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## SCPI command syntax

### 1.1 Grammar practice

Take the following two commands as examples to illustrate the meanings of symbols in the SCPI command:

Case 1: the LOAD [1] | 2: the TRIGger {MAN | EXT | TRG}

Example 2: TIME: OFFDelay < numeric >

According to command syntax, most commands (and some parameters) are represented in a mixture of upper and lower case. For shorter program lines, you can send commands in abbreviated format. If you want 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 parameter class for the given command string. Brackets are not sent with the command string.

Bar (|) separates multiple parameter selections for a given command string. For example, in the above command, {MAN|EXT|TRG} indicates that you can specify a parameter in "MAN", "EXT", "TRG". The bar is not sent with the command string.

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

Some syntax elements, such as nodes and parameters, are contained within square brackets ([ ]). This means that the element is optional and can be omitted. Brackets are not sent with the command string. If no value is specified for the optional parameter, the instrument selects the default value. In the example above, "LOAD[1|2]" means that you can refer to channel 1 by "LOAD" or "LOAD1". Also, since the entire LOAD node is optional (in square brackets), you can refer to channel 1 by omitting the LOAD node entirely. This is because channel 1 is the default channel for the LOAD node. To refer to channel 2, on the other hand, use "LOAD2" only on the program line.

### 1.2 Command separator

The colon (:) is used to separate the command keyword from the next level keyword. Whitespace must be inserted to separate arguments from command keywords. If a command requires more than one argument, the adjacent arguments must be separated by commas, as shown below:

The VOLT: ON 1

In this example, the command specifies that the load setting channel-1 startup voltage is 1V.

The semicolon (;) is used to separate multiple parameter Settings in the same subsystem. For example, send the following command string:

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

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

## ET54's command set

The section titled "description" describes the usage of the command or the operations it performs.

The section titled "parameters" describes the required parameters to send the command. When the parameter is a value or string type within  $\langle \rangle$ , the definition of the parameter, the range of allowable values, the default (factory set) value, and so on are given, and when the parameter is a choice type within  $\{ \}$ , the description of each choice is given.

The part titled "command syntax" means that the command does not need to answer, and the instrument only needs to perform corresponding actions according to the command. The part titled "query syntax" indicates that the command needs to reply, and the instrument needs to return data to the upper computer. For specific response content, please refer to "query return". Command syntax and query syntax are both syntax sent to ET54 from the external controller.

This communication agreement provides that:

NR1: integer, e.g., 123

NR2: decimal (fixed point number), e.g. 12.3

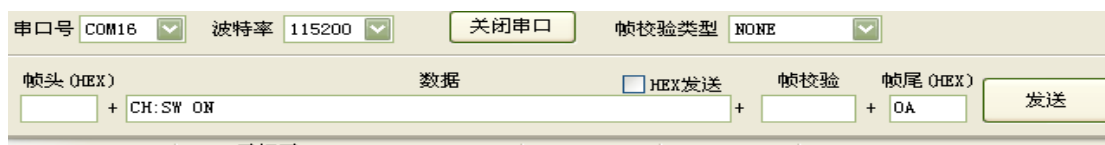
NR3: floating point number, such as: 12.3E+5

NRf: NR1, NR2 or NR3

NL: carriage return, integer 10

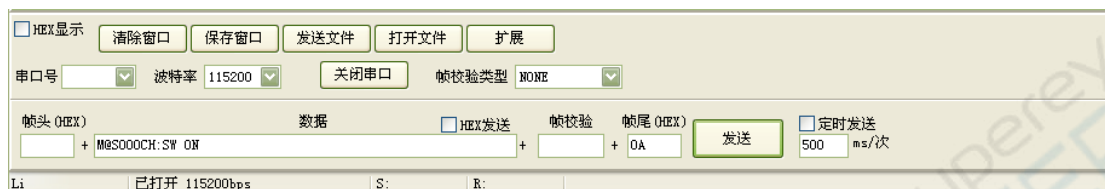
The default baud rate is 115200, which can be modified manually or by instructions in the communication Settings. After the baud rate is modified, set the baud rate of serial port software to the corresponding value, close the serial port and then open the serial port. Electronic load address can be set (485 USES 000-255).

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



RS485 communication send instruction format is

No frame head + address (m@sxxx) + instruction content + no checksum +0A (frame end) (db-9 1 pin A, 2 pin B, 6 pin GNG, load address cannot be set the same, other same as user manual)



## 2.1 Eee488.2 mandatory order

### The \* IDN?

Description commands are used to query instrument information

Query syntax \*IDN?

The query returns <model>,<SN>,<software>,<NL>

Note <model> gives the machine model, namely ET54XX; <SN> gives the serial number; <software> gives the software version number; <hardware> gives the hardware version number.

### \* TRG

Description load Settings trigger source select software as the trigger source, and this command generates a trigger

Command syntax \*TRG

## 2.2 SCPI instrument request command

### 2.2.1 command set of SYSTEM subsystem

#### : VERSion?

Describe the SCPI version number that the query instrument conforms to

Query syntax SYSTEM:VERSion?

Query returns 2017.7<NL>

#### : BEEP

Describe giving off a buzzer.

Command syntax SYST:BEEP

### : the LOCA

Describes placing ET54 in a local operation state. (the program-controlled command to set the instrument to a local or remote operating state is interactive with the key switch of the instrument)

Command syntax SYST:LOCA

## 2.3 ET54 command set

### 2.3.1 [LOAD[1|2]] subsystem command set

The LOAD subsystem command is primarily used to configure the LOAD Settings for the current channel. You can query the load Settings for the current channel.

### : the TRIGger

Set the trigger mode of the trigger source, you can query the current trigger mode of the trigger source.

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

parameter

	describe
MAN	Manual trigger mode
EXT	External trigger mode
TRG	Command trigger mode (software)

Syntax LOAD:TRIGger?

The query returns {MAN|EXT|TRG}<NL>

### : VRANge

Set the voltage range, can query the voltage range.

LOAD:VRANge{HIGH|LOW}

parameter

	describe
HIGH	High range

LOW,	Low range
------	-----------

LOAD:VRANge?

Query returns {HIGH|LOW}<NL>

### : CRANge

Set the range of current, can query the range of current.

Command syntax LOAD:CRANge{HIGH|LOW}

parameter

	describe
HIGH	High range
LOW,	Low range

Query syntax LOAD:CRANge?

Query returns {HIGH|LOW}<NL>

### : the ABNO

Query whether the current load is abnormal.

describe

	describe
NONE	There is no
OV	Over voltage protection
OC	Over current protection
The OP	Overpower protection
OT	Over temperature protection
LRV	Polarity reversal protection
The UN	The actual value does not reach the set value
FAIL	Communication failures

LOAD:ABNO?

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

**2.3.2 [QUAL[1|2]] subsystem command set**

QUAL subsystem command is mainly used to set up the current channel (CC, CV, CP, CR) mode qualified test. You can query the qualification test Settings for the current channel.

**: the TEST**

Set the qualified test on or off to check whether the current qualified test is on.

Command syntax QUAL:TEST{ON|OFF}

parameter

	describe
ON	Qualification test open
OFF	Qualified test closing

Query syntax QUAL:TEST?

The query returns {ON|OFF}<NL>

**: OUT**

Check whether the result of qualified test is passed.

	describe
NONE	There is no
PASS	Pass the qualification test
FAIL	Pass the qualified test

QUAL:OUT?

The query returns {NONE|PASS|FAIL}<NL>

**: VHIGH**

Set the upper limit voltage value, can query the current upper limit voltage value.

Command syntax QUAL:VHIGH <numeric>

parameter

The < numeric >				
model	5410, 5420,		5411	
range	high	low	high	low



The scope of	0.10 ~ 150.00	0.100 ~ 19.999	0.10 ~ 500.00	0.100 ~ 19.999
The preset value	0.10	0.100	0.10	0.100
unit	V			

QUAL:VHIGH?

The query returns <NR3><NL>

Example: in the case of electric voltage down range, set the upper limit voltage to 20V

QUAL:VHIGH 20 (note the middle space);

Query: QUAL: VHIGH?

Returns: 20.000

### : VLOW

Set the lower limit voltage value, can query the current lower limit voltage value.

Command syntax QUAL:VLOW <numeric>

parameter

The < numeric >				
model	5410, 5420,		5411	
range	high	low	high	low
The scope of	0.10 ~ 150.00	0.100 ~ 19.999	0.10 ~ 500.00	0.100 ~ 19.999
The preset value	0.10	0.100	0.10	0.100
unit	V			

Query syntax QUAL:VLOW?

The query returns <NR3><NL>

Example: in the case of electric voltage down range, set the lower limit voltage to 10V

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

Query: QUAL: VLOW?

Returns: 10.000

**: CHIGH**

Set the upper limit current value, can query the current upper limit current value.

Command syntax QUAL:CHIGH <numeric>

parameter

The < numeric >						
model	5410		5411		5420	
range	high	low	high	low	high	low
The scope of	0.00 ~ 40.00	0.000 ~ 3.000	0.00 ~ 15.00	0.000 ~ 3.000	0.00 ~ 20.00	0.000 ~ 3.000
The preset value	40.00	3.000	15.00	3.000	20.00	3.000
unit	a.					

QUAL:CHIGH?

The query returns <NR3><NL>

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

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

Query: QUAL: CHIGH?

Returns: 3.000

**: CLOW**

Set the lower limit current value, can query the current lower limit current value.

Command syntax QUAL:CLOW <numeric>

parameter

The < numeric >						
model	5410		5411		5420	
range	high	low	high	low	high	low
	0.00 ~ 40.00	0.000 ~	0.00 ~ 15.00	0.000 ~	0.00 ~ 20.00	0.000 ~

The scope of		3.000		3.000		3.000
The preset value	40.00	3.000	15.00	3.000	20.00	3.000
unit	a.					

QUAL:CLOW?

The query returns <NR3><NL>

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

QUAL:CLOW 1 (note the middle space);

Query: QUAL: CLOW?

Returns: 1.000

**: PHIGH**

Set the upper limit power value to query the current upper limit power value.

Command syntax QUAL:PHIGH <numeric>

parameter

The < numeric >		
model	5410, 5411,	5420
The scope of	0.00 ~ 400.00	0.00 ~ 200.00
The preset value	400.00	200.00
unit	W.	

QUAL:PHIGH?

The query returns <NR3><NL>

Example: set the upper power value to 200W

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

Query: QUAL: PHIGH?

Returns: 200.00

**: the PLOW**

Set the lower limit power value to query the current lower limit power value.

Command syntax QUAL:PLOW <numeric>

parameter

The < numeric >		
model	5410, 5411,	5420
The scope of	0.00 ~ 400.00	0.00 ~ 200.00
The preset value	400.00	200.00
unit	W.	

Query syntax QUAL:PLOW?

The 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?

Returns: 100.00

### 2.3.3 command set of SYSSet subsystem

SYSSet subsystem command is used to set the relevant contents of the system Settings, you can query the current instrument system Settings.

#### : START

Set boot Settings. Check boot Settings.

Command syntax SYSSet:START{DEFAULT|LAST}

	describe
The DEFAULT	The default value
LAST (default value)	The last value

Query syntax SYSSet:START?

Query returns {DEFAULT|LAST}<NL>

#### : LANGuage

Display language Settings, language Settings can be queried.

Command syntax SYSSet:LANGUage{CHINESE|ENGLISH}

	describe
CHINESE	Chinese
ENGLISH	English

Query syntax SYSSet:LANGUage?

The query returns {CHINESE|ENGLISH}<NL>

### 2.3.4 command set of COMM subsystem

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

#### : the BAUDrate

Set the baud rate.

Command syntax COMM:BAUDrate <numeric>

	The < numeric >
Baud rate	0 to 7 corresponds (4800   7200   9600   14400   19200   38400   57600   115200)
The preset value	0

Query the syntax COMM:BAUDrate?

Query returns {4800|7200|9600|14400|19200|38400|57600|115200}<NL>

### 2.3.5 [VOLT[1|2]] subsystem command set

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

parameter

The < numeric >				
model	5410, 5420,		5411	
range	high	low	high	low
The scope of	0.10 ~ 150.00	0.100 ~ 19.999	0.10 ~ 500.00	0.100 ~ 19.999

The preset value	0.10	0.100	0.10	0.100
unit	V			

**: ON**

Set the starting voltage to query the current starting voltage.

Command syntax VOLT:ON <numeric>

Query syntax VOLT:ON?

The query returns <NR3><NL>

Example: in the case of electric voltage down range, set the starting voltage to 1V

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

Query: the VOLT: ON?

Returns: 1.000

**: OFF**

Set the closing voltage value, can query the current closing voltage value.

Command syntax VOLT:OFF <numeric>

Query syntax VOLT:OFF?

The query returns <NR3><NL>

Example: in the case of electric voltage down range, set the off voltage to 1V

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

Query: the VOLT: OFF?

Returns: 1.000

**: VMAX**

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

Command syntax VOLT:VMAX <numeric>

parameter

The < numeric >				
model	5410, 5420,		5411	
range	high	low	high	low
The scope of	0.10 ~ 155.00	0.100 ~ 21.000	0.10 ~ 520.00	0.100 ~ 21.000
The preset value	155.00	21.000	520.00	21.000
unit	V			

Query syntax VOLT:VMAX?

The query returns <NR3><NL>

Example: in the case of electric voltage down range, the overvoltage protection voltage is set to 21V

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

Query the VOLT, VMAX?

Returns: 21.000

### : CV

Set the voltage value of CV mode. Check the voltage value of CV mode.

Command syntax VOLT:CV <numeric>

Query syntax VOLT:CV?

The query returns <NR3><NL>

Example: in the case of electric voltage range, set CV to 15V

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

Query: the VOLT: CV?

Returns: 15.000

### : CCCV

Set the voltage value of CC+CV mode, and inquire the voltage value of CC+CV mode.

Command syntax VOLT:CCCV <numeric>

Query syntax VOLT:CCCV?

The query returns <NR3><NL>

Example: set CCCV to 15V in the case of voltage voltage range

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

Query: the VOLT: CCCV?

Returns: 15.000

### **: CRCV**

Set the voltage value of CR+CV mode, and check the voltage value of CR+CV mode.

Command syntax VOLT:CRCV <numeric>

Query syntax VOLT:CRCV?

The query returns <NR3><NL>

Example: in the case of electric depression range, set CRCV to 15V

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

Query: the VOLT: CRCV?

Returns: 15.000

### **: TA**

Set the voltage value of dynamic test mode A, and inquire the voltage value of dynamic test mode A.

Command syntax VOLT:TA<numeric>

Query syntax VOLT:TA?

The query returns <NR3><NL>

Example: in the case of electric depression range, the dynamic test A value is set to 15V

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

Query: the VOLT: TA?

Returns: 15.000

### **: TB**



Set the voltage value of dynamic test mode B, and inquire the voltage value of dynamic test mode B.

Command syntax VOLT:TB<numeric>

Query syntax VOLT:TB?

The query returns <NR3><NL>

Example: set the value of dynamic test mode B to 10V in the case of electric low range

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

Query: the VOLT: TB?

Returns: 10.000

### LED:

Set the voltage value of LED test mode Vo, and inquire the voltage value of LED test mode Vo.

Command syntax VOLT:LED<numeric>

Query syntax VOLT:LED?

The query returns <NR3><NL>

Example: in the case of electric voltage range, set the LED test mode Vo value to 12V

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

Query: the VOLT: LED?

Returns: 12.000

### : BCR

Set the constant resistance cut-off voltage value of battery test mode. Check the constant resistance cut-off voltage value of battery test mode.

The command syntax VOLTage:BCR<numeric>

parameter

range	high	low
The scope of	0.10 ~ 120.00	0.100 ~ 19.999
The preset value	0.10	0.100

unit	V
------	---

Query syntax VOLT:BCR?

The query returns <NR3><NL>

Example: in the case of electric voltage down range, the constant resistance cut-off voltage value of battery test mode is set to 12V

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

Query: the VOLT: BCR?

Returns: 12.000

### : BCC1

Set the constant current cut-off voltage value 1 in battery test mode. Check the constant current cut-off voltage value 1 in battery test mode.

Command syntax VOLT:BCC1<numeric>

parameter

range	high	low
The scope of	0.10 ~ 120.00	0.100 ~ 19.999
The preset value	0.10	0.100
unit	V	

Query syntax VOLT:BCC1?

The query returns <NR3><NL>

Example: in the case of the voltage drop range, set the battery test mode constant current cut-off voltage 1 to 18V

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

Query: the VOLT, BCC1?

Returns: 18.000

### : BCC2

Set the constant current cut-off voltage value 2 in battery test mode. Check the constant current cut-off voltage value 2 in battery test mode.

Command syntax VOLT:BCC2<numeric>

parameter

range	high	low
The scope of	0.10 ~ 120.00	0.100 ~ 19.999
The preset value	0.10	0.100
unit	V	

Query syntax VOLT:BCC2?

The query returns <NR3><NL>

Example: in the case of the voltage drop range, set the battery test mode constant current cut-off voltage 2 to 12V

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

Query: the VOLT: BCC2?

Returns: 12.000

### : BCC3

Set the constant current cut-off voltage value 3 in battery test mode. Check the constant current cut-off voltage value 3 in battery test mode.

Command syntax VOLT:BCC3<numeric>

parameter

range	high	low
The scope of	0.10 ~ 120.00	0.100 ~ 19.999
The preset value	0.10	0.100
unit	V	

Query syntax VOLT:BCC3?

The query returns <NR3><NL>

Example: in the case of electric voltage down range, the constant current cut-off voltage of battery test mode 3 is set to 10V

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

Inquiry: VOLT:BCC3?

Returns: 10.000

### : START

Set the starting voltage value of scanning test, and inquire the starting voltage value of scanning test.

Command syntax VOLT:START<numeric>

Query syntax VOLT:START?

The query returns <NR3><NL>

Example: in the case of electric voltage down range, the starting voltage value measured by scanning test is set to 1V

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

Query: the VOLT: START?

Returns: 1.000

### : the END

Set the terminal voltage value of scanning test, and inquire the terminal voltage value of scanning test.

Command syntax VOLT:END<numeric>

Query syntax VOLT:END?

The query returns <NR3><NL>

Example: in the case of electric voltage down range, the terminal voltage of scanning test is set to 18V

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

Query: the VOLT: the END?

Returns: 18.000

### : STEP

Set the step voltage value of scan test, and inquire the step voltage value of scan test.

Command syntax VOLT:STEP<numeric>

Query syntax VOLT:STEP?

The query returns <NR3><NL>

Example: in the case of electric voltage down range, the step voltage of scanning test is set to 1V

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

Query: the VOLT: STEP?

Returns: 1.000

#### **: VTH**

Set the threshold of scan test voltage transition, and query the threshold of scan test voltage transition.

Command syntax VOLT:VTH<numeric>

Query syntax VOLT:VTH?

The query returns <NR3><NL>

Example: in the case of electric voltage down range, the threshold of scan test voltage transition is set to 10V

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

Query: the VOLT: VTH?

Returns: 10.000

#### **: VMIN**

Set the minimum voltage threshold for scanning test, and query the minimum voltage threshold for scanning test.

Command syntax VOLT:VMIN<numeric>

Query syntax VOLT:VMIN?

The query returns <NR3><NL>

Example: in the case of electric voltage down range, the minimum voltage of scanning test is set to 10V

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

Query: the VOLT, VMIN?

Returns: 10.000

#### **: LOW,**

Set the scan test voltage limit, can query the scan test voltage limit.

Command syntax VOLT:LOW<numeric>

Query syntax VOLT:LOW?

The query returns <NR3><NL>

Example: in the case of electric voltage down range, scan test scan test voltage lower limit is set to 1V

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

Query: the VOLT: LOW?

Returns: 1.000

**: HIGH**

Set the upper limit of scan test voltage, you can query the upper limit of scan test voltage.

Command syntax VOLT:HIG<numeric>

Query syntax VOLT:HIG?

The query returns <NR3><NL>

Example: in the case of electric voltage down range, the upper limit of scanning test voltage is set to 18V

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

Query: the VOLT: HIGH?

Returns: 18.000

**2.3.6 [CURR[1|2]] subsystem command set**

The CURR subsystem command set is used to set current values.

parameter

The < numeric >						
model	5410		5411		5420	
range	high	low	high	low	high	low
The scope of	0.00 ~ 40.00	0.000 ~ 3.000	0.00 ~ 15.00	0.000 ~ 3.000	0.00 ~ 20.00	0.000 ~ 3.000

The preset value	40.00	3.000	15.00	3.000	20.00	3.000
unit	a.					

**: IMAX**

Set overcurrent protection current value, can query the current overcurrent protection current value.

Command syntax CURR:IMAX <numeric>

parameter

The < numeric >						
model	5410		5411		5420	
range	high	low	high	low	high	low
The scope of	0.00 ~ 45.00	0.000 ~ 3.300	0.00 ~ 16.00	0.000 ~ 3.300	0.00 ~ 22.00	0.000 ~ 3.300
The preset value	45.00	3.300	16.00	3.300	22.00	3.300
unit	a.					

Query syntax CURR:IMAX?

The 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?

Returns: 3.000

**: CC**

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

Command syntax CURR:CC <numeric>

Query syntax CURR:CC?

The query returns <NR3><NL>

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

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

Query: CURR: CC?

Returns: 3.000

**: CCCV**

Set CC+CV mode current value, can query CC+CV mode current value.

Command syntax CURR:CCCV <numeric>

Query syntax CURR:CCCV?

The query returns <NR3><NL>

Example: in the case of low current range, CCCV mode current value is set to 3A

CURR:CCCV 15 (notice the middle space);

Query: CURR: CCCV?

Returns: 3.000

**: TA**

Set the current value of dynamic manual mode A, and query the current value of dynamic test mode A.

Command syntax CURR:TA<numeric>

Query syntax CURR:TA?

The query returns <NR3><NL>

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

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

Query: CURR: TA?

Returns: 3.000

**: TB**

Set the current value of dynamic manual mode B and query the current value of dynamic test mode B.

Command syntax CURR:TB<numeric>



Query syntax CURR:TB?

The query returns <NR3><NL>

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

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

Query: CURR: TB?

Returns: 1.000

### **LED:**

Set LED test mode Io current value, you can query LED test mode Io current value.

Command syntax CURR:LED<numeric>

Query syntax CURR:LED?

The query returns <NR3><NL>

Example: in the case of low current range, the Io value of LED test mode is set to 3A

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

Query: CURR: LED?

Returns: 3.000

### **: BCC1**

Set the constant current current value 1 in the battery test mode. Check the constant current current value 1 in the battery test mode.

Command syntax CURR:BCC1<numeric>

Query syntax CURR:BCC1?

The query returns <NR3><NL>

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

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

Query: CURR: BCC1?

Returns: 3.000

### **: BCC2**

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

Command syntax CURR:BCC2<numeric>

Query syntax CURR:BCC2?

The query returns <NR3><NL>

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

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

Query: CURR: BCC2?

Returns: 2.000

### **: BCC3**

Set the battery test mode constant current discharge value 3, and check the battery test mode constant current discharge value 3.

Command syntax CURR:BCC3<numeric>

Query syntax CURR:BCC3?

The query returns <NR3><NL>

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

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

Query: CURR: BCC3?

Returns: 1.000

### **: START**

Set the scan test starting current value, can query the scan test starting current value.

Command syntax CURR:START<numeric>

Query syntax CURR:START?

The query returns <NR3><NL>

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

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

Query: CURR: START?

Returns: 1.000

**: the END**

Set the terminal current value of scanning test, and query the terminal current value of scanning test.

Command syntax CURR:END<numeric>

Query syntax CURR:END?

The query returns <NR3><NL>

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

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

Query: CURR: the END?

Returns: 3.000

**: STEP**

Set up scan test step current value, scan test step current value can be inquired.

Command syntax CURR:STEP<numeric>

Query syntax CURR:STEP?

The query returns <NR3><NL>

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

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

Query: CURR: STEP?

Returns: 1.000

**: LOW,**

Set the scan test current-limit, and inquire the scan test current-limit.

Command syntax CURR:LOW<numeric>

Query syntax CURR:LOW?

The query returns <NR3><NL>

Example: in the case of low current range, the lower limit of scanning test current is set as 0.5a

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

Query: CURR: LOW?

Returns: 0.500

### : HIGH

Set the upper limit of scan test current, and query the upper limit of scan test current.

Command syntax CURR:HIGH<numeric>

Query syntax CURR:HIGH?

The query returns <NR3><NL>

Example: in the case of low current range, the upper limit of scan test current is set as 3A

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

Query: CURR: HIGH?

Returns: 3.000

### 2.3.7 [POWE[1|2]] subsystem command set

The POWE subsystem command set is used to set the power value.

parameter

The < numeric >		
model	5410, 5411,	5420
The scope of	0.00 ~ 400.00	0.00 ~ 200.00
The preset value	400.00	200.00
unit	W.	

### : PMAX

Set overpower protection value, can query the current overpower protection value.

Command syntax POWE:PMAX <numeric>

parameter

The < numeric >		
model	5410, 5411,	5420
The scope of	0.00 ~ 420.00	0.00 ~ 220.00

The preset value	420.00	220.00
unit	W.	

Query syntax POWE:PMAX?

The query returns <NR3><NL>

Example: set the overpower protection value to 200W

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

Query: POWE: PMAX?

Returns: 200.00

### CP:

Set CP mode power value, can query CP mode power value.

Command syntax POWE:CP <numeric>

Query syntax POWE:CP?

The query returns <NR3><NL>

Example: set the power value to 50W

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

Query: POWE: CP?

Returns: 50.00

### : START

Set the starting power value of scanning test, and inquire the starting power value of scanning test.

Command syntax POWE:START<numeric>

Query syntax POWE:START?

The query returns <NR3><NL>

Example: set the power value to 50W

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

Query: POWE: START?

Returns: 50.00

**: the END**

Set the power value of scanning test end point, and query the power value of scanning test end point.

Command syntax POWE:END<numeric>

Query syntax POWE:END?

The query returns <NR3><NL>

Example: set the power value to 200W

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

Query: POWE: the END?

Returns: 200.00

**: STEP**

Set the step power value of scan test, and inquire the step power value of scan test.

Command syntax POWE:STEP<numeric>

Query syntax POWE:STEP?

The query returns <NR3><NL>

Example: set the power value to 5W

POWE:STEP5 (note the space in the middle);

Query: POWE: STEP?

Returns: 5.00

**: LOW,**

Set the scan test power lower limit, can query the scan test power lower limit.

Command syntax POWE:LOW<numeric>

Query syntax POWE:LOW?

The query returns <NR3><NL>

Example: set the power value to 50W

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

Query: POWE: LOW?

Returns: 50.00

### : HIGH

Set the upper limit of scan test power and query the upper limit of scan test power.

Command syntax POWE:HIGH<numeric>

Query syntax POWE:HIGH?

The query returns <NR3><NL>

Example: set the power value to 200W

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

Query: POWE: HIGH?

Returns: 200.00

### 2.3.8 [RESI[1|2]] subsystem command set

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

#### : CR

Set the resistance value of CR mode. Check the resistance value of CR mode.

Command syntax RESI:CR <numeric>

parameter

The < numeric >	
The scope of	0.03 ~ 7500.00
The preset value	500
unit	$\Omega$

Query grammar RESI:CR?

The query returns <NR3><NL>

Example: the resistance value is set to 500  $\Omega$

RESI:CR 50 (note the space in the middle);

Query: the rsei: CR?

Returns: 500.00

**: CRCV**

Set the resistance value of CR+CV mode. Check the resistance value of CR+CV mode.

Command syntax RESI:CRCV <numeric>

parameter

The < numeric >	
The scope of	0.03 ~ 7500.00
The preset value	500
unit	$\Omega$

Query grammar RESI:CRCV?

The query returns <NR3><NL>

Example: the resistance value is set to 500  $\Omega$

RESI:CRCV 50 (note the middle space);

Query: the rsei: CRCV?

Returns: 500.00

**: BCR**

Set the resistance value of constant resistance discharge in battery test mode. Check the resistance value of constant resistance discharge in battery test mode.

Command syntax RESI:BCR<numeric>

parameter

The < numeric >	
The scope of	0.03 ~ 4500.00
The preset value	500
unit	$\Omega$

Query syntax RESI:BCR?

The query returns <NR3><NL>

Example: the resistance value is set to 500  $\Omega$

RESI:BCR 50 (note the middle space);



Query: the rsei: BCR?

Returns: 500.00

### 2.3.9 [TIME[1|2]] subsystem command set

The command set of the TIME subsystem is used to set the TIME value of delayed shutdown, dynamic test and scan test.

#### : OFFDelay

Set the delay shutdown time to query the current delay shutdown time value.

Command syntax TIME:OFFDelay <numeric>

parameter

	The < numeric >
The scope of	0 ~ 60000
The preset value	10
unit	s.

Query syntax TIME:OFFDelay?

The query returns <NR1><NL>

Example: set the delay shutdown time to 1500S

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

Query: TIME: OFFDelay?

Returns: 1500

#### : WA

Set the dynamic test pulse width A value.

Command syntax TIME:WA <numeric>

parameter

	The < numeric >
The scope of	0 ~ 60
The preset value	1

unit	s.
------	----

Query syntax TIME:WA?

The query returns <NR1><NL>

Example: set the delay shutdown time to 15S

TIME:WIDThA 15 (notice the space in the middle);

Query: TIME: WIDThA?

Returns: 15000

### : WB

Set the dynamic test pulse width B value.

Command syntax TIME:WB <numeric>

parameter

	The < numeric >
The scope of	0 ~ 60
The preset value	1
unit	s.

Query syntax TIME:WB?

The query returns <NR1><NL>

Example: set the delay shutdown time to 15S

TIME:WB 15 (notice the middle space);

Query: TIME: WB?

Returns: 15000

### : STEP

Set the scan test step delay value.

Command syntax TIME:STEP<numeric>

parameter

	The < numeric >
The scope of	0 ~ 9999

The preset value	1
unit	s.

Query syntax TIME:STEP?

The query returns <NR1><NL>

Example: set the delay shutdown time to 15S

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

Query: TIME: STEP?

Returns: 15

### 2.3.10 [LED[1|2]] subsystem command set

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

#### : COEFF

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

Command syntax LED:COEFF <numeric>

parameter

The < numeric >	
The scope of	0.001 ~ 1.000
The preset value	1.00

Query syntax LED:COEFF?

The query returns <NR3><NL>

Example: set the coefficient value to 0.5

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

Query: LED:COEFF?

Returns: 0.500

### 2.3.11 [TRAN[1|2]] subsystem command set

The TRAN subsystem command set is used to set the dynamic state and dynamic mode of dynamic test.

#### : STATE

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

Command syntax TRAN:STATE{CC|CV}

	describe
CC(default value)	The dynamic carrier state is CC
CV	The dynamic loading state is CV

Query syntax TRAN:STATe?

Query returns {CC|CV}<NL>

**: MODE**

Set dynamic test dynamic mode, can query dynamic test dynamic mode.

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

	describe
COUT(default value)	Dynamic mode is continuous
TRIG	The dynamic mode is trigger
PULS	The dynamic mode is pulse

Query syntax TRAN:MODE?

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

### 2.3.12 [BATT[1|2]] subsystem command set

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

**: MODE**

Set the discharge mode of the battery test, and inquire the dynamic state of the dynamic test.

Command syntax BATT:MODE{CC|CR}

	describe
CC(default value)	The discharge mode is CC
CR	The discharge mode is CR

Query syntax BATT:MODE?

Query returns {CC|CR}<NL>

**: CAPA**

Describe query battery discharge capacity.

Query syntax BATT:CAPA?

The query returns <NR3><NL>

### 2.3.13 [SCAN[1|2]] 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 scan type of scan test, scan type of scan test can be queried.

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

	describe
CC(default value)	The scan type is CC
CV	The scan type is CV
The CP	The scan type is CP

Query syntax BATT:MODE?

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

#### : THTYpe

Set the threshold type of the scan test to query the threshold type of the scan test.

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

	describe
VTH(default value)	The threshold type is voltage transition
The DROP	The threshold type is drop
VMIN	The threshold type is the minimum voltage

Query syntax BATT:THTYpe?

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

#### : COMPare

Sets the comparison type of the scan test to query the comparison type of the scan test.

Command syntax SCAN: COMPare {INCURR | INVOLT | INPOW}

	describe
INCURR (default)	The comparison type is by current
INVOLT	The comparison type is by voltage
INPOW	The comparison type is by power

Query syntax BATT:COMPare?

Query returns {INCURR | INVOLT | INPOW} < NL >

### 2.3.14 [LIST[1|2]] subsystem command set

The LIST subsystem command set is used to set the LIST test test steps, loop switches, and step modes.

#### : LOOP

Set to open or close the loop to query whether the current test has the loop open.

LIST:LOOP{ON|OFF}

parameter

	describe
ON	Open loop
OFF	Loop closed

LIST:LOOP?

The query returns {ON|OFF}<NL>

#### : MODE

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

LIST:MODE{AUTO|TRIGGER}

parameter

	describe
AUTO	Step mode is continuous
The TRIGGER	Step mode is trigger

**LIST:MODE?**

Query returns {AUTO|TRIGGER} <NL>

**: the NUM**

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

The command syntax LIST:NUM <numeric>

parameter

The < numeric >	
The scope of	1 ~ 50
The preset value	5

Query syntax LIST:NUM?

The query returns <NR1><NL>

Example: set test steps to 10

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

Query: LIST:NUM?

Returns: 10

**: PARAMeter**

Sets the parameter for the specified number of steps.

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

Set the number of steps < secnum>	
The scope of	1 ~ 50
The preset value	1

Set the test mode corresponding to the number of steps.

The type	describe
0	The test mode is CC
1	The test mode is CV

2	The test mode is CP
3	The test mode is CR
4	Test mode open circuit
5	The test mode is short circuit

Sets the upper and lower limits for the number of steps to turn on or off

The COMPare	describe
1	Open loop
0	Loop closed

Set the corresponding step delay value.

DELAY	The < numeric >
The scope of	0 ~ 9999
The preset value	1
unit	s.

VALUE, MAX, MIN

Set the load size value, upper limit and lower limit of the specified edit step number. You can query that the current specified edit step number is load value, upper limit and lower limit.

The range of setting values was determined according to the test mode of specifying the number of editing steps. CV and OPEN belonged to the voltage value range, CC and SHORT belonged to the current value range, CR to the resistance value range, CP to the power value range.

See the command VOLTage range of 2.3.5VOLTage subsystem for the VOLTage value.

CURRENT value see 2.3.6CURRENT subsystem command CURRENT value range.

See 2.3.7POWER subsystem command POWER range.

The resistance value is shown in the command resistance range of 2.3.8RESistance subsystem.

Example: at low current range, set the test mode of step 5 to CC, load value to 2A, delay time to 100S, open the upper and lower limits, set the upper limit to 3A, and set the lower limit to 0.1a

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



Query list set parameters to get the step to step Settings parameters.

LIST:PARA? < start >, < end >

< start >, < end >	
The scope of	1 ~ 50
The preset value	1

Example: gets the set parameters for the 2 groups starting from step 1.

Query: the LIST: PARA?1, 2,

return

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

2,0,3,100,0,3,0.1

**: OUT**

After the query list test is completed, the list result specifies the parameter of the number of steps.

LIST:OUT? < start >, < end >

Return the corresponding < secnum >, < type >, < value >, < delay >, < Max >, < min >, < pass\_fail >

pass_fail	describe
0	The current number of steps is not open
1	PASS
2	FAIL

Example: gets the list result parameters for steps 1 through 2.

Query: the LIST: OUT?1, 2,

return

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

2,0,3,100,3,0.1, 0

### 2.3.15 [CH[1|2]] subsystem command set

The CH subsystem command set is mainly used to set the mode and open or close the channel.

#### : MODE

Describes setting channel mode

CH:MODE {CC|CV|CP|CR|CCCV|CRCV|TRAN|LIST|SCAN|SHOR|BATT |0 LED}

Query syntax CH:MODE?

Query returns {CC|CV|CP|CR|CCCV|CRCV|TRAN|LIST|SCAN|SHOR |0 BATT |1 LED}<NL>

#### : SW

Description mode ON and OFF (ON|OFF)

Command syntax CH:SW {ON|OFF}

parameter

	describe
ON	Close the current mode (channel), the mode (channel) is closed after the mode switch
OFF	Open current mode (channel)

CH:SW?

The query returns {ON|OFF}<NL>

### 2.3.16 command set of FILE subsystem

The FILE subsystem command set is used for some file-related operations.

#### : CHECK

Description checks if the number exists in the file.

Query the syntax FILE:CHECK <numeric>?

parameter

	The < numeric >
Channel 1 list test data save range	1-100

Channel 1 list test result save range	101 ~ 200
Channel 2 list test data saving range	201 ~ 300
Channel 2 list test result save range	301 ~ 400

	describe
NO	There is no file
YES	There are files

Query returns {NO|YES}<NL>

### : RECAIl

Describes the invocation file.

The command syntax FILE:RECAIl<numeric>

	The < numeric >
Channel 1 list test data save range	1-100
Channel 1 list test result save range	101 ~ 200
Channel 2 list test data saving range	201 ~ 300
Channel 2 list test result save range	301 ~ 400

### : DELEte

Describes deleting files.

The command syntax FILE:DELEte<numeric>

	The < numeric >
Channel 1 list test data save range	1-100
Channel 1 list test result save range	101 ~ 200
Channel 2 list test data saving range	201 ~ 300
Channel 2 list test result save range	301 ~ 400

### : STORe

Describes the save file.

The command syntax FILE:STORe<numeric>

	The < numeric >
Channel 1 list test data save range	1-100
Channel 1 list test result save range	101 ~ 200
Channel 2 list test data saving range	201 ~ 300
Channel 2 list test result save range	301 ~ 400

Store the file in file address n, save it as FSN

### 2.3.17 [MEAS | 2 [1]] command

Describe the current value of the query measurement.

Query syntax MEAS:CURRent?

The query returns <NR3><NL>

Describe the voltage value measured by the query.

"MEAS:VOLTage?

The query returns <NR3><NL>

Describe the power value measured by the query.

Query syntax MEAS:POWer?

The query returns <NR3><NL>

Describes the resistance value measured by the query.

Query syntax MEAS:RESistance?

The query returns <NR3><NL>

Describe the input values (current, voltage, power, resistance) of the query measurement.

Query syntax MEAS:ALL?

The query returns <NR3>, <NR3>, <NR3>, <NR3><NL>

### 2.3.18 SELF subsystem command set

: FAN

Describe the operation of the query fan.

	describe
FAIL	Fan fault
PASS	The fan is normal

SELF:FAN?

The query returns <FAIL|PASS><NL>

