDO1, same for other TPDO.

1. Set the transmission type of TPDO1 to 254

Sending message:

Frame ID	Data (HEX)	Remarks
0601	2F 00 18 02 FE 00 00 00	Set the transmission type of TPDO1 to 254

Response message:

Frame ID	Data (HEX)	Remarks
0581	60 00 18 02 00 00 00 00	Respond message

- Red: 0x1800 is the primary index of TPDO1 (0x1800 is TPDO1).
- Green: 0x02 is the sub-index of TPDO1 (0x02 means transmission type)
- Orange: 0x00FE is setting value, means the transmission type is timer type, one byte.

2. Modify TPDO1 reporting cycle time is 100ms.

Sending message:

Frame ID	Data (HEX)	Remarks
0601	2B 00 18 05 64 00 00 00	Set the time period of TPDO1(ms)

Response message:

Frame ID	Data (HEX)	Remarks
0581	60 00 18 05 00 00 00 00	Respond message

- Red: 0x1800 is the primary index of TPDO1 (0x1800 is TPDO1).
- Green: 0x05 is the sub-index of TPDO1 (0x05 means timer cycle)
- Orange: 0x6400 is setting value, it means timer cycle is 100ms, two bytes.

3. After completing the above settings, timer cycle of TPDO1 reporting function has changed to 100ms.

Turn OFF reporting cycle function

If users want to turn off reporting cycle function, the method is similar as “modify reporting cycle function”. That is modifying the timer cycle as 0ms.

1. Set the transmission type of TPDO1 to 254

Sending message:

Frame ID	Data (HEX)	Remarks
0601	2F 00 18 02 FE 00 00 00	Set the transmission type of TPDO1 to 254

Response message:

Frame ID	Data (HEX)	Remarks
0581	60 00 18 02 00 00 00 00	Respond message

2. Modify TPDO1 timer cycle as 0ms.

Sending message:

Frame ID	Data (HEX)	Remarks
0601	2B 00 18 05 00 00 00 00	Set the time period of TPDO1(ms)

Response message:

Frame ID	Data (HEX)	Remarks
0581	60 00 18 05 00 00 00 00	Respond message

- Red: 0x1800 is the primary index of TPDO1 (0x1800 is TPDO1).
- Green: 0x05 is the sub-index of TPDO1 (0x05 means timer cycle)
- Orange: 0x0000 is setting value, it means timer cycle is 0ms, two bytes.

3. After modifying the timer cycle of TPDO1, the reporting cycle function with Frame ID 0x181 will be turned off, and the other TPDO2, TPDO3, and TPDO4 can be turned off in the same way.

Turn ON reporting cycle function

If users want to turn on reporting cycle function again, they need to disable CAN communication, then enable it again. After starting up CAN communication, the reporting cycle function will be working automatically.

2.5 Message Reference of Register

Regular Report Message

The register status information will be included in the regular report message by CAN communication, the information as follow:

Name	Address	Data (HEX)
TPDO1	0x180+CAN Address	V_rms(0-3byte) I_rms(4-7byte)
TPDO2	0x280+CAN Address	P_rms(0-3byte) oper_reg(4-5byte) state_reg(byte6)
TPDO3	0x380+CAN Address	ques_reg(byte0 - byte1)
TPDO4	0x480+CAN Address	Null

For example, the regular report message of TPDO2 is dc 00 00 00 40 41 00 00

Hexadecimal value 40 41, low byte 41 in front, and high byte 40 in the back, convert into binary value is 100 0001 0100 0000. The Bit6, Bit8 and Bit14 are set to 1, according to the status information corresponding to bit data, the present state of the instrument is: CC (current) priority, loop state is CV, and output state of the instrument is ON.

Query Status Register Message

when the command is sent to read the status register, operation register, or questionable status register. The last four bytes of the response message are the hexadecimal values, with the low byte first and the high byte last. It needs to be converted into a binary value and determined according to the corresponding bit data.

For example, the response message of status register is 43 02 30 01 11 08 00 00.

Status Information Reference

Status information is shown as follow:

Operation Status Bit	bit	Description
ACQ-WTG	0	0, no meaning, to be defined.
ARB-WTG	1	ARB waiting trigger
DLOG-WTG	2	0, no meaning, to be defined.
ACQ-Active	3	0, no meaning, to be defined.
ARB-Active	4	ARB has triggered, executing.
DLOG-Active	5	0, no meaning, to be defined.
ON/OFF	6	ON/OFF state, on:1, off:0.

Operation Status Bit	bit	Description
CC	7	Current working mode: CC mode, plus current.
CV	8	Current working mode: CV mode, plus voltage.
CW	9	Current working mode: CW mode, plus power.
CR	10	Current working mode: CR mode.
CC-	11	0, no meaning, to be defined.
CP-	12	0, no meaning, to be defined.
CAL	13	Calibration state, executing: 1, unexecuted: 0.
Priority	14	Working priority, CV: 0, CC: 1.

Standard status register	bit	Description
OPC	0	Operation completed
NU	1	0, no meaning, to be defined.
QYE	2	Query Error
DDE	3	Device-specific Error
EXE	4	Execution Error
CME	5	A command syntax error occurred.
NU	6	0, no meaning, to be defined.
PON	7	Power On, enable:1, disable: 0.

Questionable Status Register	bit	Description
OV	0	Overvoltage Protection
OC+	1	Positive Overcurrent Protection
OC-	2	Negative Overcurrent Protection
OP+	3	Positive Overpower Protection
OP-	4	Negative Overpower Protection
UV	5	Undervoltage Protection
OT	6	Over Temperature Protection
UC	7	Undercurrent Protection
Errsense	8	Sense Fault
Share	9	Current sharing fault
Rvs	10	The output is reversed
INH	11	Externally inhibited output
PS	12	Fault protection bit (protect shutdown)
OSC	13	Loop oscillation failure

Questionable Status Register	bit	Description
hardware	14	Unknown internal fault of the instrument (Hardware)

Chapter3 System Commands

Query Status Register

Directly send message to query status register, it will receive a response message after sending, upload the status of the status register.

Message Information

4F 02 30 01 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3002	0x01	R	char	1

Query Operation Register

Directly send message to query operation register, it will receive a response message after sending, upload the status of the operation register.

Message Information

43 02 30 02 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3002	0x02	R	int	4

Query Questionable Status Register

Directly send message to query questionable status register, it will receive a response message after sending, upload the status of the questionable status register.

Message Information

43 02 30 03 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3002	0x03	R	int	4

Set/Query on/off Status

Users can send message to query the input/output state of the current instrument. After sending read message, a response message will be received and the ON/OFF status information of the instrument will be uploaded.
Send ON/OFF Setting message to turn input/output ON or OFF. Sending setting message will not upload response info. The instrument will perform the corresponding set action.

Message Information

Query Command: 4F 02 30 04 00 00 00 00

Set to ON: 2F 02 30 04 01 00 00 00

Set to OFF: 2F 02 30 04 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3002	0x04	RW	char	1

Set/Query Sense Status

Message Information

Query Command: 4F 02 30 05 00 00 00 00

Set to ON: 2F 02 30 05 01 00 00 00

Set to OFF: 2F 02 30 05 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3002	0x05	RW	char	1

Query Sense Voltage

Message Information

43 02 30 09 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes

0x3002	0x09	R	int	4

Setting CAN Timing Function

Timing function is off by default, and the input/output of instrument is always on. When send the set to ON command: 23 02 30 0B 01 00 00 00 and enable the Timing function, CAN heartbeat will be checked every 3s by default, if CAN heartbeat message is received within 3s, the instrument output/input will not turn OFF, otherwise, the instrument output/input will turn off automatically.

Message Information

Query Command: 43 02 30 0B 00 00 00 00

Set to ON: 23 02 30 0B 01 00 00 00

Set to OFF: 23 02 30 0B 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3002	0x0B	RW	int	4

Setting CAN Timing Value

Set timing value, the default is 3s, the minimum is 1ms.

CAN heartbeat will be checked per 3s by default, user can change the timing value through this command.

Message Information

Query Command: 43 02 30 0C 00 00 00 00

Setting Command: 23 02 30 0C 00 00 5C 42

The last four bytes of the setting command are four-byte hexadecimal values which floating point format in C converted to such as 55S, converted to hexadecimal 00 00 5C 42, the conversion method refers to relevant tool.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3002	0x0C	RW	float	4

Query CAN Heartbeat

CAN hearbeat function is always ON, in combination with the CAN timing function, if the CAN heartbeat cannot be queried, the output/input of the instrument will be automatically turn off after the timing. If CAN heartbeat is queried, the output/input will not be automatically turn off when the instrument at the appointed time. The heartbeat parameter responded is incremented by number of queries +1.

Message Information

43 02 30 0A 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3002	0x0A	R	int	4

Clear the Protection Status

Message Information

23 10 30 01 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3010	0x01	W	Int	4

Query Software Protection Status

Message Information

43 10 30 02 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3010	0x02	R	Int	4

Error Information Reference

After querying the software protection status, the instrument will return an error message. The last four bytes of the error message

are the hexadecimal values, with the low byte first and the high byte last. It needs to be converted into a binary value and determined according to the corresponding bit data. The error occurs when the corresponding Bit data is set to 1.

for example: the return message is 60 00 00 00 00 11 08 00 00 Hexadecimal value 0811 is converted into binary value is 0 0000 0000 1000 0001 0001. The Bit0, Bit4 and Bit11 are set to 1, and OVP, OPP- and exist several master units are simultaneously occurred.

Error information references as below:

Bit	VFD Indicator	Description
bit 0	OVP	Over voltage protection
bit 1	OCP+	Over positive current protection
bit 2	OCP-	Over negative current protection
bit 3	OPP+	Over positive power protection
bit 4	OPP-	Over negative power protection
bit 5	UCP	Under current protection
bit 6	UVP	Under voltage protection
bit 7	OTP	Over temperature protection
bit 8	SENSE ERR	Sense error
bit 9	SRVS	Sense reverse protection
bit 10	ORVS	Output reverse protection
bit 11	MULTI MASTER	Exist several master units
bit 12	EXT UNLOCK	The TX and RX fiber is not locked or parallel connection is failed between units with the operation panel.
bit 13	INNER UNLOCK	The F-TX and F-RX fiber is not locked or parallel connection is failed between units without the operation panel.
bit 14	MOD CHECK FAIL	Module check failed
bit 15	ECP	Current equalization protection
bit 16	HW:xxx	Hardware protection
bit 17	POWER DOWN	Instrument power down
bit 18	INH LATCH	Inhibit output (under latch mode)
bit 19	INH LIVING	Inhibit output (under living)
bit 20	CAP OCP	Capacitor over current protection
bit 21	SLA POWER DOWN	Slaver module power down

Query Hardware Protection Status

Hardware protection is generally related to instrument hardware failure. In case of hardware failure, please contact ITECH engineer.

Message Information

43 10 30 03 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3010	0x03	R	Int	4

Chapter4 Source Commands

Setting CC/CV Priority

Message Information

Query Command: 43 03 30 01 00 00 00 00

Set to CV priority mode: 23 03 30 01 00 00 00 00

Set to CC priority mode: 23 03 30 01 01 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3003	0x01	RW	int	4

Setting Output Voltage

Message Information

Query Command: 43 03 30 02 00 00 00 00

Setting command: 23 03 30 02 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000V, converted to 6000mV, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3003	0x02	RW	int	4

Setting Voltage Rise Slew

Message Information

Query Command: 43 03 30 03 00 00 00 00

Setting command: 23 03 30 03 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000s, converted to 6000ms, and

then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3003	0x03	RW	int	4

Setting Voltage Fall Slew

Message Information

Query Command: 43 03 30 04 00 00 00 00

Setting command: 23 03 30 04 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000s, converted to 6000ms, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3003	0x04	RW	int	4

Setting Output Current

Message Information

Query Command: 43 03 30 05 00 00 00 00

Setting command: 23 03 30 05 70 17 00 00

The last four bytes of setting command are specific current hexadecimal values, such as 6.000A, converted to 6000mA, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3003	0x05	RW	int	4

Setting Current Rise Slew

Message Information

Query Command: 43 03 30 06 00 00 00 00

Setting command: 23 03 30 06 70 17 00 00

The last four bytes of setting command are specific current hexadecimal values, such as 6.000s, converted to 6000ms, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3003	0x06	RW	int	4

Setting Current Fall Slew

Message Information

Query Command: 43 03 30 07 00 00 00 00

Setting command: 23 03 30 07 70 17 00 00

The last four bytes of setting command are specific current hexadecimal values, such as 6.000s, converted to 6000ms, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3003	0x07	RW	int	4

Setting Voltage High Limit (VH)

Message Information

Query Command: 43 03 30 08 00 00 00 00

Setting command: 23 03 30 08 C0 27 09 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 600.000V, converted to 600000mA, and then converted to hexadecimal 09 27 C0, low byte C0 in front,

and high byte 09 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3003	0x08	RW	int	4

Setting Voltage Lower Limit (VL)

Message Information

Query Command: 43 03 30 09 00 00 00 00

Setting command: 23 03 30 09 40 1F 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 8.000V, converted to 8000mA, and then converted to hexadecimal 1F 40, low byte 40 in front, and high byte 1F in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3003	0x09	RW	int	4

Setting Positive Current Limit (I+)

Message Information

Query Command: 43 03 30 0A 00 00 00 00

Setting command: 23 03 30 0A 40 1F 00 00

The last four bytes of setting command are specific current hexadecimal values, such as 8.000V, converted to 8000mA, and then converted to hexadecimal 1F 40, low byte 40 in front, and high byte 1F in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3003	0x0A	RW	int	4

Setting Negative Current limit (I-)

Message Information

Query Command: 43 03 30 0B 00 00 00 00

Setting command: 23 03 30 0B 90 E8 FF FF

The last four bytes of setting command are specific current hexadecimal values, such as -6.000A, converted to -6000mA, and then converted to hexadecimal FFFF FFFF FFFF E8 90, low byte 90 in front, and high byte FF in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3003	0x0B	RW	int	4

Setting CC Loop Speed

This command used to set CC loop speed. The 00 indicates high, the 01 indicates low.

Message Information

Query Command: 43 03 30 0C 00 00 00 00

Set to low: 23 03 30 0C 01 00 00 00

Set to high: 23 03 30 0C 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3003	0x0C	RW	int	4

Setting CV Loop Speed

Message Information

Query Command: 43 03 30 0D 00 00 00 00

Set to low: 23 03 30 0D 01 00 00 00

Set to high: 23 03 30 0D 00 00 00 00

The last four bytes of setting command are specific current hexadecimal values, such as -6.000A, converted to -6000mA, and

then converted to hexadecimal FFFF FFFF FFFF E8 90, low byte 90 in front, and high byte FF in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3003	0x0D	RW	int	4

Setting Positive Power Limit (P+)

Message Information

Query Command: 43 03 30 0E 00 00 00 00

Setting command: 23 03 30 0E 88 13 00 00

The last four bytes of setting command are specific power hexadecimal values, such as 5.000W, converted to 5000mW, and then converted to hexadecimal 13 88, low byte 88 in front, and high byte 13 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3003	0x0E	RW	int	4

Setting Negative Power Limit (P-)

Message Information

Query Command: 43 03 30 0F 00 00 00 00

Setting command: 23 03 30 0F 78 EC FF FF

The last four bytes of setting command are specific power hexadecimal values, such as -5.000W, converted to -5000mW, and then converted to hexadecimal FFFF FFFF FFFF EC 78, low byte 78 in front, and high byte FF in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3003	0x0F	RW	int	4

Chapter5 Source Protection Commands

Setting OVP Status

Message Information

Query Command: 43 0E 30 01 00 00 00 00

Set to ON: 23 0E 30 01 01 00 00 00

Set to OFF: 23 0E 30 01 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300E	0x01	RW	int	4

Setting OVP Level

Message Information

Query Command: 43 0E 30 02 00 00 00 00

Setting command: 23 0E 30 02 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000V, converted to 6000mV, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300E	0x02	RW	int	4

Setting OVP Delay Time

Message Information

Query Command: 43 0E 30 03 00 00 00 00

Setting command: 23 0E 30 03 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000s, converted to 6000ms, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300E	0x03	RW	int	4

Setting OCP Status

Message Information

Query Command: 43 0E 30 04 00 00 00 00

Set to ON: 23 0E 30 04 01 00 00 00

Set to OFF: 23 0E 30 04 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300E	0x04	RW	int	4

Setting OCP Level

Message Information

Query Command: 43 0E 30 05 00 00 00 00

Setting command: 23 0E 30 05 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000A, converted to 6000mA, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300E	0x05	RW	int	4

Setting OCP Delay Time

Message Information

Query Command: 43 0E 30 06 00 00 00 00

Setting command: 23 0E 30 06 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000s, converted to 6000ms, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300E	0x06	RW	int	4

Setting OPP Status

Message Information

Query Command: 43 0E 30 07 00 00 00 00

Set to ON: 23 0E 30 07 01 00 00 00

Set to OFF: 23 0E 30 07 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300E	0x07	RW	int	4

Setting OPP Level

Message Information

Query Command: 43 0E 30 08 00 00 00 00

Setting command: 23 0E 30 08 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000W, converted to 6000mW, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300E	0x08	RW	int	4

Setting OPP Delay Time

Message Information

Query Command: 43 0E 30 09 00 00 00 00

Setting command: 23 0E 30 09 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000s, converted to 6000ms, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300E	0x09	RW	int	4

Setting UCP Status

Message Information

Query Command: 43 0E 30 0A 00 00 00 00

Set to ON: 23 0E 30 0A 01 00 00 00

Set to OFF: 23 0E 30 0A 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300E	0x0A	RW	int	4

Setting UCP Level

Message Information

Query Command: 43 0E 30 0B 00 00 00 00

Setting command: 23 0E 30 0B 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000A, converted to 6000mA, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300E	0x0B	RW	int	4

Setting UCP Delay Time

Message Information

Query Command: 43 0E 30 0C 00 00 00 00

Setting command: 23 0E 30 0C 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000s, converted to 6000ms, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300E	0x0C	RW	int	4

Setting UCP Warm Time

Message Information

Query Command: 43 0E 30 0D 00 00 00 00

Setting command: 23 0E 30 0D 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000s, converted to 6000ms, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300E	0x0D	RW	int	4

Setting UVP Status

Message Information

Query Command: 43 0E 30 0E 00 00 00 00

Set to ON: 23 0E 30 0E 01 00 00 00

Set to OFF: 23 0E 30 0E 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300E	0x0E	RW	int	4

Setting UVP Level

Message Information

Query Command: 43 0E 30 0F 00 00 00 00

Setting command: 23 0E 30 0F 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000A, converted to 6000mA, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300E	0x0F	RW	int	4

Setting UVP Delay Time

Message Information

Query Command: 43 0E 30 10 00 00 00 00

Setting command: 23 0E 30 10 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000s, converted to 6000ms, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300E	0x10	RW	int	4

Setting UVP Warm Time

Message Information

Query Command: 43 0E 30 11 00 00 00 00

Setting command: 23 0E 30 11 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000s, converted to 6000ms, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300E	0x11	RW	int	4

Chapter6 Source Measurement Commands

Querying Voltage Average Value

By default, the average voltage is included in TPDO1 regular reporting message. When the regular reporting function is disabled, you can send this command to query the voltage average value.

Message Information

43 0B 30 01 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300B	0x01	R	int	4

Querying Current Average Value

By default, the average current is included in TPDO1 regular reporting message. When the regular reporting function is disabled, you can send this command to query the current average value.

Message Information

43 0B 30 02 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300B	0x02	R	int	4

Querying Power Average Value

By default, the average power is included in TPDO1 regular reporting message. When the regular reporting function is disabled, you can send this command to query the power average value.

Message Information

43 0B 30 03 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300B	0x03	R	int	4

Querying Operation Register/CC-CV Priority/ Standard Status Register

By default, the status information is included in TPDO2 regular reporting message. When the regular reporting function is disabled, you can send this command to query the status. The response message introduction refers to **2.5 Message Reference of Register**.

Message Information

43 0B 30 04 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300B	0x04	R	int	4

Querying Questionable Status Register

By default, the status information is included in TPDO3 regular reporting message. When the regular reporting function is disabled, you can send this command to query the status. The response message introduction refers to **2.5 Message Reference of Register**.

Message Information

43 0B 30 06 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300B	0x06	R	int	4

Chapter7 Battery Simulation Commands

Setting SOC Status

Message Information

Query Command: 43 0C 30 01 00 00 00 00

Setting command: 23 0C 30 01 00 00 5C 42

The last four bytes of the setting command are four-byte hexadecimal values which floating point format in C converted to, such as 55, converted to hexadecimal 00 00 5C 42, the conversion method refers to relevant tool.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300C	0x01	RW	float	4

Setting Battery Full Voltage Level

Message Information

Query Command: 43 0C 30 02 00 00 00 00

Setting command: 23 0C 30 02 00 00 48 42

The last four bytes of the setting command are four-byte hexadecimal values which floating point format in C converted to, such as 50.000V, converted to hexadecimal 00 00 48 42, the conversion method refers to relevant tool.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300C	0x02	RW	float	4

Setting Battery Empty Voltage Level

Message Information

Query Command: 43 0C 30 03 00 00 00 00

Setting command: 23 0C 30 03 00 00 48 42

The last four bytes of the setting command are four-byte hexadecimal values which floating point format in C converted to, such as 50.000V, converted to hexadecimal 00 00 48 42, the conversion method refers to relevant tool.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300C	0x03	RW	float	4

Setting Cell Battery Capacity

Message Information

Query Command: 43 0C 30 04 00 00 00 00

Setting command: 23 0C 30 04 00 00 48 42

The last four bytes of the setting command are four-byte hexadecimal values which floating point format in C converted to, such as 50.000Ah, converted to hexadecimal 00 00 48 42, the conversion method refers to relevant tool.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300C	0x04	RW	float	4

Setting Cell Battery Inner Resistance

Message Information

Query Command: 43 0C 30 05 00 00 00 00

Setting command: 23 0C 30 05 00 00 48 42

The last four bytes of the setting command are four-byte hexadecimal values which floating point format in C converted to, such as 50.000Ω, converted to hexadecimal 00 00 48 42, the

conversion method refers to relevant tool.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300C	0x05	RW	float	4

Setting Positive Current

Message Information

Query Command: 43 0C 30 0B 00 00 00 00

Setting command: 23 0C 30 0B 00 00 48 42

The last four bytes of the setting command are four-byte hexadecimal values which floating point format in C converted to, such as 50.000A, converted to hexadecimal 00 00 48 42, the conversion method refers to relevant tool.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300C	0x0B	RW	float	4

Setting Negative Current Limit

Message Information

Query Command: 43 0C 30 0C 00 00 00 00

Setting command: 23 0C 30 0C 00 00 48 42

The last four bytes of the setting command are four-byte hexadecimal values which floating point format in C converted to, such as 50.000A, converted to hexadecimal 00 00 48 C2, the conversion method refers to relevant tool.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300C	0x0C	RW	float	4

Setting ON/OFF Status

Message Information

Query Command: 43 0C 30 06 00 00 00 00

Set to ON: 2F 0C 30 06 01 00 00 00

Set to OFF: 2F 0C 30 06 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300C	0x06	RW	char	1

Setting Battery Number of Parallel

Set the number of parallel connected batteries. Range is 1 to 128.

Message Information

Query Command: 43 0C 30 07 00 00 00 00

Setting command: 2F 0C 30 07 02 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300C	0x07	RW	char	1

Setting Battery Number of Series

Message Information

Query Command: 43 0C 30 08 00 00 00 00

Setting command: 2F 0C 30 08 03 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300C	0x08	RW	char	1

Setting Save Address

Message Information

Query Command: 43 0C 30 09 00 00 00 00

Setting command: 2F 0C 30 09 01 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300C	0x09	RW	char	1

Setting Recall Address

Message Information

Query Command: 43 0C 30 0A 00 00 00 00

Setting command: 2F 0C 30 0A 01 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300C	0x0A	RW	char	1

Chapter8 LIST Commands of Source

Setting List Status

This command used to query and setting the status of list function. 01 indicates list function is enabled, 00 indicates list function is disabled.

Message Information

Query Command: 43 0D 30 01 00 00 00 00

Enable command: 23 0D 30 01 01 00 00 00

Disable command: 23 0D 30 01 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300D	0x01	RW	int	4

Setting List Run Mode

Set the operation mode for list program: CC priority or CV priority. 00 indicates CV mode, and the 01 indicates CC mode.

Message Information

Query Command: 43 0D 30 02 00 00 00 00

Set to CC mode: 23 0D 30 02 01 00 00 00

Set to CV mode: 23 0D 30 02 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300D	0x02	RW	int	4

Setting Counts of List

This command is used to set the total number of steps included in the List program.

Message Information

Query Command: 43 0D 30 03 00 00 00 00

Setting command: 23 0D 30 03 04 00 00 00

The last four bytes of setting command are specific List count hexadecimal values, the setting maximum is 200.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300D	0x03	RW	int	4

Setting Present List Step Number

Message Information

Query Command: 43 0D 30 04 00 00 00 00

Setting command: 23 0D 30 04 01 00 00 00

The last four bytes of setting command are specific List step hexadecimal values, the setting maximum is 200.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300D	0x04	RW	int	4

Setting Amplitude of List Step

This command is used to set current value or voltage value setting for Step1.

Message Information

Query Command: 43 0D 30 05 00 00 00 00

Setting command: 23 0D 30 05 E8 03 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 1.000V（A）, converted to 1000mV（A）, and then converted to hexadecimal 03 E8, low byte in front, and high byte in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300D	0x05	RW	int	4

Setting the Slew of List Step

This command is used to set voltage slew or current slew for list step.

Message Information

Query Command: 43 0D 30 06 00 00 00 00

Set command: 23 0D 30 06 E8 03 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 1.000V（A）, converted to 1000mV（A）, and then converted to hexadecimal 03 E8, low byte in front, and high byte in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300D	0x06	RW	int	4

Setting Dwell Time of List Step

Message Information

Query Command: 43 0D 30 07 00 00 00 00

Set command: 23 0D 30 07 E8 03 00 00

The last four bytes of setting command are specific Dwell time hexadecimal values, such as 1.000S, converted to 1000mS, and then converted to hexadecimal 03 E8, low byte in front, and high byte in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300D	0x07	RW	int	4

Setting Number of List File Repetitions

This command is used to set list file repetitions.

Message Information

Query Command: 43 0D 30 08 00 00 00 00

Setting command: 23 0D 30 08 02 00 00 00

The last four bytes of setting command are specific repetition number hexadecimal values.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300D	0x08	RW	int	4

Setting Ending Status of List

This command is used to set running state after the list program is running over.

- Last: After the List program finishes running, the output is kept as the setting in the last step, and the working mode remains as the setting in the List file.
- Normal: After the List program finishes running, the working mode and voltage/current output return to the settings before the List running.

Message Information

Query Command: 43 0D 30 09 00 00 00 00

Set to Normal: 23 0D 30 09 00 00 00 00

Set to Last: 23 0D 30 09 01 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300D	0x09	RW	int	4

Setting Trigger Signal for List

This command is used to set the function switch that triggers the signal output when list is running over.

Message Information

Query Command: 43 0D 30 0A 00 00 00 00

Switch to None: 23 0D 30 0A 00 00 00 00

Switch to Trigger Out: 23 0D 30 0A 01 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300D	0x0A	RW	int	4

Setting the Save Address

This command is used to set the saving address of list file.

Message Information

Query Command: 43 0D 30 0B 00 00 00 00

Setting command: 23 0D 30 0B 02 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300D	0x0B	RW	int	4

Setting the Recall Address

This command is used to set the recall address of list file.

Message Information

Query Command: 43 0D 30 0C 00 00 00 00

Setting Command: 23 0D 30 0C 02 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300D	0x0C	RW	int	4

Query List Running Status

This command is used to query list running status.

Message Information

43 0D 30 0D 00 00 00 00

00 indicates list is stopped, and 01 indicates the list is running.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300D	0x0D	R	int	4

Chapter9 Load Commands

Setting Load Run Mode

Message Information

Query Command: 4F 04 30 01 00 00 00 00

Set to CV Mode: 2F 04 30 01 01 00 00 00

The above setting command takes CV mode as an example, as shown in red font. The corresponding parameter command of other modes are 00:CC, 01:CV, 02:CP, 03:CR, 04:CVCC, 05:CVCR, 06:CCCR, 07:VCWR. Please change the part of red font according to the required mode.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x01	RW	char	1

Setting Von Mode

Message Information

Query Command: 4F 04 30 02 00 00 00 00

Set to Latch: 2F 04 30 02 00 00 00 00

Set to living: 2F 04 30 02 01 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x02	RW	char	1

Setting Von Level

Message Information

Query Command: 4F 04 30 03 00 00 00 00

Setting command: 2F 04 30 03 E8 03 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x03	RW	int	4

Setting Load Voltage Level

Message Information

Query Command: 43 04 30 04 00 00 00 00

Setting command: 23 04 30 04 E8 03 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 1.000V, converted to 1000mV, and then converted to hexadecimal 03 E8, low byte E8 in front, and high byte 03 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x04	RW	int	4

Setting Voltage Rise Slew

Message Information

Query Command: 43 04 30 05 00 00 00 00

Setting command: 23 04 30 05 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000V/ms, converted to 6000mV/ms, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x05	RW	int	4

Setting Voltage Fall Slew

Message Information

Query Command: 43 04 30 06 00 00 00 00

Setting command: 23 04 30 06 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000V/ms, converted to 6000mV/ms, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x06	RW	int	4

Setting Load Current Level

Message Information

Query Command: 43 04 30 08 00 00 00 00

Setting command: 23 04 30 08 E8 03 00 00

The last four bytes of setting command are specific current hexadecimal values, such as 1.000A, converted to 1000mA, and then converted to hexadecimal 03 E8, low byte E8 in front, and high byte 03 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x08	RW	int	4

Setting Current Rise Slew

Message Information

Query Command: 43 04 30 09 00 00 00 00

Setting command: 23 04 30 09 70 17 00 00

The last four bytes of setting command are specific current hexadecimal values, such as 6.000A/ms, converted to 6000mA/ms, and then converted to hexadecimal 17 70, low byte 70 in front, and

high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x09	RW	int	4

Setting Current Fall Slew

Message Information

Query Command: 43 04 30 0A 00 00 00 00

Setting command: 23 04 30 0A 70 17 00 00

The last four bytes of setting command are specific current hexadecimal values, such as 6.000A/ms, converted to 6000mA/ms, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x0A	RW	int	4

Setting Load Power Level

Message Information

Query Command: 43 04 30 0C 00 00 00 00

Setting command: 23 04 30 0C E8 03 00 00

The last four bytes of setting command are specific power hexadecimal values, such as 1.000W, converted to 1000mW, and then converted to hexadecimal 03 E8, low byte E8 in front, and high byte 03 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x0C	RW	int	4

Setting Power Rise Slew

Message Information

Query Command: 43 04 30 0D 00 00 00 00

Setting command: 23 04 30 0D 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000W/ms, converted to 6000mW/ms, and then converted to hexadecimal 17 70, low byte in front, and high byte in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x0D	RW	int	4

Setting Power Fall Slew

Message Information

Query Command: 43 04 30 0E 00 00 00 00

Setting command: 23 04 30 0E 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000W/ms, converted to 6000mW/ms, and then converted to hexadecimal 17 70, low byte in front, and high byte in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x0E	RW	int	4

Setting Load Resistance

Message Information

Query Command: 43 04 30 10 00 00 00 00

Setting command: 23 04 30 10 E8 03 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 1.000Ω, converted to 1000mΩ, and then converted to hexadecimal 03 E8, low byte in front, and high

byte in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x10	RW	int	4

Setting Resistance Rise Slew

Message Information

Query Command: 43 04 30 11 00 00 00 00

Setting command: 23 04 30 11 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000Ω/ms, converted to 6000mΩ/ms, and then converted to hexadecimal 17 70, low byte in front, and high byte in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x11	RW	int	4

Setting Resistance Fall Slew

Message Information

Query Command: 43 04 30 12 00 00 00 00

Setting command: 23 04 30 12 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000Ω/ms, converted to 6000mΩ/ms, and then converted to hexadecimal 17 70, low byte in front, and high byte in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x12	RW	int	4

Setting Voltage Level under CV+CC Mode

Message Information

Query Command: 43 04 30 14 00 00 00 00

Setting command: 23 04 30 14 E8 03 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 1.000V, converted to 1000mV, and then converted to hexadecimal 03 E8, low byte in front, and high byte in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x14	RW	int	4

Setting Current Level under CV+CC Mode

Message Information

Query Command: 43 04 30 15 00 00 00 00

Setting command: 23 04 30 15 E8 03 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 1.000A, converted to 1000mA, and then converted to hexadecimal 03 E8, low byte in front, and high byte in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x15	RW	int	4

Setting Voltage Level under CV+CR Mode

Message Information

Query Command: 43 04 30 16 00 00 00 00

Setting command: 23 04 30 16 E8 03 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 1.000V, converted to 1000mV, and then converted to hexadecimal 03 E8, low byte in front, and high

byte in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x16	RW	int	4

Setting Resistance under CV+CR Mode

Message Information

Query Command: 43 04 30 17 00 00 00 00

Setting command: 23 04 30 17 E8 03 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 1.000Ω, converted to 1000mΩ, and then converted to hexadecimal 03 E8, low byte in front, and high byte in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x17	RW	int	4

Setting Current Level under CC+CR Mode

Message Information

Query Command: 43 04 30 18 00 00 00 00

Setting command: 23 04 30 18 E8 03 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 1.000A, converted to 1000mA, and then converted to hexadecimal 03 E8, low byte in front, and high byte in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x18	RW	int	4

Setting Resistance under CC+CR Mode

Message Information

Query Command: 43 04 30 19 00 00 00 00

Setting command: 23 04 30 19 E8 03 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 1.000Ω, converted to 1000mΩ, and then converted to hexadecimal 03 E8, low byte in front, and high byte in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x19	RW	int	4

Setting Voltage Level under AUTO Mode

Message Information

Query Command: 43 04 30 1A 00 00 00 00

Setting command: 23 04 30 1A E8 03 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 1.000V, converted to 1000mV, and then converted to hexadecimal 03 E8, low byte in front, and high byte in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x1A	RW	int	4

Setting Current Level under AUTO Mode

Message Information

Query Command: 43 04 30 1B 00 00 00 00

Setting command: 23 04 30 1B E8 03 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 1.000A, converted to 1000mA, and then converted to hexadecimal 03 E8, low byte in front, and high byte in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x1B	RW	int	4

Setting Power Level under AUTO Mode

Message Information

Query Command: 43 04 30 1C 00 00 00 00

Setting command: 23 04 30 1C E8 03 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 1.000W, converted to 1000mW, and then converted to hexadecimal 03 E8, low byte in front, and high byte in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x1C	RW	int	4

Setting Resistance under AUTO Mode

Message Information

Query Command: 43 04 30 1D 00 00 00 00

Setting command: 23 04 30 1D E8 03 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 1.000Ω, converted to 1000mΩ, and then converted to hexadecimal 03 E8, low byte in front, and high byte in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x3004	0x1D	RW	int	4

Chapter10 Load Protection Commands

Setting OCP Status

Message Information

Query Command: 43 0F 30 01 00 00 00 00

Set to ON: 23 0F 30 01 01 00 00 00

Set to OFF: 23 0F 30 01 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300F	0x01	RW	int	4

Setting OCP Level

Message Information

Query Command: 43 0F 30 02 00 00 00 00

Setting command: 23 0F 30 02 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000A, converted to 6000mA, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300F	0x02	RW	int	4

Setting OCP Delay Time

Message Information

Query Command: 43 0F 30 03 00 00 00 00

Setting command: 23 0F 30 03 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000s, converted to 6000ms, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300F	0x03	RW	int	4

Setting OPP Status

Message Information

Query Command: 43 0F 30 04 00 00 00 00

Set to ON: 23 0F 30 04 01 00 00 00

Set to OFF: 23 0F 30 04 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300F	0x04	RW	int	4

Setting OPP Level

Message Information

Query Command: 43 0F 30 05 00 00 00 00

Setting command: 23 0F 30 05 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000W, converted to 6000mW, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300F	0x05	RW	int	4

Setting OPP Delay Time

Message Information

Query Command: 43 0F 30 06 00 00 00 00

Setting command: 23 0F 30 06 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000s, converted to 6000ms, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300F	0x06	RW	int	4

Setting UVPStatus

Message Information

Query Command: 43 0F 30 07 00 00 00 00

Set to ON: 23 0F 30 07 01 00 00 00

Set to OFF: 23 0F 30 07 00 00 00 00

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300F	0x07	RW	int	4

Setting UVP Level

Message Information

Query Command: 43 0F 30 08 00 00 00 00

Setting command: 23 0F 30 08 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000A, converted to 6000mA, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300F	0x08	RW	int	4

Setting UVP Delay Time

Message Information

Query Command: 43 0F 30 09 00 00 00 00

Setting command: 23 0F 30 09 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000s, converted to 6000ms, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300F	0x09	RW	int	4

Setting UVP Warm Time

Message Information

Query Command: 43 0F 30 0A 00 00 00 00

Setting command: 23 0F 30 0A 70 17 00 00

The last four bytes of setting command are specific voltage hexadecimal values, such as 6.000s, converted to 6000ms, and then converted to hexadecimal 17 70, low byte 70 in front, and high byte 17 in the back.

Format Requirement

Index	Sub-Index	Access	Data Type	Bytes
0x300F	0x0A	RW	int	4