High Precision Source Meter

IT2800 Series Programming Guide

Model:IT2801 / IT2805 / IT2806 / IT2801R / IT2805R / IT2806R

Version:V1.0

Notices

Manual Part Number

IT2800

Revision

First Edition: Apr. 17, 2023

Itech Electronic, Co., Ltd.

Trademarks

Pentium is U.S. registered trademarks of Intel Corporation.

Microsoft, Visual Studio, Windows and MS Windows are registered trademarks of Microsoft Corporation in the United States and/or other countries and regions.

Warranty

The material contained in this document is provided "as is" and is subject to change, without notice, in future editions. In addition, to the maximum extent permitted by applicable law, ITECH disclaims any express or implied warranties with respect to this manual and any information it contains, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. ITECH shall not be liable for errors or incidental or consequential losses arising from the furnishing, use or application of this document and any information it contains. If there are other written agreements between ITECH and the user that contain guarantee terms that conflict with the terms contained in this document, the terms in other written agreements shall prevail.

Technology Licenses

The hardware and/or software described in this document is provided under license and may be used or copied only in accordance with that license.

Restricted Rights Legend

Restricted permissions of the U.S. government. Permissions for software and technical data which are authorized to the U.S. Government only include those for custom provision to end users. ITECH follows FAR 12.211 (technical data), 12.212 (computer software). DFARS 252.227-7015 (technical data--commercial products) for national defense and DFARS 227.7202-3 (permissions for commercial computer software or computer software documents) while providing the customized business licenses of software and technical data.

Safety Notices

CAUTION

A CAUTION sign denotes a hazard. It calls attention to an operating procedure or practice that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a CAUTION sign until the indicated conditions are fully understood and met.

WARNING

A WARNING sign denotes a hazard. It calls attention to an operating procedure or practice that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING sign until the indicated conditions are fully understood and met.

 NOTE

The "NOTE" symbol indicates a prompt, which requires reference when performing an operation step, and provides the operator with tips or supplementary information.

Certification and Quality Assurance

This series of instruments fully meet the technical indicators stated in the manual.

Warranty service

ITECH provides a one-year quality warranty service for the materials and manufacturing of this product from the date of shipment (the warranty service excludes the following warranty restrictions).

If this product needs warranty service or repair, please send the product back to the maintenance unit designated by ITECH.

- If the product needs to be sent back to ITECH for warranty service, the customer must prepay the one-way freight to ITECH's maintenance department, and ITECH will be responsible for paying the return freight.
- If it is sent back to ITECH from other countries for warranty service, all shipping costs, customs duties and other taxes must be borne by the customer.

Warranty limitations

Warranty service does not apply to damage caused by:

- Damage caused by circuits installed by the customer, or defects caused by the use of the customer's own product;
- Products that have been modified or repaired by the customer;
- Damage caused by circuits installed by customers themselves or damage caused by operating this product outside the designated environment;
- The product model or body serial number has been modified, deleted, removed, or cannot be recognized;
- Damage caused by accidents, including but not limited to lightning strikes, water ingress, fires, abuse or negligence.

Safety Symbols

	Direct current		ON (power on)
	Alternating current		OFF (power off)
	Both direct and alternating current		Power-on state
	Protective conductor terminal		Power-off state
	Earth (ground) terminal		Reference terminal
	Caution, risk of electric shock		Positive terminal

	Warning, risk of danger (refer to this manual for specific Warning or Caution information)	—	Negative terminal
	Frame or chassis terminal	-	-

Safety Precautions

During all phases of the operation of this instrument, the following general safety precautions must be followed. Failure to follow these precautions or specific warnings stated elsewhere in this manual could violate safety standards for the design, manufacture and intended use of the instrument. ITECH does not assume any responsibility for the user's failure to observe these precautions.

WARNING

- Do not use damaged equipment. Before using the device, check its case. Check for cracks. Do not operate this equipment in an environment containing explosive gas, vapor or dust.
- Always use the cables provided to connect the device.
- With properly rated load wires, all load wires must be sized to withstand the maximum short-circuit output current of the power supply without overheating. If there are multiple loads, each pair of load wires must be able to safely carry the full rated short-circuit output current of the power supply.
- Before connecting the device, please observe all markings on the device.
- Before connecting the I/O terminals, please turn off the power of the device and the application system.
- Do not install substitute parts on the instrument by yourself, or perform any unauthorized modifications.
- Do not use this device with removable covers removed or loose.
- Do not connect any cables and terminal blocks before self-test.
- Please only use the power adapter provided by the manufacturer to avoid accidental injury.
- We are not responsible for direct or indirect financial losses that may occur when using this product.
- This equipment is for industrial use, not suitable for IT power system.
- It is strictly forbidden to use this equipment on life support system or any other equipment with safety requirements.

CAUTION

- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- If you use the power supply to charge the battery, you must pay attention to the positive and negative polarity of the battery when wiring, otherwise the power supply will be burned!

- Always use a dry cloth to clean the device case. Do not clean the inside of the instrument.
- Do not block the ventilation holes of the device.

Environmental Conditions

This series of instruments is only allowed to be used indoors and in low condensation areas. The table below shows the general environmental requirements for this instrument.

Environmental Conditions	Requirements
Operating temperature	0°C to 40°C
Operating humidity	20%-80% (non-condensation)
Storage temperature	-10°C to 70 °C
Altitude	Operating up to 2,000 meters
Pollution degree	Pollution degree 2
Installation category	II

Note

In order to ensure the measurement accuracy, it is recommended to start operation after warming up the machine for 1 hour.

Regulatory Markings

CE	The CE mark indicates that the product complies with all the relevant European legal directives. The specific year (if any) affixed refers to the year when the design was approved.
UKCA	The UKCA mark indicates that the product complies with all relevant UK legal regulations (if accompanied by a year, it indicates the year the design was approved).
	The instrument complies with the WEEE Directive (2002/96/EC) marking requirement. This affixed product label indicates that you must not discard the electrical/electronic product in domestic household waste.
	This symbol indicates the time period during which no hazardous or toxic substances are expected to leak or deteriorate during normal use. The expected service life of the product is 10 years. The product can be used safely during the 10-year Environment Friendly Use Period (EFUP). Upon expiration of the EFUP, the product must be immediately recycled.

Waste Electrical and Electronic Equipment Directive (WEEE)

Waste Electrical and Electronic Equipment Directive (WEEE),2002/96/EC

This product complies with the marking requirements of the WEEE Directive (2002/96/EC). This symbol indicates that this electronic device must not be disposed of with normal household waste.

Product Category

According to the equipment classification in Annex I of the WEEE Directive, this instrument belongs to the "monitoring category" product.

To return this unwanted instrument, please contact your nearest ITECH sales office.

Compliance Information

Complies with the essential requirements of the following applicable European Directives, and carries the CE marking accordingly:

- Electromagnetic Compatibility (EMC) Directive 2014/30/EU
- Low-Voltage Directive (Safety) 2014/35/EU

Conforms with the following product standards:

EMC Standard

IEC 61326-1:2012/ EN 61326-1:2013 [1][2][3]

Reference Standards

CISPR 11:2015+A1:2016 Ed 6.1
IEC 61000-3-2: 2018 RLV
IEC 61000-3-3: 2013+A1:2017
IEC 61000-4-2:2008
IEC 61000-4-3 2006+A1:2007+A2:2010/ EN 61000-4-3 A1:2008+A2:2010
IEC 61000-4-4:2012
IEC 61000-4-5:2014+A1:2017
IEC 61000-4-6:2013+cor1:2015
IEC 61000-4-11:2004+A1:2017

1. The product is intended for use in non-residential/non-domestic environments. Use of the product in residential/domestic environments may cause electromagnetic interference.
2. Connection of the instrument to a test object may produce radiations beyond the specified limit.
3. Use high-performance shielded interface cable to ensure conformity with the EMC standards listed above.

Safety Standard

IEC 61010-1:2010+A1:2016

Content

Chapter1 Remote Control

1.1 Overview

This chapter will provide following remote configuration introductions:

- SCPI Command Introduction
- Command type
- Command format
- Data format
- Remote Operation

1.2 SCPI Command Introduction

SCPI(Standard Commands for Programmable Instruments),Also known as programmable instrument standard commands, it defines the communication method between the bus controller and the instrument. is an ASCII-based instrument command language for test and measurement instruments. SCPI commands are based on a hierarchical structure (also known as a tree system). In this system, Related Commands are grouped under a common node or root, thus forming subsystems.

1.3 Command Type of SCPI

SCPI has two types of commands, common and subsystem.

- Common commands generally are not related to specific operation but to controlling overallelectronic load functions, such as reset, status, and synchronization. All commoncommands consist of a three-letter mnemonic preceded by an asterisk: *RST *IDN? *SRE 8.
- Subsystem commands perform specified instrument functions. They are organized into an upside-down tree structure with the root at the top. The figure below shows part of a subsystem command tree, from which you can get commands in different paths.

Multiple commands in a message

Multiple SCPI commands can be combined and sent as a single message with one message terminator. There are two important considerations when sending several commands within a single message:

- Use a semicolon to separate commands within a message.
- Head paths influence how the instrument interprets commands.

We consider the head path as a string which will be inserted in front of every command of a message. As for the first command of a message, the head path is a null string; for each subsequent command, the head path is a string which is defined to form the current command until and including the head of the last colon separator. A message with two combined commands: CURR:LEV 3;PROT:STAT OFF

The example indicates the effect of semicolon and explains the concept of head path. Since the head path is defined to be "CURR" after "curr: lev 3", the head of the second command, "curr", is deleted and the instrument explains the second command as: CURR:PROT:STAT OFF

If "curr" is explicitly included in the second command, it is semantically wrong. Since combining it with the head path will become "CURR:CURR:PROT:STAT OFF", resulting in wrong command.

Movement in the subsystem

In order to combine commands from different subsystems, you need to be able to reset the header path to a null string within a message. You do this by beginning the command with a colon (:), which discards any previous header path. For example, you could clear the output protection and check the status of the Operation Condition register in one message by using a root specifier as follows:

PROTection:CLEAr;:STATus:OPERation:CONDition?

The following message shows how to combine commands from different subsystems as well as within the same subsystem:

POWer:LEVel 200;PROTection 28; :CURRent:LEVel 3;PROTection:STATe ON

Note the use of the optional header LEVel to maintain the correct path within the voltage and current subsystems, and the use of the root specifier to move between subsystems.

Including Common Commands

You can combine common commands with subsystem commands in the same message. Treat the common command as a message unit by separating it with a semicolon (the message unit separator). Common commands do not affect the header path; you may insert them anywhere in the message.

Case sensitivity

Common commands and SCPI commands are not case sensitive. You can use upper or lowerfor example:

*RST = *rst

:DATA? = :data?

:SYSTem:PRESet = :system:preset

Long-form and short-form versions

A SCPI command word can be sent in its long-form or short-form version. The command subsystem tables in Section 5 provide the in the long-form version. However, the short-form version is indicated by upper case characters. Examples:

:SYSTem:PRESet long-form

:SYST:PRES short form

:SYSTem:PRES long-form and short-form combination

Note that each command word must be in long-form or short-form, and not something in between.

For example, :SYSTe:PRESe is illegal and will generate an error. The command will not be executed.

Query

Observe the following precautions with queries:

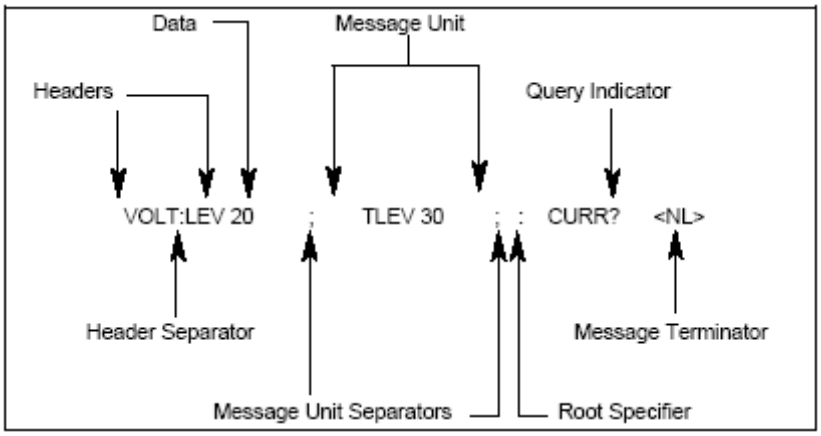
- Set up the proper number of variables for the returned data. For example, if you are reading back a measurement array, you must dimension the array according to the number of measurements that you have placed in the measurement buffer.
- Read back all the results of a query before sending another command to the electronic load. Otherwise a Query Interrupted error will occur and the unreturned data will be lost.

1.4 SCPI Message Type

There are two types of SCPI messages that the program responds to.

- program message(Program Message) Contains one or more SCPI commands that the controller sends back payloads. These messages require a response from the payload.
- response message(Response message) Contains SCPI-specific form of data sent back from the payload to the controller. The payload issues these messages only when a program message command called "query."

The figure below shows the SCPI message structure:



Message unit

The simplest SCPI command is a single message unit consisting of a synchronization header (or keyword) followed by a message terminator. The message unit contains a parameter in the synchronization header, which can be a number or a string.

ABORt<NL>

VOLTage 20<NL>

Sync head

Sync headers, also referred to as keywords, are instructions recognizable by the load. Sync heads can be either long or short. In the long form, the sync headers are spelled out in full, such as VOLTAGE, STATUS, and DELAY. If short, the sync header is only the first three or four letters, such as VOLT, STAT, and DEL.

Query indicator

If a question mark follows the synchronization header, the command is a query command (VOLTage?, VOLTage:PROTection?). If a query contains a parameter, put the question mark at the end of the previous header (VOLTage:PROTection?MAX).

Message unit separator

When two or more message units form a composite message, separate them with a semicolon (STATus:OPERation?;QUEStionable?).

Root specifier

The colon is the root specifier when it precedes the first synchronization header of a message unit.

End of message

A terminator notifies SCPI that it has reached the end of the message. The three allowed message terminators are:

newline (<NL>),the ASCII code for decimal 10 or hexadecimal 0X0A.

- end or identify (<END>)
- both of the above (<NL><END>).

In the example of this guide, there is an assumed end-of-message at the end of each message.

Message execution rules

- The order of command execution is the order listed in the programming message.
- An invalid command generates an error and of course is not executed.
- Valid commands take precedence over invalid commands when a multi-command program message is executed.
- When a multi-command program message is executed, valid commands following an invalid command are ignored.

1.5 Response Data Type

The string returned by the query statement is any of the following forms, depending on the length of the string:

- **<CRD>:**Character response data. Allow strings to be returned.
- **<AARD>:**Arbitrary ASCII response data. Allow 7-bit ASCII returns. This data type has an implied message terminator.
- **<SRD>:**String response data returns string parameters enclosed in double quotes.

Response message

A response message is a message that the instrument sends to the computer in response to a query command.

Send a response message

Issue a query command, and the response information is placed in the output sequence. When the electronic load talks, a response message is sent from the

output sequence to the computer.

Multiple response message

If more than one query command is sent in the same program message (see "composite command message"), when the electronic load starts talking, multiple response messages of all query messages are sent back to the computer. Responses are sent back in the order in which the query commands were issued, separated by semicolons. Entries in the same query are separated by commas. The following example shows the response message of a program message, including a single query command.

0; 1; 1; 0

Response message terminator(RMT)

Each response is terminated by a LF and EOI, the following example shows how multiple response messages are terminated.

0; 1; 1; 0; <RMT>

Message exchange protocol

Two Criterions Summarize the Information Exchange Protocol

- **Rule 1:**You must always tell the electronic load what is sent to the computer.

  Always perform the following two steps to send information from the instrument to other computers.

1. Send the appropriate query command in the program information
2. Let the electronic load talk

- **Rule 2:**The computer must receive a complete response message before another message is sent to the electronic load.

1.6 Command Format

The format for using the display command is as follows:
[SOURce[1|2]:]VOLTage:UNIT {VPP|VRMS|DBM}
[SOURce[1|2]:]FREQuency:CENTer
{<frequency>|MINimum|MAXimum|Default }
Following command syntax, most commands (and some parameters) are expressed in a mixture of upper and lower case letters. Capital letters denote command abbreviations. For shorter program lines, commands can be sent in abbreviated form. For better program readability, you can send commands in long form.

For example, in the syntax statement above, VOLT and VOLTAGE are both acceptable formats. Uppercase or lowercase letters can be used. Therefore, VOLTAGE, volt, and Volt are all acceptable formats. Other formats, such as VOL and VOLTAG, are invalid and generate an error.

- Braces ({ }) enclose parameter options for a given command string. Braces are not sent with the command string.
- Vertical bars (|) separate multiple parameter selections for a given command string. For example, in the above command, {VPP|VRMS|DBM} means that you can specify "VPP", "VRMS", or "DBM". Vertical bars are not sent with the command string.
- The angle brackets (< >) in the second example indicate that a value must be specified for the parameter within the brackets. For example, in the above syntax statement, the parameter in angle brackets is <frequency>.

Angle brackets are not sent with the command string. You must specify a value for the parameter (such as "FREQ:CENT 1000") unless you choose another option shown in the syntax (such as "FREQ:CENT MIN").

- Some syntax elements (such as nodes and parameters) are enclosed in square brackets ([ ]). This indicates that the element is optional and can be omitted. Angle brackets are not sent with the command string. If no value is specified for an optional parameter, the instrument will select a Default value. In the example above, "SOURce[1|2]" means that you can refer to source channel 1 by either "SOURce" or "SOURce1", or "SOUR1" or "SOUR". Also, since the entire SOURce node is optional (in square brackets), you can also refer to channel 1 by omitting the SOURce node entirely. This is because channel 1 is the Default channel for the SOURce language node. On the other hand, to refer to channel 2, "SOURce2" or "SOUR2" must be used in the program line.

Colon (:)

It is used to separate key words of a command with the key words in next level. As shown below:

APPL:SIN 455E3,1.15,0.0

In this example, APPLy command assigns a sine wave with frequency of 455 KHz, amplitude of 1.15 V and DC offset of 0.0 V.

Semicolon (;)

It is used to separate several commands in the same subsystem and can also minimize typing. For example, to send the following command string:

TRIG:SOUR EXT; COUNT 10

has the same effect as sending the following two commands:

TRIG:SOUR EXT
TRIG:COUNT 10

Question mark (?)

You can insert question marks into a command to query current values of most Parameter. For example, the following commands will trigger to set the count as 10:

TRIG:COUN 10

Then, you may query count value by sending the following command:

TRIG:COUN?

You may also query the allowable minimum or maximum count as follows:

TRIG:COUN?MIN
TRIG:COUN?MAX

Comma (,)

If a command requires several Parameter, then a comma must be used to separate adjacent Parameter.

Space

You must use blank characters, [TAB] or [Space] to separate Parameter with key words of commands.

Generic commands (*)

Execute functions like reset, self-inspection and status operation. Generic commands always start with an asterisk (*) and occupy 3 character sizes, including one or more Parameter. Key words of a command and the first parameter are separated by a space. Semicolon (;) can separate several commands as follows:

*RST; *CLS; *ESE 32; *OPC?

Command terminator

Command strings sent to the instrument must end with a <Newline> (<NL>) character. IEEE-488 EOI (End or Identify) information can be used as <NL> character to replace termination command string of <NL> character. It is acceptable to place one <NL> after a <Enter>. Termination of command string always resets current SCPI command path to root level.

NOTE

As for every SCPI message with one query sent to the instrument, the instrument will use a <NL> or newline sign (EOI) to terminate response of return. For example, if "DISP:TEXT?" is sent, <NL> will be placed after the returned data string to terminate response. If an SCPI message includes several queries separated by semicolon (such as "DISP?;DISP:TEXT?"), <NL> will terminate response returned after response to the last query. In all cases, the program must read <NL> in response before another command is sent to the instrument, otherwise errors will be caused.

1.7 Data Type

SCPI language defines several data types used for program message and response messages.

- Numerical parameter

Commands requiring numerical Parameter support the notations of all common decimal notations, including optional signs, decimal points, scientific notation, etc. Special values of numerical Parameter are also acceptable, such as MIN, MAX and DEF. In addition, suffixes for engineering units can also be sent together with numerical Parameter (including M, k, m or u). If the command accepts only some specific values, the instrument will automatically round the input Parameter to acceptable values. The following commands require numerical Parameter of frequency value:

[SOURce[1|2]:]FREQuency:CENTer {<Frequency>|MINimum|MAXimum}

- <NR1>:Data is at the last implicit decimal point, e.g. 273
- <NR2>:have an explicit decimal point, e.g. .0273
- <NR3>:with explicit decimal point and exponent, e.g. 2.73E+2 2.73E+2
- <Nrf>:The extended form contains<NR1>, <NR2> and <NR3>, for example: 273 273. 2.73E2273 273. 2.73E2
- <Nrf+>:Extended decimal form includes <NRf> and MIN MAX DEF, for example: 273 273. 2.73E2 MAX. MIN and MAX are the minimum and maximum finite values, within the scope of this parameter definition, DEF is the Default value of this parameter.

- Discrete parameter

Discrete Parameter are used for settings with limited number of programming

values (such as IMMediate, EXTernal or BUS). They can use short and long format like key words of commands. They may be expressed in both upper and lower case. The query response always returns uppercase Parameter in short format. The following commands require discrete Parameter in voltage unit:

[SOURce[1|2]:]VOLTage:UNIT {VPP|VRMS|DBM}

- Boolean parameter

Boolean Parameter refer to true or false binary conditions. In case of false conditions, the instrument will accept "OFF" or "0". In case of true conditions, the instrument will accept "ON" or "1". In query of Boolean settings, the instrument will always return "0" or "1". Boolean Parameter are required by the following commands:

DISPlay {OFF|0|ON|1}

- ASCII string Parameter

String Parameter may actually include all ASCII character sets. Character strings must start and end with paired quotation marks; and single quotation marks or double quotation marks are both allowed. Quotation mark separators may also act as one part of a string, they can be typed twice without any character added between them. String parameter is used in the following command:

DISPlay:TEXT <quoted string>

For example, the following commands display message of "WAITING..." (without quotation marks) on the front panel of the instrument.

DISP:TEXT "WAITING..."

Single quotation marks may also be used to display the same message.

DISP:TEXT 'WAITING...'

1.8 Remote Operation

For the detailed introduction of the remote interface connection, please refer to the content in the user manual.

Note: If the programming command used by the user involves modifying the instrument setting, such as modifying the set value of the output voltage, after completing the communication connection and setting between the instrument and the host computer, the SYST:REM command must be executed first.

Chapter2 SCPI Status Register

You can determine the current state of the power supply by reading the value of the operating status register. The power supply records different instrument states through four state register groups, which are divided into state byte group registers, standard event registers, query state registers and operation state registers. The status byte register records the messages of other status registers. The following table gives the definition of each status register.

Mnemonic	Bit	Value Bit Weight	Meaning
OV	0	1	Overvoltage
OC	1	2	Overcurrent
OT	2	4	Over temperature
Errsense	3	8	Sense fault
hardware	4	16	Hardware malfunction
Interlock	5	32	Interlock circuit is open
Operating Status Bit			
WTG	0	1	Wait for trigger
active	1	2	Has been triggered and is executing
-	2	4	Not used
-	3	8	Not used
ONOFF	4	16	Instrument on/off is off state
CC	5	32	Current source mode
CV	6	64	Voltage source mode
CAL	7	128	Calibrating
Normal	8	256	Normal mode
Pulse	9	512	Pulse mode
Sweep	10	1024	Scan mode
Record	11	2048	Data logging mode
Ohms	12	4096	Resistance measurement mode
Math	13	8192	Data Calculation Open
Limit	14	16384	Comprehensive limit test mode

Battery	15	32768	Battery simulation mode
4-wire	16	65536	4wire mode
Rmt	17	131072	Remote control mode
HC	18	262144	High capacitance mode

Chapter3 Sample

Battery Simulation

IT2800 Battery simulation supports SCPI commands to modify parameters and control battery simulation functions.

Take this example as an example to operate the battery simulation function:

User define mode:

Order	illustrate
*RST	Reset
BATTery:EMULator:MODE User	Set the battery simulation mode to User define mode
BATTery:EMULator:INITial:SOC 0.05	Set SOC Initial Value to 5%
BATTery:EMULator:SOC:UPPer:LIMit 1.01	Set SOC upper limit to 101%
BATTery:EMULator:SOC:LOWer:LIMit -0.01	Set the SOC lower limit to -1%
BATTery:EMULator:END:MODE HOLD	Set end type Hold
BATTery:EMULator:VOC:FULL 10	Fully charged state voltage value is 10V
BATTery:EMULator:VOC:EMPTy 0	The voltage value of the empty state is 0V
BATTery:EMULator:CAPacity:LIMit 10	The maximum battery capacity is 10AH
BATTery:EMULator:RES 0.005	Set the internal resistance of the battery to 5mΩ
BATTery:EMULator:PARallel 1	Set the number of parallel connections to 1
BATTery:EMULator:SERies 1	Set the number of series to 1
BATTery:EMULator:CURRent:LIMit:POSitive 1	Set the limit current upper limit value 1A
BATTery:EMULator:CURRent:LIMit:NEGative -1	Set the lower limit of the limited current -1A
OUTPUT 1	Output open
BATTery:EMULator:RUN	Start the battery simulation function

Curve mode:

Order	illustrate
*RST	Reset
BATTery:EMULator:MODE Curve	Set the battery simulation mode to Curve mode
BATTery:EMULator:INITial:SOC 0.02	Set SOC Initial Value to 2%
BATTery:EMULator:SOC:UPPer:LIMit 1.01	Set SOC upper limit to 101%
BATTery:EMULator:SOC:LOWer:LIMit -0.01	Set the SOC lower limit to -1%
BATTery:EMULator:END:MODE HOLD	Set end type Hold
BATTery:EMULator:CAPacity:LIMit 10	The maximum battery capacity is 10AH
BATTery:EMULator:PARallel 1	Set the number of parallel connections to 1
BATTery:EMULator:SERies 1	Set the number of series to 1

BATTery:EMULator:CURRent:LIMit:POSitive 1	Set the limit current upper limit value 1A
BATTery:EMULator:CURRent:LIMit:NEGative -1	Set the lower limit of the limited current -1A
BATTery:EMULator:CURVe:STEP 1,0.01,0.1,0.6	Set the first step Cell SOC, Cell Voltage, Cell Res to 1%, 0.1,0.6
BATTery:EMULator:CURVe:STEP 2,0.02,0.2,1	Set the second step Cell SOC, Cell Voltage, Cell Res to 2%, 0.2,1
BATTery:EMULator:CURVe:STEP 3,0.03,0.3,1	Set the third step Cell SOC, Cell Voltage, Cell Res to 3%, 0.3,1
BATTery:EMULator:CURVe:STEP 4,0.04,0.4,1	Set the fourth step Cell SOC, Cell Voltage, Cell Res to 4%, 0.4,1
BATT:EMUL:FILE:SAVE:LOCAl "Bat-Cur-01.csv"	Save the file as "Bat-Cur-01.csv" to the local
OUTPUT 1	Output open
BATTery:EMULator:RUN	Start the battery simulation funcition

Measure Limit

Configure the classification mode:

Order	**illustrate**
CALC:CLIM:MODE GRAD	Setting Up Binary Limit Tests
CALC:FEED VOLT	Set limit test data as voltage
CALC:CLIM:COUN 2	Set the limit test entry to 2
CALC:CLIM:COMP 10	Set the number of limit tests to 10
CALC:CLIM:UPD END	Set limit end mode
CALC:CLIM:REP:COUN 2	Set Limit Test Repeats
CALC:CLIM:ALLP 1	Set all tests in the classification mode to pass the output status bit to bit0
CALC:CLIM:STAR:TRIG:SOUR BUS	Set the limit test trigger source to BUS trigger
CALC:CLIM:CLE:AUTO 1	Set limit test to turn on auto clear
CALC:CLIM:CLE:AUTO:DEL 0.1	Set limit test auto clear delay to 100ms
CALC:LIMit1:MODE COMP	Set the comparison type of entry 1 to limited value comparison
CALC:LIMit1:FAIL:ON IN	Set the limit comparison mode to IN
CALC:LIMit1:FAIL:DIG 2	Set the status bit of entry 1 test failure to bit1
CALC:LIMit2:HIGH 2	Set entry 2 test high value to 2V
CALC:LIMit2:LOW -2	Set entry 2 to test low to -2V
CALC:LIMit1:FAIL:DIG 2	Set the entry 2 test failure status bit to bit2
CALC:CLIM:RUN	Start limit test
*TRG	Execute Limit Test
CALC:DATA?	Query test results
CALC:DATA:LAT?	Query the latest test results

Configure the sort mode:

Order	**illustrate**
CALC:CLIM:MODE SORT	Set Sorting Limit Test
CALC:FEED VOLT	Set limit test data as voltage
CALC:CLIM:COUN 2	Set the limit test entry to 2
CALC:CLIM:COMP 10	Set the number of limit tests to 10
CALC:CLIM:ALLP 1	Set the sorting mode all test failure output status bits to bit0
CALC:CLIM:STAR:TRIG:SOUR BUS	Set the limit test trigger source to BUS trigger

CALC:CLIM:CLE:AUTO 1	Set limit test to turn on auto clear
CALC:CLIM:CLE:AUTO:DEL 0.1	Set limit test auto clear delay to 100ms
CALC:CLIM:STAR 0	Set the starting voltage of sorting to 0V
CALC:LIMit1:VALU 1	Set the test value of entry 1 to 1V
CALC:LIMit1:PASS:DIG 2	Set the status bit of entry 1 test success to bit1
CALC:LIMit2:VALU 2	Set the test value of entry 2 to 2V
CALC:LIMit1:PASS:DIG 2	Set the entry 2 test failure status bit to bit2
CALC:CLIM:RUN	Start limit test
*TRG	Execute Limit Test
CALC:DATA?	Query test results
CALC:DATA:LAT?	Query the latest test results

Sweep Mode

The following is an example of the operation of the sweep function command

Order	**illustrate**
SOURce:SWEep:SPACingLINear	Set the sweep operation mode, LINear|LOGarithmic|LIST
SOURce:SWEep:STAir SINGle	Set the sweep running direction, SINGle|DOUBle
SOURce:SWEep:RANGing BEST	Set the sweep gear,BEST|FIXed|AUTO
SOURce:SWEep:POINts 20	Set the sweep points,2-99999
SOURce:SWEep:STEP 0.1	Set the sweep step size
SOURce:SWEep:STARt 1	Set the sweep starting point
SOURce:SWEep:STOP 10	Set the sweep end point
SOURce:SWEep:FINish LAST	Set the sweep end mode, LAST|NORMal|OFF
SOURce:SWEep:STATe?	Query sweep status
SOURce:SWEep:RSTate?	Query the running status of sweep
SOURce:SWEep:TRIG:STARt:SOURceMANUal	Set sweep start trigger source
SOURce:SWEep:TRIG:STARt:DELay 0.1	Set sweep start trigger delay
SOURce:SWEep:TRIG:STEP:SOURceTIMer	Set sweep step trigger source
SOURce:SWEep:TRIG:STEP:TIMer 0.1	Set sweep step cycle time
SOURce:SWEep:TRIG:STEP:DELay 0.1	Set sweep step delay time
SOURce:SWEep:BEFore:STEP:TOUTputTRIG1	Set the pre-step trigger method
SOURce:SWEep:AFTer:STEP:TOUTputTRIG1	Set the trigger mode after the step
SOURce:SWEep:STARt:TOUTputTRIG1	Set the start trigger mode
SOURce:SWEep:END:TOUTputTRIG1	Set the end trigger method
OUTPUT 1	Set the output to ON
SOURce:SWEep:INITiate	Start the sweep function
SOURce:SWEep:ABORt	Stop the sweep function

The following is an example of the operation of the list function command.

Order	**illustrate**
SOURce:LIST:FILE:OPEN:LOCal "List-01.csv"	Open the local list file List-01.csv
SOURce:LIST:FILE:OPEN:UDISk "List-01.csv"	Open the list file List-01.csv in the U disk
SOURce:LIST:NAME?	Query the file name of the currently open file
SOURce:LIST:NAME:ALL:LOCal?	Query the file names of all local List files
SOURce:LIST:NAME:ALL:UDISk?	Query the file names of all List files in the U disk
SOURce:LIST:FILE:SAVE:LOCal "List-02.csv"	Save the file List-02.csv to the local
SOURce:LIST:FILE:SAVE:UDISk "List-02.csv"	Save the file List-02.csv to the U disk

SOURce:LIST:FILE:DELete:LOCal "List-02.csv"	Delete the local file List-02.csv
SOURce:LIST:FILE:DELete:UDISk "List-02.csv"	Delete the file List-02.csv in the U disk
SOURce:LIST:FILE:DELete:ALL:LOCal	Delete all local List files
SOURce:LIST:FILE:DELete:ALL:UDISk	Delete all List files in the U disk
SOURce:LIST:CURRent 1,2,3,4,5,6	Set List current list
SOURce:LIST:VOLTage 1,2,3,4,5,6	Set List voltage list
SOURce:LIST:CURRent:APPend1.1,2.1,3.1	Append List list data
SOURce:LIST:VOLTage:APPend 1.1,2.1,3.1	Append List list data
SOURce:LIST:CURRent:CLEar	Clear the List list
SOURce:LIST:VOLTage:CLEar	Clear the List list
SOURce:LIST:VOLTage:POINts?	Query List list points (effective points)
SOURce:LIST:CURRent:POINts?	Query List list points (effective points)
SOURce:LIST:STEP?2	Query the step value of the List list
SOURce:LIST:CONFigure	Make the edited List data take effect

Trigger

Order	**illustrate**
TRIGger:MAPPED:TRIG1:TO:FIBER25 ON	Turn on TRIG1 and turn it into Fiber25 synchronous trigger signal
TRIGger:MAPPED:TRIG1:TO:FIBER25 OFF	Turn off TRIG1 and turn it into Fiber25 synchronous trigger signal
TRIGger:MAPPED:TRIG1:TO:FIBER25?	Query whether to enable the function of converting to Fiber25
TRIGger:MAPPED:TRIG2:TO:FIBER26 ON	Turn on TRIG2 and turn it into Fiber26 synchronous trigger signal
TRIGger:MAPPED:TRIG2:TO:FIBER26 OFF	Turn off TRIG2 and turn it into Fiber26 synchronous trigger signal
TRIGger:MAPPED:TRIG2:TO:FIBER26?	Query whether to enable the function of converting to Fiber26
TRIGger:MAPPED:TRIG3:TO:FIBER27 ON	Turn on TRIG3 and turn it into Fiber27 synchronous trigger signal
TRIGger:MAPPED:TRIG3:TO:FIBER27 OFF	Turn off TRIG3 and switch to Fiber27 synchronous trigger signal
TRIGger:MAPPED:TRIG3:TO:FIBER27?	Query whether to enable the function of converting to Fiber27
TRIGger:MAPPED:TRIG4:TO:FIBER28 ON	Turn on TRIG4 and turn it into Fiber28 synchronous trigger signal
TRIGger:MAPPED:TRIG4:TO:FIBER28 OFF	Turn off TRIG4 and turn it into Fiber28 synchronous trigger signal
TRIGger:MAPPED:TRIG4:TO:FIBER28?	Query whether to enable the function of converting to Fiber28
TRIGger:MAPPED:MANual:TO:FIBER29 ON	Turn on manual trigger and switch to Fiber29 synchronous trigger signal
TRIGger:MAPPED:MANual:TO:FIBER29 OFF	Turn off manual trigger and switch to Fiber29 synchronous trigger signal
TRIGger:MAPPED:MANual:TO:FIBER29?	Query whether to enable the function of converting to Fiber29
TRIGger:MAPPED:GPIB:TO:FIBER30 ON	Turn on GPIB and convert it to Fiber30 synchronous trigger signal
TRIGger:MAPPED:GPIB:TO:FIBER30 OFF	Turn off GPIB and switch to Fiber30 synchronous trigger signal
TRIGger:MAPPED:GPIB:TO:FIBER30?	Query whether to enable the function of converting to Fiber30
TRIGger:MAPPED:BUS:TO:FIBER31 ON	Turn on the BUS and turn it into a Fiber31 synchronous trigger signal

TRIGger:MAPPED:BUS:TO:FIBER31 OFF	Turn off the BUS and turn it into a Fiber31 synchronous trigger signal
TRIGger:MAPPED:BUS:TO:FIBER31?	Query whether to enable the function of converting to Fiber31
TRIGger:MAPPED:SCOPe:TO:FIBER32 ON	Turn on the oscilloscope and convert it to Fiber32 synchronous trigger signal
TRIGger:MAPPED:SCOPe:TO:FIBER32 OFF	Turn off the oscilloscope and switch to Fiber32 synchronous trigger signal
TRIGger:MAPPED:SCOPe:TO:FIBER32?	Query whether to enable the function of converting to Fiber32

Pulse Mode

Command to set the voltage pulse:

Order	**illustrate**
*RST	Reset 2800
FUNC:MODE VOLT	Set voltage source mode
VOLT:RANG 2	Set the voltage gear to 2V
PULS:BASE 0	Set pulse base value
PULS:PEAK 2	Set the peak value of the pulse to 2V
PULS:DEL 10ms	Set the pulse delay to 10ms
PULS:WIDT 10ms	Set the pulse width to 10ms
OUTP 1	open output

The command sets the current pulse:

Order	**illustrate**
*RST	Reset 2800
FUNC:MODE CURR	Set current source mode
CURR:RANG 0.01	Set the current gear to 10mA
PULS:BASE 0	Set pulse base value
PULS:PEAK 0.01	Set the peak value of the pulse to 10mA
PULS:DEL 10ms	Set the pulse delay to 10ms
PULS:WIDT 10ms	Set the pulse width to 10ms
OUTP 1	open output

Scope View

The following is an example of the operation of the oscilloscope function command.

Order	**illustrate**
*RST	Reset
SENSe1:SCOPe:VOLTage:SCALe 1	Set the Voltage Div to 1V/
SENSe1:SCOPe:CURRent:SCALe 0.01	Set Current Div to 10mA/
SENSe1:SCOPe:TIMebase:SCALe 0.01	Set Time Div to 10ms/
SENSe1:SCOPe:TIMebase:DELay 0	Set Trigger Delay to 0us
SENSe1:SCOPe:TRIGger:SOURce VOLT	Set the trigger source to voltage
SENSe1:SCOPe:TRIGger:LEVel 0.5	Set the trigger value to 0.5V

SENSe1:SCOPe:TRIGger:SLOPe RISE	Set the trigger edge as rising edge
SENSe1:SCOPe:TRIGger:MODE NORMal	Set the trigger mode to NORMAL
SENSe1:SCOPe:RECord:LENGth 60	Set the maximum data length to 60kpts
SENSe1:SCOPe:LINE:SELection VOLTage,ON	Open the voltage curve
SENSe1:SCOPe:LINE:SELection CURRent,ON	Open current curve
CURR 0.001	Set current parameter 0.001
VOLT 1	Set the voltage parameter 1V
OUTPUT 1	Set the output to ON
SENSe1:SCOPe:RUN	Run the oscilloscope function

Example of reading oscilloscope data:

Order	**illustrate**
SENSe1:FORMat ASCii	set data format
SENSe1:SCOPe:RAW:POINts:ACTual?	Obtain the number of data sets of the oscilloscope, including voltage and current
SENSe1:SCOPe:RAW:DATA:VOLTage? 100	Get the data of the oscillometric voltage
SENSe1:SCOPe:RAW:DATA:CURRent? 100	Acquire oscillometric current data
SENSe1:SCOPe:RAW:DATA:ALL?	Obtain oscillometric voltage and current data
SENSe1:SCOPe:WAVeform:DATA?(optional directive)	Obtain the data currently displayed on the oscilloscope (the pixel corresponding to the display point)
SENSe1:SCOPe:DATA:TAG?(optional directive)	Query the sampling data ID of the oscilloscope

Multiple Channel

Multi-channel On/Off synchronization function:

Order	**illustrate**
MULTichannel:ROLE SLAVe	Set the current role as a slave (other machines)
MULTichannel:ROLE MASTer	Set the current role as host (host machine)
MULTichannel:ROLE?	Query the current role (all machines, used to detect whether the configuration role is valid)
MULTichannel:NODE:NUMBer?	Obtain the total number of nodes after fiber paralleling (host machine, used to check whether the number of paralleling machines is correct)
MULTichannel:GROup:NUMBer A	Set the current group number to A (all machines)
MULTichannel:GROup:NUMBer?	Query the current group number (all machines)
MULTichannel:OUTPut:ON:SYNChronization 1	Turn on output synchronization On (all machines)
MULTichannel:OUTPut:ON:SYNChronization?	Query whether synchronization On

	is turned on (all machines)
MULTichannel:OUTPut:OFF:SYNChronization1	Turn on output synchronously Off (all machines)
MULTichannel:OUTPut:OFF:SYNChronization?	Query whether synchronous Off is enabled (all machines)

Recorder

The following is an example of the operation of the data logging function command.

Order	**illustrate**
*RST	Reset
SENSe1:RECORder:ACQuire:INTErval:APERture 1	Set the Measure Interval to 1s
SENSe1:RECORder:APERture 0.8	Set Measure Speed to 0.8s
SENSe1:RECORder:MODE Cycle	Set Recorder Mode to Loop mode
CURR 0.001	Set current parameter 0.001
VOLT 1	Set the voltage parameter 1V
OUTPUT 1	Set the output to ON
SENSe1:RECORder:RUN	Start the recorder function

The data is saved to the trace buffer. For specific read instructions, refer to the trace buffer module.

Examples of operations are as follows:

Order	**illustrate**
SENS:TRAC:FEED SENS	Set Trace cache measurement data
SENS:FORM:ELEM:SENS VOLT	Set the Trace data element to voltage
SENS:FORM ASCII	Set the Trace return value type to string
SENS:TRAC:FREE? (optional command)	Query the number of free caches and the total number of caches
SENS:TRAC:ACT?	Query the number of stored data
SENS:TRAC:DATA?	Get all cached data

Trace

Trace cache function:

Order	**illustrate**
*RST	Reset 2800
SENS:TRAC:CLE	Clear Trace data and enter NEV mode
SENS:TRAC:POIN 2	Set the Trace buffer size to 2
SENS:TRAC:FEED SENS	Set Trace cache measurement data
SENS:TRAC:FEED:CONT NEXT	Set the Trace control mode to NEXT
SENS:FORM:ELEM:SENS VOLT	Set the Trace data element to voltage

SENS:FORM ASCII	Set the Trace return value type to string
FUNC:TRIG:CONT 1	Set up automatic triggers
OUTP 1	open output
SENS:TRAC:FREE?	Query the number of free caches and the total number of caches
SENS:TRAC:ACT?	Query the number of stored data
SENS:TRAC:DATA?	Get all cached data

Measure Math

Instructions for mathematical expressions use:

Order	**illustrate**
*RST	Reset 2800
SENS:TRAC:CLE	Clear Trace data and enter NEV mode
SENS:TRAC:POIN 2	Set the Trace buffer size to 2
SENS:TRAC:FEED MATH	Set Trace cache measurement data
SENS:TRAC:FEED:CONT NEXT	Set the Trace control mode to NEXT
SENS:FORM:ELEM:CALC CALC	Set the Trace data element to the result of a mathematical calculation
SENS:FORM ASCII	Set the Trace return value type to string
FUNC:TRIG:CONT 1	Set up automatic triggers
OUTP 1	open output
SENS:TRAC:FREE?	Query the number of free caches and the total number of caches
SENS:TRAC:ACT?	Query the number of stored data
SENS:TRAC:DATA?|CALC:MATH:DATA?	Get all math calculation data
CALC:MATH:DATA:LAT?	Get the latest data calculation data

Chapter4 STATus Subsystem

STATus:QUEStionable[:EVENt]?

This command is used to read the value of query event register. After the command is executed, the query event register value is cleared.

Query Syntax

STATus:QUEStionable[:EVENt]?

Parameter

None

Return Parameters

<NR2>

Related Commands

STATus:QUEStionable:ENABle

STATus:QUEStionable:ENABle <state>

This command edits the value of query event enable register. The programming parameters determine which bits in the query event register will cause the QUES bit in the status byte register to be set.

Command Syntax

STATus:QUEStionable:ENABle <state>

Parameter

0~65535 (The parameter range is related to the definition of query event enable register.)

Power-on Value

Refer to the *PSC command.

Example

STATus:QUEStionable:ENABle 128

Query Syntax

STATus:QUEStionable:ENABle?

Return Parameters

<NR2>

STATus:QUEStionable:PTRansition <NR1>

Sets the value of the PTR (positive transition) register. These registers act as polarity filters between the problem condition and problem event registers. When a bit in the PTR register is set to 1, a 0 to 1 transition of the corresponding bit in the Problem Condition register will cause that bit to be set in the Problem Event register. STATus:PRESet sets all bits in the PTR register and clears all bits in the NTR register.

Subsystem

STATus

Command Syntax

STATus:QUEStionable:PTRansition <NR1>

Parameter

<NR1>

The decimal value is equal to the binary-weighted sum of all bits in the register. Setting range: 0~65535.

Defaults

0

Example

Enable bits 3 and 4 in the PTR register:STATus:QUEStionable:PTRansition 24

Query Command

STATus:QUEStionable:PTRansition?

Return Parameters

<NR1>

STATus:QUEStionable:NTRansition <NR1>

Sets the value of the NTR (Negative Transition) register. These registers act as polarity filters between the problem condition and problem event registers. When a bit in the NTR register is set to 1, a 1 to 0 transition of the corresponding bit in the Problem Condition register will cause that bit to be set in the Problem Event register. STATus:PRESet sets all bits in the PTR register and clears all bits in the NTR register.

- If the same bit in both NTR and PTR registers is set to 1, then any transition of that bit in the Problem Condition register will set the corresponding bit in the Problem Event register.

- If the same bit in both NTR and PTR registers is set to 0, then any transition of that bit in the Problem Condition register cannot set the corresponding bit in the Problem Event register.

- The return value is the binary-weighted sum of all enabled bits in the register.

Subsystem

STATus

Command Syntax

STATus:QUEStionable:NTRansition <NR1>

Parameter

<NR1>

The decimal value is equal to the binary-weighted sum of all bits in the register. Setting range: 0~65535.

Defaults

0

Example

Enable bits 3 and 4 in the NTR register:STATus:QUEStionable:NTRansition 24

Query Command

STATus:QUEStionable:NTRansition?

Return Parameters

<NR1>

STATus:QUEStionable:CONDition?

This command is used to read the value of query condition register. When the value of a bit in the query condition register changes, the corresponding bit in the query event register is set to 1.

Query Syntax

STATus:QUEStionable:CONDition?

Parameter

None

Return Parameters

<NR2>

STATus:OPERation[:EVENt]?

This command is used to read the value of operation event register. After this command is executed, the value of the operation event register is cleared.

Query Syntax

STATus:OPERation[:EVENt]?

Parameter

None

Return Parameters

<NR1>

Related Commands

STATus:OPERation:ENABle

STATus:OPERation:CONDition?

This command is used to query the condition register of the operation status group. It is a read-only register that holds the active (non-latching) operating state of the instrument. Reading the Operational Status Condition Register does not clear it.

- The return value is the binary-weighted sum of all enabled bits in the register. For example, if bit 3 (value 8) and bit 5 (value 32) are set, the query will return +40.
- The bits of the condition register reflect the current condition. If the condition disappears, the corresponding bit will be cleared.
- *RST will clear this register, not its bits whose condition still exists after *RST.

Query Syntax

STATus:OPERation:CONDition?

Parameter

None

Return Parameters

<NR1>

STATus:OPERation:ENABle

This command edits the value of the operation event enable register. The programming parameters determine which bits in the operation event register will cause the OPER bit in the status byte register to be set.

Command Syntax

STATus:OPERation:ENABle <NR1>

Parameter

0~255

Example

STATus:OPERation:ENABle 128

Query Syntax

STATus:OPERation:ENABle?

Return Parameters

<NR1>

STATus:OPERation:PTRansition <NR1>

Sets the value of the PTR (positive transition) register. These registers act as polarity filters between the operating condition and operating event registers. When a bit in the PTR register is set to 1, a 0 to 1 transition of the corresponding bit in the Operation Condition register will cause that bit to be set in the Operation Event register. **STATus:PRESet** sets all bits in the PTR register and clears all bits in the NTR register.

Subsystem

STATus

Command Syntax

STATus:OPERation:PTRansition <NR1>

Parameter

<NR1>

The decimal value is equal to the binary-weighted sum of all bits in the register. Setting range: 0~65535.

Defaults

0

Example

Enable bits 3 and 4 in the PTR register:STATus:OPERation:PTRansition 24

Query Command

STATus:OPERation:PTRansition?

Return Parameters

<NR1>

STATus:OPERation:NTRansition <NR1>

Sets the value of the NTR (Negative Transition) register. These registers act as polarity filters between the operating condition and operating event registers. When a bit in the NTR register is set to 1, a 1-to-0 transition of the corresponding bit in the Operation Condition register will cause that bit to be set in the Operation

Event register. **STATus:PRESet** sets all bits in the PTR register and clears all bits in the NTR register.

- If the same bit in both NTR and PTR registers is set to 1, then any transition of that bit in the Operation Condition Register will set the corresponding bit in the Operation Event Register.
- The return value is the sum of the binary weighted values of all enabled bits in the register.

Subsystem

STATus

Command Syntax

STATus:OPERation:NTRansition <NR1>

Parameter

<NR1>

The decimal value is equal to the binary-weighted sum of all bits in the register. Setting range: 0~65535.

Defaults

0

Example

Enable bits 3 and 4 in the NTR register:STATus:OPERation:NTRansition 24

Query Command

STATus:OPERation:NTRansition?

Return Parameters

<NR1>

STATus:PRESet

This command is used to preset all enable, PTR and NTR registers.

operation register	**problem register**	**Default settings**
STAT:OPER:ENAB	STAT:QUES:ENAB	All defined bits disabled
STAT:OPER:NTR	STAT:QUES:NTR	All defined bits disabled

STAT:OPER:PTR	STAT:QUES:PTR	All defined bits disabled

Command Syntax

STATus:PRESet

Parameter

None

Chapter5 System Subsystem

SYSTem:PRESet

Bring the instrument into a state suitable for panel operation (restore factory settings).

Command Syntax

SYSTem:PRESet

Parameter

None

SYSTem:ERRor?

This command is used to read the error code and error message of the power supply.

The query returns the next error number, followed by the remote programming error message string;

The sequence is a first-in-first-out buffer FIFO, and when an error occurs, it is stored in the buffer;

When an error is read, it is removed from the sequence.

After reading all errors, the query returns "0, No Error";

If the accumulation of errors is more than the sequence can bear, the last error in the sequence is "-350, Too Many Errors";

Command Syntax

SYST:ERR?

Parameter

None

Return Parameters

<NR1>, <SRD>

SYSTem:VERSion?

This command is used to query the version number of the currently used SCPI command. The return value will be a string "YYYY.V", where YYYY represents the year of the version, and V represents the version number of that year.

Command Syntax

SYST:VERS?

Parameter

None

Return Parameters

<NRf>

SYSTem:REMote

This command is used to switch to remote control mode (PC control). When the user needs to send a control command, it must ensure that the command is executed to switch the instrument to the remote control mode, otherwise the command will fail to be sent

Command Syntax

SYSTem:REMote

Parameter

None

SYSTem:LOCal

This command is used to switch to local control mode.

Command Syntax

SYST:LOCal

Parameter

None

SYSTem:POSetup <value>

This command is used to set some parameter settings or working status when the instrument is powered on.

- RST:When power is turned on again, some settings and power output states are initialized.
- LAST:When the power is turned on again, the instrument maintains the settings (including gear position and set value) and power output state before the last shutdown.
- LAST_OFF:When the power is turned on again, the instrument maintains the settings before the last shutdown, but the power output is turned off.

Command Syntax

SYSTem:POSetup <value>

Parameter

RST|LAST|LAST_OFF

Return Parameters

None

SYSTem:POSetup?

Query the system power-on parameter settings.

Command Syntax

SYSTem:POSetup?

Parameter

None

Return Parameters

RST|LAST|LAST_OFF

SYSTem:CLEar

This command is used to clear error information.

Command Syntax

SYSTem:CLEar

Parameter

None

Return Parameters

None

SYSTem:BEEPer:IMMediate

This command is used to set the buzzer to sound once.

Command Syntax

SYSTem:BEEPer:IMMediate

Parameter

None

SYSTem:BEEPer[:STATe] <Bool>

This command is used to turn on or off the buzzer.

Command Syntax

SYSTem:BEEPer[:STATe] <bool>

SYST:BEEP 1

Parameter

0|ON|1|OFF

Return Parameters

None

SYSTem:BEEPer[:STATe]?

Query the on and off status of the buzzer. Return 0 buzzer off, 1 buzzer on.

Command Syntax

SYSTem:BEEPer[:STATe]?

Parameter

None

Return Parameters

0|1

SYSTem:PROTection:BEEPer[:STATe] <Bool>

Set the protection buzzer to enable or disable.

Command Syntax

SYSTem:PROTection:BEEPer[:STATe] <bool>

SYST:PROT:BEEP 1

Parameter

0|ON|1|OFF

Return Parameters

None

SYSTem:PROTection:BEEPer[:STATe]?

Query the opening and closing status of the protection buzzer. Return 0 buzzer

off, 1 buzzer on.

Command Syntax

SYSTem:PROTection:BEEPer[:STATe]?

Parameter

None

Return Parameters

0|1

SYSTem:DATE <yyyy>,<mm>,<dd>

This command is used to set the date of the system clock. Specifies the number of years (2000 to 2099), months (1 to 12), and days (1 to 31).

Subsystem

System

Command Syntax

SYSTem:DATE <yyyy>,<mm>,<dd>

Parameter

NR1

Defaults

None

Return Parameters

None

Example

SYST:DATE 2017,06,30

Related Commands

SYSTem:DATE?

SYSTem:TIME <hh>,<mm>,<ss>

This command is used to set the time of the system clock. Specify hours (0 to 23), minutes (0 to 59), seconds (0 to 59). The real-time clock does not adjust itself for time zone changes or daylight saving time.

Subsystem

System

Command Syntax

SYSTem:TIME <hh>,<mm>,<ss>

Parameter

SPD

Defaults

12,30,01

Return Parameters

None

Example

Set clock to **8:30 PM SYST:TIME 20,30,0**

Related Commands

SYSTem:TIME?

SYSTem:RUN:TIME?

Read device runtime.

Command Syntax

SYSTem:RUN:TIME?

Parameter

None

Return Parameters

<SRD>

SYSTem:COMMunicate:USB:TYPE <CPD>

Set the USB interface type. The USB of IT2800 series SMU can be set as Device or Host type for communication or as a storage device. When it is set to Host, it is used as a storage device; when it is set to Device, it is used as a communication interface.

Command Syntax

SYSTem:COMMunicate:USB:TYPE <CPD>

Parameter

DEVice|HOST

Default Parameter

HOST

Return Parameter

DEVice|HOST

Example

SYST:COMM:USB:TYPE HOST

Query Command

SYSTem:COMMunicate:USB:TYPE?

SYSTem:COMMunicate:SELect <CPD>

This command is used to select the communication mode in USB communication mode. The instrument is equipped with USB and LAN interfaces as standard, and supports optional GPIB communication interface. The instrument will automatically detect the communication mode. If using USB communication, the user needs to choose the TMC mode or VCP mode. Invalid in other communication methods.

Command Syntax

SYSTem:COMMunicate:SELect <CPD>

Parameter

TMC|VCP

Default Parameter

VCP

Return Parameters

TMC|VCP

Example

SYST:COMM:SEL VCP //Select the USB communication mode as VCP mode

Query Command

SYSTem:COMMunicate:SELect?

SYSTem:COMMunicate:GPIB:ADDRess <NR1>

This command is used to set the communication address of GPIB.

Command Syntax

SYSTem:COMMunicate:GPIB:ADDRess <NR1>

Parameter

<NR1>

Available range:1~30

Defaults

1

Return Parameters

<NR1>

Example

SYST:COMM:GPIB:ADDR 2 //Set the communication address of GPIB to 2.

Query Command

SYSTem:COMMunicate:GPIB:ADDRess?

SYSTem:COMMunicate:LAN:IP[:CONFiguration] <SPD>

This command is used to set the IP address of the instrument.

Command Syntax

SYSTem:COMMunicate:LAN:IP[:CONFiguration] <SPD>

Parameter

<SPD>

Default Parameter

"192.168.0.11"

Return Parameters

<SPD>

Example

SYST:COMM:LAN:IP "192.168.0.11" //Set the IP address to 192.168.0.11

Query Command

SYSTem:COMMunicate:LAN:IP[:CONFiguration]? //Query the current IP address

SYSTem:COMMunicate:LAN:IP[:CONFiguration]:MODE <CPD>

This command is used to set the IP mode of the LAN port.

- MANual: The user manually sets the IP-related parameters.
- AUTO: The system automatically configures IP related parameters.

Command Syntax

SYSTem:COMMunicate:LAN:IP[:CONFiguration]:MODE <CPD>

Parameter

<CPD>

AUTO|MANual

Defaults

MANual

Return Parameters

AUTO|MANual

Example

SYST:COMM:LAN:IP:MODE AUTO //Set the IP mode of the LAN interface to auto-configuration mode

Query Command

SYSTem:COMMunicate:LAN:IP[:CONFiguration]:MODE?

SYSTem:COMMunicate:LAN:SMASk <SPD>

This command is used to set the subnet mask of LAN.

Command Syntax

SYSTem:COMMunicate:LAN:SMASk <SPD>

Parameter

<SPD>

Defaults

"255.255.255.0"

Return Parameters

<SPD>

Example

SYST:COMM:LAN:SMAS "255.255.255.1" //This command is used to set the subnet mask of LAN

Query Command

SYSTem:COMMunicate:LAN:SMASk?

SYSTem:COMMunicate:LAN:DGATeway <SPD>

This command is used to set the gateway address of LAN.

Command Syntax

SYSTem:COMMunicate:LAN:DGATeway <SPD>

Parameter

<SPD>

Defaults

"192.168.0.1"

Example

SYST:COMM:LAN:DGAT "192.168.0.1" //Set the LAN gateway to 192.168.0.1

Query Command

SYST:COMM:LAN:DGAT? //This command is used to query the gateway address of the LAN

SYSTem:COMMunicate:LAN:RAWSocketport <port>

This command is used to set the socket port number of LAN. Setting range: 10000-60000.

Command Syntax

SYSTem:COMMunicate:LAN:RAWSocketport <port>

Parameter

<SPD>

Defaults

"30000"

Example

SYSTem:COMMunicate:LAN:RAWSocketport 30001 //Set the LAN socket port number to 30001

Query Command

SYSTem:COMMunicate:LAN:RAWSocketport? //This command is used to query the port number of LAN

SYSTem:BRIGhtness:LEVel <NR1>

This command is used to set the screen brightness of the current power supply, and the setting range is 1-10.

Command Syntax

SYSTem:BRIGhtness:LEVel <NR1>

Parameter

1-10

Return Parameters

<NR1>

Defaults

8

Example

SYST:BRIG:LEVel 10 //Adjust power background brightness to 10

Query Command

SYSTem:BRIGhtness:LEVel? // This command is used to query the current LCD screen brightness

SYSTem:SOFT:KEYBoard[:STATe] <CPD>

This command is used to set the UI soft keyboard switch of the current power supply.

Command Syntax

SYSTem:SOFT:KEYBoard[:STATe] <CPD>

Parameter

0|OFF|1|ON

Example

SYST:SOFT:KEYB 1 //Turn on the on-screen soft keyboard of the power supply

Query Command

SYSTem:SOFT:KEYBoard[:STATe]? //This command is used to query the current soft keyboard status

SYSTem:LFRequency <NR1>

This command is used to set the AC input frequency: 50 (50 Hz) | 60 (60 Hz). This setting will not be reset by executing the ***RST** instruction.

Command Syntax

SYSTem:LFRequency <NR1>

Parameter

50 | 60

Example

SYST:LFR 60 //Set the AC input frequency to 60Hz

Query Command

SYSTem:LFRequency? //This command is used to query the AC input frequency

SYSTem:DISPlay:DIGits <NRf+>

This command is used to set the table of several and a half digits. Setting range: 3.5, 4.5, 5.5, 6.5 | MINimum | MAXimum | Default Default value: 6.5.

Command Syntax

SYSTem:DISPlay:DIGits <NRf+>

Parameter

3.5 | 4.5 | 5.5 | 6.5 | MINimum | MAXimum | Default

Example

SYST:DISP:DIG 5.5 // Set to a resolution of 5.5

Query Command

SYSTem:DISPlay:DIGits? //This command is used to query the current resolution setting

Chapter6 SENSe Subsystem

SENSe[c][:REMote][:STATe] <BOOL>

SENSe[c]:REMote <BOOL>

This command is used to enable or disable remote sensing. Remote sensing must be enabled to use a 4-wire connection (Kelvin connection). Disabled by Default.

Command Syntax

SENSe[c][:REMote][:STATe] <BOOL>

SENSe[c]:REMote <BOOL>

Parameter

<BOOL>

1|ON|0|OFF

Query Syntax

SENSe[c][:REMote][:STATe]?

SENSe[c]:REMote?

Return Parameters

<BOOL>

Example

SENS 1

SENS:REM 1

SENSe[c]:VIEW:TYPE <CPD>

This command is used to set the meter display type. Default : V&A, means to display the measured value of voltage and current.

Command Syntax

SENSe[c]:VIEW:TYPE <CPD>

Parameter

<CPD>

V&A|V&O|V&W

A&V|A&O|A&W

O&V|O&A|O&W

W&V|W&A|W&O

Example

SENS:VIEW:TYPE A&O

Query Command

None

SENSe[c]:APERture:AUTO

This command is used to enable or disable automatic speed measurement function.

1|ON|0|OFF(Default). The parameter data type is Boolean.

mode = 0 or OFF, disables the automatic adjustment of measurement speed function.

mode = 1 or ON enables automatic adjustment of measurement speed. If this function is enabled, the instrument will automatically set the integration time (NPLC value) suitable for the measurement range. When set to ON, the Default configuration is 5plc.

Command Syntax

SENSe[c]:APERture:AUTO

Parameter

<BOOL>

1|ON|0|OFF

Query Syntax

SENSe[c]:APERture:AUTO?

Return Parameters

<BOOL>

Example

SENS:APER:AUTO 1

SENSe[c]:NPLCycles <NRf+>

This command is used to set the measurement speed, with PLC as the unit.

The setting command has no REAL parameter; when the readback command has the parameter real, the actual parameter is read, and the set parameter is read back by Default.

When the power line frequency is 50hz, *RST is 5plc after reset.

When the power line frequency is 60hz, *RST is 6plc after reset.

The setting accuracy is 10us, and the setting value will be automatically adapted according to the setting accuracy. For example, when the power line frequency is 60hz, when 5plc is set, the actual value is 4.9998plc, and the set measurement time is 83.33ms, which needs to meet the setting accuracy..

Command Syntax

SENSe[c]:NPLCycles <NRf+>

Parameter

<NRf+>

value|MINimum|MAXimum|Default |REAL

value range:5E-4 to 100 for 50 Hz;6E-4 to 120 for 60 Hz

Query Syntax

SENSe[c]:NPLCycles?

Return Parameters

<NRf+>

Example

SENS:NPLC 10

SENSe[c]:APERture <NRf+>

This command is used to set the measurement speed in seconds. The Default is 0.1S.

The set command has no REAL parameter.

When the readback command takes the parameter real, the actual parameter is read, and the Default is to read back the set parameter.

Command Syntax

SENSe[c]:APERture <NRf+>

Parameter

<NRf+>

1E-5 to 2 |MINimum|MAXimum|Default |REAL

Query Syntax

SENSe[c]:APERture?

Return Parameters

<NRf+>

Example

SENS:APER 10

SENSe[c]:WAIT[:STATe] <BOOL>

This command is used to enable or disable the measurement waiting time of the specified channel. The wait time is defined as the time after the start of the DC output or after the trailing edge of the pulse that the measurement channel cannot start measuring. The Default is on.

Command Syntax

SENSe[c]:WAIT[:STATe] <BOOL>

Parameter

<BOOL>

1|ON|0|OFF

Query Syntax

SENSe[c]:WAIT[:STATe]?

Return Parameters

<BOOL>

Example

SENS:WAIT 0

SENSe[c]:WAIT:AUTO <BOOL>

This command is used to enable or disable the initial wait time used to calculate the measurement wait time of the specified channel. The initial wait time is automatically set by the instrument and cannot be changed. The Default is on.

Command Syntax

SENSe[c]:WAIT:AUTO <BOOL>

Parameter

<BOOL>

1|ON|0|OFF

Query Syntax

SENSe[c]:WAIT:AUTO?

Return Parameters

<BOOL>

Example

SENS:WAIT:AUTO 0

SENSe[c]:WAIT:GAIN <NRf+>

This command sets the gain value used to calculate the measurement latency of the specified channel.

Default : 1

Command Syntax

SENSe[c]:WAIT:GAIN <NRf+>

Parameter

<NRf+>

(0 to 100)|MINimum|MAXimum|Default

Query Syntax

SENSe[c]:WAIT:GAIN?

Return Parameters

<NRf+>

Example

SENS:WAIT:GAIN 10

SENSe[c]:WAIT:OFFSet <NRf+>

This command sets the offset value used to calculate the measurement latency of the specified channel. The Default is 0. The unit is seconds.

Command Syntax

SENSe[c]:WAIT:OFFSet <NRf+>

Parameter

<NRf+>

value (0 to 1 seconds)|MINimum|MAXimum|Default

Query Syntax

SENSe[c]:WAIT:OFFSet? [REAL]

Return Parameters

<NRf+>

Example

SENS:WAIT:OFFS 0.1

SENSe[c]:RESistance:RANGe <NRf+>

Resistance measurement fixed gear setting

2Ω,20Ω,200Ω,2kΩ,20kΩ,200kΩ,2MΩ,20MΩ,200MΩ

IT2801 none 200MΩ

Defaults:200

Command Syntax

SENSe[c]:RESistance:RANGe <NRf+>

Parameter

<NRf+>

2,20,200,2000,20 000,200 000,2000 000

Query Syntax

SENSe[c]:RESistance:RANGe?

Return Parameters

<NRf+>

Example

SENS:RES:RANG 200

SENSe[c]:RESistance:MODE <CPD>

This command is used to select the resistance measurement mode. Equivalent to the On/Off function of the ohm test UI, Auto: On;Manual(Defaults):Off.

If mode=manual is selected, the source and measurement conditions must be set manually. If resistance measurement is enabled, the resistance is calculated by dividing the voltage by the current. The resistance measurement range cannot be set.

If mode=AUTO is selected, the channel is automatically set for current source and voltage measurement if the resistance measurement function is enabled.

Command Syntax

SENSe[c]:RESistance:MODE <CPD>

Parameter

<CPD>

MANual (Default)|AUTO

Example

SENS:RES:MODE AUTO

Query Command

SENSe[c]:RESistance:MODE?

Return Parameters

<CRD>

SENSe[c]:RESistance:OCOMpensated <BOOL>

This command is used to enable or disable offset compensated resistance measurement. Default is off.

mode = 0 or OFF, disables offset compensated resistance measurement.

mode = 1 or ON to enable offset compensated resistance measurement.

Command Syntax

SENSe[c]:RESistance:OCOMpensated <BOOL>

Parameter

<BOOL>

1|ON|0|OFF

Query Syntax

SENSe[c]:RESistance:OCOMpensated?

Return Parameters

<NR1>

Example

SENS:RES:OCOM 1

SENSe[c]:<CURRent[:DC]|VOLTage[:DC]>:PROTection[:LEVel][:BOTH] <NRf+>

This command sets the limit value of the specified channel. This setting

applies to both positive and negative polarities/quadrants. Current reset value is 0.01; voltage reset value is 0.

When FUNCtion:MODE is set to VOLT, it is equivalent to[SOURce[c]:]CURRent[:LEVel][:IMMediate][:AMPLitude]instruction;

When FUNCtion:MODE is set to CURR, it is equivalent to[SOURce[c]:]VOLTage[:LEVel][:IMMediate][:AMPLitude]instruction;

Command Syntax

SENSe[c]:<CURRent[:DC]|VOLTage[:DC]>:PROTection[:LEVel][:BOTH] <NRf+>

Parameter

<NRf+>

(value)|MINimum|MAXimum|Default

Query Syntax

SENSe[c]:<CURRent[:DC]|VOLTage[:DC]>:PROTection[:LEVel][:BOTH]?

Return Parameters

<NRf+>

Example

SENS:CURR:PROT 10

SENSe[c]:<CURRent[:DC]|VOLTage[:DC]>:PROTection :TRIPped?

Used to return the compliance status of the specified channel. For <CURRent[:DC]|VOLTage[:DC]>, specify CURRent[:DC] for current compliance, or VOLTage[:DC] for voltage compliance. The status is 1 or 0, indicating whether the channel is in a compliant state.

Command Syntax

SENSe[c]:<CURRent[:DC]|VOLTage[:DC]>:PROTection:TRIPped?

Return Parameters

<NR1>

Example

SENS:VOLT:PROT:TRIP?

SENSe[c]:<CURRent[:DC]|RESistance|VOLTage[:DC]>: RANGe:AUTO <BOOL>

This command is used to enable or disable the automatic range function of the

specified measurement channel. The Default is on.

mode = 0 or OFF, disables autoranging.

mode = 1 or ON to enable autoranging. If this function is enabled, the channel is automatically set to the measurement range that provides the best resolution.

If a range is manually selected, autoranging will be disabled.

Command Syntax

SENSe[c]:<CURRent[:DC]|RESistance|VOLTage[:DC]>:RANGe:AUTO <BOOL>

Parameter

<BOOL>

1|ON|0|OFF

Query Syntax

SENSe[c]:<CURRent[:DC]|RESistance|VOLTage[:DC]>:RANGe:AUTO?

Return Parameters

<NR1>

Example

SENS:VOLT:RANG:AUTO 0

SENSe[c]:RECorder:RUN

This command is used to run the data logging function.

Command Syntax

SENSe[c]:RECorder:RUN

Parameter

None

Return Parameters

None

SENSe[c]:RECorder:STOP

This command is used to stop the data logging function.

Command Syntax

SENSe[c]:RECorder:STOP

Parameter

None

Return Parameters

None

SENSe[c]:RECorder:ACQuire:INTerval:NPLCycles <NRf+>

This command sets the timing measurement interval, with PLC as the unit.

Send SENSe[c]:RECorder:STOP The setting takes effect when the recorder function is turned off.

Defaults:5 PLC to 50Hz;6 PLC to 60Hz.

Command Syntax

SENSe[c]:RECorder:ACQuire:INTerval:NPLCycles <NRf+>

Parameter

<NRf+>

(value)|MINimum|MAXimum|Default

Value range: 5E-3 to 100 for 50 Hz; 6E-3 to 120 for 60 Hz.

Query Syntax

SENSe[c]:RECorder:ACQuire:INTerval:NPLCycles?

Return Parameters

<NRf+>

Example

SENS:REC:ACQ:INT:NPLC 10

SENSe[c]:RECorder:ACQuire:INTerval:APERture <NRf+>

This command sets the timing measurement interval in seconds.

Send SENSe[c]:RECorder:STOP and the setting takes effect when the recorder function is turned off.

Default : 0.1 seconds.

Command Syntax

SENSe[c]:RECorder:ACQuire:INTerval:APERture <NRf+>

Parameter

<NRf+>

(value)|MINimum|MAXimum|Default

Value range: 1E-4 to 2 S.

Query Syntax

SENSe[c]:RECorder:ACQuire:INTerval:APERture?

Return Parameters

<NRf+>

Example

SENS:REC:ACQ:INT:APER 0.5

SENSe[c]:RECorder:NPLCycles <NRf+>

This command sets the measurement speed, with PLC as the unit.

Send SENSe[c]:RECorder:STOP and the setting takes effect when the recorder function is turned off.

Default : 4 PLC to 50Hz; 4.8 PLC to 60Hz.

Command Syntax

SENSe[c]:RECorder:NPLCycles <NRf+>

Parameter

<NRf+>

(value)|MINimum|MAXimum|Default

Value range: 5E-4 to 80 for 50 Hz; 6E-4 to 96 for 60 Hz.

Query Syntax

SENSe[c]:RECorder:NPLCycles?

Return Parameters

<NRf+>

Example

SENS:REC:NPLC 10

SENSe[c]:RECorder:APERture <NRf+>

This command sets the measurement speed in seconds.

Send SENSe[c]:RECorder:STOP and the setting takes effect when the

recorder function is turned off.

Default : 0.08 seconds.

Command Syntax

SENSe[c]:RECorder:APERture <NRf+>

Parameter

<NRf+>

(value)|MINimum|MAXimum|Default

Value range: 1E-5 to 1.6 S.

Query Syntax

SENSe[c]:RECorder:APERture?

Return Parameters

<NRf+>

Example

SENS:REC:APER 0.5

SENSe[c]:RECorder:DATA:NUMBer <NRf+>

This command sets the number of data records.

Send SENSe[c]:RECorder:STOP and the setting takes effect when the recorder function is turned off.

The setting takes effect when SENSe[c]:RECorder:MODE is set to ONCE.

Default value: 1000000.

Command Syntax

SENSe[c]:RECorder:DATA:NUMBer <NRf+>

Parameter

<NRf+>

1 to 1000000|MINimum|MAXimum|Default

Query Syntax

SENSe[c]:RECorder:DATA:NUMBer?

Return Parameters

<NRf+>

Example

SENS:REC:DATA:NUMB 10000

SENSe[c]:RECorder:MODE <CPD>

This command is used to select the data recording mode.

CYCLe (Default): cyclic recording, the maximum recording value is 1000000, and it will be overwritten after reaching.

ONCE: Execute recording according to the number of data records set by SENSe[c]:RECorder:DATA:NUMBer.

Send SENSe[c]:RECorder:STOP and the setting takes effect when the recorder function is turned off.

Command Syntax

SENSe[c]:RECorder:MODE <CPD>

Parameter

<CPD>

CYCLe|ONCE

Example

SENS:REC:MODE ONCE

Query Command

SENSe[c]:RECorder:MODE?

Return Parameters

<CRD>

SENSe[c]:RECorder:RSTate?

Used to query the status of data records.

RUN:Operating status

STOP: stop state

Command Syntax

SENSe[c]:RECorder:RSTate?

Return Parameters

RUN|STOP

Example

SENS:REC:RST?

SENSe[c]:ACQuire:DELay <NRf+>

This command sets the measurement delay after the trigger, in seconds. The Default is 0.

Command Syntax

SENSe[c]:ACQuire:DELay <NRf+>

Parameter

<NRf+>

(0 to 10000)|MINimum| MAXimum|Default

Query Syntax

SENSe[c]:ACQuire:DELay?

Return Parameters

<NRf+>

Example

SENS:ACQ:DEL 0.5

SENSe[c]:ACQuire:INTerval <NRf+>

This command sets the measurement interval in seconds. The Default is 0.1.

Command Syntax

SENSe[c]:ACQuire:INTerval <NRf+>

Parameter

<NRf+>

0.0001s to 10000s|MINimum|MAXimum|Default

Query Syntax

SENSe[c]:ACQuire:INTerval?

Return Parameters

<NRf+>

Example

SENS:ACQ:INT 0.5

SENSe[c]:ACQuire:COUNt <NRf+>

This command sets the measurement count after the trigger.

Default value: 1.

Command Syntax

SENSe[c]:ACQuire:COUNt <NRf+>

Parameter

<NRf+>

1 to 100000|INFinity|MINimum|MAXimum|Default

Query Syntax

SENSe[c]:ACQuire:COUNt?

Return Parameters

<NRf+>

Example

SENS:ACQ:COUN 10000

SENSe[c]:TRACe:CLEar

This command is used to clear the trace buffer of the specified channel.

Command Syntax

SENSe[c]:TRACe:CLEar

Parameter

None

Return Parameters

None

SENSe[c]:TRACe:FREE?

Used to return the available size (available) and total size (total) of the trace buffer. The total data size is set by the command **SENSe[c]:TRACe:POINts**, the IT2805 model is 300000; the IT2801 and IT2806 models are up to 1000000.

Command Syntax

SENSe[c]:TRACe:FREE?

Return Parameter

NR1

Example

SENS:TRAC:FREE?

SENSe[c]:TRACe:POINts:ACTual?

Used to return the amount of data in the trace buffer. Used to return the amount of data in the trace buffer.

Command Syntax

SENSe[c]:TRACe:POINts:ACTual?

Return Parameters

NR1

Example

SENS:TRAC:POIN:ACT?

SENSe[c]:TRACe:POINts <NRf+>

This command sets the size of the trace buffer. Use the SENSe[c]:TRACe:FEED:CONTrol command to set the Trace function mode to NEVer, or send SENSe[c]:TRACe:CLEar, the setting of this command will take effect.

Default value: 1000000.

Command Syntax

SENSe[c]:TRACe:POINts <NRf+>

Parameter

<NRf+>

1 to 1000000|MINimum|MAXimum|Default

Query Syntax

SENSe[c]:TRACe:POINts?

Return Parameters

<NR1>

Example

SENS:TRAC:POIN 10000

SENSe[c]:TRACe:FEED <CPD>

type=SENS specifies the measurement result data, which contains all voltage measurement data, current measurement data, resistance measurement data, time data, status data or source output setting data specified by **SENSe[c]:FORMat:ELEMents**.

type=MATH Specifies calculation result data. Data contains calculation results, time data, or state data.

Defaults:SENSe

Command Syntax

SENSe[c]:TRACe:FEED <NRf+>

Parameter

<CPD>

MATH|SENSe

Query Syntax

SENSe[c]:TRACe:FEED?

Return Parameters

<CRD>

MATH|SENSe

Example

SENS:TRAC:FEED SENS

SENSe[c]:TRACe:FEED:CONTrol <CPD>

NEXT enables write operations until the buffer is full. Buffer full automatically changes mode to NEV. No errors occurred.

NEVer Disables writing to the trace buffer.

ALWays Enable write operations and circular buffers.

You can use the **SENSe[c]:TRACe:CLEar, SENSe[c]:TRACe:FEED** and **SENSe[c]:TRACe:POINts** commands

Defaults:NEVer

Command Syntax

SENSe[c]:TRACe:FEED:CONTrol <NRf+>

Parameter

<CPD>

NEXT|NEVer|ALWays

Query Syntax

SENSe[c]:TRACe:FEED:CONTrol?

Return Parameters

<CRD>

NEXT|NEVer|ALWays

Example

SENS:TRAC:FEED:CONT ALW

SENSe[c]:TRACe:DATA:LATest:OFFSet?

Returns the offset of the latest data location, the first value is 0.

Command Syntax

SENSe[c]:TRACe:DATA:LATest:OFFSet?

Return Parameter

NR1

Example

SENS:TRAC:DATA:LAT:OFFS?

SENSe[c]:TRACe:DATA? [offset[, size]]

Returns the data in the trace buffer. **SENSe[c]:FORMat[:data]**

Only return '\n' when there is no data in the Trace Buffer. After **SENSe[c]:TRACe:FEED:CONTrol** is NEXT or ALWAYS, output on. The trace buffer will have data generated.

Defaults:STARt

Command Syntax

SENSe[c]:TRACe:DATA? [offset[, size]]

Parameter

<NR1> or <CPD>

n|CURRent|STARt

Query Syntax

SENSe[c]:TRACe:DATA?

Return Parameters

<NR1> or <CPD>

n|CURRent|STARt

Example

SENS:TRAC:DATA STAR

SENSe[c]:TRACe:TSTamp:FORMat <CPD>

Select the rule for reading timestamped data in the trace buffer.

rule=ABS Set the returned data as the delta value of the first timestamp data.

rule=DELT Set the returned data as the delta value of the previous timestamp data.

Defaults:ABSolute

Command Syntax

SENSe[c]:TRACe:TSTamp:FORMat <CPD>

Parameter

<CPD>

DELTa|ABSolute(Default)

Query Syntax

SENSe[c]:TRACe:TSTamp:FORMat?

Return Parameters

<CRD>

DELTa|ABSolute(Default)

Example

SENS:TRAC:TST:FORM ABS

SENSe[c]:FORMat[:data] <CPD>

format=REAL32 Specifies IEEE-754 single-precision format. 4 bytes of data.

format=REAL64 Specifies IEEE-754 double precision format. 8 bytes of data.

Defaults:ASCii

Command Syntax

SENSe[c]:FORMat[:data] <NRf+>

Parameter

<CPD>

ASCii|REAL32|REAL64

Query Syntax

SENSe[c]:FORMat[:data]?

Return Parameters

<CRD>

ASCii|REAL32|REAL64

Example

SENS:FORM ASC

SENSe[c]:FORMat:ELEMents:SENSe type{,type}

elements contained in the returned measurement result data**:FETCh:ARRay? or :TRACe:DATA? command**

Elements and their order: computation, time, state

SENSe[c]:FORM:ELEM:SENS SOUR,CURR,VOLT,RES,TIME,STAT

SENSe[c]:FORM:ELEM:SENS?

Command Syntax

SENSe[c]:FORMat:ELEMents:SENSe <CPD>

Parameter

<CPD>

VOLTage|CURRent|RESistance|TIME|STATus|SOURce

Query Syntax

SENSe[c]:FORMat:ELEMents:SENSe?

Return Parameters

<CRD>

VOLTage|CURRent|RESistance|TIME|STATus|SOURce

Example

SENS:FORM:ELEM:SENS SOUR,CURR,VOLT,RES,TIME,STAT

SENS:FORM:ELEM:SENS?

SENSe[c]:FORMat:ELEMents:CALCulate <CPD>

elements contained in the returned measurement result data
CALCulate:DATA? or CALCulate:DATA:LATest?

Components and their sequence: voltage, current, resistance, time, state, power

Defaults:CALC

Command Syntax

SENSe[c]:FORMat:ELEMents:CALCulate <CPD>

Parameter

<CPD>

CALC|TIME|STATus

Query Syntax

SENSe[c]:FORMat:ELEMents:CALCulate?

Return Parameters

<CRD>

CALC|TIME|STATus

Example

SENS:FORM:ELEM:CALC TIME

SENSe[c]:FORMat:BORDer <CPD>

Set byte order (endian)

byte_order=NORMal Set normal byte order. For IEEE-754 single-precision format, byte 1 through byte 4 are sent in this order. For IEEE-754 double precision format, bytes 1 through 8 are sent in this order.

byte_order=SWAPped Sets the reverse byte order. For IEEE-754 single-precision format, byte 4 through byte 1 are sent in this order. For IEEE-754 double precision format, byte 8 through byte 1 are sent in this order.Defaults:NORMal

Command Syntax

SENSe[c]:FORMat:BORDer <CPD>

Parameter

<CPD>

NORMal|SWAPped

Query Syntax

SENSe[c]:FORMat:BORDer?

Return Parameters

<CRD>

NORMal|SWAPped

Example

SENS:FORM:BORD NORM

SENSe[c]:<CURRent[:DC]|RESistance|VOLTage[:DC]>:RANGe:AUTO:LLIMit <NRf+>

Specifies the lower limit for automatic measurement ranging operations.

current:1uA|10uA|100uA|1mA|10mA|100mA|1A

Voltage:200mV|2V|20V|200V|1000V

Res:2|20|200|2000|20000|200000|2000000|20000000|200000000

200000000 Only valid for IT2805 and IT2806

Command Syntax

SENSe[c]:<CURRent[:DC]|RESistance|VOLTage[:DC]>:RANGe:AUTO:LLIMit <NRf+>

Parameter

<NRf+>

value|MINimum|MAXimum|Default

Query Syntax

SENSe[c]:<CURRent[:DC]|RESistance|VOLTage[:DC]>:RANGe:AUTO:LLIMit?

Return Parameters

<NRf+>

Example

SENS:CURR:RANG:AUTO:LLIM 10

Chapter7 TRIGger Subsystem

TRIGger[c]:INITiate[:IMMediate]

Start the specified device action on the specified channel. The state of the trigger changes from idle to enabled.

Command Syntax

TRIGger[c]:INITiate[:IMMediate]

Parameter

None

Query Syntax

None

Return Parameters

None

Example

TRIG:INIT

TRIGger[c]:ABORt

Terminates the specified device action for the specified channel. The trigger state is changed to idle.

Command Syntax

TRIGger[c]:ABORt

Parameter

None

Query Syntax

None

Return Parameters

None

Example

TRIG:ABOR

TRIGger[c][:SEQuence]:COUNt <NRf+>

This command is used to set the trigger count of the specified device action. Send:**[SOURce[c]:]FUNCtion:STEP:STATe** After the instruction sets the STEP mode ON, the Parameter set by the instruction takes effect, and in the STEP mode, it indicates the number of repetitions of the source output.

Command Syntax

TRIGger[c][:SEQuence]:COUNt <NRf+>

Parameter

<NRf+>

1 to 100000|INFinity|MINimum|MAXimum|Default

Query Syntax

TRIGger[c][:SEQuence]:COUNt?

Return Parameters

<NRf+>

Example

TRIG:COUN 1000

TRIGger[c][:SEQuence]:DELay <NRf+>

This command is used to set the trigger delay of the specified device action. Unit: seconds.

Command Syntax

TRIGger[c][:SEQuence]:DELay <NRf+>

Parameter

<NRf+>

0 to 10000 | MINimum | MAXimum | Default

Query Syntax

TRIGger[c][:SEQuence]:DELay?

Return Parameters

<NRf+>

Example

TRIG:DEL 10

TRIGger[c][:SEQuence]:SOURce <CPD>

This command is used to select the trigger source of the specified device action.

MANual(Defaults):Panel [Trig] key trigger.

BUS: Triggered by *TRG command.

TIMer: Select an internally generated signal, and generate a signal internally at intervals set by the **TRIGger[c][:SEQuence]:TIMer command**.

TRIG1-8: Digital IO pin 1~8 trigger.

FIBER1-32: Fiber trigger

Command Syntax

TRIGger[c][:SEQuence]:SOURce <CPD>

Parameter

<CPD>

MANual|BUS|TIMer|TRIG1-8|FIBEr1-32|AUTO

Query Syntax

TRIGger[c][:SEQuence]:SOURce?

Return Parameters

<CRD>

Example

TRIG:SOUR BUS

TRIGger[c][:SEQuence]:TIMer <NRf+>

This command is used to set the time interval of the TIMER trigger source of the specified device action. Unit: seconds.

Command Syntax

TRIGger[c][:SEQuence]:TIMer <NRf+>

Parameter

<NRf+>

0.0001 to 10000 | MINimum | MAXimum | Default

Query Syntax

TRIGger[c][:SEQuence]:TIMer?

Return Parameters

<NRf+>

Example

TRIG:TIM 10

TRIGger[c][:SEQuence]:SOURce:TOUTput:SIGNal <CPD>

This command is used to set the trigger output port selection for source trigger. TRIGn means select a signal to GPIO pin n. The Default is TRIG1.

OFF: no output to port

TRIG1-8: Output to Digital IO pins 1~8.

FIBEr1-32: Output to fiber optic pin.

Command Syntax

TRIGger[c][:SEQuence]:SOURce:TOUTput:SIGNal <CPD>

Parameter

<CPD>

TRIG1-8|FIBEr1-32|OFF

Query Syntax

TRIGger[c][:SEQuence]:SOURce:TOUTput:SIGNal?

Return Parameters

<CRD>

Example

TRIG:SOUR:TOUT:SIGN TRIG2

TRIGger[c][:SEQuence]:SENSe:TOUTput:SIGNal <CPD>

This command is used to set the selection of trigger output port when starting measurement. TRIGn means select a signal to GPIO pin n. The Default is TRIG1.

OFF: no output to port

TRIG1-8: Output to Digital IO pins 1~8.

FIBEr1-32: Output to fiber optic pin.

Command Syntax

TRIGger[c][:SEQuence]:SENSe:TOUTput:SIGNal <CPD>

Parameter

<CPD>

TRIG1-8|FIBEr1-32|OFF

Query Syntax

TRIGger[c][:SEQuence]:SENSe:TOUTput:SIGNal?

Return Parameters

<CRD>

Example

TRIG:SENS:TOUT:SIGN TRIG2

TRIGger[c]:MAPPED:TRIG1:TO:FIBER25 <BOOL>

This command is used in multi-channel mode. When the machine is master or slave, it can be used normally.

When the machine is single, it can only be read and cannot be configured.

Command Syntax

TRIGger[c]:MAPPED:TRIG1:TO:FIBER25 <BOOL>

Parameter

<BOOL>

1|ON|0|OFF

Query Syntax

TRIGger[c]:MAPPED:TRIG1:TO:FIBER25?

Return Parameters

<BOOL>

Example

TRIG:MAPPED:TRIG1:TO:FIBER25 1

TRIGger[c]:MAPPED:TRIG2:TO:FIBER26 <BOOL>

This command is used in multi-channel mode. When the machine is master or slave, it can be used normally.

When the machine is single, it can only be read and cannot be configured.

Command Syntax

TRIGger[c]:MAPPED:TRIG2:TO:FIBER26 <BOOL>

Parameter

<BOOL>

1|ON|0|OFF

Query Syntax

TRIGger[c]:MAPPED:TRIG2:TO:FIBER26?

Return Parameters

<BOOL>

Example

TRIG:MAPPED:TRIG2:TO:FIBER26 1

TRIGger[c]:MAPPED:TRIG3:TO:FIBER27 <BOOL>

This command is used in multi-channel mode. When the machine is master or slave, it can be used normally.

When the machine is single, it can only be read and cannot be configured.

Command Syntax

TRIGger[c]:MAPPED:TRIG3:TO:FIBER27 <BOOL>

Parameter

<BOOL>

1|ON|0|OFF

Query Syntax

TRIGger[c]:MAPPED:TRIG3:TO:FIBER27?

Return Parameters

<BOOL>

Example

TRIG:MAPPED:TRIG3:TO:FIBER27 1

TRIGger[c]:MAPPED:TRIG4:TO:FIBER28 <BOOL>

This command is used in multi-channel mode. When the machine is master or slave, it can be used normally.

When the machine is single, it can only be read and cannot be configured.

Command Syntax

TRIGger[c]:MAPPED:TRIG4:TO:FIBER28 <BOOL>

Parameter

<BOOL>

1|ON|0|OFF

Query Syntax

TRIGger[c]:MAPPED:TRIG4:TO:FIBER28?

Return Parameters

<BOOL>

Example

TRIG:MAPPED:TRIG4:TO:FIBER28 1

TRIGger[c]:MAPPED:MANual:TO:FIBER29 <BOOL>

This command is used in multi-channel mode. When the machine is master or slave, it can be used normally.

When the machine is single, it can only be read and cannot be configured.

Command Syntax

TRIGger[c]:MAPPED:MANual:TO:FIBER29 <BOOL>

Parameter

<BOOL>

1|ON|0|OFF

Query Syntax

TRIGger[c]:MAPPED:MANual:TO:FIBER29?

Return Parameters

<BOOL>

Example

TRIG:MAPPED:MANual:TO:FIBER29 1

TRIGger[c]:MAPPED:GPIB:TO:FIBER30 <BOOL>

This command is used in multi-channel mode. When the machine is master or slave, it can be used normally.

When the machine is single, it can only be read and cannot be configured.

Command Syntax

TRIGger[c]:MAPPED:GPIB:TO:FIBER30 <BOOL>

Parameter

<BOOL>

1|ON|0|OFF

Query Syntax

TRIGger[c]:MAPPED:GPIB:TO:FIBER30?

Return Parameters

<BOOL>

Example

TRIG:MAPPED:GPIB:TO:FIBER30 1

TRIGger[c]:MAPPED:BUS:TO:FIBER31 <BOOL>

This command is used in multi-channel mode. When the machine is master or slave, it can be used normally.

When the machine is single, it can only be read and cannot be configured.

Command Syntax

TRIGger[c]:MAPPED:BUS:TO:FIBER31 <BOOL>

Parameter

<BOOL>

1|ON|0|OFF

Query Syntax

TRIGger[c]:MAPPED:BUS:TO:FIBER31?

Return Parameters

<BOOL>

Example

TRIG:MAPPED:BUS:TO:FIBER31 1

TRIGger[c]:MAPPED:SCOPe:TO:FIBER32 <BOOL>

This command is used in multi-channel mode. When the machine is master or slave, it can be used normally.

When the machine is single, it can only be read and cannot be configured.

Command Syntax

TRIGger[c]:MAPPED:SCOPe:TO:FIBER32 <BOOL>

Parameter

<BOOL>

1|ON|0|OFF

Query Syntax

TRIGger[c]:MAPPED:SCOPe:TO:FIBER32?

Return Parameters

<BOOL>

Example

TRIG:MAPPED:SCOP:TO:FIBER32 1

TRIGger[c]:LOAD "DurationLoop", <duration>, <delay>

delay: the delay time before each measurement (0 to10ks); the Default value is 0 means no delay;

Duration: The time to take the measurement (100us to 100ks).

Command Syntax

TRIGger[c]:LOAD "DurationLoop", <duration>, <delay>

Parameter

<NRf+>

duration:1e-4 to 1e5

delay: 0 to 1e4

Query Syntax

None

Return Parameters

<NRf+>

TRIGger[c]:LOAD "SimpleLoop", <count>, <delay>

delay: the delay time before each measurement (0 to10ks); the Default value is 0 means no delay;

count: The number of measurements the instrument will take. Set to 0 for infinite measurements.

Command Syntax

TRIGger[c]:LOAD "SimpleLoop", <count>, <delay>

Parameter

<NRf+>

count: 0 to 1e8

delay: 0 to 1e4

Query Syntax

None

Return Parameters

<NRf+>

Chapter8 OUTPut Subsystem

OUTPut[c][:STATe]

This command is used to control the power output on or off.

Command Syntax

OUTPut[c][:STATe] <bool>

Parameter

0|ON|1|OFF

Query Syntax

OUTPut[c][:STATe]?

Return Parameters

0|1

Example

OUTP 1

OUTPut[c]:INTerlock:TRIPped?

1: Interlock open, all voltages available

0: Interlock connection, voltage limited to plus or minus 42V

Command Syntax

OUTPut[C]:INTerlock:TRIPped?

Parameter

1|0

Return Parameters

0|1

Example

OUTP:INT:TRIP? 1

OUTPut[c]:IMPedance[:STATe]

This command is used to set the state of the output impedance of the instrument:

0|OFF means turn off the function;

1|ON means to open this function.

This function is valid only when the source mode is voltage source.

Command Syntax

OUTPut[c]:IMPedance[:STATe] <bool>

Parameter

0|ON|1|OFF

Query Syntax

OUTPut[c]:IMPedance[:STATe]?

Return Parameters

0|1

Example

OUTP:IMP 1

OUTPut[c]:IMPedance:RESistance:LEVel <NRf+>

This command is used to set the output resistance value. Unit: Ohm.

Command Syntax

OUTPut[c]:IMPedance:RESistance:LEVel <NRf+>

Parameter

<NRf+>

0-100|MINimum|MAXimum|Default

Query Syntax

OUTPut[c]:IMPedance:RESistance:LEVel?

Return Parameters

<NRf+>

Example

OUTP:IMP:RES:LEV 10

OUTPut[c]:OFF:MODE <CPD>

This command is used to set the output mode when the power is OFF:

HIGHz: The relay on the output is disconnected and the output is in a high-impedance state.

ZERO: The relay at the output is closed and the output is 0V.

Command Syntax

OUTPut[c]:OFF:MODE <CPD>

Parameter

<CPD>

HIGHz|ZERO

Query Syntax

OUTPut[c]:OFF:MODE?

Return Parameters

<CRD>

Example

OUTP:OFF:MODE ZERO

OUTPut[c]:FILTer[:LPASs][:STATe]

This command is used to control the power output filter function on or off.

Command Syntax

OUTPut[c]:FILTer[:LPASs][:STATe] <bool>

Parameter

0|ON|1|OFF

Query Syntax

OUTPut[c]:FILTer[:LPASs][:STATe]?

Return Parameters

0|1

Example

OUTP:FILT 1

OUTPut[c]:FILTer:AUTO

This command is used to control the opening or closing of the automatic filter function of the power supply.

Command Syntax

OUTPut[c]:FILTer:AUTO <bool>

Parameter

0|ON|1|OFF

Query Syntax

OUTPut[c]:FILTer:AUTO?

Return Parameters

0|1

Example

OUTP:FILT:AUTO 1

OUTPut[c]:FILTer[:LPASs]:FREQ <NRf+>

Sets the cutoff frequency of the output filter. If the automatic filter function is enabled by the **OUTP:FILT:AUTO** command, the command setting is ignored.

Command Syntax

OUTPut[c]:FILTer[:LPASs]:FREQ <NRf+>

Parameter

<NRf+>

freq=MINimum | MAXimum | Default | 15.9155Hz-15915.5Hz

freq = 1/(2*π* Tconst)

Query Syntax

OUTPut[c]:FILTer[:LPASs]:FREQ?

Return Parameters

<NRf+>

Example

OUTP:FILT:FREQ 100

OUTPut[c]:FILTer[:LPASs]:TCONstant <NRf+>

Sets the time constant instead of setting the cutoff frequency of the output filter.

If the automatic filter function is enabled by the OUTP:FILT:AUTO command, the command setting will be ignored.

Command Syntax

OUTPut[c]:FILTer[:LPASs]:TCONstant <NRf+>

Parameter

<NRf+>

Tconst=MINimum|MAXimum|Default | 10 µs to 10 ms

Tconst = 1/(2 *frequency*)

Query Syntax

OUTPut[c]:FILTer[:LPASs]:TCONstant?

Return Parameters

<NRf+>

Example

OUTP:FILT:TCON 1E-6

Chapter9 SOURce Subsystem

[SOURce[c]:]FUNCtion:SHAPe <CPD>

Set the output mode of the power supply.

PULSe: pulse mode

DC: normal mode

Command Syntax

[SOURce[c]:]FUNCtion:SHAPe <CPD>

Parameter

<CPD>

PULSe|DC

Query Syntax

[SOURce[c]:]FUNCtion:SHAPe?

Example

FUNC:SHAP PULS

[SOURce[c]:]FUNCtion:MODE <CPD>

Set the power supply to operate as a voltage source or a current source.

VOLTage: voltage source

CURRent: current source

Command Syntax

[SOURce[c]:]FUNCtion:MODE <CPD>

Parameter

<CPD>

VOLTage|CURRent

Query Syntax

[SOURce[c]:]FUNCtion:MODE?

Example

FUNC:MODE CURR

[SOURce[c]:]CURRent:LOOP:SPEed <CPD>

Sets the loop speed of the current source. Only supported by IT2805 and IT2806 models.

NORMal: normal loop speed

HIGH: high speed

Command Syntax

[SOURce[c]:]CURRent:LOOP:SPEed <CPD>

Parameter

<CPD>

NORMal|HIGH

Query Syntax

[SOURce[c]:]CURRent:LOOP:SPEed?

Example

CURR:LOOP:SPE HIGH

[SOURce[c]:]CURRent[:LEVel][:IMMediate][:AMPLitude] <NRf+>

Set the output current value. Unit: A.

Command Syntax

[SOURce[c]:]CURRent[:LEVel][:IMMediate][:AMPLitude] <NRf+>

Parameter

<NRf+>

MINimum | MAXimum | Default

Query Syntax

[SOURce[c]:]CURRent[:LEVel][:IMMediate][:AMPLitude]?

Return Parameter

<NRf+>

Example

CURR 2

[SOURce[c]:]CURRent:RANGe:AUTO

This command is used to enable or disable current automatic range.

1|ON|0|OFF (Default). The parameter data type is Boolean.

mode = 0 or OFF disables automatic scaling of current.

mode = 1 or ON enables automatic scaling of current.

Command Syntax

[SOURce[c]:]CURRent:RANGe:AUTO <bool>

Parameter

0|ON|1|OFF

Query Syntax

[SOURce[c]:]CURRent:RANGe:AUTO?

Return Parameters

0|1

Example

CURR:RANG:AUTO 1

[SOURce[c]:]CURRent:RANGe <NRf+>

Set the fixed gear of the current. Unit: A. Setting range: 1E-6, 1E-5, 1E-4, 1E-3, 0.01, 0.1, 1 correspond to 1μA, 10μA, 100μA, 1mA, 10mA, 100mA, 1A gears respectively.

Command Syntax

[SOURce[c]:]CURRent:RANGe <NRf+>

Parameter

<NRf+>

1E-6,1E-5,1E-4,1E-3,0.01,0.1,1

Query Syntax

[SOURce[c]:]CURRent:RANGe?

Return Parameters

<NRf+>

Example

CURR:RANG 1E-6

[SOURce[c]:]VOLTage[:LEVel][:IMMediate][:AMPLitude] <NRf+>

Set the output voltage value. Unit: V.

Command Syntax

[SOURce[c]:]VOLTage[:LEVel][:IMMediate][:AMPLitude] <NRf+>

Parameter

<NRf+>

MINimum | MAXimum | Default

Query Syntax

[SOURce[c]:]VOLTage[:LEVel][:IMMediate][:AMPLitude]?

Return Parameters

<NRf+>

Example

VOLT 5

[SOURce[c]:]VOLTage:RANGe:AUTO

This command is used to enable or disable voltage automatic range.

1|ON|0|OFF (Default). The parameter data type is Boolean.

mode = 0 or OFF disables automatic scaling of voltage.

mode = 1 or ON enables automatic scaling of voltage.

Command Syntax

[SOURce[c]:]VOLTage:RANGe:AUTO <bool>

Parameter

0|ON|1|OFF

Query Syntax

[SOURce[c]:]VOLTage:RANGe:AUTO?

Return Parameters

0|1

Example

VOLT:RANG:AUTO 1

[SOURce[c]:]VOLTage:RANGe <NRf+>

Set the fixed gear of the voltage. Unit: V. Setting range: 0.2, 2, 20, 200, 1000 (only IT2801 supports the setting of 1000) corresponding to 200mV, 2V, 20V, 200V, 1000V gears (only IT2801 supports 1000 gears).

Command Syntax

[SOURce[c]:]VOLTage:RANGe <NRf+>

Parameter

<NRf+>

0.2,2,20,200,1000 (Only IT2801 supports the setting of 1000)

Query Syntax

[SOURce[c]:]VOLTage:RANGe?

Return Parameters

<NRf+>

Example

VOLT:RANG 20

[SOURce[c]:]PULSe:BASE <NRf+>

Set the base level in pulse mode.

Command Syntax

[SOURce[c]:]PULSe:BASE <NRf+>

Parameter

<NRf+>

MINimum|MAXimum|Default

Query Syntax

[SOURce[c]:]PULSe:BASE?

Return Parameters

<NRf+>

Example

PULS:BASE 2

[SOURce[c]:]PULSe:PEAK <NRf+>

Set the peak level in pulse mode. When **[SOURce[c]:]FUNCtion:SHAPe** is

set to **PULSe**, the command can be executed normally.

Command Syntax

[SOURce[c]:]PULSe:PEAK <NRf+>

Parameter

<NRf+>

MINimum|MAXimum|Default

Voltage source mode:

min = -1.05*Vrange

max = 1.05*Vrange

def = 0

Current source mode:

min = -1.05*Irange

max = 1.05*Irange

def = 0

Query Syntax

[SOURce[c]:]PULSe:PEAK?

Return Parameters

<NRf+>

Example

PULS:PEAK 10

[SOURce[c]:]PULSe:PRIority <CPD>

Pulse waveform priority output mode, whether to output the base value or the peak value first

Defaults: BASE

Command Syntax

[SOURce[c]:]PULSe:PRIority <CPD>

Parameter

<CPD>

BASE|PEAK

Query Syntax

[SOURce[c]:]PULSe:PRIority?

Return Parameters

<CPD>

Example

PULS:PRI BASE

[SOURce[c]:]PULSe:DELay <NRf+>

Set the pulse delay time of the specified channel. The pulse delay time is the time from the start of the pulse base output to the start of the pulse level transition (or the start of the pulse peak output). Unit: seconds. Setting range: 1E-4 to 1E3.

Note: When the IT2806 current range is 10A, the minimum delay value is 40ms, and when the voltage range is 200V, the maximum delay value is 100ms.

Command Syntax

[SOURce[c]:]PULSe:DELay <NRf+>

Parameter

<NRf+>

1E-4 to 1E3

Query Syntax

[SOURce[c]:]PULSe:DELay?

Return Parameters

<NRf+>

Example

PULS:DEL 2

[SOURce[c]:]PULSe:WIDTh <NRf+>

Sets the pulse width of the specified channel. The pulse width refers to the time from the start of pulse peak output (or the start of pulse level shift) to the end of pulse peak output. However, it is strictly defined as the time from 10% of the peak level of the leading edge to 90% of the peak level of the trailing edge. Unit: seconds. Setting range: 1E-4 to 1E3.

Note: when the IT2806 current range is 10A, the maximum width is 1ms, and when the IT2806 voltage range is 200V, the maximum width is 2.5ms.

Command Syntax

[SOURce[c]:]PULSe:WIDTh <NRf+>

Parameter

<NRf+>

1E-4 to 1E3

Query Syntax

[SOURce[c]:]PULSe:WIDTh?

Return Parameters

<NRf+>

Example

PULS:WIDT 2

[SOURce[c]:]WAIT[:STATe]

This command is used to enable or disable the source wait time of the specified channel. This latency is defined as the time that the source channel cannot change the output after the start of the DC output or the trailing edge of the pulse. After using the **[SOURce[c]:]FUNCtion:SHAPe** command to set to DC mode, the setting of this command will take effect.

0|OFF|1|ON (Default). The parameter data type is Boolean.

mode = 0 or OFF disables the source wait time.

mode = 1 or ON to enable source wait time.

Command Syntax

[SOURce[c]:]WAIT[:STATe] <bool>

Parameter

0|ON|1|OFF

Query Syntax

[SOURce[c]:]WAIT[:STATe]?

Return Parameters

0|1

Example

WAIT 0

[SOURce[c]:]WAIT:AUTO

This command is used to enable or disable the initial wait time used to calculate the source wait time for the specified channel. The initial wait time is

automatically set by the instrument and cannot be changed. After using the **[SOURce[c]:]FUNCtion:SHAPe** command to set to DC mode, the setting of this command will take effect.

0|OFF|1|ON (Default). The Parameter data type is Boolean.

mode = 0 or OFF disables the initial wait time.

mode = 1 or ON to enable the initial wait time.

Command Syntax

[SOURce[c]:]WAIT:AUTO <bool>

Parameter

0|ON|1|OFF

Query Syntax

[SOURce[c]:]WAIT:AUTO?

Return Parameters

0|1

Example

WAIT:AUTO 0

[SOURce[c]:]WAIT:GAIN <NRf+>

Sets the gain value used to calculate the source latency for the specified channel. After using the **[SOURce[c]:]FUNCtion:SHAPe** command to set to DC mode, the setting of this command will take effect.

Command Syntax

[SOURce[c]:]WAIT:GAIN <NRf+>

Parameter

<NRf+>

(0 to 100)|MINimum|MAXimum|Default

Query Syntax

[SOURce[c]:]WAIT:GAIN?

Return Parameters

<NRf+>

Example

WAIT:GAIN 2

[SOURce[c]:]WAIT:OFFSet <NRf+>

Sets the offset value used to calculate source latency for the specified channel. Unit: seconds. After using the **[SOURce[c]:]FUNCtion:SHAPe** command to set to DC mode, the setting of this command will take effect.

Command Syntax

[SOURce[c]:]WAIT:OFFSet <NRf+>

Parameter

<NRf+>

0 to 1 seconds

Query Syntax

[SOURce[c]:]WAIT:OFFSet? [REAL]

When the readback command has the parameter real, it means to read back the actual parameters; by Default , without the real parameter, it means to read back the set parameters.

Return Parameters

<NRf+>

Example

WAIT:OFFS 2

[SOURce[c]:]FUNCtion:TRIGgered:CONTinuous

This command is used to enable or disable the continuous trigger output of the specified channel.

0|OFF|1|ON (Default). The parameter data type is Boolean.

mode = 0 or OFF disables the continuous trigger output.

mode = 1 or ON enables continuous trigger output.

Command Syntax

[SOURce[c]:]FUNCtion:TRIGgered:CONTinuous <bool>

Parameter

0|ON|1|OFF

Query Syntax

[SOURce[c]:]FUNCtion:TRIGgered:CONTinuous?

Return Parameters

0|1

Example

FUNC:TRIG:CONT 0

[SOURce[c]:]FUNCtion:STEP:BASE <NRf+>

For setting the base level of STEP mode.

Command Syntax

[SOURce[c]:]FUNCtion:STEP:BASE <NRf+>

Parameter

<NRf+>

value|MINimum|MAXimum|Default

Query Syntax

[SOURce[c]:]FUNCtion:STEP:BASE?

Return Parameters

<NRf+>

Example

FUNC:STEP:BASE 2

[SOURce[c]:]FUNCtion:STEP:STATe

This command is used to enable or disable STEP mode.

1|ON|0|OFF (Default). The parameter data type is Boolean.

mode = 0 or OFF disables STEP mode.

mode = 1 or ON enables STEP mode.

Command Syntax

[SOURce[c]:]FUNCtion:STEP:STATe <bool>

Parameter

0|ON|1|OFF

Query Syntax

[SOURce[c]:]FUNCtion:STEP:STATe?

Return Parameters

0|1

Example

FUNC:STEP:STAT 1

[SOURce[c]:]SWEep:INITiate[:IMMediate]

Sweep start command, turn on the output On/Off switch before starting sweep.

Command Syntax

[SOURce[c]:]SWEep:INITiate[:IMMediate]

Parameter

None

Query Syntax

None

Example

SWE:INIT

[SOURce[c]:]SWEep:ABORt

Sweep stop command.

Command Syntax

[SOURce[c]:]SWEep:ABORt

Parameter

None

Query Syntax

None

Example

SWE:ABOR

[SOURce[c]:]SWEep:CYCLe:COUNt <NRf+>

The number of loop runs by step1-stepn, 0 means infinite loop

Defaults:1

Command Syntax

[SOURce[c]:]SWEep:CYCLe:COUNt <NRf+>

Parameter

<NRf+>

value(0-10000)|MINimum| MAXimum|Default

Query Syntax

[SOURce[c]:]SWEep:CYCLe:COUNt?

Return Parameters

value(0-10000)|MINimum| MAXimum|Default

Example

SWE:CYCL:COUN 1

[SOURce[c]:]SWEep:RESume:WAIT

Sweep stops running, returns to the initial waiting state of sweep, and changes trig:start:source to bus.

Command Syntax

[SOURce[c]:]SWEep:RESume:WAIT

Parameter

None

Query Syntax

None

Example

SWE:RES:WAIT

[SOURce[c]:]SWEep:SPACing <CPD>

Select the scan output mode for the specified channel.

LINear (Default): linear scan

LOGarithmic: logarithmic sweep

LIST: List custom scan

Command Syntax

[SOURce[c]:]SWEep:SPACing <CPD>

Parameter

<CPD>

LINear|LOGarithmic|LIST

Query Syntax

[SOURce[c]:]SWEep:SPACing?

Return Parameters

LINear|LOGarithmic|LIST

Example

SWE:SPAC LIST

[SOURce[c]:]SWEep:STAir <CPD>

Select the scan mode for the specified channel. The parameter data type is CPD.

SINGle (Default): Sets the sweep mode to single sweep.

DOUBle: Set the sweep mode to double sweep. Dual Scan performs a scan from start to stop to start.

LIST mode does not support DOUBle.

Command Syntax

[SOURce[c]:]SWEep:STAir <CPD>

Parameter

<CPD>

SINGle|DOUBle

Query Syntax

[SOURce[c]:]SWEep:STAir?

Return Parameters

SINGle|DOUBle

Example

SWE:STA DOUB

[SOURce[c]:]SWEep:RANGing <CPD>

Select the range mode for the sweep output of the specified channel. The parameter data type is CPD.

BEST (Default): The channel will automatically set the range that covers the entire sweep output level for a linear sweep (SPACing mode = LINear), or the range that provides the best resolution to apply to the source output for each step of a logarithmic sweep (SPACing mode = LINear). mode = LOGarithmic).

FIXed: The channel only uses the range that was valid when the scan was started. When sweep output is applied, no range change is performed.

AUTO: The channel automatically sets the range that provides the best resolution for the source output at each scan step.

Command Syntax

[SOURce[c]:]SWEep:RANGing <CPD>

Parameter

<CPD>

BEST|FIXed|AUTO

Query Syntax

[SOURce[c]:]SWEep:RANGing?

Return Parameters

BEST|FIXed|AUTO

Example

SWE:RANG AUTO

[SOURce[c]:]SWEep:POINts <NRf+>

Set the number of sweep points for the specified channel. This command setting is valid for both current sweep and voltage sweep.

Command Syntax

[SOURce[c]:]SWEep:POINts <NRf+>

Parameter

<NRf+>

value(2-99999)|MINimum| MAXimum|Default

Query Syntax

[SOURce[c]:]SWEep:POINts?

Return Parameters

<NRf+>

Example

SWE:POIN 1000

[SOURce[c]:]SWEep:STEP <NRf+>

Set the scan step value of the specified channel.

Command Syntax

[SOURce[c]:]SWEep:STEP <NRf+>

Parameter

<NRf+>

value|MINimum| MAXimum|Default

Query Syntax

[SOURce[c]:]SWEep:STEP?

Return Parameters

<NRf+>

Example

SWE:STEP 0.5

[SOURce[c]:]SWEep:STARt <NRf+>

Set the scan start value for the specified channel.

Defaults:0.1

Command Syntax

[SOURce[c]:]SWEep:STARt <NRf+>

Parameter

<NRf+>

value is the range of the current range

value|MINimum| MAXimum

Source current mode:

min = -1.05*gear rating;

max = 1.05*gear rating;

Source voltage mode:

min = -1.05*gear rating;

max = 1.05*gear rating;

Query Syntax

[SOURce[c]:]SWEep:STARt? [MINimum | MAXimum]

Return Parameters

<NRf+>

Example

SWE:STAR 1

[SOURce[c]:]SWEep:STOP <NRf+>

Sets the scan stop value for the specified channel. Defaults: 2

Command Syntax

[SOURce[c]:]SWEep:STOP <NRf+>

Parameter

<NRf+>

value is the range of the current range

value|MINimum| MAXimum

Source current mode:

min = -1.05*gear rating;

max = 1.05*gear rating;

Source voltage mode:

min = -1.05*gear rating;

max = 1.05*gear rating;

Query Syntax

[SOURce[c]:]SWEep:STOP? [MINimum | MAXimum]

Return Parameters

<NRf+>

Example

SWE:STOP 2

[SOURce[c]:]SWEep:FINish <CPD>

Select the working mode after the frequency sweep of the specified channel is completed. The parameter data type is CPD.

NORMal (Default): Return to the normal output mode before Sweep after

sweeping.

LAST: Maintain the output of the last STEP in Sweep mode.

OFF: Output is off.

Command Syntax

[SOURce[c]:]SWEep:FINish <CPD>

Parameter

<CPD>

NORMal|LAST|OFF

Query Syntax

[SOURce[c]:]SWEep:FINish?

Return Parameters

NORMal|LAST|OFF

Example

SWE:FIN OFF

[SOURce[c]:]SWEep:STATe?

Used to query the status of Sweep.

IDLE (Default): idle state

WTG: wait for trigger state

ACTive: running state

Command Syntax

[SOURce[c]:]SWEep:STATe?

Return Parameter

IDLE|WTG|ACTive

Example

SWE:STAT?

[SOURce[c]:]SWEep:RSTate?

Used to query the running status of Sweep.

STOP | 0 (Default): run stops

RUN | 1: running

Command Syntax

[SOURce[c]:]SWEep:RSTate?

Return Parameters

0|1

Example

SWE:RST?

[SOURce[c]:]LIST:FILE:OPEN:<LOCal|UDISk> <filename>

Open the list file saved in the instrument memory/U disk. The parameter data type is SPD.

LOCal (Default): Open the List file saved in the instrument memory.

UDISk: Open the List file saved in the U disk.

Filename: file name

Command Syntax

[SOURce[c]:]LIST:FILE:OPEN:<LOCal|UDISk> <filename>

Parameter

<SPD>

Query Syntax

None

Example

SOURce1:LIST:FILE:OPEN:LOCal "List-01.csv"

[SOURce[c]:]LIST:NAME?

Used to query the name of the currently opened/configured list file.

Command Syntax

[SOURce[c]:]LIST:NAME?

Return Parameters

<SRD>

Example

LIST:NAME?

[SOURce[c]:]LIST:NAME:ALL:LOCal?

It is used to query the names of all list files saved in the instrument memory.

Command Syntax

[SOURce[c]:]LIST:NAME:ALL:LOCal?

Return Parameters

<SRD>

Example

LIST:NAME:ALL:LOC?

[SOURce[c]:]LIST:NAME:ALL:UDISk?

It is used to query the names of all list files saved in the U disk.

Command Syntax

[SOURce[c]:]LIST:NAME:ALL:UDISk?

Return Parameters

<SRD>

Example

LIST:NAME:ALL:UDIS?

[SOURce[c]:]LIST:FILE:SAVE:LOCal <filename>

Save the list file to the instrument memory. The parameter data type is SPD.

Filename: file name

Command Syntax

[SOURce[c]:]LIST:FILE:SAVE:LOCal <filename>

Parameter

<SPD>

Query Syntax

None

Example

SOURce:LIST:FILE:SAVE:LOCal "List-02.csv"

[SOURce[c]:]LIST:FILE:SAVE:UDISk <filename>

Save the list file to a USB flash drive. The parameter data type is SPD.

Filename: file name

Command Syntax

[SOURce[c]:]LIST:FILE:SAVE:UDISk <filename>

Parameter

<SPD>

Query Syntax

None

Example

SOURce:LIST:FILE:SAVE:UDISk "List-02.csv"

[SOURce[c]:]LIST:FILE:DELete:LOCal <filename>

Delete the specified list file in the instrument memory. The parameter data type is SPD.

Filename: file name

Command Syntax

[SOURce[c]:]LIST:FILE:DELete:LOCal <filename>

Parameter

<SPD>

Query Syntax

None

Example

SOURce1:LIST:FILE:DELete:LOCal "List-03.csv"

[SOURce[c]:]LIST:FILE:DELete:UDISk <filename>

Delete the specified list file in the USB flash drive. The parameter data type is SPD.

Filename: file name

Command Syntax

[SOURce[c]:]LIST:FILE:DELete:UDISk <filename>

Parameter

<SPD>

Query Syntax

None

Example

SOURce1:LIST:FILE:DELete:UDISk "List-03.csv"

[SOURce[c]:]LIST:FILE:DELete:ALL:LOCal

Delete all list files in the instrument memory.

Command Syntax

[SOURce[c]:]LIST:FILE:DELete:ALL:LOCal

Parameter

None

Query Syntax

None

Example

SOURce1:LIST:FILE:DELete:ALL:LOCal

[SOURce[c]:]LIST:FILE:DELete:ALL:UDISk

Delete all list files in the USB flash drive.

Command Syntax

[SOURce[c]:]LIST:FILE:DELete:ALL:UDISk

Parameter

None

Query Syntax

None

Example

SOURce1:LIST:FILE:DELete:ALL:UDISk

[SOURce[c]:]LIST:<CURRent|VOLTage> list

Sets the current or voltage data output by the list sweep for the specified channel.

The maximum number of steps in the list is 20.

Command Syntax

[SOURce[c]:]LIST:<CURRent|VOLTage> list

Parameter

list

value|MINimum| MAXimum|Default

Query Syntax

[SOURce[c]:]LIST:<CURRent|VOLTage>?

Return Parameters

list

Example

SOURce1:LIST:VOLT 0.1,0.2,0.3

SOURce1:LIST:VOLTage?

[SOURce[c]:]LIST:<CURRent|VOLTage>:APPend append_list

Adds the current or voltage data from the list sweep output to the end of the list.

The maximum number of steps in the list is 20.

Command Syntax

[SOURce[c]:]LIST:<CURRent|VOLTage>:APPend append_list

Parameter

list

value|MINimum| MAXimum|Default

Query Syntax

None

Example

SOURce1:LIST:VOLT:APP 1.1,1.2,1.3

[SOURce[c]:]LIST:<CURRent|VOLTage>:CLEar

Clears the list sweep output data (current or voltage) for the specified channel.

Command Syntax

[SOURce[c]:]LIST:<CURRent|VOLTage>:CLEar

Parameter

None

Query Syntax

None

Example

SOURce:LIST:CURRent:CLEar

[SOURce[c]:]LIST:<CURRent|VOLTage>:POINts?

It is used to query the list sweep output data points (current or voltage) of the specified channel.

Command Syntax

[SOURce[c]:]LIST:<CURRent|VOLTage>:POINts?

Return Parameters

<SRD>

Example

SOURce:LIST:CURRent:POINts?

[SOURce[c]:]LIST:STEP? <NR1>

It is used to query the list sweep output data points of the specified Step of the specified channel.

Command Syntax

[SOURce[c]:]LIST:STEP? <NR1>

Parameter

<NR1>

Return Parameters

<NR1>

Example

LIST:STEP? 1

[SOURce[c]:]LIST:CONFigure

Configure the list scan output data for the specified channel.

Command Syntax

[SOURce[c]:]LIST:CONFigure

Parameter

None

Query Syntax

None

Example

SOURce:LIST:CONFigure

[SOURce[c]:]SWEep:TRIG:STARt:SOURce <CPD>

Set/query the starting trigger source of the list sweep output of the specified channel. The parameter data type is CPD.

IMMediate: trigger immediately

MANUal (Default): [Trig] button trigger

BUS: command trigger

TRIG1-8: Digital IO 1-8 pin trigger

FIBer1-32: Fiber trigger

Command Syntax

[SOURce[c]:]SWEep:TRIG:STARt:SOURce <CPD>

Parameter

<CPD>

IMMediate|MANUal|BUS|TRIG1-8|FIBer1-32

Query Syntax

[SOURce[c]:]SWEep:TRIG:STARt:SOURce?

Return Parameters

IMMediate|MANUal|BUS|TRIG1-8|FIBer1-32

Example

SOURce1:SWEep:TRIG:STArt:SOURce BUS

[SOURce[c]:]SWEep:TRIG:STARt:DELay <NRf+>

Set the list sweep output start trigger delay time of the specified channel. The Default value is 0, unit: second.

Command Syntax

[SOURce[c]:]SWEep:TRIG:STARt:DELay <NRf+>

Parameter

<NRf+>

value(0-10)|MINimum| MAXimum|Default

Query Syntax

[SOURce[c]:]SWEep:TRIG:STARt:DELay?

Return Parameters

<NRf+>

Example

SOURce1:SWEep:TRIG:STARt:DELay 1.0

[SOURce[c]:]SWEep:TRIG:STEP:SOURce <CPD>

Set/query the list sweep output step trigger source of the specified channel. The parameter data type is CPD.

MANUal (Default): [Trig] button trigger

TIMer: timer trigger

BUS: command trigger

TRIG1-8: Digital IO 1-8 pin trigger

FIBer1-32: Fiber trigger

Command Syntax

[SOURce[c]:]SWEep:TRIG:STEP:SOURce <CPD>

Parameter

<CPD>

MANUal|TIMer|BUS|TRIG1-8|FIBer1-32

Query Syntax

[SOURce[c]:]SWEep:TRIG:STEP:SOURce?

Return Parameters

MANUal|TIMer|BUS|TRIG1-8|FIBer1-32

Example

SOURce1:SWEep:TRIG:STEP:SOURce TIMer

[SOURce[c]:]SWEep:TRIG:STEP:TIMer <NRf+>

Set/query the list scan output step trigger time interval of the specified channel.

When the parameter is set to AUTO mode, the actual cycle time is measure time + rise time. The Default value is 0.1s, unit: second.

Command Syntax

[SOURce[c]:]SWEep:TRIG:STEP:TIMer <NRf+>

Parameter

<NRf+>

AUTO|value(0.0001 - 10)|MINimum| MAXimum|Default

Query Syntax

[SOURce[c]:]SWEep:TRIG:STEP:TIMer?

Return Parameters

<NRf+>

Example

SOURce1:SWEep:TRIG:STEP:TIMer 0.5

[SOURce[c]:]SWEep:TRIG:STEP:INTerval:MINimum <NRf+>

Set/query the list scan output step trigger interval time of the specified channel, and the two step trigger time must be greater than or equal to this time.

When the trig step source is BUS|TRIG1-8|FIBer1-32, use this parameter.

Command Syntax

[SOURce[c]:]SWEep:TRIG:STEP:INTerval:MINimum <NRf+>

Parameter

<NRf+>

value(0.0001 - 10)|MINimum| MAXimum|Default

Query Syntax

[SOURce[c]:]SWEep:TRIG:STEP:INTerval:MINimum?

Return Parameters

<NRf+>

Example

SOURce1:SWEep:TRIG:STEP:INTerval:MINimum 0.1

[SOURce[c]:]SWEep:BEFore:STEP:TOUTput <CPD>

Set/query the trigger signal before the list scan output step of the specified channel. The parameter data type is CPD.

OFF (Default): do not trigger

TRIG1-8: Digital IO 1-8 pin trigger

FIBer1-32: Fiber trigger

Command Syntax

[SOURce[c]:]SWEep:BEFore:STEP:TOUTput <CPD>

Parameter

<CPD>

OFF|TRIG1-8|FIBer1-32

Query Syntax

[SOURce[c]:]SWEep:BEFore:STEP:TOUTput?

Return Parameters

OFF|TRIG1-8|FIBer1-32

Example

SOURce1:SWEep:BEFore:STEP:TOUTput FIBer8

[SOURce[c]:]SWEep:AFTer:STEP:TOUTput <CPD>

Set/query the trigger signal after the list sweep output step of the specified channel. The parameter data type is CPD.

OFF (Default): do not trigger

TRIG1-8: Digital IO 1-8 pin trigger

FIBer1-32: Fiber trigger

Command Syntax

[SOURce[c]:]SWEep:AFTer:STEP:TOUTput <CPD>

Parameter

<CPD>

OFF|TRIG1-8|FIBer1-32

Query Syntax

[SOURce[c]:]SWEep:AFTer:STEP:TOUTput?

Return Parameters

OFF|TRIG1-8|FIBer1-32

Example

SOURce1:SWEep:AFTer:STEP:TOUTput FIBer8

[SOURce[c]:]SWEep:STARt:TOUTput <CPD>

Set/query the list scan output start trigger signal of the specified channel. The parameter data type is CPD.

OFF (Default): do not trigger

TRIG1-8: Digital IO 1-8 pin trigger

FIBer1-32: Fiber trigger

Command Syntax

[SOURce[c]:]SWEep:STARt:TOUTput <CPD>

Parameter

<CPD>

OFF|TRIG1-8|FIBer1-32

Query Syntax

[SOURce[c]:]SWEep:STARt:TOUTput?

Return Parameters

OFF|TRIG1-8|FIBer1-32

Example

SOURce1:SWEep:STARt:TOUTput FIBer8

[SOURce[c]:]SWEep:END:TOUTput <CPD>

Set/query the list scan output stop trigger signal of the specified channel. The parameter data type is CPD.

OFF (Default): do not trigger

TRIG1-8: Digital IO 1-8 pin trigger

FIBer1-32: Fiber trigger

Command Syntax

[SOURce[c]:]SWEep:END:TOUTput <CPD>

Parameter

<CPD>

OFF|TRIG1-8|FIBer1-32

Query Syntax

[SOURce[c]:]SWEep:END:TOUTput?

Return Parameters

OFF|TRIG1-8|FIBer1-32

Example

SOURce1:SWEep:END:TOUTput FIBer8

[SOURce[c]:]SWEep:GRAPh:AUTO

Sweep drawing mode changed to AUTO

Command Syntax

[SOURce[c]:]SWEep:GRAPh:AUTO

Parameter

None

Query Syntax

None

Example

SWE:GRAP:AUTO

[SOURce[c]:]SWEep:GRAPh:CLEar

Sweep drawing empty

Command Syntax

[SOURce[c]:]SWEep:GRAPh:CLEar

Parameter

None

Query Syntax

None

Example

SWE:GRAP:CLE

[SOURce[c]:]SWEep:DATA:VIEW <CPD>

I-U: Graphical I-U Curve

U-I: Graphical U-I Curve

DATAlist: data list

Command Syntax

[SOURce[c]:]SWEep:DATA:VIEW <CPD>

Parameter

<CPD>

I-U|U-I|DATAlist

Query Syntax

[SOURce[c]:]SWEep:DATA:VIEW?

Return Parameters

I-U|U-I|DATAlist

Example

SWE:DATA:VIEW DATAlist

[SOURce[c]:]SWEep:GRAPh:VOLTage:COORdinate:START <NRf+>

Graph, voltage coordinate axis start value. Start<stop

IT2801:(-1050-1050) IT2805/IT2806:(-210-210)

Defaults:0

Command Syntax

[SOURce[c]:]SWEep:GRAPh:VOLTage:COORdinate:START <NRf+>

Parameter

<NRf+>

(-1050 - 1050)|MINimum|MAXimum|Default

Query Syntax

[SOURce[c]:]SWEep:GRAPh:VOLTage:COORdinate:START?

Return Parameters

(-1050 - 1050)|MINimum|MAXimum|Default

Example

SWE:GRAP:VOLT:COOR:START 0

[SOURce[c]:]SWEep:GRAPh:VOLTage:COORdinate:STOP <NRf+>

Graph, voltage coordinate axis stop value. stop>start

IT2801:(-1050-1050) IT2805/IT2806:(-210-210)

Defaults:2

Command Syntax

[SOURce[c]:]SWEep:GRAPh:VOLTage:COORdinate:STOP <NRf+>

Parameter

<NRf+>

(-1050 - 1050)|MINimum|MAXimum|Default

Query Syntax

[SOURce[c]:]SWEep:GRAPh:VOLTage:COORdinate:STOP?

Return Parameters

(-1050 - 1050)|MINimum|MAXimum|Default

Example

SWE:GRAP:VOLT:COOR:STOP 2

[SOURce[c]:]SWEep:GRAPh:CURRent:COORdinate:START <NRf+>

Graph, current coordinate axis start value. Start<stop

IT2801:(-1.05-1.05) IT2805/IT2806:(-10-10)

Defaults:0

Command Syntax

[SOURce[c]:]SWEep:GRAPh:CURRent:COORdinate:START <NRf+>

Parameter

<NRf+>

(-1.05 - 1.05)|MINimum|MAXimum|Default

Query Syntax

[SOURce[c]:]SWEep:GRAPh:CURRent:COORdinate:START?

Return Parameters

(-1.05 - 1.05)|MINimum|MAXimum|Default

Example

SWE:GRAP:CURR:COOR:START 0

[SOURce[c]:]SWEep:GRAPh:CURRent:COORdinate:STOP <NRf+>

Graph, current coordinate axis stop value. stop>start

IT2801:(-1.05-1.05) IT2805/IT2806:(-10-10)

Defaults:1

Command Syntax

[SOURce[c]:]SWEep:GRAPh:CURRent:COORdinate:STOP <NRf+>

Parameter

<NRf+>

(-1.05 - 1.05)|MINimum|MAXimum|Default

Query Syntax

[SOURce[c]:]SWEep:GRAPh:CURRent:COORdinate:STOP?

Return Parameter

(-1.05 - 1.05)|MINimum|MAXimum|Default

Example

SWE:GRAP:CURR:COOR:STOP 1

[SOURce[c]:]SWEep:GRAPh:CONFig:CURVe:NUMBer <NRf+>

Configure the graph to display the maximum number of curves

Defaults:1

Command Syntax

[SOURce[c]:]SWEep:GRAPh:CONFig:CURVe:NUMBer <NRf+>

Parameter

<NRf+>

(1 - 20)|MINimum|MAXimum|Default

Query Syntax

[SOURce[c]:]SWEep:GRAPh:CONFig:CURVe:NUMBer?

Return Parameters

(1 - 20)|MINimum|MAXimum|Default

Example

SWE:GRAP:CONF:CURV:NUMB 1

[SOURce[c]:]SWEep:GRAPh:VOLTage:SCALe <CPD>

Graph,voltage axis mode

Defaults:LINear

Command Syntax

[SOURce[c]:]SWEep:GRAPh:VOLTage:SCALe <CPD>

Parameter

<CPD>

LINear|LOGarithmic

Query Syntax

[SOURce[c]:]SWEep:GRAPh:VOLTage:SCALe?

Return Parameters

LINear|LOGarithmic

Example

SWE:GRAP:VOLT:SCAL LINear

[SOURce[c]:]SWEep:GRAPh:CURRent:SCALe <CPD>

Graph, current axis mode

Defaults:LINear

Command Syntax

[SOURce[c]:]SWEep:GRAPh:CURRent:SCALe <CPD>

Parameter

<CPD>

LINear|LOGarithmic

Query Syntax

[SOURce[c]:]SWEep:GRAPh:CURRent:SCALe?

Return Parameters

LINear|LOGarithmic

Example

SWE:GRAP:CURR:SCAL LINear

[SOURce[c]:]SWEep:GRAPh:VOLTage:INVErt <CPD>

Graph, whether the voltage value is reversed

OFF (Default): do not trigger

Command Syntax

[SOURce[c]:]SWEep:GRAPh:VOLTage:INVErt <CPD>

Parameter

<CPD>

0|OFF|1|ON

Query Syntax

[SOURce[c]:]SWEep:GRAPh:VOLTage:INVErt?

Return Parameters

<CPD>

Example

SWE:GRAP:VOLT:INVE 0

[SOURce[c]:]SWEep:GRAPh:CURRent:INVErt <CPD>

Curve, whether the current value is reversed

OFF (Default): do not trigger

Command Syntax

[SOURce[c]:]SWEep:GRAPh:CURRent:INVErt <CPD>

Parameter

<CPD>

0|OFF|1|ON

Query Syntax

[SOURce[c]:]SWEep:GRAPh:CURRent:INVErt?

Return Parameters

<CPD>

Example

SWE:GRAP:CURR:INVE 0

[SOURce[c]:]SWEep:GRAPh:VIEW:CURVe:NUMBer?

In the graph, the number of curves that have been drawn

Command Syntax

[SOURce[c]:]SWEep:GRAPh:VIEW:CURVe:NUMBer?

Return Parameter

None

Example

SWE:GRAP:VIEW:CURV:NUMB?

[SOURce[c]:]SWEep:GRAPh:VIEW:CURVe:DATA? <NR1>

In the graph, specify the curve coordinate point data. It returns up to 596 voltage values and 596 current values.

Return value: the first value: the number of coordinate points.

The second value: Volt1, the third value: Curr1, ...

Command Syntax

[SOURce[c]:]SWEep:GRAPh:VIEW:CURVe:DATA? <NR1>

Parameter

<NR1>

(1-20)

Return Parameters

<NR1>

Example

SWE:GRAP:VIEW:CURV:DATA? 10

[SOURce[c]:]SWEep:DATA:EXPort [filename]

To export sweep data to a U disk, a U disk must be inserted, and the usb mode should be switched to host.

The exported sweep data includes the original sweep data and the corresponding coordinate data in the sweep graph.

Default export file name: IT28XX_sweep_data00001-LX.csv

If the command filename has parameters: IT28XX_sweep_data_filename-LX.csv

Command Syntax

[SOURce[c]:]SWEep:DATA:EXPort [filename]

Parameter

[filename]

Query Syntax

[SOURce[c]:]SWEep:DATA:EXPort [filename]?

Return Parameters

None

Example

SWE:DATA:EXP [001filename]

[SOURce[c]:]<CURRent|VOLTage>:RANGe:AUTO:LLIMit <NRf+>

Specifies the lower limit for auto output range operation and sets the minimum range that provides the best resolution for applying the specified value.

Parameters are the same as:**SENSe[c]:<CURRent[:DC]|RESistance|VOLTage[:DC]>:RANGe:AUTO:LLIMit** range Command description.

Command Syntax

[SOURce[c]:]<CURRent|VOLTage>:RANGe:AUTO:LLIMit <NRf+>

Parameter

<NRf+>

value|MINimum| MAXimum|Default

Query Syntax

[SOURce[c]:]<CURRent|VOLTage>:RANGe:AUTO:LLIMit?

Return Parameters

<NRf+>

Example

SOURce1:CURR:RANG:AUTO:LLIM 1E-6

[SOURce[c]:]DIGital:EXTernal:SELect <NR1>

Select the Digital IO pin used for external triggering.

Command Syntax

[SOURce[c]:]DIGital:EXTernal:SELect <NR1>

Parameter

<NR1>

1 ~ 16

Query Syntax

[SOURce[c]:]DIGital:EXTernal:SELect?

Return Parameters

<NR1>

Example

DIG:EXT:SEL 2

[SOURce[c]:]DIGital:EXTernal[:FUNCtion] <CPD>

Set the function of the Digital IO pin. The parameter data type is CPD. TINPut|TOUT is only valid for Digital IO 1~8.

INPut: pin receiving level.

OUTPut: pin output level.

TINPut: The pin receives the trigger level.

TOUT: pin output trigger level.

The Default settings are as follows:

IO1-8: TINPut

IO9-12: OUTPut

IO13: INPut

IO14-16: OUTPut

Command Syntax

[SOURce[c]:]DIGital:EXTernal[:FUNCtion] <CPD>

Parameter

<CPD>

INPut|OUTPut|TINPut|TOUT

Query Syntax

[SOURce[c]:]DIGital:EXTernal[:FUNCtion]?

Return Parameters

INPut|OUTPut|TINPut|TOUT

Example

DIG:EXT OUTP

[SOURce[c]:]DIGital:EXTernal:INPut:STATe? <NR1>,<CPD>

Read the port level true or false, it is valid when the port is INPut.

Command Syntax

[SOURce[c]:]DIGital:EXTernal:INPut:STATe? <NR1><CPD>

Parameter

<NR1>,<CPD>

NR1:[1-12,16]

CPD:0|OFF|1|ON

Return Parameters

NR1:[1-12,16]

CPD:0|OFF|1|ON

Example

DIG:EXT:INP:STAT? 1

[SOURce[c]:]DIGital:INPut:DATA? <NR1>

read data from the GPIO pins.Valid when the port is INPut.

Command Syntax

[SOURce[c]:]DIGital:INPut:DATA? <NR1>

Parameter

<NR1>

0 to 4095

Return Parameters

0 to 4095

Example

DIG:INP:DATA? 1

[SOURce[c]:]DIGital:EXTernal:STATe <NR1>,<CPD>

Set whether the specified Digital IO pin is flipped. The parameter data type is CPD.

The Default settings are as follows:

0|OFF: do not flip

Command Syntax

[SOURce[c]:]DIGital:EXTernal:STATe <NR1>,<CPD>

Parameter

<NR1>,<CPD>

NR1: [1-12,16]

CPD: 0|OFF|1|ON

Query Syntax

[SOURce[c]:]DIGital:EXTernal:STATe <NR1>?

Return Parameters

0|OFF|1|ON

Example

DIG:EXT:STAT 2,1

[SOURce[c]:]DIGital:DATA <NR1>

Set output data to GPIO pin (digital control port) and read data from GPIO pin. The Default setting is 0.

Command Syntax

[SOURce[c]:]DIGital:DATA <NR1>

Parameter

<NR1>

0 to 4095

Query Syntax

[SOURce[c]:]DIGital:DATA?

Return Parameters

<NR1>

Example

DIG:DATA 2800

[SOURce[c]:]DIGital:EXTernal:POLarity <CPD>

Sets the polarity of the input/output function of the specified GPIO pin. The

input/output function is set by the **[SOURce[c]:]DIGital:EXTernal[:FUNCtion] <CPD>** command. The parameter data type is CPD.

POS (Default): no rollover

NEG: Flip

Command Syntax

[SOURce[c]:]DIGital:EXTernal:POLarity <CPD>

Parameter

<CPD>

POS|NEG

Query Syntax

[SOURce[c]:]DIGital:EXTernal:POLarity?

Return Parameters

POS|NEG

Example

DIG:EXT:POL NEG

[SOURce[c]:]DIGital:EXTernal:TOUTput:WIDTh <NRf+>

Sets the pulse width of the output trigger for the specified GPIO pin. The Default value is 0.0001, unit: second.

Command Syntax

[SOURce[c]:]DIGital:EXTernal:TOUTput:WIDTh <NRf+>

Parameter

<NRf+>

3E-5 to 1E-2, in seconds | MINimum|MAXimum|Default

Query Syntax

[SOURce[c]:]DIGital:EXTernal:TOUTput:WIDTh?

Return Parameters

<NRf+>

Example

DIG:EXT:TOUT:WIDT 0.1

OUTPut[c]:HCAPacitance[:STATe]

This command is used to enable or disable high capacitance mode **(this command is only applicable to IT2806 model).** This mode is effective for highly capacitive DUTs.

1|ON|0|OFF (Default). The parameter data type is Boolean.

mode = 1 or ON enables high capacitance mode.

mode = 0 or OFF disables high capacitance mode.

Command Syntax

OUTPut[c]:HCAPacitance[:STATe] <bool>

Parameter

0|ON|1|OFF

Query Syntax

OUTPut[c]:HCAPacitance[:STATe]?

Return Parameters

0|1

Example

OUTP:HCAP 1

OUTPut[c]:LOW <CPD>

This command is used to select the state of the low level terminal. Before executing this command, the source output must be disabled with the OUTP 0 command. Otherwise an error will occur.

FLOat|GROund (Default). The parameter data type is CPD.

low_state = FLOat sets float state.

low_state = GROund sets ground state. Connect the low side to ground.

Command Syntax

OUTPut[c]:LOW <CPD>

Parameter

FLOat|GROund

Query Syntax

OUTPut[c]:LOW?

Return Parameters

<CRD>

Example

OUTP:LOW FLO

OUTPut[c]:ON:AUTO

This command is used to control the automatic output function on or off.

0|OFF|1|ON (Default). The parameter data type is Boolean.

mode=0 or OFF, disable the automatic output function.

mode = 1 or ON enables the automatic output turn-on function. If this function is enabled, the source output will be turned on automatically when the **TRIGger[c]:INITiate[:IMMediate]** command is sent.

Command Syntax

OUTPut[c]:ON:AUTO <bool>

Parameter

0|ON|1|OFF

Query Syntax

OUTPut[c]:ON:AUTO?

Return Parameters

0|1

Example

OUTP:ON:AUTO 0

OUTPut[c]:OFF:AUTO

This command is used to enable or disable the automatic output shutdown function.

1|ON|0|OFF (Default). The parameter data type is Boolean.

mode = 0 or OFF disables the automatic output shutdown function.

mode = 1 or ON enables automatic output shutdown. If this function is enabled,

when the state of the packet channel changes from busy to idle, the source output will be automatically turned off immediately.

Command Syntax

OUTPut[c]:OFF:AUTO <bool>

Parameter

0|ON|1|OFF

Query Syntax

OUTPut[c]:OFF:AUTO?

Return Parameters

0|1

Example

OUTP:OFF:AUTO 1

OUTPut[c]:PROTection[:STATe]

This command is used to enable or disable overvoltage/overcurrent protection. If enabled, the source/measure unit (SMU) sets the output to 0 V and automatically sets the output switch to off when the desired state is reached.

1|ON|0|OFF (Default). The parameter data type is Boolean.

mode = 0 or OFF disables overvoltage/overcurrent protection.

mode = 1 or ON enables overvoltage/overcurrent protection.

Command Syntax

OUTPut[c]:PROTection[:STATe] <bool>

Parameter

0|ON|1|OFF

Query Syntax

OUTPut[c]:PROTection[:STATe]?

Return Parameters

0|1

Example

OUTP:PROT 1

OUTPut[c]:PROTection:CLEar

This command is used to clear protection.

Command Syntax

OUTPut[c]:PROTection:CLEar

Parameter

None

Query Syntax

None

Example

OUTP:PROT:CLE

OUTPut[c]:RECall <NR1>

This command is used to recall the channel settings saved by **OUTPut:SAVE** command.

Command Syntax

OUTPut[c]:RECall <NR1>

Parameter

<NR1>

1-100

Query Syntax

None

Example

OUTP:REC 10

OUTPut[c]:SAVE <NR1>

This command is used to save channel settings. This setting can be called by the **OUTPut:RECal**l command.

Command Syntax

OUTPut[c]:SAVE <NR1>

Parameter

<NR1>

1-100

Query Syntax

None

Example

OUTP:SAVE 10

Chapter10 MULTichannel Subsystem

MULTichannel[c]:ROLE <role>

Set the roles of master and slave in multi-channel mode.

SINGle(Defaults): stand-alone mode

SLAVe: used as a slave in multi-channel mode

MASTer: used as a host in multi-channel mode

Command Syntax

MULTichannel[c]:ROLE <role>

Parameter

<CPD>

SINGle|SLAVe|MASTer

Query Syntax

MULTichannel[c]:ROLE?

Example

MULT:ROLE MAST

MULTichannel[c]:NODE:NUMBer?

Get the total number of nodes in the fiber group multi-channel. Only effective when assembling multiple channels with fiber optics. How many machines are connected together by optical fiber, the return value is how many. This command is only valid for the host in multi-channel mode, other roles are invalid.

Command Syntax

MULTichannel[c]:NODE:NUMBer?

Return Parameters

<NR1>

1-16

Example

MULT:NODE:NUMB?

MULTichannel[c]:GROup:NUMBer <group>

Set the instrument group number in multi-channel mode. It only takes effect when the optical fiber group is used for multi-channel.

Command Syntax

MULTichannel[c]:GROup:NUMBer <group>

Parameter

<CPD>

A|B|C|D

Query Syntax

MULTichannel[c]:GROup:NUMBer?

Example

MULT:GRO:NUMB C

MULTichannel[c]:OUTPut:ON:SYNChronization <state>

This command is used to control the switch of the output ON synchronization function. It only takes effect when the optical fiber group is used for multi-channel.

1|ON|0|OFF (Default). The parameter data type is Boolean.

state = 0 or OFF, turns off synchronization of output ON.

state = 1 or ON enables synchronization of output ON.

Command Syntax

MULTichannel[c]:OUTPut:ON:SYNChronization <bool>

Parameter

0|ON|1|OFF

Query Syntax

MULTichannel[c]:OUTPut:ON:SYNChronization?

Return Parameters

0|1

Example

MULT:OUTP:ON:SYNC 1

MULTichannel[c]:OUTPut:OFF:SYNChronization <state>

This command is used to control the switch of output OFF synchronization function. It only takes effect when the optical fiber group is used for multi-channel.

1|ON|0|OFF (Default). The parameter data type is Boolean.

state = 0 or OFF, turn off synchronization of output OFF.

state = 1 or ON to enable synchronization of output OFF.

Command Syntax

MULTichannel[c]:OUTPut:OFF:SYNChronization <bool>

Parameter

0|ON|1|OFF

Query Syntax

MULTichannel[c]:OUTPut:OFF:SYNChronization?

Return Parameters

0|1

Example

MULT:OUTP:OFF:SYNC 1

MULTichannel[c]:FIBer:LOCK:CHECk?

It will take effect only when the optical fiber multi-channel function is used and the host is configured.

Read back 1, indicating that the optical fiber communication is normal

Read back 0, indicating that the optical fiber communication is abnormal

Command Syntax

MULTichannel[c]:FIBer:LOCK:CHECk?

Parameter

<NR1>

0-1

Query Syntax

MULTichannel[c]:FIBer:LOCK:CHECk?

Chapter11 FETCh & MEASure Subsystem

MEASure[:SCALar]:CURRent[:DC]? [chanlist]

Perform a measurement and return the measurement result data. The parameter data type is a list of channels. Read the measured current value.

Parameter[chanlist] indicates the selected channel. For the commands supporting [chanlist] in FETCh & MEASure Subsystem, the function of this parameter is the same.

If there is no Parameter, the current value of channel 1 will be returned by Default. That is, MEASure:CURRent? (@1) is equivalent to the MEASure:CURRent? directive.

Channel number parameters can be set, for example: **MEASure:CURRent? (@1, 2, 3)** means to read back the current values of channel 1, channel 2 and channel 3; **MEASure:CURRent? (@1:8)** means to read back the current values of channels 1~ Channel 8 reads back the current values of 8 channels in total. Up to 2 commas are supported, such as **MEASure:CURRent? (@1,8,10)** or **MEASure:CURRent? (@1,3:8,10)**

Command Syntax

MEASure[:SCALar]:CURRent[:DC]?

Parameter

[chanlist]

Return Parameters

<NRf+>

Example

MEAS:CURR?

MEASure[:SCALar]:VOLTage[:DC]? [chanlist]

Perform a measurement and return the measurement result data. The Parameter data type is a list of channels. Read the measured voltage value.

If there is no parameter, the voltage value of channel 1 will be returned by Default.

That is, **MEASure:VOLTage?(@1)** is equivalent to the **MEASure:VOLTage?** directive.

Command Syntax

MEASure[:SCALar]:VOLTage[:DC]? [chanlist]

Parameter

[chanlist]

Return Parameters

<NRf+>

Example

MEAS:VOLT?

MEASure[:SCALar]:RESistance[:DC]? [chanlist]

Perform a measurement and return the measurement result data. The parameter data type is a list of channels. Read the measured resistance value.

If there is no parameter, it returns the resistance value of channel 1 by Default. That is, **MEAS:RES? (@1)** is equivalent to the MEAS:RES? instruction.

Command Syntax

MEASure[:SCALar]:RESistance[:DC]? [chanlist]

Parameter

[chanlist]

Return Parameters

<NRf+>

Example

MEAS:RES?

MEASure[:SCALar]? [chanlist]

Perform a measurement and return the measurement result data. The parameter data type is a list of channels. Read the Meter current value, voltage value, resistance value.

If there is no parameter, the current value, voltage value and resistance value of channel 1 will be returned by Default.

That is, **MEAS? (@1)** is equivalent to the **MEAS?** instruction.

Command Syntax

MEASure[:SCALar]? [chanlist]

Parameter

[chanlist]

Return Parameters

<NRf+>

Example

MEAS?

FETCh[:SCALar]:CURRent[:DC]? [chanlist]

Returns the current latest measurement data. The parameter data type is a list of channels. Read the measured current value.

If there is no parameter, the current value of channel 1 will be returned by Default.

That is, **FETC:CURR? (@1)** is equivalent to the **FETC:CURR?** instruction.

Command Syntax

FETCh[:SCALar]:CURRent[:DC]? [chanlist]

Parameter

[chanlist]

Return Parameters

<NRf+>

Example

FETC:CURR?

FETCh[:SCALar]:VOLTage[:DC]? [chanlist]

Returns the current latest measurement data. The parameter data type is a list of channels. Read the measured voltage value.

If there is no parameter, the voltage value of channel 1 will be returned by Default.

That is, **FETC:VOLT? (@1)** is equivalent to the **FETC:VOLT?** instruction.

Command Syntax

FETCh[:SCALar]:VOLTage[:DC]? [chanlist]

Parameter

[chanlist]

Return Parameters

<NRf+>

Example

FETC:VOLT?

FETCh[:SCALar]:RESistance[:DC]? [chanlist]

Returns the current latest measurement data. The parameter data type is a list of channels. Read the measured resistance value.

If there is no parameter, it returns the resistance value of channel 1 by Default.

That is, **FETC:RES? (@1)** is equivalent to the **FETC:RES?** instruction.

Command Syntax

FETCh[:SCALar]:RESistance[:DC]? [chanlist]

Parameter

[chanlist]

Return Parameters

<NRf+>

Example

FETC:RES?

FETCh[:SCALar]:SOURce? [chanlist]

Returns the current latest measurement data. The parameter data type is a list of channels. Read source setpoint.

If there is no parameter, it will return the source setting value of channel 1 by Default.

That is, **FETC:SOUR? (@1)** is equivalent to the **FETC:SOUR?** instruction.

Command Syntax

FETCh[:SCALar]:SOURce? [chanlist]

Parameter

[chanlist]

Return Parameters

<NRf+>

Example

FETC:SOUR?

FETCh[:SCALar]:STATus? [chanlist]

Returns the current latest measurement data. The parameter data type is a list of channels. Read status value.

If there is no parameter, it returns the status value of channel 1 by Default.

That is, **FETC:STAT? (@1)** is equivalent to the **FETC:STAT?** instruction.

Command Syntax

FETCh[:SCALar]:STATus? [chanlist]

Parameter

[chanlist]

Return Parameters

<NRf+>

Example

FETC:STAT?

FETCh[:SCALar]:TIME? [chanlist]

Returns the current latest measurement data. The parameter data type is a list of channels. Read the measurement time.

If there is no parameter, the measurement time of channel 1 will be returned by Default.

That is, **FETC:TIME? (@1)** is equivalent to the **FETC:TIME?** instruction.

Command Syntax

FETCh[:SCALar]:TIME? [chanlist]

Parameter

[chanlist]

Return Parameters

<NRf+>

Example

FETC:TIME?

FETCh[:SCALar]? [chanlist]

Returns the current latest measurement data. The parameter data type is a list

of channels. Read Meter current value, voltage value, resistance value, source setting value, status and time.

If there is no parameter, it will return the current value, voltage value, resistance value, source setting value, status and time of channel 1 by Default.

That is, **FETC? (@1)** is equivalent to the **FETC?** instruction.

Command Syntax

FETCh[:SCALar]? [chanlist]

Parameter

[chanlist]

Return Parameters

<NRf+>

Example

FETC?

Chapter12 CALCulate Subsystem

CALCulate[c]:CLIMits:CLEar:AUTO <BOOL>

Enables or disables automatic clearing for composite limit tests.

After using the **CALCulate[c]:CLIMits:STOP** command to close the limit value test, the setting of this command will take effect

Command Syntax

CALCulate[c]:CLIMits:CLEar:AUTO <BOOL>

Parameter

<BOOL>

0|OFF|1|ON

Query Syntax

CALCulate[c]:CLIMits:CLEar:AUTO?

Return Parameters

<BOOL>

0|1

Example

CLAC:CLIM:CLE:AUTO 1

CALCulate[c]:CLIMits:CLEar:AUTO:DELay <NRf+>

Set the delay time for automatic clearing of composite limit tests.

After using the **CALCulate[c]:CLIMits:STOP** command to close the limit value test, the setting of this command will take effect

Defaults:0.1

Command Syntax

CALCulate[c]:CLIMits:CLEar:AUTO:DELay <NRf+>

Parameter

<NRf+>

(3E-5 to 60)|MINimum|MAXimum|Default

Query Syntax

CALCulate[c]:CLIMits:CLEar:AUTO:DELay? [time]

Return Parameters

<NRf+>

Example

CALC:CLIM:CLE:AUTO:DEL MINimum

CALCulate[c]:CLIMits:CLEar[:IMMediate]

Immediately clear composite limit test results and ports (GPIO lines).

Command Syntax

CALCulate[c]:CLIMits:CLEar[:IMMediate]

Parameter

None

Query Syntax

None

CALCulate[c]:CLIMits:RUN

Run composite limit tests.

Command Syntax

CALCulate[c]:CLIMits:RUN

Parameter

None

Query Syntax

None

CALCulate[c]:CLIMits:STOP

Stop compound limit testing.

Command Syntax

CALCulate[c]:CLIMits:STOP

Parameter

None

Query Syntax

None

CALCulate[c]:CLIMits:RSTate?

Read compound limit status.

Command Syntax

CALCulate[c]:CLIMits:RSTate?

Parameter

None

Query Syntax

CALCulate[c]:CLIMits:RSTate?

Return Parameters

"RUN" | "STOP"

Example

CALC:CLIM:RST?

CALCulate[c]:CLIMits:MODE <CPD>

Set the operating mode of the composite limit test to GRADing or SORTing.

After using the **CALCulate[c]:CLIMits:STOP** command to close the limit value test, the setting of this command will take effect

Command Syntax

CALCulate[c]:CLIMits:MODE <CPD>

Parameter

<CPD>

SORT|GRAD

Query Syntax

CALCulate[c]:CLIMits:MODE?

Return Parameters

<CRD>

Example

CALC:CLIM:CLIM:MODE SORT

CALCulate[c]:CLIMits:UPDate <CPD>

For GRAD composite limit testing only.

Enable or disable instant results, outputs or updates.

After using the **CALCulate[c]:CLIMits:STOP** command to close the limit value test, the setting of this command will take effect.

This option is only available in Grading mode.

Immediate: test fail, output immediately, and stop this test.

Test pass, output immediately, and stop this test.

end: test fail, if it is the first fail, save the fail pattern and try again. If it is not the first fail, retest directly, and test repeat num times at most. After multiple tests, if pass, output all pass, otherwise output the first fail pattern.

Command Syntax

CALCulate[c]:CLIMits:UPDate <CPD>

Parameter

<CPD>

END|IMMediate

Query Syntax

CALCulate[c]:CLIMits:UPDate?

Return Parameters

<CRD>

Example

CALC:CLIM:UPD END

CALCulate[c]:CLIMits:REPeat:COUNt <NR1>

This option is only available in Grading mode. For the same test, repeat the test times.

After using the **CALCulate[c]:CLIMits:STOP** command to close the limit value test and **CALCulate[c]:CLIMits:MODE** is set to **GRADing** mode, the setting of this command will take effect.

Command Syntax

CALCulate[c]:CLIMits:REPeat:COUNt <NR1>

Parameter

<NR1>

2-1000

Query Syntax

CALCulate[c]:CLIMits:REPeat:COUNt?

Return Parameters

<NR1>

Example

CALC:CLIM:REP:COUN 2

CALCulate[c]:FEED <CPD>

Specifies the input data values used to calculate the limit test data.

Command Syntax

CALCulate[c]:FEED <CPD>

Parameter

<CPD>

MATH|RESistance|CURRent|VOLTage

Query Syntax

None

Return Parameters

<CRD>

Example

CALC:FEED MATH

CALCulate[c]:CLIMits:STARt:TRIG:SOURce <CPD>

Enables the selection of the trigger source for the combined limit value test.

Use the **CALCulate[c]:CLIMits:STOP** command to turn off the limit test settings to take effect.

BUS: instruction triggers start;

DIO: Digital pin 13.

Command Syntax

CALCulate[c]:CLIMits:STARt:TRIG:SOURce <CPD>

Parameter

<CPD>

MANUal|BUS|DIO

Query Syntax

CALCulate[c]:CLIMits:STARt:TRIG:SOURce?

Return Parameters

<CRD>

Example

CALC:CLIM:STAR:TRIG:SOUR BUS

CALCulate[c]:CLIMits:COUNt <NRf+>

The number of comprehensive limit test limits.

After using the **CALCulate[c]:CLIMits:STOP** command to close the limit value test, the setting of this command will take effect

Command Syntax

CALCulate[c]:CLIMits:COUNt <NRf+>

Parameter

<NRf+>

(1to12)|MINimum|MAXimum

Query Syntax

CALCulate[c]:CLIMits:COUNt?

Return Parameters

<NRf+>

Example

CALC:CLIM:COUN MAX

CALCulate[c]:CLIMits:COMPonents <NRf+>

The number of comprehensive limit test data sources.

0: Unlimited number of tests until the command is sent to stop the test.

After using the **CALCulate[c]:CLIMits:STOP** command to close the limit value test, the setting of this command will take effect

Command Syntax

CALCulate[c]:CLIMits:COMPonents <NRf+>

Parameter

<NRf+>

(0to50000)|MINimum|MAXimum

Query Syntax

CALCulate[c]:CLIMits:COMPonents?

Return Parameters

<NRf+>

Example

CALC:CLIM:COMP MAX

CALCulate[c]:CLIMits:ALLPattern <NRf+>

Grading mode: All limit tests passed output bit.

Sorting mode: All limit test failure output bits.

Will be displayed on our user IO. A total of 12 IOs.

After using the **CALCulate[c]:CLIMits:STOP** command to close the limit value test, the setting of this command will take effect

Command Syntax

CALCulate[c]:CLIMits:ALLPattern <NRf+>

Parameter

<NRf+>

(0to4095)|MINimum|MAXimum

Query Syntax

CALCulate[c]:CLIMits:ALLPattern?

Return Parameters

<NRf+>

Example

CALC:CLIM:ALLP 1000

CALCulate[c]:LIMit1:MODE <CPD>

limit: compare with the set limit value;

After using the **CALCulate[c]:CLIMits:STOP** command to turn off the limit test,

After **CALCulate[c]:CLIMits:MODE** is set to GRADing mode, the setting of this command will take effect.

Command Syntax

CALCulate[c]:LIMit1:MODE <CPD>

Parameter

<CPD>

LIMIt|COMPliance

Query Syntax

CALCulate[c]:LIMit1:MODE?

Return Parameters

<CRD>

Example

CALC:CLIM:MODE LIM

CALCulate[c]:LIMit1:FAIL:ON <CPD>

Set the query limit comparison mode

Use the **CALCulate[c]:CLIMits:STOP** command to turn off limit testing and,

After **CALCulate[c]:LIMit1:MODE** is set to ComPliance mode, the setting of this command will take effect.

Command Syntax

CALCulate[c]:LIMit1:FAIL:ON <CPD>

Parameter

<CPD>

IN|OUT

Query Syntax

CALCulate[c]:LIMit1:FAIL:ON?

Return Parameters

<CRD>

Example

CALC:LIM:FAIL:ON IN

CALCulate[c]:LIMit[m]:HIGH <NRf+>

m:1-12, means limit value 1 to limit value 12

Use the **CALCulate[c]:CLIMits:STOP** command to turn off limit testing and,

After **CALCulate[c]:CLIMits:MODE** is set to GRADing mode, the setting of this command will take effect.

Def = Max

Limit1 Min=Limit1 Low

Max = 1e+09

Limit(n) Min=Limit(n) low

Max=Limit(n-1) High

Note: n range 2-12

Command Syntax

CALCulate[c]:LIMit[m]:HIGH <NRf+>

Parameter

<NRf+>

(-1e+9 to +1e+09)|MINimum|MAXimum|Default

Query Syntax

CALCulate[c]:LIMit[m]:HIGH?

Return Parameters

<NRf+>

Example

CALC:LIM:HIGH MIN

CALCulate[c]:LIMit[m]:LOW <NRf+>

m:1-12, means limit value 1 to limit value 12

Use the **CALCulate[c]:CLIMits:STOP** command to turn off limit testing and,

After **CALCulate[c]:CLIMits:MODE** is set to GRADing mode, the setting of this command will take effect.

Def=Min

Limit1 Min=-1e+09 Max=Limit1 High

Limit(n) Min=limit(n-1) low

Max = limit(n) high

Note: n range 2-12

Command Syntax

CALCulate[c]:LIMit[m]:LOW? <NRf+>

Parameter

<NRf+>

(-1e+9 to +1e+09)|MINimum|MAXimum|Default

Query Syntax

CALCulate[c]:LIMit[m]:LOW?

Return Parameters

<NRf+>

Example

CALC:LIM:LOW MAX

CALCulate[c]:LIMit[m]:FAIL:DIGital[:DATA] <NR1>

In Grading mode, the limit fail output bit.

The Default value is bit[m] = 1. At the same time, the corresponding value will be output on the user IO. Up to 12 tests, corresponding to 12 IOs.

Use the **CALCulate[c]:CLIMits:STOP** command to turn off limit testing and,

After **CALCulate[c]:CLIMits:MODE** is set to GRADing mode, the setting of this command will take effect.

Command Syntax

CALCulate[c]:LIMit[m]:FAIL:DIGital[:DATA] bit_pattern <NR1>

Parameter

<NR1>

0-4095

Query Syntax

CALCulate[c]:LIMit[m]:FAIL:DIGital[:DATA]?

Return Parameters

<NR1>

Example

CALC:LIM:FAIL:DIG[:DATA] 1000

CALCulate[c]:LIMit:STARt <NRf+>

In Sorting mode, the limit value tests the starting value.

Use the **CALCulate[c]:CLIMits:STOP** command to turn off limit testing and,

CALCulate[c]:CLIMits:SORTing This command takes effect.

Defaults:-1e+09

Command Syntax

CALCulate[c]:LIMit:STARt <NRf+>

Parameter

<NRf+>

(-1e+09 to +1e+09)|MINimum|MAXimum|Default

Query Syntax

CALCulate[c]:LIMit:STARt?

Return Parameters

<NRf+>

Example

CALC:LIM:STAR MAX

CALCulate[c]:LIMit[m]:VALue <NRf+>

In Sorting mode, each limit test value, m:1-12, means limit 1 to limit 12.

Use the **CALCulate[c]:CLIMits:STOP** command to turn off limit testing and,

CALCulate[c]:CLIMits:SORTing This command takes effect.

Def = Min

Limit1 Min = Start Value

Limit1 Max = 1e+09

Limit(n) Min = Limit(n-1)Value

Limit(n) Max = 1e+09

Command Syntax

CALCulate[c]:LIMit[m]:VALue <NRf+>

Parameter

<NRf+>

(-1e+09 to +1e+09)|MINimum|MAXimum|Default

Query Syntax

CALCulate[c]:LIMit[m]:VALue?

Return Parameters

<NRf+>

Example

CALC:LIM:VAL MAX

CALCulate[c]:LIMit[m]:PASS:DIGital[:DATA] <NR1>

In Sorting mode, limit pass output bit. The Default value is bit[m] = 1, and the corresponding value will be output on the user IO. Up to 12 tests, corresponding to 12 IOs.

Use the **CALCulate[c]:CLIMits:STOP** command to turn off limit testing and,

CALCulate[c]:CLIMits:SORTing This command setting takes effect.

Command Syntax

CALCulate[c]:LIMit[m]:PASS:DIGital[:DATA] <NR1>

Parameter

<NR1>

0-4095

Query Syntax

CALCulate[c]:LIMit[m]:PASS:DIGital[:DATA]?

Return Parameters

<NR1>

Example

CALC:LIM:PASS:DIG 1000

CALCulate[c]:DATA? [offset[, size]]

Return limit test data.

The elements of the returned data are determined by the FORMat:ELEMents:CALCulate command.

Command Syntax

CALCulate[c]:DATA? [offset[, size]]

Parameter

<NR3>

1 to maximum

Return Parameters

<NR3>

Example

CALC:DATA? 1

CALCulate[c]:DATA:LATest?

Returns the latest limit test data.

The elements of the returned data are determined by the FORMat:ELEMents:CALCulate command.

Command Syntax

CALCulate[c]:DATA:LATest?

Parameter

None

Return Parameters

<NR3>

CALCulate[c]:CLIMits:SETTing:RECall <NR1>

Restores selected synthetic limit test configuration parameters,

CALCulate[c]:CLIMits:SETTing:SAVE After saving the file, the command takes effect.

Command Syntax

CALCulate[c]:CLIMits:SETTing:RECall <NR1>

Parameter

<NR1>

1--10

Query Syntax

None

Example

CALC:CLIM:SETT:REC 1

CALCulate[c]:CLIMits:SETTing:SAVE <NR1>

Save the existing synthetic limit test configuration parameters.

Command Syntax

CALCulate[c]:CLIMits:SETTing:SAVE index

Parameter

<NR1>

1--10

Query Syntax

None

Example

CALC:CLIM:SETT:SAVE 1

CALCulate[c]:CLIMits:SETTing:DELete <NR1>

Deletes the selected composite limit test configuration parameter.

Command Syntax

CALCulate[c]:CLIMits:SETTing:DELete index

Parameter

<NR1>

1--10

Query Syntax

None

Example

CALC:CLIM:SETT:DEL 1

CALCulate[c]:MATH:STATe <BOOL>

Enable or disable math expressions.

Command Syntax

CALCulate[c]:MATH:STATe state

Parameter

1|ON|0|OFF

Query Syntax

CALCulate[c]:MATH:STATe?

Return Parameters

<BOOL>

1|0

Example

CALC:MATH:STAT 0

CALCulate[c]:MATH:FUNCtion <CPD>

Power: power

Off-Comp-Ohm: Offset Compensation Ohm

Alpha: rheostat

Volt-Coef: voltage coefficient

Command Syntax

CALCulate[c]:MATH:FUNCtion <CPD>

Parameter

<CPD>

POWEr|OFFCompohm|ALPHa|VOLTcoef

Query Syntax

CALCulate[c]:MATH:FUNCtion?

Return Parameters

<CRD>

POWEr|OFFCompohm|ALPHa|VOLTcoef

Example

CALC:MATH:FUNC OFFC

CALCulate[c]:MATH:DATA? [offset[, size]]

Returns the calculation result data.

Command Syntax

CALCulate[c]:MATH:DATA? [offset[, size]]

Parameter

n|CURRent|STARt

Return Parameters

<NR1> or <CPD>

CALCulate[c]:MATH:DATA:LATest?

Returns the latest calculation result data.

Command Syntax

CALCulate[c]:MATH:DATA:LATest?

Parameter

None

Return Parameters

<NR3>

CALCulate[c]:MATH[:EXPRession]:CATalog?

Returns a list of all predefined and user-defined mathematical expression names.

Definition of mathematical expression; up to 256 ASCII characters; parameter data type is Expr.

Command Syntax

CALCulate[c]:MATH[:EXPRession]:CATalog?

Parameter

None

Return Parameters

Expr

Example

CALC:MATH:CAT?

CALCulate[c]:MATH[:EXPRession][:DEFine] <SPD>

Defines a math expression that will be a user-defined math expression.

Command Syntax

CALCulate[c]:MATH[:EXPRession][:DEFine] definition

Parameter

<SPD>

Query Syntax

CALCulate[c]:MATH[:EXPRession][:DEFine]?

Return Parameters

<SRD>

Example

CALC:MATH:EXPR:DEF((CURR[1]-CURR[0])*(RES[1]-RES[0]))

CALC:MATH:EXPR:NAME "Expression_for_ch1"

CALCulate[c]:MATH[:EXPRession]:DELete[:SELected] <SPD>

Deletes the naming of the selected expression.

Command Syntax

CALCulate[c]:MATH[:EXPRession]:DELete[:SELected] name

Parameter

<SPD>

Query Syntax

None

Example

CALC:MATH:EXPR:DEL:SEL "TempExpression1"

CALCulate[c]:MATH[:EXPRession]:DELete:ALL

Remove naming of all expressions.

Command Syntax

CALCulate[c]:MATH[:EXPRession]:DELete:ALL

Parameter

None

Query Syntax

None

Example

CALC:MATH:EXPR:DEL:ALL

CALCulate[c]:MATH[:EXPRession]:NAME <SPD>

Select a mathematical expression for calculation.

A predefined math expression or a user-defined math expression can be specified via the name parameter.

Command Syntax

CALCulate[c]:MATH[:EXPRession]:NAME <SPD>

Parameter

<SPD>

Query Syntax

CALCulate[c]:MATH[:EXPRession]:NAME?

Return Parameters

<SRD>

Example

CALC:MATH:EXPR:NAME "Expression_for_ch1"

CALCulate[c]:MATH:UNITs <SPD>

Defines the unit name for mathematical expressions.

Unit name. Up to 32 ASCII characters.

Command Syntax

CALCulate[c]:MATH:UNITs <SPD>

Parameter

<SPD>

Query Syntax

CALCulate[c]:MATH:UNITs?

Return Parameters

<SRD>

Example

CALC:MATH:UNIT "amps"

CALC:MATH:UNIT?

Chapter13 SCOPe Subsystem

SENSe[c]: All oscilloscope commands belong to the sense command set.

SENSe[c]:SCOPe:AUTO Oscilloscope automatic setup

SENSe[c]:SCOPe:RUN oscilloscope running

SENSe[c]:SCOPe:SINGle Scope word capture

SENSe[c]:SCOPe:STOP Oscilloscope stopped

SENSe[c]:SCOPe:TIMebase:SCALe <NRf+>

Set the time scale of the display oscilloscope <0.001-1.0>

Command Syntax

SENSe[c]:SCOPe:TIMebase:SCALe <NRf+>

Parameter

<NRf+>

0.001|0.002:0.005|0.01|0.02|0.05|0.1|0.2|0.5|1|MINimum|MAXimum

Query Syntax

SENSe[c]:SCOPe:TIMebase:SCALe?

Return Parameters

<NRf+>

Example

SENS:SCOP:TIM:SCAL 1

SENSe[c]:SCOPe:VOLTage:SCALe <NRf+>

Set the voltage scale of the oscilloscope <0.000001-1000.0>

IT2801:maximum value 1000

IT2805/IT2806:maximum value 200

Command Syntax

SENSe[c]:SCOPe:VOLTage:SCALe <NRf+>

Parameter

<NRf+>

[MINimum|MAXimum]

Query Syntax

SENSe[c]:SCOPe:VOLTage:SCALe?

Return Parameters

<NRf+>

Example

SENS:SCOP:VOLT:SCAL MAX

SENSe[c]:SCOPe:CURRent:SCALe <NRf+>

Set the current scale of the oscilloscope <1e-6 -- 10>

Parameter The range varies by model:

IT2801 <1e-6 -- 1>

IT2805/IT2806 <1e-6 -- 10>

Command Syntax

SENSe[c]:SCOPe:CURRent:SCALe <NRf+>

Parameter

<NRf+>

[MINimum|MAXimum]

Query Syntax

SENSe[c]:SCOPe:CURRent:SCALe?

Return Parameters

<NRf+>

Example

SENS:SCOP:CURR:SCAL MAX

SENSe[c]:SCOPe:TIMebase:DELay <NRf+>

Set the trigger delay of the oscilloscope <-3.0-3.0>

Parameter range changes according to Time Div(-3*TimeDiv -- 3*Time Div)

Command Syntax

SENSe[c]:SCOPe:TIMebase:DELay <NRf+>

Parameter

<NRf+>

[MINimum|MAXimum]

Query Syntax

SENSe[c]:SCOPe:TIMebase:DELay?

Return Parameters

<NRf+>

Example

SENS:SCOP:TIM:DEL MAX

SENSe[c]:SCOPe:TRIGger:LEVel <NRf+>

Set the trigger level of the oscilloscope, the range is the machine voltage range.

Command Syntax

SENSe[c]:SCOPe:TRIGger:LEVel <NRf+>

Parameter

<NRf+>

[MINimum|MAXimum]

Query Syntax

SENSe[c]:SCOPe:TRIGger:LEVel?

Return Parameters

<NRf+>

Example

SENS:SCOP:TRIG:LEV MAX

SENSe[c]:SCOPe:TRIGger:SOURce <NRf+>

Set the trigger source of the oscilloscope.

Command Syntax

SENSe[c]:SCOPe:TRIGger:SOURce <NRf+>

Parameter

<NRf+>

VOLT|CURR|MANUal|BUS|TRIG1-2|FIBer1

Query Syntax

SENSe[c]:SCOPe:TRIGger:SOURce?

Return Parameters

<NRf+>

Example

SENS:SCOP:TRIG:SOUR MAX

SENSe[c]:SCOPe:TRIGger:SLOPe <CPD>

Set the trigger edge of the oscilloscope.

Command Syntax

SENSe[c]:SCOPe:TRIGger:SLOPe <NRf+>

Parameter

<CPD>

<RISE|FALL|BOTH>

Query Syntax

SENSe[c]:SCOPe:TRIGger:SLOPe?

Return Parameters

<CRD>

Example

SENS:SCOP:TRIG:SLOP FALL

SENSe[c]:SCOPe:TRIGger:MODE <CPD>

Set the trigger edge of the oscilloscope.

Command Syntax

SENSe[c]:SCOPe:TRIGger:MODE <CPD>

Parameter

<CPD>

<AUTO|NORMal>

Query Syntax

SENSe[c]:SCOPe:TRIGger:MODE?

Return Parameters

<CRD>

Example

SENS:SCOP:TRIG:MODE AUTO

SENSe[c]:SCOPe:RECord:LENGth <NRf+>

Set the maximum number of recorded data of the oscilloscope.

IT2805:Support up to 300, there is no 600 option.

IT2801 and IT2806: Support up to 600. There is no 300 option.

Command Syntax

SENSe[c]:SCOPe:RECord:LENGth <NRf+>

Parameter

<NRf+>

0.6|6|60|300|600|MINimum|MAXimum

Query Syntax

SENSe[c]:SCOPe:RECord:LENGth?

Return Parameters

<NRf+>

Example

SENS:SCOP:REC:LENG 6

SENSe[c]:SCOPe:LINE:SELection <NRf+>

Set the line display of the oscilloscope.

Command Syntax

SENSe[c]:SCOPe:LINE:SELection <NRf+>

Parameter

<NRf+>

<VOLTage|CURRent>,<Off|On|0|1>

Query Syntax

ENSe[c]:SCOPe:LINE:SELection?

Return Parameters

<NRf+>

Example

SENS:SCOP:LINE:SEL VOLT

SENSe[c]:SCOPe:STATus?

Query the current state of the oscilloscope.

Command Syntax

SENSe[c]:SCOPe:STATus?

Parameter

"STOP"|"READy"|"ROLL"|"AUTO"|"TRIG'd"

Return Parameters

None

Example

SENS:SCOP:STAT?

SENSe[c]:SCOPe:RSTate?

Query the current state of the oscilloscope.

Command Syntax

SENSe[c]:SCOPe:RSTate?

Parameter

"RUN"|"STOP"|"SINGle"

Return Parameters

None

Example

SENS:SCOP:RST?

SENSe[c]:SCOPe:WAVeform:DATA?

Obtain the currently displayed data of the oscilloscope;

Parameter Takes a long time to get.

Command Syntax

SENSe[c]:SCOPe:WAVeform:DATA?

Parameter

None

Example

SENS:SCOP:WAV:DATA?

SENSe[c]:SCOPe:RAW:DATA:VOLTage?

Obtain the data of the buffer voltage of the oscilloscope;

Parameter Takes a long time to get.

Command Syntax

SENSe[c]:SCOPe:RAW:DATA:VOLTage?

Parameter

1-600000

Return Parameters

None

Example

SENS:SCOP:RAW:DATA:VOLT?

SENSe[c]:SCOPe:RAW:DATA:CURRent?

Obtain the data of the buffer current of the oscilloscope;

Parameter Takes a long time to get.

Command Syntax

SENSe[c]:SCOPe:RAW:DATA:CURRent?

Parameter

1-600000

Return Parameters

None

Example

SENS:SCOP:RAW:DATA:CURR?

SENSe[c]:SCOPe:RAW:DATA:ALL?

Get the oscilloscope buffer data voltage and current;

Parameter Takes a long time to get.

Command Syntax

SENSe[c]:SCOPe:RAW:DATA:ALL?

Parameter

1-600000

Return Parameters

None

Example

SENS:SCOP:RAW:DATA:ALL?

SENSe[c]:SCOPe:RAW:POINts:ACTual?

Get the number of data sets of the oscilloscope buffer, including voltage and current

Command Syntax

SENSe[c]:SCOPe:RAW:POINts:ACTual?

Parameter

None

Example

SENS:SCOP:RAW:POIN:ACT?

SENSe[c]:SCOPe:RANGe:CATalog?

Get the voltage and current scale range options.

IT2801:

1E-6/2E-6/5E-6/1E-5/2E-5/5E-5/1E-4/2E-4/5E-4/1E-3/2E-3/5E-3/0.01/0.02/0.05/001/0.2/0.5/1/2/5/10/20/50/100/200/500/1000,

1E-6/2E-6/5E-6/1E-5/2E-5/5E-5/1E-4/2E-4/5E-4/1E-3/2E-3/5E-3/0.01/0.02/0.05/001/0.2/0.5/1

IT2805:

1E-6/2E-6/5E-6/1E-5/2E-5/5E-5/1E-4/2E-4/5E-4/1E-3/2E-3/5E-3/0.01/0.02/0.05/001/0.2/0.5/1/2/5/10/20/50/100/200,

1E-6/2E-6/5E-6/1E-5/2E-5/5E-5/1E-4/2E-4/5E-4/1E-3/2E-3/5E-3/0.01/0.02/0.05/001/0.2/0.5/1/2/5/10

IT2806:

1E-6/2E-6/5E-6/1E-5/2E-5/5E-5/1E-4/2E-4/5E-4/1E-3/2E-3/5E-3/0.01/0.02/0.05/001/0.2/0.5/1/2/5/10/20/50/100/200,,

1E-6/2E-6/5E-6/1E-5/2E-5/5E-5/1E-4/2E-4/5E-4/1E-3/2E-3/5E-3/0.01/0.02/0.05/001/0.2/0.5/1/2/5/10

Command Syntax

SENSe[c]:SCOPe:RANGe:CATalog?

Parameter

None

Example

SENS:SCOP:RANG:CAT?

SENSe[c]:SCOPe:DATA:TAG?

Query the sampling data ID of the oscilloscope.

Command Syntax

SENSe[c]:SCOPe:DATA:TAG?

Parameter

None

Example

SENS:SCOP:DATA:TAG?

Chapter14 BATTery emulator Subsystem

BATTery[c]:EMULator:RUN

BATTery[c]:EMULator:STOP

The battery simulation function runs or stops.

BATTery[c]:EMULator:RSTate?

Read the running state of the battery simulation, run or stop.

Command Syntax

BATTery[c]:EMULator:RSTate?

Parameter

None

Return Parameters

"RUN" | "STOP"

Example

BATT:EMUL:RST?

BATTery[c]:EMULator:MODE <CPD>

Battery simulation operation mode, user-defined parameters and external import curve mode;

User defined files are saved locally;

CURVe mode only supports U disk import.

Defaults:USERdefine

Command Syntax

BATTery[c]:EMULator:MODE <CPD>

Parameter

<CPD>

USERdefine|CURVe

Query Syntax

BATTery[c]:EMULator:MODE?

Return Parameters

<CRD>

Example

BATT:EMUL:MODE CURV

BATTery[c]:EMULator:INITial:SOC <NRf+>

The initial soc percentage of the battery simulation simulation battery;

Defaults:0

Command Syntax

BATTery[c]:EMULator:INITial:SOC <NRf+>

Parameter

<NRf+>

0-1|MINimum|MAXimum|Default

Query Syntax

BATTery[c]:EMULator:INITial:SOC?

Return Parameters

<NRf+>

Example

BATT:EMUL:INIT:SOC MAX

BATTery[c]:EMULator:SOC:UPPer:LIMit <NRf+>

Set the battery simulated overcharge SOC upper limit;

Defaults:1.01

Command Syntax

BATTery[c]:EMULator:SOC:UPPer:LIMit <NRf+>

Parameter

<NRf+>

1-1.1|MINimum|MAXimum|Default

Query Syntax

BATTery[c]:EMULator:SOC:UPPer:LIMit?

Return Parameters

<NRf+>

Example

BATT:EMUL:SOC:UPP:LIM MAX

BATTery[c]:EMULator:SOC:LOWer:LIMit <NRf+>

Set the battery simulated overcharge SOC lower limit;

Defaults:-0.01

Command Syntax

BATTery[c]:EMULator:SOC:LOWer:LIMit <NRf+>

Parameter

<NRf+>

-0.1 to 0 |MINimum|MAXimum|Default

Query Syntax

BATTery[c]:EMULator:SOC:LOWer:LIMit?

Return Parameters

<NRf+>

Example

BATT:EMUL:SOC:LOW:LIM MAX

BATTery[c]:EMULator:VOC:FULL <NRf+>

Battery simulation simulates the voltage of a fully charged battery, only supports USERdefine mode;

Full voltage maximum value determination steps:

1. Determine the current gear according to the I-limit parameter.

2. Then determine the voltage gear from the specifications of the corresponding model, so as to find the maximum value max/min of the gear;

3. Determine the current Full Voltage max = max/serial_num according to the current serial number serial_num;

Full Voltage min = 0V;

Defaults:0

Command Syntax

BATTery[c]:EMULator:VOC:FULL <NRf+>

Parameter

<NRf+>

MINimum|MAXimum

Query Syntax

BATTery[c]:EMULator:VOC:FULL?

Return Parameters

<NRf+>

Example

BATT:EMUL:VOC:FULL MIN

BATTery[c]:EMULator:VOC:EMPTy <NRf+>

Battery simulation simulates the voltage of empty battery, only supports USERdefine mode;

Empty voltage maximum value determination steps:

1. Determine the current gear according to the I-limit parameter.

2. Then determine the voltage gear from the specifications of the corresponding model, so as to find the maximum value max/min of the gear;

3. Determine the current Empty Voltage max = max/serial_num according to the current serial number serial_num;

Empty Voltage min = 0V;

Defaults:0

Command Syntax

BATTery[c]:EMULator:VOC:EMPTy <NRf+>

Parameter

<NRf+>

MINimum|MAXimum

Query Syntax

BATTery[c]:EMULator:VOC:EMPTy?

Return Parameters

<NRf+>

Example

BATT:EMUL:VOC:EMPT MIN

BATTery[c]:EMULator:CAPacity:LIMit <NRf+>

Battery simulation simulates the capacity of the battery;

Defaults:10

Command Syntax

BATTery[c]:EMULator:CAPacity:LIMit <NRf+>

Parameter

<NRf+>

MINimum|MAXimum|Default

Query Syntax

BATTery[c]:EMULator:CAPacity:LIMit?

Return Parameters

<NRf+>

Example

BATT:EMUL:CAP:LIM MAX

BATTery[c]:EMULator:RESistance <NRf+>

The internal resistance setting of battery simulation only supports USERdefine mode.

Defaults:0.005

Command Syntax

BATTery[c]:EMULator:RESistance <NRf+>

Parameter

<NRf+>

MINimum|MAXimum|Default

Query Syntax

BATTery[c]:EMULator:RESistance?

Return Parameters

<NRf+>

Example

BATT:EMUL:RES MIN

BATTery[c]:EMULator:PARallel <NR1>

Set the number of battery simulation parallel connections;

Defaults:1

Command Syntax

BATTery[c]:EMULator:PARallel <NR1>

Parameter

<NR1>

MINimum|MAXimum|Default

<1-99>

Query Syntax

BATTery[c]:EMULator:PARallel?

Return Parameters

<NR1>

Example

BATT:EMUL:PAR MIN

BATTery[c]:EMULator:SERies <NR1>

Set the number of battery simulations connected in series:

Serial number minimum = 1;

The steps to determine the maximum value of Serial number:

1. First determine the maximum value of Full Voltage max;

2. Get the current Full Voltage parameter para_value;

3. Serial number = max/para_value;

Note: The minimum value of the Serial number is 1, and the maximum value may be 1, and the two do not conflict.

Defaults:1

Command Syntax

BATTery[c]:EMULator:SERies <NR1>

Parameter

<NR1>

MINimum|MAXimum|Default

<1-99>

Query Syntax

BATTery[c]:EMULator:SERies?

Return Parameters

<NR1>

Example

BATT:EMUL:SER 10

BATTery[c]:EMULator:CURRent:LIMit:POSitive <NRf+>

Set the limit value of battery pack current positive for battery simulation.

I-Limit Positive maximum value determination steps:

1. Determine the voltage gear according to the Full Voltage parameter.

2. Then determine the current gear from the specifications of the corresponding model, so as to find the maximum value max/min of the gear;

3. I-limit_MAX = max; i-limit_MIN = 0

Defaults:MAXimum

Command Syntax

BATTery[c]:EMULator:CURRent:LIMit:POSitive <NRf+>

Parameter

<NRf+>

MINimum|MAXimum

Query Syntax

BATTery[c]:EMULator:CURRent:LIMit:POSitive?

Return Parameters

<NRf+>

Example

BATT:EMUL:CURR:LIM:POS MIN

BATTery[c]:EMULator:CURRent:LIMit:NEGative <NRf+>

Set the negative limit value of battery simulation simulation battery pack current.

I-Limit Negative maximum value determination steps:

1. Determine the voltage gear according to the Full Voltage parameter.

2. Then determine the current gear from the specifications of the corresponding model, so as to find the maximum value max/min of the gear;

3. I-limit_MAX = 0; I-limit_MIN = min

Defaults:MINimum

Command Syntax

BATTery[c]:EMULator:CURRent:LIMit:NEGative <NRf+>

Parameter

<NRf+>

MINimum|MAXimum

Query Syntax

BATTery[c]:EMULator:CURRent:LIMit:NEGative?

Return Parameters

<NRf+>

Example

BATT:EMUL:CURR:LIM:NEG MIN

BATTery[c]:EMULator:END:MODE <CPD>

HOLD: After charging and discharging reaches the limit value, it will keep the limit value.

OFF: After charging reaches the upper limit, off

Defaults:HOLD

Command Syntax

BATTery[c]:EMULator:END:MODE <CPD>

Parameter

<CPD>

<HOLD|OFF>

Query Syntax

BATTery[c]:EMULator:END:MODE?

Return Parameters

<CRD>

Example

BATT:EMUL:END:MODE OFF

BATTery[c]:EMULator:CURRent:SOC?

Get the real-time SOC of the battery during battery simulation.

Command Syntax

BATTery[c]:EMULator:CURRent:SOC?

Parameter

None

Example

BATT:EMUL:CURR:SOC?

BATTery[c]:EMULator:CURRent:CAPacity?

Get the real-time capacity of the battery during battery simulation.

Command Syntax

BATTery[c]:EMULator:CURRent:CAPacity?

Parameter

None

Example

BATT:EMUL:CURR:CAP?

BATTery[c]:EMULator:CURRent:VOC?

Obtain the real-time open circuit voltage of the battery during battery simulation.

Command Syntax

BATTery[c]:EMULator:CURRent:VOC?

Parameter

None

Example

BATT:EMUL:CURR:VOC?

BATTery[c]:EMULator:CURRent:Time?

Get the runtime of the battery during the battery simulation.

Command Syntax

BATTery[c]:EMULator:CURRent:Time?

Parameter

None

Example

BATTery[c]:EMULator:CURRent:Time?

BATTery[c]:EMULator:CURRent:AH?

After getting the battery simulation started, the ampere hour

Returns 2 values: a positive value and a negative value.

Command Syntax

BATTery[c]:EMULator:CURRent:AH?

Parameter

None

Example

BATT:EMUL:CURR:AH?

BATTery[c]:EMULator:FILE:OPEN:LOCal <SPD>

BATTery[c]:EMULator:FILE:OPEN:UDISk <SPD>

Open the file, LOCA1 is used in USERdefine mode, LOCA1 and UDISk are used in CURVe mode.

USERdefine mode: only use Battery-XXX.csv

CURVe mode: Only Bat-Cur-XXX.csv can be used

Command Syntax

BATTery[c]:EMULator:FILE:OPEN:LOCal <SPD>

BATTery[c]:EMULator:FILE:OPEN:UDISk <SPD>

Parameter

<SPD>

Query Syntax

None

Return Parameters

<SRD>

Example

BATT:EMUL:FILE:OPEN:LOC "TempExpression1_NAME"

BATT:EMUL:FILE:OPEN:UDIS "TempExpression2_NAME"

BATTery[c]:EMULator:NAME?

Query the name (including path) of the currently opened file.

Command Syntax

BATTery[c]:EMULator:NAME?

Parameter

None

Return Parameters

<SRD>

Example

BATT:EMUL:NAME?

BATTery[c]:EMULator:NAME:ALL:LOCal?

BATTery[c]:EMULator:NAME:ALL:UDISk?

View all files under a certain path.

Command Syntax

BATTery[c]:EMULator:NAME:ALL:LOCal?

BATTery[c]:EMULator:NAME:ALL:UDISk?

Parameter

None

Return Parameters

<SRD>

Example

BATT:EMUL:NAME:ALL:LOC?

BATT:EMUL:NAME:ALL:UDIS?

BATTery[c]:EMULator:FILE:SAVE[:LOCal] <SPD>

Save the file locally, the saved name format is Bat-Cur-XXX.csv or Battery-XXX.csv

User mode: only use Battery-XXX.csv

Curve mode: Only Bat-Cur-XXX.csv can be used

Command Syntax

BATTery[c]:EMULator:FILE:SAVE[:LOCal] <SPD>

Parameter

<SPD>

Return Parameters

<SRD>

Example

BATT:EMUL:FILE:SAVE:LOC "Tamps"

BATTery[c]:EMULator:FILE:DELete[:LOCal] <SPD>

Delete local files.

Command Syntax

BATTery[c]:EMULator:FILE:DELete[:LOCal] <SPD>

Parameter

<SPD>

Return Parameters

<SRD>

Example

BATT:EMUL:FILE:DEL:LOC "Tamps"

BATTery[c]:EMULator:FILE:DELete:ALL[:LOCal] <SPD>

Delete all local files.

Command Syntax

BATTery[c]:EMULator:FILE:DELete:ALL[:LOCal] <SPD>

Parameter

<SPD>

Return Parameters

<SRD>

Example

BATT:EMUL:FILE:DEL:ALL:LOC

BATTery[c]:EMULator:CURVe:STEP <NR1>,<NRF>,<NRF>,<NRF>

<NR1>: index number of curve,

The parameters are separated by commas, and the specific order is as follows:

is capacity (SOC:0 - 1), voltage, internal resistance

Note: SOC, voltage, and internal resistance need to be changed progressively, and there will be an error prompt when the parameters are not changed progressively.

<NR1>: [1-10000]

Capacity (SOC:0-1)

Voltage: (V)

Internal resistance: (Ω)

Command Syntax

BATTery[c]:EMULator:CURVe:STEP <NR1>,<NRF>,<NRF>,<NRF>

Parameter

<NR1>,<NRF>,<NRF>,<NRF>

Query Syntax

None

Return Parameters

<NR1>,<NRF>,<NRF>,<NRF>

Example

BATT:EMUL:CURV:STEP 1

BATTery[c]:EMULator:CURVe:STEP? <NR1>

Read the content information of the specified number of steps.

<NR1>:[1-10000]

Command Syntax

BATTery[c]:EMULator:CURVe:STEP? <NR1>

Parameter

<NR1>

Example

BATT:EMUL:CURV:STEP? 1

BATTery[c]:EMULator:CURVe:COUNt?

Query how many steps the current Curve has.

Command Syntax

BATTery[c]:EMULator:CURVe:COUNt?

Parameter

None

Return Parameters

None

Example

BATT:EMUL:CURV:COUN?

BATTery[c]:EMULator:CURVe:STEP:DELete <NR1>

Delete the specified step. If you delete steps that do not exist, an error will be reported.

1 is the current maximum number of steps.

LIST:STEP:DELete 1 //Delete the first step

To delete the number of steps, it is necessary to ensure that the number of steps is less than the total number of steps, otherwise 120, "Parameter overflowed" will be reported

Command Syntax

BATTery[c]:EMULator:CURVe:STEP:DELete <NR1>

Parameter

<NR1>

Return Parameters

<NR1>

Example

BATT:EMUL:CURV:STEP:DEL 1

Chapter15 IEEE-488 Reference Command

This chapter introduces common commands of IEEE-488.

*IDN?

This order can read information about power supply. The parameter it returns contains 4 segments divided by comma.

Query Syntax

*IDN?

Parameter

None

Return Parameters

<AARD>section description

Example

ITECH, IT2801, 00000000000004, V1.01-V1.00

*RST

This command resets the power supply to the factory Default state.

- Turn off recorder, sweep, meas ohms, meas limit, meas math, battery, pulse functions.
- Return to DC output mode.
- close output.
- Reset all parameters under the config menu.

Command Syntax

*RST

Parameter

None

*SAV <group>

This command will save the current setting value to the specified memory area.

Command Syntax

*SAV <NR1>

Parameter

1-100

*RCL <group>

This command will restore the set value from the specified memory area.

Command Syntax

*RCL <NR1>

Parameter

1-100

*TRG

When the trigger source of the power supply is command mode, this command will generate a trigger signal. The function is the same as the **TRIGger[c]:INITiate[:IMMediate]** command.

Command Syntax

*TRG

Parameter

None

Chapter16 Error Message

The following is the error code and description error code returned by the device. The error code is returned in two ways. Error codes are displayed on the front panel:
Error numbers and messages are given by **SYSTem:ERRor?** Query readback.

Error error string
100 to 199 (set standard event status register bit #5)
(0) No error
(101) DESIGN ERROR: Too many numeric suffices in Command Spec
(110) No Input Command to parse
(114 Numeric suffix is invalid value
(116 Invalid value in numeric or channel list, e.g. out of range
(117) Invalid number of dimensions in a channel list
(120) Parameter of type Numeric Value overflowed its storage
(130) Wrong units for parameter
(140) Wrong type of parameter(s)
(150) Wrong number of parameters
(160) Unmatched quotation mark (single/double) in parameters
(165) Unmatched bracket
(170) Command keywords were not recognized
(180) No entry in list to retrieve (number list or channel list)
(190) Too many dimensions in entry to be returned in parameters
(191) Too many char
(-150) String data error
(-151) Invalid string data [e.g., END received before close quote]
(-158) String data not allowed
(-160) Block data error
(-161) Invalid block data [e.g., END received before length satisfied]
(-168) Block data not allowed
(-170) Expression error
(-171) Invalid expression
(-178) Expression data not allowed

Execution errors -200 to -299 (set standard event register bit #4)
(-200) Execution error [generic]
(-221) Settings conflict [check current device state]
(-222) Data out of range [e.g., too large for this device]
(-223) Too much data [out of memory; block, string, or expression too long]
(-224) Illegal parameter value [device-specific]
(-225) Out of memory
(-230) Data Corrupt or Stale
(-270) Macro error
(-272) Macro execution error
(-273) Illegal macro label
(-276) Macro recursion error

(-277) Macro redefinition not allowed

System errors -300 to -399 (set standard event status register bit 3)

(-310) System error [generic]
(-350) Too many errors [errors beyond 9 lost due to queue overflow]

Query error -400 to -499 (set standard event register Bit2)

(-499) (sets Standard Event Status Register bit #2)
(-400) Query error [generic]
(-410) Query INTERRUPTED [query followed by DAB or GET before response complete]
(-430) Query DEADLOCKED [too many queries in command string]
(-440) Query UNTERMINATED [after indefinite response]

Self-test errors 0 to 99 (set standard event status register bit 3)

0 No error
1 Module Initialization Lost
2 Mainframe Initialization Lost
3 Module Calibration Lost
4 Non-volatile RAM STATE section checksum failed
5 Non-volatile RAM RST section checksum failed
10 RAM selftest
11 CVDAC selftest 1
12 CVDAC selftest 2
13 CCDAC selftest 1
14 CCDAC selftest 2
15 CRDAC selftest 1
16 CRDAC selftest 2
20 Input Down
40 Flash write failed
41 Flash erase failed
80 Digital I/O selftest error

Device-related errors 100 to 32767 (set standard event status register bit 3)

213 RS232 buffer overrun error
216 RS232 receiver framing error
217 RS232 receiver parity error
218 RS232 receiver overrun error
220 Front panel uart overrun
221 Front panel uart framing
222 Front panel uart parity
223 Front panel buffer overrun
224 Front panel timeout
225 Front Crc Check error
226 Front Cmd Error
401 CAL switch prevents calibration
402 CAL password is incorrect
403 CAL not enabled
404 Computed readback cal constants are incorrect
405 Computed programming cal constants are incorrect

406 Incorrect sequence of calibration commands
407 CV or CC status is incorrect for this command
408 Output mode switch must be in NORMAL position
600 Lists inconsistent [lists have different list lengths]
601 Too many sweep points
602 Command only applies to RS232 interface
603 FETCH of data that was not acquired
604 Measurement overrange
605 Command not allowed while list initiated
610 Corrupt update data
611 Not Updating

Contact us

Thank you for purchasing ITECH products, if you have any questions about this product, please contact us according to the following steps:

1. Visit the ITECH website www.itechate.com.
2. Choose your most convenient contact method for further consultation.