

ET54 直流可编程电子负载 SCPI 通讯协议
司

杭州中创电子有限公司

ET5406A+/ET5407A+ Electronic load SCPI communication protocol

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1 SCPI command syntax

1.1 Syntax conventions

The following two commands are used as examples to illustrate the meanings of symbols in the SCPI command:

Example 1: `LOAD:TRIGger{MAN|EXT|TRG}`

Example 2: `TIME:OFFDelay <numeric>`

Following the command syntax, most commands (and some arguments) are represented as a mixture of uppercase and lowercase letters. For shorter program lines, you can send commands in an abbreviated format. For better program readability, you can send long format commands. For example, in the syntax statement above, `TRIGger` and `TRIG` are both acceptable formats.

The brackets (`[]`) contain the argument categories for the given command string. The brackets are not sent with the command string.

A vertical bar (`|`) separates multiple parameter selections for a given command string. For example, in the command above, `{MAN|EXT|TRG}` means you can specify one of the arguments in "MAN", "EXT", "TRG". The vertical bar is not sent with the command string.

Angle brackets (`< >`) in the second example indicate that a value must be specified for the argument inside the brackets. For example, in the syntax statement above, the argument inside the Angle brackets is `< delay value >`. Angle brackets are not sent with the command string. You must specify a value for the argument (for example, "1500").

Some syntax elements (such as nodes and arguments) are contained within square brackets (`[]`). This means that the element is optional and can be omitted. The brackets are not sent with the command string. If no value is specified for the optional argument, the instrument will select the default value. In the example above, "LOAD" means that you can pass either "LOAD" or "LOAD1," which refers to channel 1. Also, since the entire LOAD node is optional (in square brackets), you can also refer to channel 1 by omits the LOAD node altogether. This is because channel 1 is the default channel for the LOAD node. On the other hand, to refer to channel 2, you can only use "LOAD2" in the program line.

1.2 Command separator

The colon (`:`) is used to separate the command keyword from the keyword at the next level. Spaces must be inserted to separate the argument from the command keyword. If a command requires more than one argument, you must separate the adjacent arguments with commas, as follows:

`VOLT:ON 1`

In this example, the command specifies that the load setup channel starts with a voltage of 1V.

A semicolon (`;`) is used to separate multiple parameter setting items in the same subsystem. For example, send the following command string:

```
LIST:PARA 10,0,3, 100,1,3,0.1
```

Under low current range, set the test mode of step 10 to CC, set the load value to 2A, set the delay time to 100S, compare the upper and lower limits to open, set the upper limit value to 3A, set the lower limit value to 0.1A

2 Command set of ET54

The section titled "Description" describes how the command is used or what the command does.

The section titled "Parameters" describes the required parameters for sending the command. When the parameters are numeric or string types in $\langle \rangle$, the definition of the parameters, allowable range of values, default (factory setting) values, etc., are given. When the parameters are selection types in $\{ \}$, the description of each choice is given.

The section titled "Command Syntax" indicates that the command does not need to be answered, and the instrument only needs to perform the corresponding action according to the command. The part titled "Query syntax" means that the command needs to be answered, and the instrument needs to return data to the host computer. For details, please refer to "Query Return". "Command Syntax" and "Query syntax" are both the syntax sent from the external controller to the ET54.

This communication protocol states:

NR1: integer, such as: 123

NR2: decimal (fixed-point number), such as: 12.3

NR3: floating-point number, such as: 12.3E+5

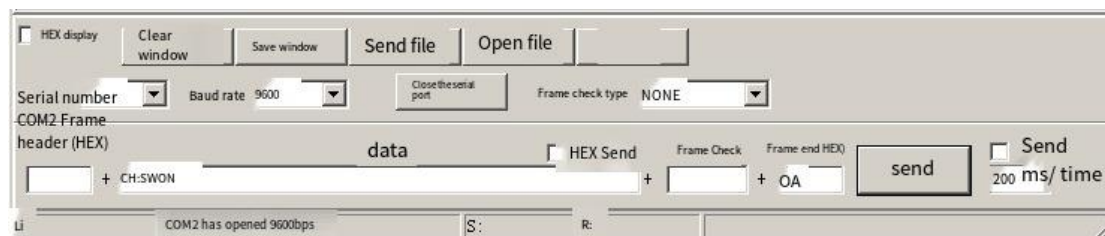
NRf: NR1, NR2, or NR3

NL: Carriage return, integer 10

The default baud rate is 9600, which can be changed manually or by command in communication Settings. After changing the baud rate, set the baud rate of the serial port software to the corresponding value, close the serial port and then open the serial port. You can set the electronic load address (485 with 000-031).

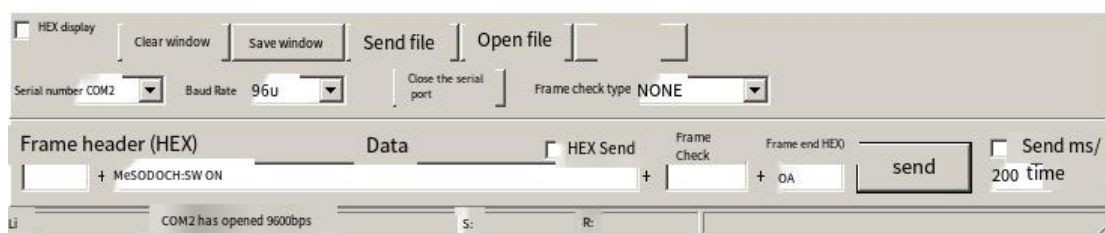
Where 0 is the broadcast address and 1 to 31 is the specific address.

Send instruction format, no frame header + instruction content + no check +0A (frame end)



RS485 communication send instruction format is

No frame header + address (M@SXXX) + instruction content + no check +0A (frame tail)



2.1 IEEE488.2 Mandatory command

*IDN?

The description command is used to query instrument information

Query syntax *IDN?

Query returns <model>, <SN>, <software>, <NL>

Note <model> gives the machine model xxxx, <SN> gives the serial number, <software> gives the software version number, < hardware> gives the hardware version number.

*TRG

Describe the load Select "Software" as the trigger source, generating a trigger signal.

Command syntax *TRG

RST

Description Restore all system setup parameters to their factory state.

Command syntax RST

2.2 SCPI instruments require commands

2.2.1 SYSTem subsystem command set

:VERSion?

Description The SCPI version number that the instrument conforms to

Query syntax SYSTem:VERSion?

Query returns xxxx<NL>

:BEEP

Description Sounds a buzzer.

Command syntax SYST:BEEP

:LOCA

Description Put ET54 in a local action state. (Programmed commands that set the instrument to local or remote operation state interact with the key switching of the instrument)

Command syntax SYST:LOCA

2.3 ET54 command set

2.3.1 [LOAD] subsystem command set

The LOAD subsystem commands are mainly used to configure the load Settings of the current channel. You can query the load Settings of the current channel.

:TRIGger

Set the trigger mode of the trigger source. You can query the trigger mode of the current trigger source.

Command syntax LOAD:TRIGger{MAN|EXT|TRG|ALL}

Arguments

	Description
MAN	Manual trigger mode
EXT	External trigger mode
TRG	Command trigger mode (software)
ALL	All 3 works

Query syntax LOAD:TRIGger?

Query returns {MAN|EXT|TRG|ALL}<NL>

:VRANge

Set the range of voltage. You can query the range of voltage.

Command syntax LOAD:VRANge{HIGH|LOW}

Arguments

	Description
HIGH	High range
LOW	Low range

Query syntax LOAD:VRANge?

Query returns {HIGH|LOW}<NL>

:CRANge

Set the current range high or low, you can query the current range high or low.

Command syntax LOAD:CRANge{HIGH|LOW}

Arguments

	Description
HIGH	High range
LOW	Low range

Query syntax LOAD:CRANge?

Query returns {HIGH|LOW}<NL>

:ABNO

Query whether the current load is abnormal.

Description

	Description
NONE	There is no
OV	Overvoltage protection
OC	Overcurrent protection
OP	Overpower protection
OT	Overtemperature protection
LRV	Polarity reverse connection reminder
FAN	Fan failure

Query Syntax LOAD:ABNO?

{NONE|OV|OC|OP|OT|LRV|UN|FAIL}<NL>

2.3.2 [QUAL] subsystem command set

QUAL subsystem commands are mainly used to set the qualification test for the current channel (CC, CV, CP, CR) mode. You can query the qualifying test Settings of the current channel.

:TEST

To enable or disable a qualified test, you can query whether the current qualified test is enabled.

Command syntax QUAL:TEST{ON|OFF}

Arguments

	Description
ON	Qualifying test open
OFF	Qualified test off

Query Syntax QUAL:TEST?

Query returns {ON|OFF}<NL>

:OUT

Check whether the results of the qualifying test pass.

	Description
NONE	There is no
PASS	Pass the qualifying test
FAIL	Fail the passing test

Query syntax QUAL:OUT?

Query returns {NONE|PASS|FAIL}<NL>

:VHIGH

Set the qualified test upper voltage value. You can query the current upper voltage value.

Command syntax QUAL:VHIGH <numeric>

Arguments

< numeric >				
Model number	5406		5407	
Range	high	low	high	low
Range	0.10 to 120.00	0.100 ~ 20	0.10 to 180.00	0.100 ~ 20
Preset	0.10	0.100	0.10	0.100
unit	V			

Query syntax QUAL:VHIGH?

Query returns <NR3><NL>

Example: In the case of low voltage range, set the upper voltage to 20V

QUAL:VHIGH 20 (note the space in the middle);

Query: QUAL:VHIGH?

Return: 20.000

:VLOW

Set the qualified test lower limit voltage value, you can query the current lower

limit voltage value.

Command syntax QUAL:VLOW <numeric>

Arguments

< numeric >				
Model number	5410, 5420		5411	
range	high	low	high	low
Range	0.10 to 150.00	0.100 ~ 20	0.10 ~ 500.00	0.100 to 20
Preset	0.10	0.100	0.10	0.100
Units	V			

Query syntax QUAL:VLOW?

Query returns <NR3><NL>

Example: In the case of low voltage range, set the lower limit voltage to 10V

QUAL:VLOW 10 (note the space in the middle);

Query: QUAL:VLOW?

Return: 10.000

:CHIGH

Set the qualified test upper limit current value, you can query the current upper limit current value.

Command syntax QUAL:CHIGH <numeric>

Arguments

< numeric >				
Model number	5406		5407	
Range	high	low	high	low
Range	0.00 ~ 20.00	0.000 ~ 3.000	0.00 to 30.00	0.000 ~ 3.000
Preset	20.00	3.000	30.00	3.000
Units	A			

Query syntax QUAL:CHIGH?

Query returns <NR3><NL>

Example: In the case of low current range, set the upper current to 3A

QUAL:CHIGH 3 (note the space in the middle);

Query: QUAL:CHIGH?

Return: 3.000

:CLOW

Set the qualifying test lower limit current value, you can query the current lower limit current value.

Command syntax QUAL:CLOW <numeric>

Arguments

< numeric >				
< numeric >				
Model number	5406		5407	
Range	high	low	high	low

Range	0.00 ~ 20.00	0.000 ~ 3.000	0.00 to 30.00	0.000 ~ 3.000
Preset	20.00	3.000	30.00	3.000
Units	A			

Query syntax QUAL:CLOW?

Query returns <NR3><NL>

Example: In the case of low current range, set the lower current to 1A

QUAL:CLOW 1 (note the space in the middle);

Query: QUAL:CLOW?

Return: 1.000

:PHIGH

Set the qualified test upper power value, you can query the current upper power value.

Command syntax QUAL:PHIGH <numeric>

Arguments

< numeric >	
Model number	5406, 5407
Scope	0.00 ~ 200.00
Preset	200.00
Units	W

Query syntax QUAL:PHIGH?

Query returns <NR3><NL>

Example: Set the upper power value to 200W

QUAL:PHIGH 200 (note the space in the middle);

Query: QUAL:PHIGH?

Return: 200.00

:PLOW

Set the qualifying test lower limit power value, the current lower limit power value can be queried.

Command syntax QUAL:PLOW <numeric>

Arguments

< numeric >	
Model number	5406, 5407
Radius	0.00 ~ 200.00
Preset	200.00
Units	W

Query syntax QUAL:PLOW?

Query returns <NR3><NL>

Example: Set the lower limit power value to 100W

QUAL:PLOW 100 (note the space in the middle);

Query: QUAL:PLOW?

Return: 100.00

2.3.3 SYSSet subsystem command set

The SYSSet subsystem commands are used to set the system Settings and query the current Settings of the instrument system.

:START

Set the boot Settings, which can be queried.

Command syntax SYSSet:START{DEFAULT|LAST}

	Description
DEFAULT	Default
LAST (default)	Last value

Query syntax SYSSet:START?

Query returns {DEFAULT|LAST}<NL>

2.3.4 COMM subsystem command set

The COMM subsystem command set is used to set up the remote communication.

:BAUDrate

Set the baudrate.

Command syntax COMM:BAUDrate <numeric>

	< numeric >
Baud rate	0 to 7 corresponds (4800 7200 9600 14400 19200 34800 57600 115200)
Preset	0

Query syntax COMM:BAUDrate?

The return is {4800|7200|9600|14400|19200|34800|57600|115200}<NL>

2.3.5 [VOLT] Subsystem command set

The VOLT subsystem command set is used to set voltage values.

Parameters

< numeric >				
Model number	5406		5407	
range	high	low	high	low
Range	0.10 to 120.00	0.100 to 20.000	0.10 to 180.00	0.100 to 20.000
Preset	0.10	0.100	0.10	0.100
Units	V			

:ON

Set the starting voltage, you can query the current starting voltage value.

Command syntax VOLT:ON <numeric>

Query syntax VOLT:ON?

Query returns <NR3><NL>

Example: In the case of low voltage range, set the starting voltage to 1V

VOLT:ON 1.0 (note the space in the middle);

Query: VOLT:ON?

Return: 1.000

:OFF

Set off voltage. You can query the current off voltage.

Command syntax VOLT:OFF <numeric>

Query syntax VOLT:OFF?

Query returns <NR3><NL>

Example: In the case of low voltage range, set the turn-off voltage to 1V

VOLT:OFF 1.0 (note the space in the middle);

Query: VOLT:OFF?

Return: 1.000

:VMAX

Set the overvoltage protection voltage, you can query the current overvoltage protection voltage value.

Command syntax VOLT:VMAX <numeric>

Arguments

< numeric >				
Model number	5410, 5420		5411	
Range	high	low	high	low
Radius	0.10 to 155.00	0.100 to 21.000	0.10 ~ 520.00	0.100 ~ 21.000
Preset	155.00	21.000	520.00	21.000
Units	V			

Query syntax VOLT:VMAX?

Query return <NR3><NL>

Example: In case of low voltage range, set the overvoltage protection voltage to 21V

VOLT:VMAX 21 (note the space in the middle);

Search VOLT:VMAX?

Return: 21.000

:CV

Set CV mode voltage value, you can query CV mode voltage value.

Command syntax VOLT:CV <numeric>

Query syntax VOLT:CV < numeric >

Query return <NR3><NL>

Example: In case of low voltage range, set CV to 15V

VOLT:CV 15 (note the space in the middle);

Query: VOLT:CV?

Return: 15.000

:TA

Set the dynamic test mode A value voltage value, you can query the dynamic test mode A voltage value.

Command syntax VOLT:TA<numeric>

Query syntax VOLT:TA < numeric >

Query return <NR3><NL>

Example: In the case of low voltage range, set the dynamic test A value to 15V

VOLT:TA 15 (note the space in the middle);

Query: VOLT:TA?

Return: 15.000

:TB

Set the dynamic test mode B voltage value to query the dynamic test mode B voltage value.

Command syntax VOLT:TB<numeric>

Query syntax VOLT:TB?

Query return <NR3><NL>

Example: In the case of low voltage range, set the dynamic test mode B value to 10V

VOLT:TB 10 (note the space in the middle);

Query: VOLT:TB?

Return: 10.000

:BCR

Set the battery test mode constant resistance cutoff voltage value, you can query the battery test mode constant resistance cutoff voltage value.

Command syntax VOLTage:BCR<numeric>

argument

Range	high	low
Range	0.10 to 150.00	0.100 to 20.000
Preset	0.10	0.100
Units	V	

Query syntax VOLT:BCR?

Query return <NR3><NL>

Example: In the case of low voltage range, set the battery test mode constant resistance cutoff voltage value to 12V

VOLT:BCR 12 (note the space in the middle);

Query: VOLT:BCR?

Return: 12.000

:BCC1

Set battery test mode constant current cutoff voltage value 1, you can query battery test mode constant current cutoff voltage value 1.

Command syntax VOLT:BCC1<numeric>

Arguments

Range	high	low
Range	0.10 to 150.00	0.100 to 20.000
Preset	0.10	0.100
Units	V	

Query syntax VOLT:BCC1?

Query return <NR3><NL>

Example: In the case of low voltage range, set the battery test mode constant current cutoff voltage value 1 to 18V

VOLT:BCC1 18 (note the space in the middle);

Query: VOLT:BCC1?

Return: 18.000

:BCC2

Set battery test mode constant current cutoff voltage value 2, you can query battery test mode constant current cutoff voltage value 2.

Command syntax VOLT:BCC2<numeric>

Arguments

Range	high	low
Range	0.10 to 150.00	0.100 to 20.000
Preset	0.10	0.100
Units	V	

Query syntax VOLT:BCC2?

Query return <NR3><NL>

Example: In the case of low voltage range, set the battery test mode constant current cutoff voltage value 2 to 12V

VOLT:BCC2 12 (note the space in the middle);

Query: VOLT:BCC2?

Return: 12.000

:BCC3

Set battery test mode constant current cutoff voltage value 3, you can query battery test mode constant current cutoff voltage value 3.

Command syntax VOLT:BCC3<numeric>

Arguments

range	high	low
Range	0.10 to 150.00	0.100 to 20.000
Preset	0.10	0.100
Units	V	

Query syntax VOLT:BCC3?

Query return <NR3><NL>

Example: In the case of low voltage range, set the battery test mode constant current cutoff voltage value 3 to 10V

VOLT:BCC3 10 (note the space in the middle);

Query: VOLT:BCC3?

Return: 10.000

:START

Set the starting voltage of the scan test. You can query the starting voltage of the scan test.

Command syntax VOLT:START<numeric>

Query syntax VOLT:START?

Query returns <NR3><NL>

Example: In the case of low voltage range, set the scanning test starting voltage value to 1V

VOLT:START 1 (note the space in the middle);

Query: VOLT:START?

Return: 1.000

:END

Set the voltage of the end point of the scanning test. You can query the voltage of the end point of the scanning test.

Command syntax VOLT:END<numeric>

Query syntax VOLT:END?

Query returns <NR3><NL>

Example: In the case of low voltage range, set the scanning test terminal voltage value to 18V

VOLT:END 18 (note the space in the middle);

Query: VOLT:END?

Return: 18.000

:STEP

Set the step voltage of the scan test. You can query the step voltage of the scan test.

Command syntax VOLT:STEP<numeric>

Query syntax VOLT:STEP?

Query returns <NR3><NL>

Example: In the case of low voltage range, set the scanning test step voltage value to 1V

VOLT:STEP 1 (note the space in the middle);

Query: VOLT:STEP 1?

Return: 1.000

:VTH

Set the scan test voltage break threshold, you can query the scan test voltage break threshold.

Command syntax VOLT:VTH<numeric>

Query syntax VOLT:VTH?

Query return <NR3><NL>

Example: In the case of low voltage range, set the scan test voltage break threshold to 10V

VOLT:VTH 10 (note the space in the middle);

Query: VOLT:VTH?

Return: 10.000

:VMIN

Set the scan test minimum voltage threshold, you can query the scan test minimum voltage threshold.

Command syntax VOLT:VMIN<numeric>

Query syntax VOLT:VMIN?

Query return <NR3><NL>

Example: In the case of low voltage range, set the scan test minimum voltage to 10V

VOLT:VMIN 10 (note the space in the middle);

Query: VOLT:VMIN?

Return: 10.000

:LOW

Set the lower limit of the scan test voltage, which can be queried.

Command syntax VOLT:LOW<numeric>

Query syntax VOLT:LOW?

Query returns <NR3><NL>

Example: In the case of low voltage range, set the scan test scan test voltage lower limit to 1V

VOLT:LOW 1 (note the space in the middle);

Query: VOLT:LOW?

Return: 1.000

:HIGH

Set the upper limit of the scan test voltage. You can query the upper limit of the scan test voltage.

Command syntax VOLT:HIG<numeric>

Query syntax VOLT:HIG?

Query returns <NR3><NL>

Example: In the case of low voltage range, set the upper limit of scan test scan test voltage to 18V

VOLT:HIG 18 (note the space in the middle);

Query: VOLT:HIG?

Return: 18.000

2.3.6 [CURR] Subsystem command set

The CURR subsystem command set is used to set the current value.
Parameters

< numeric >				
Model number	5406		5407	
Range	high	low	high	low
Range	0.00 ~ 40.00	0.000 ~ 3.000	0.00 to 20.00	0.000 ~ 3.000
Preset	40.00	3.000	20.00	3.000
Units	A			

:IMAX

Set the overcurrent protection current value to query the current overcurrent protection current value.

Command syntax CURR:IMAX <numeric>

Arguments

< numeric >			
Model number	5410	5411	5420

Range	high	low	high	low	high	low
Range	0.00	0.000	0.00	0.000	0.00	0.000
	~	~	to	~	~	~
	45.00	3.300	16.00	3.300	22.00	3.300
Preset	45.00	3.300	16.00	3.300	22.00	3.300
Units	A					

Query syntax CURR:IMAX?

Query returns <NR3><NL>

Example: In the case of low current range, set the overcurrent protection current to 3A

CURR:IMAX 3 (note the space in the middle);

Query: CURR:IMAX?

Return: 3.000

:CC

Set the CC mode current value, you can query the CC mode current value.

Command syntax CURR:CC <numeric>

Query syntax CURR:CC?

Query returns <NR3><NL>

Example: In the case of low current range, set the CC mode current value to 3A

CURR:CC 15 (note the space in the middle);

Query: CURR:CC?

Return: 3.000

:TA

Set dynamic test mode A value current value, you can query the dynamic test mode A current value.

Command syntax CURR:TA<numeric>

Query syntax CURR:TA?

Query returns <NR3><NL>

Example: In case of current range, set the dynamic test A value to 3A

CURR:TA 3 (note the space in the middle);

Query: CURR:TA?

Return: 3.000

:TB

Set the dynamic test mode B value current value, you can query the dynamic test mode B current value.

Command syntax CURR:TB<numeric>

Query syntax CURR:TB?

Query returns <NR3><NL>

Example: In the case of low current range, set the dynamic test mode B value to 1A

CURR:TB 1 (note the space in the middle);

Query: CURR:TB?

Return: 1.000

:BCC

Set battery test mode constant discharge value (cut-off condition non-voltage), you can query battery test mode constant discharge value.

Command syntax CURR:BCC<numeric>

Query syntax CURR:BCC?

Query returns <NR3><NL>

Example: In the case of low current range, set the battery test mode constant discharge value to 3A

CURR:BCC 3 (note the space in the middle);

Query: CURR:BCC?

Return: 3.000

:BCC1

Set battery test mode constant discharge value 1, you can query battery test mode constant discharge value 1.

Command syntax CURR:BCC1<numeric>

Query syntax CURR:BCC1?

Query returns <NR3><NL>

Example: In the case of low current range, set the battery test mode constant discharge value 1 to 3A

CURR:BCC1 3 (note the space in the middle);

Query: CURR:BCC1?

Return: 3.000

:BCC2

Set battery test mode constant discharge value 2, you can query battery test mode constant discharge value 2.

Command syntax CURR:BCC2<numeric>

Query syntax CURR:BCC2?

Query returns <NR3><NL>

Example: In the case of low current range, set the battery test mode constant discharge value 2 to 2A

CURR:BCC2 2 (note the space in the middle);

Query: CURR:BCC2?

Return: 2.000

:BCC3

Set battery test mode constant discharge value 3, you can query battery test mode constant discharge value 3.

Command syntax CURR:BCC3<numeric>

Query syntax CURR:BCC3?

Query returns <NR3><NL>

Example: In the case of low current range, set the battery test mode constant discharge value 3 to 1A

CURR:BCC3 1 (note the space in the middle);

Query: CURR:BCC3?
Return: 1.000

:START

Set the scanning test starting current value, you can query the scanning test starting current value.

Command syntax CURR:START<numeric>

Query syntax CURR:START?

Query returns <NR3><NL>

Example: In the case of low current range, set the scanning test starting current value to 1A

CURR:START 1 (note the space in the middle);

Query: CURR:START?

Return: 1.000

:END

Set the current value of the end point of scanning test, you can query the current value of the end point of scanning test.

Command syntax CURR:END<numeric>

Query syntax CURR:END?

Query return <NR3><NL>

Example: In the case of low current range, set the scanning test end current value to 3A

CURR:END 3 (note the space in the middle);

Query: CURR:END?

Return: 3.000

:STEP

Set the scanning test stepping current value, you can query the scanning test stepping current value.

Command syntax CURR:STEP<numeric>

Query syntax CURR:STEP?

Query returns <NR3><NL>

Example: In the case of low current range, set the scanning test measuring step current value to 1A

CURR:STEP 1 (note the space in the middle);

Query: CURR:STEP?

Return: 1.000

:LOW

Set the scan test current limit, you can query the scan test current limit.

Command syntax CURR:LOW<numeric>

Query syntax CURR:LOW?

Query returns <NR3><NL>

Example: In the case of low current range, set the scan test scan test current lower limit to 0.5A

CURR:LOW 0.5 (note the space in the middle);

Query: CURR:LOW?

Return: 0.500

:HIGH

Set the upper limit of the scan test current. You can query the upper limit of the scan test current.

Command syntax CURR:HIGh<numeric>

Query syntax CURR:HIGh?

Query returns <NR3><NL>

Example: In the case of low current range, set the upper limit of scan test scan test current to 3A

CURR:HIGh 3 (note the space in the middle);

Query: CURR:HIGh?

Return: 3.000

2.3.7 [POWE] subsystem command set

The POWE subsystem command set is used to set power values.

Parameters

< numeric >	
Model number	5406, 5407
Scope	0.00 ~ 200.00
Preset	200.00
Units	W

:PMAX

Set the overpower protection value to query the current overpower protection value.

Command syntax POWE:PMAX <numeric>

Arguments

< numeric >	
Model number	5406, 5407
Scope	0.00 ~ 210.00
Preset	210.00
Units	W

Query syntax POWE:PMAX?

Query returns <NR3><NL>

Example: Set the overpower protection value to 200W

POWE:PMAX 200 (note the space in the middle);

Query: POWE:PMAX?

Return: 200.00

:CP

Set the CP mode power. You can query the CP mode power.

Command syntax POWE:CP <numeric>

Query syntax POWE:CP?

Query returns <NR3><NL>

Example: Set the power value to 50W

POWE:CP 50 (note the space in the middle);

Query: POWE:CP?

Return: 50.00

:START

Set the start power of the scan test. You can query the start power of the scan test.

Command syntax POWE:START<numeric>

Query syntax POWE:START?

Query returns <NR3><NL>

Example: Set the power value to 50W

POWE:START 50 (note the space in the middle);

Query: POWE:START?

Return: 50.00

:END

Set the end power value of the scanning test. You can query the end power value of the scanning test.

Command syntax POWE:END<numeric>

Query syntax POWE:END?

Query returns <NR3><NL>

Example: Set the power value to 200W

POWE:END 200 (note the space in the middle);

Query: POWE:END?

Return: 200.00

:STEP

Set the scanning test step power value, you can query the scanning test step power value.

Command syntax POWE:STEP<numeric>

Query syntax POWE:STEP?

Query returns <NR3><NL>

Example: Set the power value to 5W

POWE:STEP 5 (note the space in the middle);

Query: POWE:STEP?

Return: 5.00

:LOW

Set the lower limit of scanning test power, you can query the lower limit of scanning test power.

Command syntax POWE:LOW<numeric>

Query syntax POWE:LOW?

Query returns <NR3><NL>

Example: Set the power value to 50W

POWE:LOW 50 (note the space in the middle);

Query: POWE:LOW?

Return: 50.00

:HIGH

Set the upper limit of scan test power. You can query the upper limit of scan test power.

Command syntax POWE:HIG<numeric>

Query syntax POWE:HIG?

Query return <NR3><NL>

Example: Set the power value to 200W

POWE:HIG 200 (note the space in the middle);

Query: POWE:HIG?

Return: 200.00

2.3.8 [RESI] subsystem command set

The RESI subsystem command set is used to set resistance values.

:CR

Set the CR mode resistance value, you can query the CR mode resistance value.

Command syntax RESI:CR <numeric>

Arguments

< numeric >	
Scope	0.01 to 4500.00
Preset	100
unit	Ω

Query syntax RESI:CR?

Query returns <NR3><NL>

Example: Set the resistance value to 500 Ω

RESI:CR 500 (note the space in the middle);

Query: RESI:CR?

Return: 500.00

:BCR

Set battery test mode constant resistance discharge resistance value, you can query battery test mode constant resistance discharge resistance value.

Command syntax RESI:BCR<numeric>

Arguments

< numeric >	
Scope	0.03 to 4500.00
Preset	500
Units	Ω

Query syntax RESI:BCR?

Query returns <NR3><NL>

Example: Set the resistance value to 500 Ω

```
RESI:BCR 500 (note the space in the middle);  
Query: RESI:BCR?  
Return: 500.00
```

2.3.9 [TIME] Subsystem command set

The TIME subsystem command set is used to set the time value of delay off, dynamic test and scan test.

:OFFDelay

Set the delay off time. You can query the current delay off time.

Command syntax TIME:OFFDelay <numeric>

Arguments

	< numeric >
Radius	0 to 99,999
Preset	0
Units	Seconds (s)

Query syntax TIME:OFFDelay?

Query returns <NR1><NL>

Example: Set the delay turn-off time to 1500S

```
TIME:OFFDelay 1500 (note the space in the middle);
```

Query: TIME:OFFDelay?

Return: 1500

:WA

Set the dynamic test Pulse width A value.

Command syntax TIME:WA <numeric>

Arguments

	< numeric >
Scope	50 to 99,999
Preset	1000
Units	Milliseconds (ms)

Query syntax TIME:WA?

Query returns <NR1><NL>

Example: Set the delay turn-off time to 1000ms

```
TIME:WIDThA 1000 (note the space in the middle);
```

Query: TIME:WIDThA?

Return: 1000

:WB

Set the dynamic test pulse width B value.

Command syntax TIME:WB <numeric>

argument

	< numeric >
Scope	50 to 99,999
Preset	1000
Units	Milliseconds (ms)

Query syntax TIME:WB?

Query returns <NR1><NL>

Example: Set the delay turn-off time to 1000mS

TIME:WB 1000(note the space in the middle);

Query: TIME:WB?

Return: 1000

:STEP

Set the scanning test step delay value.

Syntax TIME:STEP<numeric>

Arguments

	< numeric >
Scope	1 ~ 999
Preset	1
Units	Seconds (s)

Query syntax TIME:STEP?

Query returns <NR1><NL>

Example: Set the delay turn-off time to 15S

TIME:STEP 15 (note the space in the middle);

Query: TIME:STEP?

Return: 15

:BTT

Set the battery mode value.

Command syntax TIME:BTT<numeric>

Arguments

	< numeric >
Scope	1 to 99,999
Preset	60
Units	Seconds (s)

Query syntax TIME:BTT?

Query returns <NR1><NL>

Example: Set the delay turn-off time to 15S

TIME:BTT 15 (note the space in the middle);

Query: TIME:BTT?

Return: 15

2.3.10 [LED] Subsystem command set

The LED subsystem command set is used to set LED COEFF coefficient values.

:COEFF

Set LED test mode coefficient value, you can query LED test mode coefficient value.

Command syntax LED:COEFF <numeric>

Parameters

	< numeric >
Scope	0.01 to 1.00

Preset	1.00
--------	------

Query syntax LED:COEFF?

Query return <NR3><NL>

Example: Set the coefficient value to 0.5

LED:COEFF 0.5 (note the space in the middle);

Query: LED:COEFF?

Return: 0.50

2.3.11 [TRAN] subsystem command set

TRAN subsystem command set is used to set dynamic load and dynamic mode of dynamic test.

:STATE

Set the dynamic state of the dynamic test. You can query the dynamic state of the dynamic test.

Command syntax TRAN:STATE{CC|CV}

	Description
CC(default)	Dynamic carrier is CC
CV	The dynamic carrier state is CV

Query syntax TRAN:STATE?

Query returns {CC|CV}<NL>

:MODE

Set the dynamic mode of the dynamic test. You can query the dynamic mode of the dynamic test.

Command syntax TRAN:MODE{COUT|TRIG|PULS}

	Description
COUT(default)	Dynamic mode is continuous
TRIG	Dynamic mode for Trigger
PULS	Dynamic mode is pulse

Query syntax TRAN:MODE?

Query returns {COUT|TRIG|PULS}<NL>

2.3.12 [BATT] subsystem command set

The BATT subsystem command set is used to set the discharge mode of the battery test.

:MODE

Set the discharge mode for the battery test.

Command syntax BATT:MODE{CC|CR}

	Description
CC(default)	The discharge mode is CC
CR	Discharge mode is CR

Query syntax BATT:MODE?

Query returns {CC|CR}<NL>

:CAPA

Description Query the battery discharge capacity.

Query syntax BATT:CAPA?

Query returns <NR3><NL>

:ENER

Description Query the battery discharge energy.

Query syntax BATT:ENER?

Query returns <NR3><NL>

:BCUT

Set the cut-off conditions for the battery test.

Command syntax BATT:BCUT{V|T|C|E}

	Description
V(default)	The cut-off condition is voltage
T	Cut-off condition is time
C	Cutoff condition is capacity
E	Cut-off condition is energy

Query syntax BATT:BCUT?

Query return {V|T|C|E}<NL>

:BAEN

Set cutoff enable for battery test.

Command syntax BATT:BAEN{1|2|3}

	Description
3(default)	The three stages of discharge were enabled
2	Enable 2 stage discharge
1	Enable 1 stage discharge

Query syntax BATT:BAEN?

Query returns {1|2|3}<NL>

:BTC

Set battery test mode cutoff capacity.

Command syntax BATT:BTC <numeric>

Arguments

< numeric >	
Scope	0 to 9999
Preset	0

Query syntax BATT:BTC?

Query returns <NR3><NL>

Example: Set the coefficient value to 1

BATT:BTC 1 (note the space in the middle);

Query: BATT:BTC?

Return: 1.00

:BTE

Set battery test mode cutoff energy.

Command syntax BATT:BTE <numeric>

argument

< numeric >	
Scope	0 to 9999
Preset	0

Query syntax BATT:BTE?

Query returns <NR3><NL>

Example: Set the coefficient value to 1

BATT:BTE 1 (note the space in the middle);

Query: BATT:BTE?

Return: 1.00

2.3.13 [SCAN] subsystem command set

The SCAN subsystem command set is used to set the scan type, threshold type and comparison type of the scan test.

:TYPE

Set the scan type of the scan test. You can query the scan type of the scan test.

Command syntax SCAN:TYPE{CC|CV|CP}

	Description
CC(default)	The scan type is CC
CV	The scan type is CV
CP	The scan type is CP

Query syntax SCAN:TYPE?

Query return {CC|CV|CP}<NL>

:THType

Set the threshold type of the scan test. You can query the threshold type of the scan test.

Command syntax SCAN:THType{VTH|DROP|VMIN}

	Description
VTH(default)	The threshold type is voltage break
DROP	The threshold type is drop
VMIN	The threshold type is the minimum voltage

Query syntax SCAN:THType?

Query return {VTH|DROP|VMIN}<NL>

:COMPare

Set the comparison type of the scan test, query the comparison type of the scan test.

Command syntax SCAN:COMPare{INCURR|INVOLT|INPOW|NONE}

	Description
INCURR(default)	The comparison type is by current
INVOLT	The comparison type is by voltage
INPOW	Compare type by power
NONE	Compare type Off

Query syntax SCAN:COMPare?

The query returns {INCURR|INVOLT|INPOW}<NL>

2.3.14 [LIST] Subsystem command set

The LIST subsystem command set is used to set the number of test steps, loop switch and step mode of the list test.

:LOOP

To turn loop on or off, you can check whether the loop is open for the current test.

Command syntax LIST:LOOP{ON|OFF}

Arguments

	Description
ON	Loop open
OFF	Loop off

Query syntax LIST:LOOP?

Query return {ON|OFF}<NL>

:MODE

Set the list test step mode to query the step mode of the current test.

Command syntax LIST:MODE{AUTO|TRIGGER}

Arguments

	Description
AUTO	Step mode is continuous
TRIGGER	Step mode is trigger

Query syntax LIST:MODE?

Query returns {AUTO|TRIGGER} <NL>

:NUM

Set list test steps to query the current number of test steps.

Command syntax LIST:NUM <numeric>

Arguments

< numeric >	
Scope	1 to 10
Preset values	5

Query syntax LIST:NUM?

Query returns <NR1><NL>

Example: Set the test step number to 10

LIST:NUM 10 (note the space in the middle);

Query: LIST:NUM?

Return: 10

:PARAMeter

Set parameters for the specified number of steps.

Command syntax LIST:PARA <secnum>,<type>,<value>,< delay>,<compar>,<max>,<min>

Set number of steps < secnum>	
Range	1 ~ 10
Preset values	1

Set the test mode for the number of steps.

type	Description
0	Test mode is CC
1	Test mode is CV
2	Test mode is CP
3	Test mode is CR
4	Test mode for open circuit
5	Test mode is short circuit

Set the upper and lower limits of open or close comparison for the corresponding number of steps

COMPare	Description
0	Compare off
1	Compare currents
2	Compare voltages
3	Compare power
4	Compare resistors

Set the corresponding step delay value.

DELAy	< numeric >
Scope	1 to 60,000
Preset	5
Units	Seconds (s)

VALUe, MAX, MIN

Set the load size value, upper limit, lower limit of the specified editing step, you can query the current specified editing step is the load value, upper limit, lower limit.

According to the test mode of the specified number of editing steps to determine the range of setting values, CV and OPEN belong to the voltage value range, CC and SHORT belong to the current value range, CR is the resistance value range, CP is the power value range.

See 2.3.5VOLTage subsystem command voltage range for voltage values.

For the CURRent value, see 2.3.6CURRent subsystem Command Current value range.

See 2.3.7POWER subsystem command Power range for power values.

For the resistance value, see 2.3.8RESistance subsystem Command Resistance

Range.

Example: Under low current range, set the test mode of step 5 to CC, set the load value to 3A, set the delay time to 100S, compare the upper and lower limits to open, set the upper limit value to 3A, set the lower limit value to 0.1A

LIST:PARA 5,0,3,100,1,3,0.1

Query list setup parameters to get groups of setup parameters starting from what step.

Query syntax LIST:PARA? <start>,<num>

<start>,<num>	
Scope	1 to 10
Preset values	1

Example: Get the setting parameters for the 2 groups starting from step 3.

Query :LIST:PARA? 1, 2,

Back

3,0,3,100,1,3,0.1

4,0,3,100,0,3,0.1

:OUT

Query the list result after the list test is completed specifies the parameters for the number of steps.

Query syntax LIST:OUT? <start>,<end>

Return the corresponding < secnum >, < type >, < value >, < pass_fail >, < Max >, < min >

pass_fail	Description
0	Current step comparison not turned on
1	PASS
2	FAIL

Example: Get list result parameters from steps 1 through 2.

Query :LIST:OUT? 1, 2,

Back

1,0,3.000, 1,0,3.000,1.000

2,0,3.000, 2,0,3.000,0.000

2.3.15 [CH] Subsystem command set

The CH subsystem command set is used to set modes and open or close channels.

:MODE

Description Set the channel mode

Command syntax CH:MODE{CC|CV|CP|CR|TRAN|LIST|SCAN|SHOR|BATT}

Query syntax CH:MODE?

Return {CC|CV|CP|CR|TRAN|LIST|SCAN|SHOR|BATT}<NL>

:SW

Describe mode ON, OFF (ON|OFF)

Command syntax CH:SW{ON|OFF}

Arguments

	Description
ON	Turn off current mode (channel), mode (channel) off state after mode switching
OFF	Open current mode (channel)

Query syntax CH:SW?

Query returns {ON|OFF}<NL>

2.3.16 FILE subsystem command set

The FILE subsystem command set is used for some operations related to files.

The files are stored in various Settings, as well as the current test results in list mode.

:CHECK

Description Check the number for the presence of a file.

Query syntax FILE:CHECK <numeric>?

Arguments

< numeric >
1-1600

	Description
NO	No files
YES	Present file

Query returns {NO|YES}<NL>

:RECA11

Describes the call file.

Command syntax FILE:RECA11<numeric>

< numeric >
1 to 1600

:DELEte

Description Delete file.

Command syntax FILE:DELEte<numeric>

< numeric >
1 to 1600

:STORe

Description Save file.

Command syntax FILE:STORe

Store the file to file address n, save the name xxxxx(x is the file serial number).

2.3.17 [MEAS] command

Description Query measured current value.

Query syntax MEAS:CURRent?

Query return <NR3><NL>

Description The voltage value measured by the query.

Query syntax MEAS:VOLTage?

Query returns <NR3><NL>

Describe the power value measured by the query.

Query syntax MEAS:POWer?

Query returns <NR3><NL>

Description The resistance value measured by the query.

Query syntax MEAS:RESIstance?

Query returns <NR3><NL>

Description The input value of the query measurement (current value, voltage value, power value, resistance value).

Query syntax MEAS:ALL?

Query returns <NR3>, <NR3>, <NR3>, <NR3><NL>

2.3.18 SELF subsystem command set

:FAN

Description Query whether the fan works properly.

	Description
FAIL	Fan failure
PASS	Fan normal

Query Syntax SELF:FAN?

Query returns <FAIL|PASS><NL>