

CURVE TRACER CS-8000 Series CS-8020 / 8200 / 8500

Remote Control Manual



IWATSU

Preface

- ◆ Thank you for purchasing the Curve Tracer CS-8000 Series. We sincerely hope to continue using our instruments for a long time.
- ◆ Before using the instrument, thoroughly read the Instruction Manual to fully understand its contents. After reading the Instruction Manual and this Remote Control Manual, keep them in a safe place for future reference.
- ◆ The Remote Control Manual describes description of remote controls that use LAN interface. The handling precautions, operation method and performance of the instrument refer to the Instruction Manual.



Important Safety Precautions

The " ⚠ WARNING" and " ⚠ CAUTION" in the Instruction Manual describe the items that you should follow in order to use the instrument safely and prevent injury to the human body and damage to property.

Please be sure to read it for safe use.

In addition, the panel is marked with a warning symbol.

Description of panel symbols

	ELECTRIC SHOCK HAZARD	If you handle it incorrectly, you may get an electric shock. This is a symbol to call your attention. To protect the human body, refer to the items described in the Instruction Manual before use.
	WARNING	This symbol is used with reference to the items described in the instruction manual to protect the human body and protect the instrument from damage.

Notice

- ◆ Part of the contents of this Remote Control Manual may be changed without notice due to improvements in performance and functions.
- ◆ It is prohibited to reprint or copy the contents of the Remote Control Manual without permission.
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- ◆ Microsoft and Microsoft Windows are registered trademarks of Microsoft Corporation.
- ◆ If you have any inquiries about the instrument, please contact IWATSU or sales office.

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1. Remote Control

1.1 Overview

With remote control, you can use an external controller (usually a computer) to perform operations equivalent to manually operating the buttons and knobs of the instrument.

Remote control not only performs simple operations, but also transfers waveform data, screen data, panel setting data, and so on. In addition, you can configure an automatic measurement system.

For remote control of this instrument, communication using the TCP / IP protocol using the LAN interface of 10/100 / 1000Base-T is used. For details, refer to "1.5 Communication method".

1.2 Restrictions on remote control

Most functions can be controlled remotely with this instrument, but remote control is not possible for power switch ON / OFF, remote interface settings (IP address, etc.), and external unit registration and selection operations. For the functions that can be controlled remotely, refer to the list of control commands in "2.3 Command List".

1.3 Remote / local control


With this instrument, there is no state transition like remote / local in the communication standard IEEE Std.488.1 of GPIB interface widely used for remote control of measuring instruments.

For this reason, it is possible to accept key operations from the panel even during remote connection, but by turning on the LOCK WHILE REMOTE CONTROL setting in the SYSTEM menu, it is possible to prevent key operations from the front panel during remote connection.

1.4 Remote configuration settings

1.4.1 The instrument settings

Since the instrument uses the TCP / IP protocol for communication, it is necessary to make network settings such as the IP address.

SYSTEM Menu - SYSTEM STATUS – Tap the gear button  of REMOTE STATUS and set the following items.

Item	Function
DHCP	Set the DHCP function to "ON" or "OFF". When set to "ON", the information required for connection is automatically acquired. When set to "OFF", Set "IP ADDRESS", "SUBNET MASK", and "DEFAULT GATEWAY" individually. The default is "ON".
IP ADDRESS	If DHCP is "OFF", you can set the IP address. The default is 10.102.102.102.
SUBNET MASK	If DHCP is "OFF", you can set the subnet mask. The default is 255.255.255.0.
DEFAULT GATEWAY	If DHCP is "OFF", you can set the default gateway. The default is 10.102.102.100.

If the network connection settings are incorrect, the instrument, other devices on the network, or both may behave unpredictably. When connecting to an existing network, please contact the network administrator in advance and make the correct settings before connecting the instrument.

The instrument does not support name service. Therefore, when specifying this instrument when connecting, specify the IP address directly instead of the host name. If the IP address is set automatically by DHCP, you can check the assigned IP address in the SYSTEM menu – SYSTEM STATUS – REMOTE STATUS.

1.4.2 Communication settings on the computer side

Set the communication settings of the control software on the computer side as follows.

Client communication settings

Item	Setting
TCP / IP port number (connection destination)	5198
Delimiter (Send ^{Note1})	Either LF or CR + LF
Delimiter (Receive ^{Note2})	LF

Note1:It means that the computer sends data to this Instrument

Note2:It means that the computer receives data from this Instrument.

1.4.3 IP connection check

You can use the “ping” command from your computer to check the connection on the IP network. This command confirms the normality of the IP network by sending an IP packet to the network device and receiving the response.

The “ping” command can be used in Microsoft Windows and UNIX environments. For Windows, enter the following from the command prompt.

```
C:\>ping 10.102.102.102 Note
```

Note: The argument following "ping" specifies the network device to check the connection, and enter the IP address assigned to this Instrument. Here, "10.102.102.102" is used as an input example, but actually replace this part to suit the usage environment. If you have enabled the automatic IP address assignment by DHCP, check the IP address actually assigned by selecting SYSTEM menu-SYSTEM STATUS-REMOTE STATUS.

The following is an example of the execution result of the "ping" command when the connection is successful.

```
C:\>ping 10.102.102.102
```

```
Pinging 10.102.102.102 with 32 bytes of data:
```

```
Reply from 10.102.102.102: bytes=32 time<10 ms TTL=128
Reply from 10.102.102.102: bytes=32 time=20 ms TTL=128
Reply from 10.102.102.102: bytes=32 time=20 ms TTL=128
Reply from 10.102.102.102: bytes=32 time=30 ms TTL=128
```

```
Ping statistics for 10.102.102.102:
```

```
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2 ms, Maximum = 4 ms, Average = 3 ms
```

```
C:\>
```

In addition, the following is an example of the execution result of the "ping" command when there is some kind of failure on the network and a timeout occurs without receiving a response.

```
C:\>ping 10.102.102.102
```

```
Pinging 10.102.102.102 with 32 bytes of data:
```

```
Request timed out.
Request timed out.
Request timed out.
Request timed out.
```

```
Ping statistics for 10.102.102.102:
```

```
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

```
C:\>
```

If a timeout occurs, there may be a problem with the Instrument, the IP address setting of the computer, or the network connection including the cable.

1.5 Communication method

TCP / IP are used for communication between this instrument and the computer. Follow the steps below to make a TCP / IP connection.

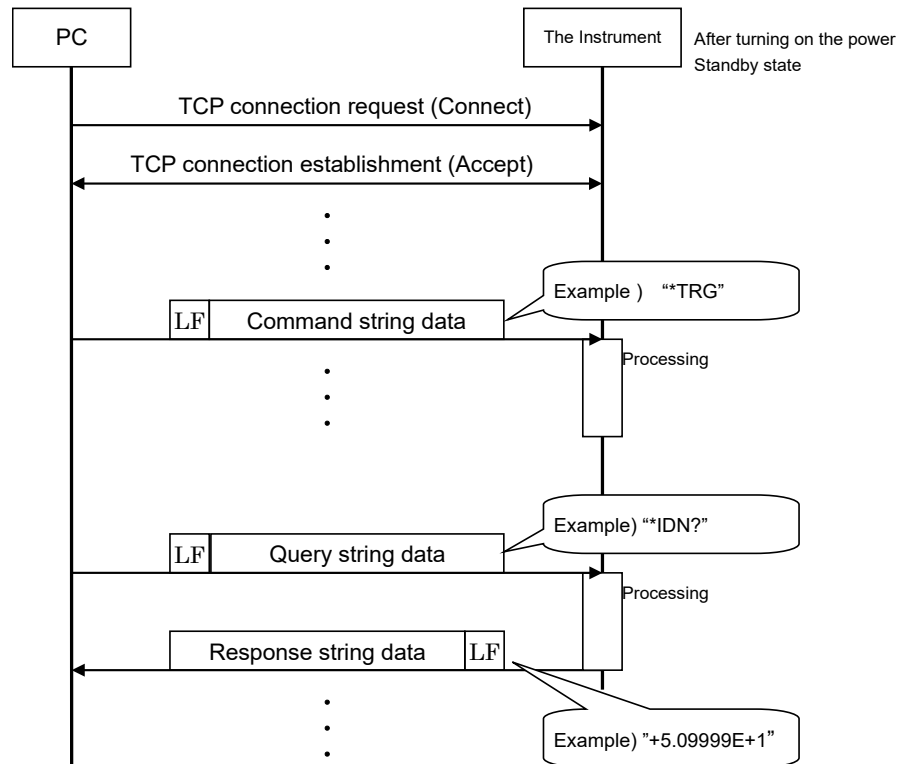
Procedure

1. After powering on, the Instrument will wait for a TCP / IP connection request from your computer on the specified port number 5198.
2. The computer makes a TCP / IP connection request to the Instrument.
3. The Instrument accepts TCP / IP connection request and establishes connection
4. After establishing the TCP / IP connection, communication is performed by sending and receiving a simple 7bit ASCII code character string.
5. Send a command or query from your computer to the Instrument.

Command / Query messages are strings terminated with LF or CR + LF.

- The Instrument that received the command / query interprets and executes it, and returns a response message if the query was received normally.
The response message is a string with a delimiter added. The response message delimiter is always LF.

Only one computer can be connected at the same time as the instrument.



2. Remote Control Command

2.1 Message Syntax

2.1.1 Overview

This Instrument does not support the GPIB interface, but remote commands comply with the GPIB IEEE 488.2 standard, which is widely used in measuring instruments.

Remarks

Each element defined by the IEEE 488.2 standard is used.

<PROGRAM MESSAGE>
<CHARACTER PROGRAM DATA>
<DECIMAL NUMERIC PROGRAM DATA>
<SUFFIX PROGRAM DATA>
<STRING PROGRAM DATA>
<RESPONSE MESSAGE>
<CHARACTER RESPONSE DATA>
<NR1 NUMERIC RESPONSE DATA>
<NR2 NUMERIC RESPONSE DATA>
<NR3 NUMERIC RESPONSE DATA>
<STRING RESPONSE DATA>
<ARBITRARY ASCII RESPONSE DATA>

2.1.2 Delimiter

When this Instrument receives a program message, it recognizes LF or CR + LF as a delimiter.

When any of these delimiters is received, it is judged as a command or query <program message>, interpreted and executed.

On the other hand, the delimiter (<RESPONSE MESSAGE TERMINATOR>) when this Instrument sends a <response message> is fixed to LF.

2.1.3 I / O Buffer

In this Instrument, the program message input from the remote interface is temporarily saved in the input buffer, and when the end of the program message by the delimiter (or EOI) is detected, the command in the buffer is interpreted and executed. The following message is not received during command interpretation / execution. When the command interpretation / execution are completed, the input buffer is cleared and the reception of the program message is resumed.

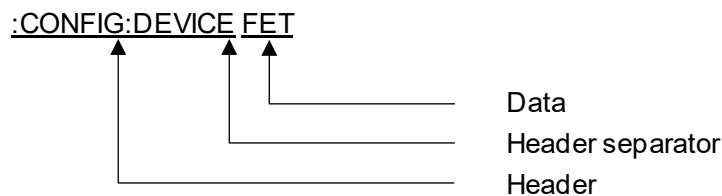
The size of this input buffer is 1024 bytes. If a program message longer than this is input, the excess part is discarded and only the part left in the buffer is interpreted and executed. When using multi-

commands (see Section 2.1.5), make sure that the total length of the program message does not exceed the input buffer size. The length of the program message includes the delimiter. Also, since the Instrument has a sufficiently large output buffer, it is not necessary to pay attention to the size of the response message for one program message. However, if queries are sent continuously without receiving a response message, communication operation may stop until it is read. Keep in mind that the response message is read each time you send a query.

2.1.4 Message Format

One message unit consists of a header, a data, and a header separator that separates them.

(Example)

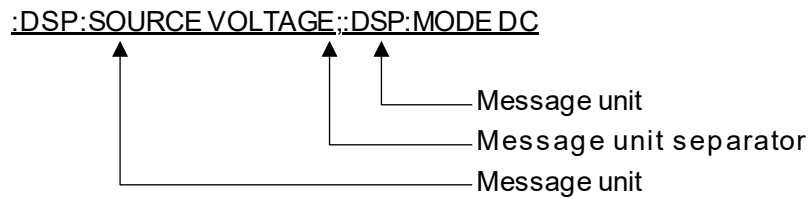


- a. Header
The header is composed of ASCII characters. It consists of 1 to 4 mnemonics separated by a colon (:) and represents the function or operation of this Instrument.
The above is an example of a command for setting this Instrument. In the case of a query that inquires about the setting contents (makes this Instrument create response data), the last character in the header is the "?".
- b. Header separator
The header separator indicates the delimiter between the header and the data. It can be one or more whitespace characters (ASCII characters). It can be the IEEE 488.2 standard <white space> character.
A header separator is not required for commands that do not have a data.
This Instrument does not allow omission of the data except for commands that do not have a data.
- c. Data part
The data is a parameter that indicates the specific setting contents of the function specified in the header. It can be a mnemonic (string) or it can be a number.
If you need more than one parameter, use a comma (,) as a separator for each parameter.
The number of parameters and their configuration differ for each command. For the detailed format of the data, refer to the explanation of each command.

2.1.5 Multi-command

You can combine multiple message units into a single message.
Connect each message unit separated by a semicolon (;).

(Example)



In addition, the Instrument-specific commands of this Instrument have a hierarchical command structure called <compound command program header>. For example, the parent command DSP is combined with subcommands such as SOURCE and MODE to configured the header part (like :DSP:SOURCE, :DSP:MODE, etc.). When composing a message by connecting message units that have a header part consisting of a common parent command, the parent command can be omitted in the subsequent message units.

(Example)

You can write the ":DSP:SOURCE VOLTAGE;;DSP:MODE PULSE" as
":DSP:SOURCE VOLTAGE;MODE PULSE"

(Note that if the parent command is omitted, a colon (:) is not added to the header part.)

In the following, this function will be expressed as "parent command :DSP specified as the header path".

The header path specification is valid only within the message (up to the delimiter). In the following message, the parent command of the first message unit is specified as the header path.

That is, if you send ":DSP:SOURCE VOLTAGE;MODE PULSE" as one message, it will be interpreted correctly, but if you divide it into two lines, ":DSP:SOURCE VOLTAGE" and "MODE:PULSE", an error occurs. (This Instrument does not have a parent command called MODE)

Also, at the beginning of the message, even if the colon (:), which is the first character in the header, is omitted, it is considered as the parent command.

(Example)

DSP:SOURCE VOLTAGE is interpreted the same as
:DSP:SOURCE VOLTAGE.

You can also specify the structure header path at the subcommand level.

(Example)

:DSP:SWEEP:START 0.0;:DSP:SWEEP:STOP 10.0 is interpreted the same as
:DSP:SWEEP:START 0.0;STOP 10.0.

In this case, ":DSP:SWEEP" is specified as the header path.

If the message unit begins with a colon (:), the command is considered the parent command. The header path is also updated and the command becomes the new header path.

(Example)

:DSP:SOURCE VOLTAGE;MODE PULSE;;GSP:SOURCE VOLTAGE;MODE DC

↑
Header path is DSP

↑
Header path is GSP

This Instrument does not search for commands by going back in the command tree. Therefore, when combining message units of different parent commands into one message, be sure to start the message unit whose header path should be switched with a colon (:).

(Example) command 1 :DSP:SWEEP:START 0.0

command 2 :DSP:HOLDTIME:VALUE 0.0

○ :DSP:SWEEP:START 0.0;;DSP:HOLDTME:VALUE 0.0

×:DSP:SWEEP:START 0.0;HOLDTIME:VALUE 0.0

↑
It cannot be omitted.

The above header path rules do not apply to common commands (*WAI, *OPC, etc.) specified in IEEE Std.488.2.

Common commands are executed ignoring the header path. However, it does not destroy the previous header path specification, and the previous header path specification is valid when interpreting the next message unit of the common command.

(Example)

:DSP:SOURCE VOLTAGE;*WAI;MODE PULSE

↑ ↑
 Header path is :DSP
 Common command *WAI executed normally

The message unit that makes up a multi-command can also contain a query that returns a response. If there are multiple queries, the response message will be a semicolon (;) connecting each response message.

(Example)

Program message :DSP:SOURCE VOLTAGE;SOURCE?;MODE PULSE;MODE?

Response message VOLTAGE;PULSE

If there is an uninterpretable message unit (a character string that is not a command / query, a parameter of an unspecified format, etc. that causes a command error) among the message units that make up the multi-command, the message before that message unit up to the unit is executed normally, and the subsequent message unit is discarded without being interpreted. Also, the entire response message is discarded.

2.1.6 Query

A message unit whose last character in the header is the? Mark is called a query, and means a command that inquires about settings and measurement results. This Instrument creates a response message when it receives a query.

Depending on the query, the response message created may be a comma (,) concatenation of multiple response message units.

For details on the format of the response message, etc., please refer to the description of each query used.

2.1.7 Mnemonic

The characters that make up the mnemonics in the header are a combination of ASCII codes A to Z, 0 to 9, and an underscore (_).

The letters A to Z are interpreted in the same way, whether they are uppercase or lowercase or a mixture of both.

```
:CONFIG:DEVICE FET
:config:device fet
:CONFig:DEVIce Fet
```

Some command / query mnemonics in this instruction manual are written in mixed case. This indicates that the abbreviation with only the capital letters extracted can be used.

(Example)

All of the following mnemonics can be used for the “:CONFig:DEVIce” command.

```
:CONFING:DEVICE
:CONFIG:DEV
:CONF:DEVICE
:CONF:DEV
```

The response message unit created by this Instrument in response to a query consists of only the data part without a header.

In addition, the mnemonics of the data part of the response message sent by this Instrument are always capitalized.

2.1.8 Data Format

2.1.8.1 < CHARACTER PROGRAM DATA> / <CHARACTER RESPONSE DATA>

<CHARACTER PROGRAM DATA> and <CHARACTER RESPONSE DATA> are data composed of a combination of A to Z, 0 to 9, and an underscore (_), similar to the mnemonic used in the header part.

```
:DSP:SOURCE VOLTAGE;;DSP:MODE PULSE
```

In the case of this message example, the parameter "VOLTAGE" of the :DSP:SOURCE command and the parameter "PULSE" of the :DSP:MODE command are <CHARACTER PROGRAM DATA>. Similar to the header mnemonic, you can mix uppercase / lowercase letters and use abbreviations.

If the <CHARACTER RESPONSE DATA> created by this Instrument as a <response message>, it must be in uppercase.

2.1.8.2 < DECIMAL NUMERIC PROGRAM DATA > / < NUMERIC RESPONSE DATA >

It is used for data that is treated as a number in one of the formats: integer (NR1), floating point number (NR2), and floating point number with an exponent (NR3).

:DSP:SWEEP:START 50E-3

In the case of this message example, the part "50E-3" is the numerical program data, and the following numerical values are all interpreted as the same value.

$$0.05 = 50E-3 = 5e-2 = 5E-2 = 50e-3$$

If the unit is defined in the command, < DECIMAL NUMERIC PROGRAM DATA > can be followed by < SUFFIX PROGRAM DATA > that represents the defined unit.

< SUFFIX PROGRAM DATA > consists of a suffix unit part that represents the unit itself, such as V (volt) and Hz (hertz), and a suffix multiplier part that represents the magnification of the unit, such as m (millimeter) and k (kilo). It is divided.

Note: About the range of NR3

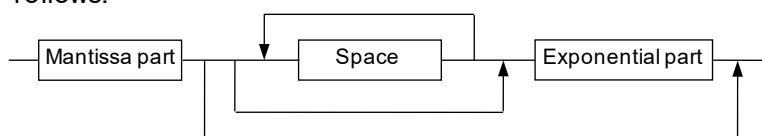
If the number of digits in the mantissa exceeds the number of significant digits specified in each command, the digits after the excess are basically rounded off. No error occurs.

The exponent part interprets only the numerical values in the range of $E \pm 99$ as the normal format.

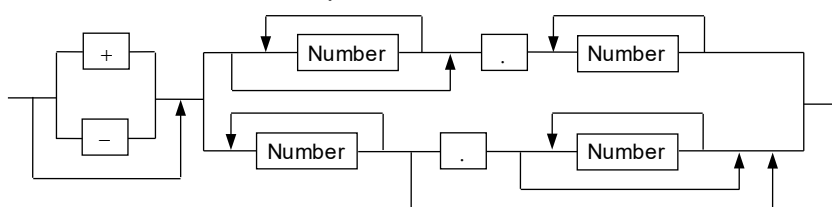
If it exceeds that range, a command error occurs and the value will be discarded.

In addition, each command has its own numerical range, and an execution error may occur depending on the settings. For details, refer to the explanation of each command.

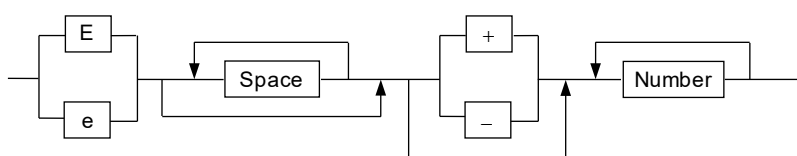
- The format of < DECIMAL NUMERIC PROGRAM DATA > accepted by this Instrument is as follows.



The format of the fraction part is shown below.



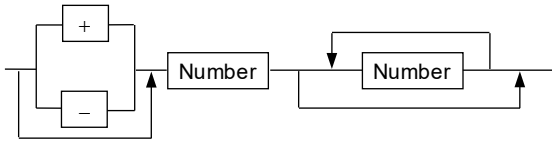
The format of the exponent part is shown below.



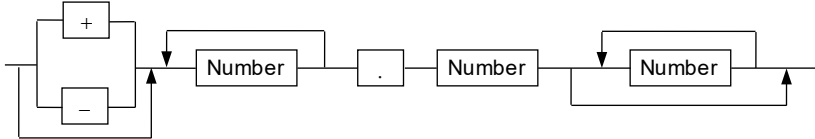
Remarks: The space in the above format includes <white space> specified in IEEE 488.2.

- The format of the numerical response data sent by this instrument is as follows.

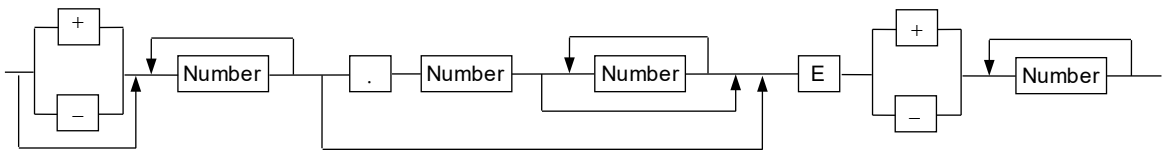
NR1 (integer) format



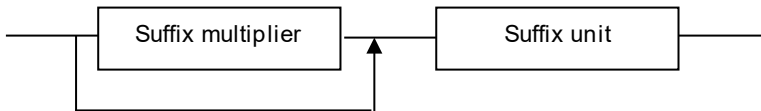
NR2 (floating point number) format



NR3 (floating point number with an exponent) format



- The format of the < SUFFIX PROGRAM DATA > received by this Instrument is as follows.



The table below shows the suffix multipliers that can be set.

Multipliers	Symbol
1E12	T
1E9	G
1E6	MA
1E3	K
1E-3	M
1E-6	U
1E-9	N
1E-12	P

The suffix units that can be set are "V", "A", "S", and "W".

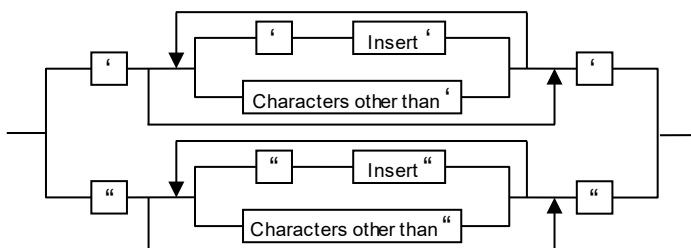
2.1.8.3 < ARBITRARY ASCII RESPONSE DATA >

< ARBITRARY ASCII RESPONSE DATA > is the response data created by this instrument, and is data composed of text that includes ASCII characters that are not allowed in < CHARACTER RESPONSE DATA > or numerical response data.

If a new query message unit exists between the query that returns < ARBITRARY ASCII RESPONSE DATA > and the delimiter, no response to those queries will be created and a query error occurs.

2.1.8.4 < STRING PROGRAM DATA > / < STRING RESPONSE DATA >

The < STRING PROGRAM DATA > received by this instrument is as follows. In addition, the <character string response data> created by this instrument is delimited by the following double quotes (“”).



Data separated by single quotes (') or double quotes (") is processed as < STRING PROGRAM DATA >.

If there are two consecutive delimiters (' or ") in < STRING PROGRAM DATA >, they will be recognized as one delimiter (' or ") .

< STRING PROGRAM DATA > allows all characters of 7-bit JIS code. However, if each command contains characters that are not allowed, a command error occurs.

2.2 Status Report Structure

2.2.1 Service Request (SRQ)

Since this Instrument does not support the GPIB interface, it does not support GPIB-specific service requests. The controller must be programmed to read the Instrument's internal status register as needed.

2.2.2 Status Byte Register

Can be read by *STB? query.

It is located at the last stage of the status information of the instrument, which has a hierarchical structure.

This register has an 8-bit configuration, and its contents are as follows.

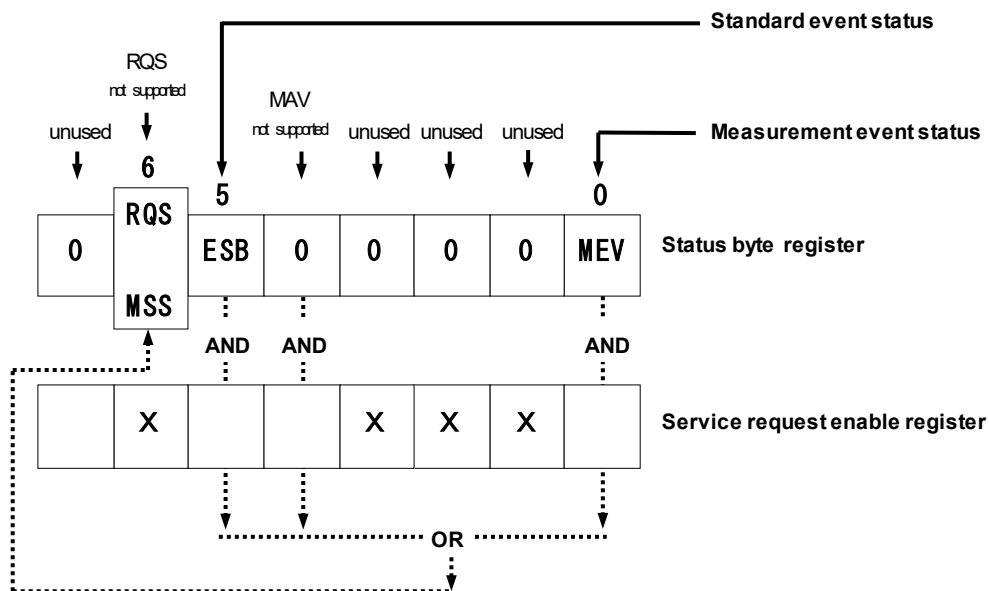
- | | |
|-------------|---|
| (Bit 7) | The instrument does not use Bit 7 of the status byte register.
It will always be 0. |
| RQS (Bit 6) | Defined as a response to GPIB-specific serial poles.
Since the instrument does not support the GPIB interface, it does not operate as an RQS bit. |
| MSS (Bit 6) | Returned as Bit6 of *STB? query response.
It reflects the logical sum of all Bits as a result of masking other Bits (ESB, MAV, ..., MEV) in the status byte register with the Service Request Enable Register. |

ESB (Bit 5)	Returned as Bit5 of *STB? query response. It reports summary message corresponding to the Standard Event Status Register.
MAV (Bit 4)	Defined as a response to GPIB-specific serial poles. The instrument does not support the GPIB interface, so it will always be 0.
(Bit 3)	The instrument does not use Bit 3 of the status byte register. It will always be 0.
(Bit 2)	The instrument does not use Bit 2 of the status byte register. It will always be 0.
(Bit 1)	The instrument does not use Bit 1 of the status byte register. It will always be 0.
MEV (Bit 0)	Returned as Bit0 of *STB? query response. It reports summary message corresponding to the measurement event status register.

2.2.3 Service Request Enable Register

A register for masking the Status Byte Register. The MSS bit is set according to the masked result. The mask pattern can be set with *SRE command and can be read with *SRE? query. Whether or not to clear the contents of this register when the power is turned on (= 0) can be set with the *PSC command. Not directly affected by *CLS commands.

Status Byte Register structure



2.2.4 Standard Event Status Register

Can be read by *ESR? query.

The logical sum of all bits resulting from masking the contents of this register with the Standard Event Status Enable Register is reflected in the ESB bit of the status byte register.

The contents of this register are cleared (= 0) by both the *CLS command and the *ESR? query read.

This register has an 8-bit configuration, and its contents are as follows.

- PON (Bit 7) Set to 1 when the power is turned on.

- (Bit 6) Not used in the instrument.
It will always be 0.

- CME (Bit 5) Set to 1 when a command error occurs.
Indicates that there is some error in the command syntax.

- EXE (Bit 4) Set to 1 when an execution error occurs.
Indicates that the command cannot be executed or completed normally.

- DDE (Bit 3) Set to 1 when a device dependent error occurs.
This is a summary message of the device dependent error event status register.

- QYE (Bit 2) Set to 1 when a query error occurs.
Query error is an error that occurs when the response message is read from this instrument without sending a query in the GPIB

interface, or when the next command / query message is sent before the response message is completely read.
 The instrument does not support the GPIB interface, so it will always be 0.

(Bit 1) Not used in this instrument.
 It will always be 0.

OPC (Bit 0) Set to 1 when the operation is completed.
 Supports *OPC command synchronization between controller and Instrument.

2.2.5 Standard Event Status Enable Register

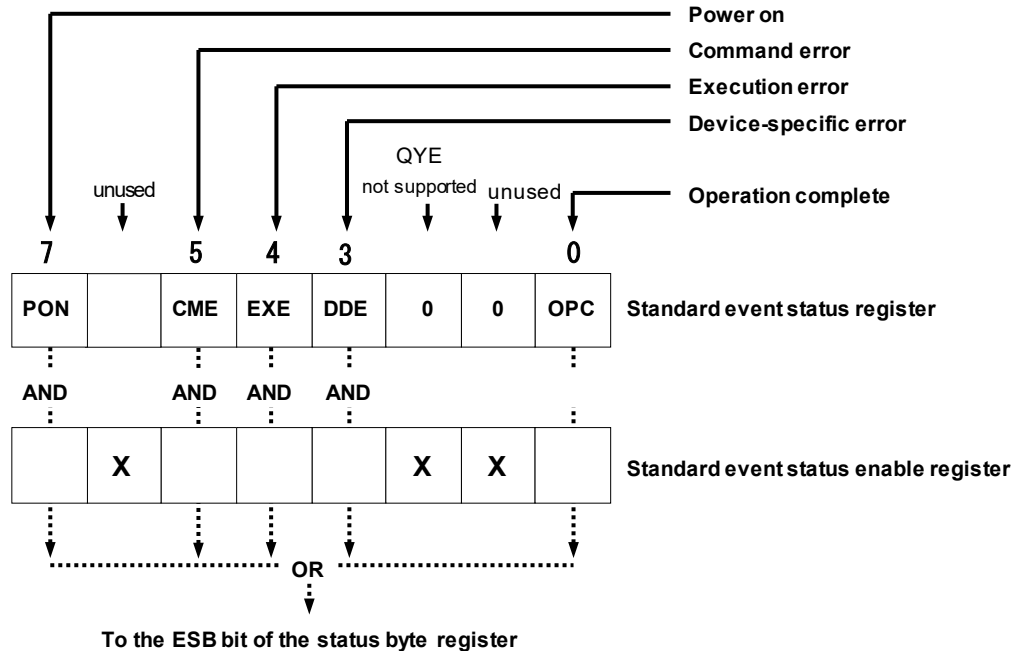
A register for masking the Standard Event Status Register. The ESB bit in the status byte register is set according to the masked result.

The mask pattern setting can be read with the *ESE command, and can be read with the *ESE? query.

Whether or not to clear the contents of this register when the power is turned on (= 0) can be set with the *PSC command.

It is not affected by GPIB device clear messages or *CLS commands.

Standard Event Status Register structure



2.2.6 Output queue

Since the instrument does not support the GPIB interface, it does not support GPIB-specific output queue status reports (MAV bits of status bytes).

2.2.7 Device Dependent Error Condition Status Register

This register reports the abnormal status of the main unit. It can be read by :STATus:DECR? query. There is no change in the register value by reading.

The register shows the latest status.

Use the Device Dependent error event status register (and enable register) to detect the occurrence of an abnormal condition.

The register has a 16-bit configuration, and its contents are explained below.

(Bit 13-15)	Not used in the instrument. Always 0
MEDE (Bit 12)	Internal storage error
POW (Bit 11)	POWER EXPANDER (optional unit) overdrive
AUX (Bit 10)	AUX overdrive
EXTU (Bit 9)	External Unit overdrive
(Bit 7-8)	Not used in the instrument. Always 0.
HCOH (Bit 6)	HC Unit overheat
GNOH (Bit 5)	GND Unit overheat
AXOH (Bit 4)	AUX overheat
HVOH (Bit 3)	HV Unit overheat
GTOH (Bit 2)	GATE Unit overheat
MVOH (Bit 1)	MV Unit overheat
(Bit 0)	Not used in the instrument. Always 0.

2.2.8 Device Dependent Error Event Status Register

The Device Dependent Error Event Status Register is a register that reports changes in the abnormal status of the instrument. It can be read by :STATus:DEER? query. The register latches each bit of the Device dependent error condition register, and 1 is set when the corresponding bit changes from 0 to 1. The state change is retained until the register is read and cleared by the *CLS command.

The register is used to detect the occurrence of an abnormal condition. To get the latest status, use the Device dependent error condition status register.

The register has a 16-bit configuration, and its contents are explained below.

(Bit 13-15)	Not used in the Instrument. It will always be 0.
MEDE (Bit 12)	Set to 1 when an internal storage error occurs.
POW (Bit 11)	Set to 1 when POWER EXPANDER (optional unit) overdrive occurs.
AUX (Bit 10)	Set to 1 when AUX overdrive occurs.
EXTU (Bit 9)	Set to 1 when an external unit overdrive occurs.
(Bit 7-8)	Not used in the Instrument. It will always be 0.
HCOH (Bit 6)	Set to 1 when HC unit overheat occurs.
GNOH (Bit 5)	Set to 1 when GND unit overheat occurs.
AXOH (Bit 4)	Set to 1 when AUX unit overheat occurs.
HVOH (Bit 3)	Set to 1 when HV unit overheat occurs.
GTOH (Bit 2)	Set to 1 when GATE unit overheat occurs.
MVOH (Bit 1)	Set to 1 when MV unit overheat occurs.
(Bit 0)	Not used in the Instrument. It will always be 0.

2.2.9 Device Dependent Error Event Enable Register

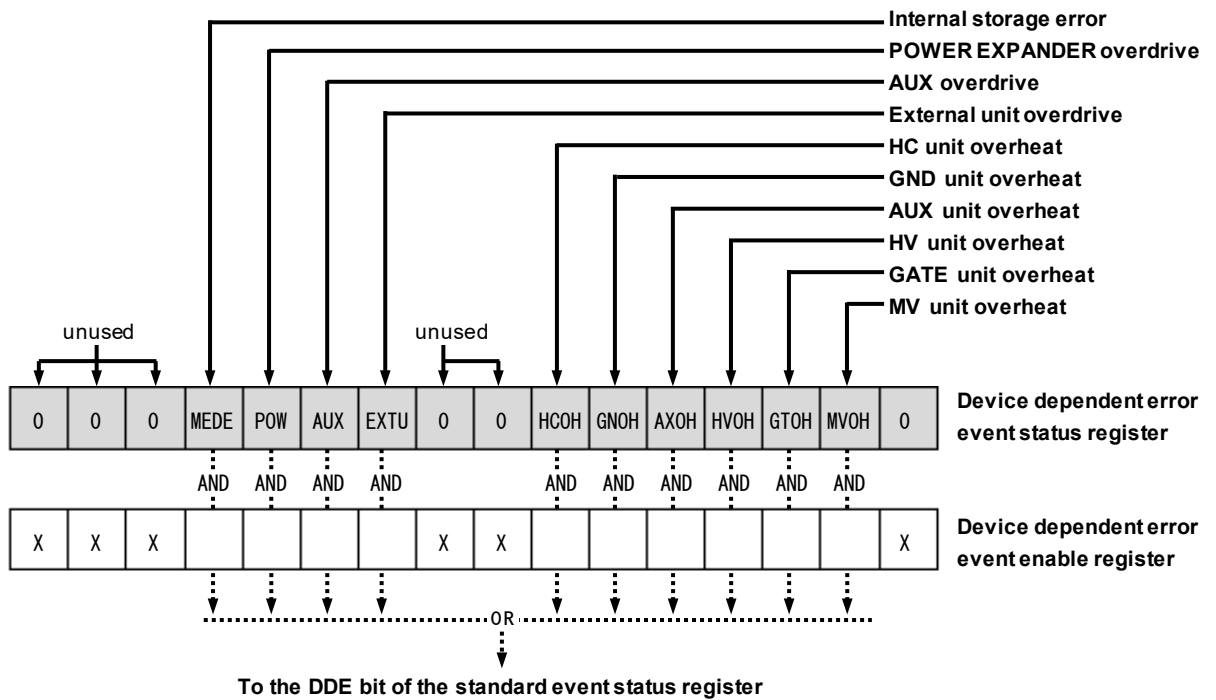
The Device Dependent Error Event Enable Register is a register for masking the Device dependent error event status register. The DDE bit in the Standard Event Status Register is set according to the masked result.

You can set / read the mask pattern with :STATus:DEEE command / :STATus:DEEE? query.

The register can be set to clear to 0 when the power is turned on with the *PSC command.

It is not affected by Instrument clear or *CLS commands.

DEER Event register structure



2.2.10 Measurement Condition Status Register

The Measurement Condition Status Register is a register that reports the status related to measurement. It can be read by `:STATus:MCSR?` query.

There is no change in the register value by reading.

The register shows the latest status. Use the Measurement Event Status Register (and Enable Register) to detect changes in state related to a measurement.

The register has an 8-bit configuration, and its contents are explained below.

(Bit 4-7) Not used in the Instrument.
It will always be 0.

ITL (Bit 3) Report the INTERLOCK status.
It is 0 in the non-interlocked state and 1 in the interlocked state.

OUT (Bit 2) Reports the status of OUTPUT ENABLE.
It is 0 in the output disabled state and 1 in the output enabled state.

MES (Bit 1) Report the measurement status.
It is 0 when the measurement is stopped and 1 when the measurement is in progress.

NMES (Bit 0) Invert MES bit and report.
It is 0 in the measurement state and 1 in the measurement stop state.

2.2.11 Measurement Event Status Register

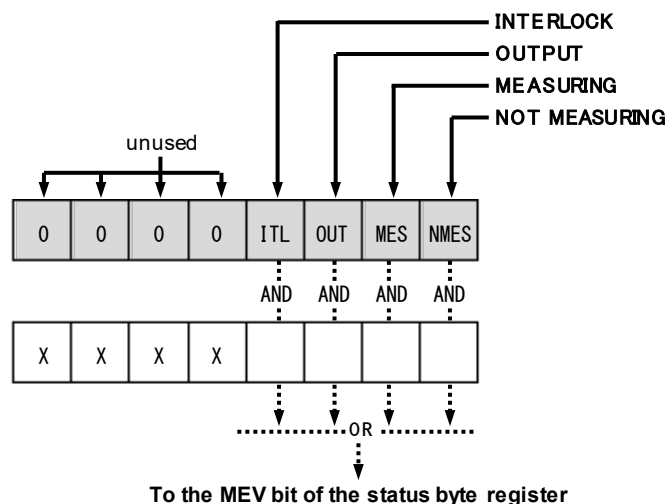
The Measurement Event Status Register is a register that reports changes in the state associated with a measurement. It can be read by :STATus:MEsr? query. The register latches each bit of the Measurement Condition Status Register, and 1 is set when the corresponding bit changes from 0 to 1. The state change is retained until the register is read and cleared by the *CLS command. The register is used to detect changes in the measurement status. To get the latest status, use the Device Dependent Error Condition Status Register. The register has an 8-bit configuration, and its contents are explained below.

- (Bit 4-7) Not used in the Instrument.
It will always be 0.
- ITL (Bit 3) Set to 1 when an interlock occurs.
- OUT (Bit 2) Set to 1 when OUTPUT ENABLE is turned ON.
- MES (Bit 1) Set to 1 when the measurement is started
- NMES (Bit 0) Set to 1 when the measurement is completed

2.2.12 Measurement Event Enable Register

The Measurement Event Enable Register is a register for masking the Measurement Event Status Register. The MEV bit of the status byte register is set according to the masked result. You can set / read the mask pattern with :STATus:MESE command / :STATus:MESE? query. The register can be set to clear to 0 when the power is turned on with the *PSC command. It is not affected by Instrument clear or *CLS commands.

Measurement event status register structure



2.3 Command List

2.3.1 Common Command List

Syntax	Function
*IDN?	Queries the Instrument-specific information of the instrument.
*RST	Recall the default template and initialize the operation settings of the main unit to the default values.
*OPC	When all running operations are complete, sets the operation completion message (OPC bit) in the Standard Event Status Register to 1.
*OPC?	Returns 1 when all running actions are complete.
*WAI	Subsequent command execution is deferred until all ongoing operations are complete.
*CLS	It clears the Standard Event Status Register and the Instrument-specific Event Register, and also clears the corresponding bit in the Status Byte Register.
*ESE	Sets the Standard Event Status Enable Register.
*ESE?	Queries the Standard Event Status Enable Register.
*ESR?	Queries the current contents of the Standard Event Status Register. The contents of the Standard Event Status Register are cleared by reading.
*PSC	Controls the automatic clearing of the Service Request Enable Register, Standard Event Status Enable Register, and Instrument-specific Event Enable Register when the power is turned on.
*PSC?	Queries about the settings of Power on Status Clear.
*SRE	Sets the Service Request Enable Register.
*SRE?	Queries the Service Request Enable Register.
*STB?	Queries the status byte and master summary status bit (MSS message).
*TRG	Executes the trigger.
*RCL	Recall the template saved in the internal memory or external USB memory of the curve tracer and update the operation settings of the curve tracer.
SAV	Save the current operation settings as a template file (.CTT) in the internal memory or external USB memory of the curve tracer.

2.3.2 Instrument-specific Commands List

Syntax	Function
:STATus:DECR?	Queries the Device Dependent Error Condition Register.
:STATus:DEER?	Queries the Device Dependent Error Event Status Register.
:STATus:DEEE	Sets the Device Dependent Error Event Enable Register.
:STATus:DEEE?	Queries the Device Dependent Error Event Enable Register.
:STATus:MCSR?	Queries the Measurement Condition Status Register.
:STATus:MESR?	Queries the Measurement Event Status Register.
:STATus:MESE	Sets the Measurement Event Enable Register.
:STATus:MESE?	Queries the Measurement Event Status Enable register.

Syntax	Function
:CONFig:DEvice	Sets the type of device to be measured.
:CONFig:DEvice?	Queries the type of device to be measured.
:CONFig:CONFig	Sets the configuration by fixture.
:CONFig:CONFig?	Queries the configuration by fixture.
:CONFig:GateRESistor	Sets ON / OFF of gate resistance.
:CONFig:GateRESistor?	Queries ON / OFF of gate resistance.
:CONFig:NOFIxture?	Queries the fixture usage status.
:CONFig:LEAKage	Sets LEAKAGE ON / OFF.
:CONFig:LEAKage?	Queries LEAKAGE ON / OFF.
:CONFig:GrouNDUnit	Sets ON / OFF of GROUND UNIT.

:CONFig:GrouNDUnit?	Queries ON / OFF of GROUND UNIT.
:CONFig:SENSe:DRAIn:Hlgh :CONFig:SENSe:COLLector:Hlgh	Sets the measurement point on the High side of Drain / Collector Supply.
:CONFig:SENSe:DRAIn:Hlgh? :CONFig:SENSe:COLLector:Hlgh?	Queries the measurement point on the High side of Drain / Collector Supply.
:CONFig:SENSe:DRAIn:LOW :CONFig:SENSe:COLLector:LOW	Sets the measurement point on the Low side of Drain / Collector Supply.
:CONFig:SENSe:DRAIn:LOW? :CONFig:SENSe:COLLector:LOW?	Queries the measurement point on the Low side of Drain / Collector Supply.
:CONFig:SENSe:GATE:Hlgh :CONFig:SENSe:BASE:Hlgh	Sets the measurement point on the High side of Gate / Base Supply.
:CONFig:SENSe:GATE:Hlgh? :CONFig:SENSe:BASE:Hlgh?	Queries the measurement point on the High side of Gate / Base Supply.
:CONFig:SENSe:GATE:LOW :CONFig:SENSe:BASE:LOW	Sets the measurement point on the Low side of Gate / Base Supply.
:CONFig:SENSe:GATE:LOW? :CONFig:SENSe:BASE:LOW?	Queries the measurement point on the Low side of Gate / Base Supply.
:CONFig:SENSe:SMU:Hlgh	Sets the measurement point on the High side of SMU (optional external unit).
:CONFig:SENSe:SMU:Hlgh?	Queries the measurement point on the High side of SMU (optional external unit).
:CONFig:SENSe:SMU:LOW	Sets the measurement point on the Low side of SMU (optional external unit).
:CONFig:SENSe:SMU:LOW?	Queries the measurement point on the Low side of SMU (optional external unit).
:CONFig:FORCe:SMU:LOW	Sets output voltage reference potential of SMU (optional external unit).
:CONFig:FORCe:SMU:LOW?	Queries output voltage reference potential of SMU (optional external unit).
:CONFig:SMU:ENABled	Set whether SMU (optional external unit) is enabled or disabled.
:CONFig:SMU:ENABled?	Queries whether SMU (optional external unit) is enabled or disabled.
:CONFig:SEMU:ENABled	Set whether SEMU (optional external unit) is enabled or disabled.
:CONFig:SEMU:ENABled?	Queries whether SEMU (optional external unit) is enabled or disabled.
:CONFig:SEMU:EmittorForce:SHORT	Sets the short/open of the FORCE contact for Emitter (or Source) terminal of the SEMU (optional external unit).
:CONFig:SEMU:EmittorForce:SHORT?	Queries the short/open of the FORCE contact for Emitter (or Source) terminal of the SEMU (optional external unit).
:CONFig:SEMU:EmittorSense:SHORT	Sets the short/open of the SENSE contact for Emitter (or Source) terminal of the SEMU (optional external unit).
:CONFig:SEMU:EmittorSense:SHORT?	Queries the short/open of the SENSE contact for Emitter (or Source) terminal of the SEMU (optional external unit).
:CONFig:SEMU:SenseEmittorForce:SHORT	Sets the short/open of the FORCE contact for Sense Emitter (or Sense Source) terminal of the SEMU (optional external unit).
:CONFig:SEMU:SenseEmittorForce:SHORT?	Queries the short/open of the FORCE contact for Sense Emitter (or Sense Source) terminal of the SEMU (optional external unit).
:CONFig:SEMU:SenseEmittorSense:SHORT	Sets the short/open of the SENSE contact for Sense Emitter (or Sense Source) terminal of the SEMU (optional external unit).
:CONFig:SEMU:SenseEmittorSense:SHORT?	Queries the short/open of the SENSE contact for Sense Emitter (or Sense Source) terminal of the SEMU (optional external unit).
:CONFig:ACQuisitionChanneL	Sets the data types (up to 5) to be measured.
:CONFig:ACQuisitionChanneL?	Queries the data types (up to 5) to be measured.

Syntax	Function
:ACQuisition:OUTPut	Sets OUTPUT ENABLE.
:ACQuisition:OUTPut?	Queries the current OUTPUT ENABLE.
:ACQuisition:STATus	Sets the measurement status.
:ACQuisition:STATus?	Queries the current measurement status.
:ACQuisition:WaitSinGLe?	Starts a single measurement, waits for the measurement to complete, and then returns a response.

:ACquisition:INTerLock?	Queries the current interlock status.
:ACquisition:OveRHeat?	Queries the current overheat occurrence status.
:ACquisition:OVeRDrive?	Queries the current overdrive occurrence status.
:ACquisition:LASTresult?	Queries the end cause of the last executed measurement.
:ACquisition:DATAStatus?	Queries the status of the currently displayed XY waveform data.
:ACquisition:PRImary	Sets the supply unit to be the primary sweep.
:ACquisition:PRImary?	Queries the supply unit to be the primary sweep.
:ACquisition:SECondary	Sets the supply unit to be the secondary sweep.
:ACquisition:SECondary?	Queries the supply unit to be the secondary sweep.
:ACquisition:CONStant?	Queries the supply unit set to constant output when SMU (optional) is used.
:ACquisition:SECondary:MaxSTeps	Sets the maximum steps of the secondary sweep.
:ACquisition:SECondary:MaxSTeps?	Queries the maximum steps of the secondary sweep.
:ACquisition:PRImary:MaxSTeps?	Queries the maximum steps of the primary sweep.
:ACquisition:PeriodMODE	Sets the measurement cycle mode.
:ACquisition:PeriodMODE?	Queries the measurement cycle mode.
:ACquisition:PERIod	Sets the measurement cycle.
:ACquisition:PERIod?	Queries the measurement cycle.
:ACquisition:MeasPOInt	Sets the measurement start point (sampling start point).
:ACquisition:MeasPOInt?	Queries the measurement start point (sampling start point).
:ACquisition:MeasTIME	Sets the measurement period (sampling period).
:ACquisition:MeasTIME?	Queries the measurement period (sampling period).
:ACquisition:HOLDtime:ENABled1	Sets ON / OFF of HOLD TIME1.
:ACquisition:HOLDtime:ENABled1?	Queries ON / OFF of HOLD TIME1.
:ACquisition:HOLDtime:ENABled2	Sets ON / OFF of HOLD TIME2.
:ACquisition:HOLDtime:ENABled2?	Queries ON / OFF of HOLD TIME2.
:ACquisition:HOLDtime:ENABled3	Sets ON / OFF of HOLD TIME3.
:ACquisition:HOLDtime:ENABled3?	Queries ON / OFF of HOLD TIME3.
:ACquisition:HOLDtime:TIME1	Sets the period of HOLD TIME1.
:ACquisition:HOLDtime:TIME1?	Queries the period of HOLD TIME1.
:ACquisition:HOLDtime:TIME2	Sets the period of HOLD TIME2.
:ACquisition:HOLDtime:TIME2?	Queries the period of HOLD TIME2.
:ACquisition:HOLDtime:TIME3	Sets the period of HOLD TIME3.
:ACquisition:HOLDtime:TIME3?	Queries the period of HOLD TIME3.
:ACquisition:AVErage:STATus	Set ON / OFF of AVERAGE processing.
:ACquisition:AVErage:STATus?	Queries ON / OFF of AVERAGE processing.
:ACquisition:AVErage:COUNt	Sets the average number of AVERAGE processes.
:ACquisition:AVErage:COUNt?	Queries the average number of AVERAGE processes.
:ACquisition:LIMitAction	Sets the ACTION when a LIMIT condition is detected.
:ACquisition:LIMitAction?	Queries the ACTION when a LIMIT condition is detected.

Syntax	Function
:DrainSuPply:AVAlIable?	Queries whether Drain / Collector Supply is enabled or disabled.
:DrainSuPply:UNIT	Sets the power supply unit to be used as Drain / Collector Supply.
:DrainSuPply:UNIT?	Queries the power supply unit to be used as Drain / Collector Supply.
:DrainSuPply:SOURce	Sets whether to use the selected Drain / Collector Supply Unit as a voltage source or a current source.
:DrainSuPply:SOURce?	Queries whether to use the selected Drain / Collector Supply Unit as a voltage source or a current source.
:DrainSuPply:MODE	Sets the output waveform of the selected Drain / Collector Supply Unit.
:DrainSuPply:MODE?	Queries the output waveform of the selected Drain / Collector Supply Unit.
:DrainSuPply:MAXimum	Sets the maximum output of the selected Drain / Collector Supply Unit.
:DrainSuPply:MAXimum?	Queries the maximum output of the selected Drain / Collector Supply Unit.

:DrainSuPply:POLarity	Sets the output polarity of the selected Drain / Collector Supply Unit.
:DrainSuPply:POLarity?	Queries the output polarity of the selected Drain / Collector Supply Unit.
:DrainSuPply:SWEep:ENABled	Sets ON (sweep)/ OFF (fixed value) of the output sweep of Drain / Collector Supply.
:DrainSuPply:SWEep:ENABled?	Queries ON (sweep)/ OFF (fixed value) of the output sweep of Drain / Collector Supply.
:DrainSuPply:SWEep:MODE	Sets the output change method when sweeping Drain / Collector Supply.
:DrainSuPply:SWEep:MODE?	Queries the output change method when sweeping Drain / Collector Supply.
:DrainSuPply:SWEep:DIRectioN	Sets the sweep direction when sweeping Drain / Collector Supply.
:DrainSuPply:SWEep:DIRectioN?	Queries the sweep direction when sweeping Drain / Collector Supply.
:DrainSuPply:SWEep:STARt	Sets the output value to start the Drain / Collector Supply sweep.
:DrainSuPply:SWEep:STARt?	Queries the output value to start the Drain / Collector Supply sweep.
:DrainSuPply:SWEep:STOP	Sets the output value to stop Drain / Collector Supply sweep.
:DrainSuPply:SWEep:STOP?	Queries the output value to stop Drain / Collector Supply sweep.
:DrainSuPply:SWEep:STEPs:COUNt	Sets the number of sweep steps for Drain / Collector Supply.
:DrainSuPply:SWEep:STEPs:COUNt?	Queries the number of sweep steps for Drain / Collector Supply.
:DrainSuPply:SWEep:STEPs:VALue?	Queries the step width during a linear sweep of Drain / Collector Supply.
:DrainSuPply:SWEep:LIST	Sets the output value list when the sweep mode of Drain/Collector Supply is LIST.
:DrainSuPply:SWEep:LIST?	Queries the output value list when the sweep mode of Drain/Collector Supply is LIST.
:DrainSuPply:SWEep:LIST:TRANsfer	This command transfers a file of output value lists stored in the PC to the curve tracer and applies it as a list of values to be output by Drain / Collector Supply in the list sweep.
:DrainSuPply:SWEep:LIST:TRANsfer?	Transfers a list of values to be output by Drain / Collector Supply in the list sweep to the PC.
:DrainSuPply:VOLTag:e:TITLe	Sets the name given to the measured voltage of Drain / Collector Supply.
:DrainSuPply:VOLTag:e:TITLe?	Queries the name given to the measured voltage of Drain / Collector Supply.
:DrainSuPply:VOLTag:e:RANGe:MODE	Sets the method for determining the measurement range in the Drain / Collector Supply voltage.
:DrainSuPply:VOLTag:e:RANGe:MODE?	Queries the method for determining the measurement range in the Drain / Collector Supply voltage.
:DrainSuPply:VOLTag:e:RANGe:RANGe	Sets the Drain / Collector Supply measurement range applied when the voltage measurement range determination method is FIX.
:DrainSuPply:VOLTag:e:RANGe:RANGe?	Queries the Drain / Collector Supply measurement range applied when the voltage measurement range determination method is FIX.
:DrainSuPply:VOLTag:e:RANGe:MINimum	Sets the measurement range that is the lower limit of range search when the Drain / Collector Supply voltage measurement range determination method is AUTO.
:DrainSuPply:VOLTag:e:RANGe:MINimum?	Queries the measurement range that is the lower limit of range search when the Drain / Collector Supply voltage measurement range determination method is AUTO.
:DrainSuPply:VOLTag:e:RANGe:MAXimum	Sets the measurement range that is the upper limit of range search when the Drain / Collector Supply voltage measurement range determination method is AUTO.
:DrainSuPply:VOLTag:e:RANGe:MAXimum?	Queries the measurement range that is the upper limit of range search when the Drain / Collector Supply voltage measurement range determination method is AUTO.
:DrainSuPply:VOLTag:e:LIMit:UPPer:STATus	Sets whether to specify the upper limit for the Drain / Collector Supply voltage as a limit detection condition.
:DrainSuPply:VOLTag:e:LIMit:UPPer:STATus?	Queries whether to specify the upper limit for the Drain / Collector Supply voltage as a limit detection condition.
:DrainSuPply:VOLTag:e:LIMit:UPPer:VALue	Sets the upper limit of the Drain / Collector Supply voltage used for the Limit detection condition.

:DrainSuPply:VOLTag:e:LIMit:UPPer:VALue?	Queries the upper limit of the Drain / Collector Supply voltage used for the Limit detection condition.
:DrainSuPply:VOLTag:e:LIMit:LOWer:STATus	Sets whether to specify the lower limit for the Drain / Collector Supply voltage as a limit detection condition.
:DrainSuPply:VOLTag:e:LIMit:LOWer:STATus?	Queries whether to specify the lower limit for the Drain / Collector Supply voltage as a limit detection condition.
:DrainSuPply:VOLTag:e:LIMit:LOWer:VALue	Sets the lower limit of the Drain / Collector Supply voltage used for the limit detection condition.
:DrainSuPply:VOLTag:e:LIMit:LOWer:VALue?	Queries the lower limit of the Drain / Collector Supply voltage used for the limit detection condition.
:DrainSuPply:AMPare:TITLe :DrainSuPply:CURRent:TITLe	Sets the name given to the measured current of Drain / Collector Supply.
:DrainSuPply:AMPare:TITLe? :DrainSuPply:CURRent:TITLe?	Queries the name given to the measured current of Drain / Collector Supply.
:DrainSuPply:AMPare:RANGe:MODE :DrainSuPply:CURRent:RANGe:MODE	Sets how to determine the Drain / Collector Supply current measurement range.
:DrainSuPply:AMPare:RANGe:MODE? :DrainSuPply:CURRent:RANGe:MODE?	Queries how to determine the Drain / Collector Supply current measurement range.
:DrainSuPply:AMPare:RANGe:RANGe :DrainSuPply:CURRent:RANGe:RANGe	Sets the measurement range applied when the measurement range determination method of Drain / Collector Supply Voltage is FIX.
:DrainSuPply:AMPare:RANGe:RANGe? :DrainSuPply:CURRent:RANGe:RANGe?	Queries the measurement range applied when the measurement range determination method of Drain / Collector Supply Voltage is FIX.
:DrainSuPply:AMPare:RANGe:MINimum :DrainSuPply:CURRent:RANGe:MINimum	Sets the measurement range that is the lower limit of range search when the Drain / Collector Supply current measurement range determination method is AUTO.
:DrainSuPply:AMPare:RANGe:MINimum? :DrainSuPply:CURRent:RANGe:MINimum?	Queries the measurement range that is the lower limit of range search when the Drain / Collector Supply current measurement range determination method is AUTO.
:DrainSuPply:AMPare:RANGe:MAXimum :DrainSuPply:CURRent:RANGe:MAXimum	Sets the measurement range that is the upper limit of range search when the Drain / Collector Supply current measurement range determination method is AUTO.
:DrainSuPply:AMPare:RANGe:MAXimum? :DrainSuPply:CURRent:RANGe:MAXimum?	Queries the measurement range that is the upper limit of range search when the Drain / Collector Supply current measurement range determination method is AUTO.
:DrainSuPply:AMPare:LIMit:UPPer:STATus :DrainSuPply:CURRent:LIMit:UPPer:STATus	Sets whether to specify the upper limit for the Drain / Collector Supply current as a limit detection condition.
:DrainSuPply:AMPare:LIMit:UPPer:STATus? :DrainSuPply:CURRent:LIMit:UPPer:STATus?	Queries whether to specify the upper limit for the Drain / Collector Supply current as a limit detection condition.
:DrainSuPply:AMPare:LIMit:UPPer:VALue :DrainSuPply:CURRent:LIMit:UPPer:VALue	Sets the upper limit of the Drain / Collector Supply current used for the limit detection condition.
:DrainSuPply:AMPare:LIMit:UPPer:VALue? :DrainSuPply:CURRent:LIMit:UPPer:VALue?	Queries the upper limit of the Drain / Collector Supply current used for the limit detection condition.
:DrainSuPply:AMPare:LIMit:LOWer:STATus :DrainSuPply:CURRent:LIMit:LOWer:STATus	Sets whether to specify the lower limit for the Drain / Collector Supply current as a limit detection condition.
:DrainSuPply:AMPare:LIMit:LOWer:STATus? :DrainSuPply:CURRent:LIMit:LOWer:STATus?	Queries whether to specify the lower limit for the Drain / Collector Supply current as a limit detection condition.
:DrainSuPply:AMPare:LIMit:LOWer:VALue :DrainSuPply:CURRent:LIMit:LOWer:VALue	Sets the lower limit of the Drain / Collector Supply current used for the limit detection condition.
:DrainSuPply:AMPare:LIMit:LOWer:VALue? :DrainSuPply:CURRent:LIMit:LOWer:VALue?	Queries the lower limit of the Drain / Collector Supply current used for the limit detection condition.
:DrainSuPply:LIMit:POWer:STATus	Sets whether to specify Drain / Collector Supply power as a limit detection condition.
:DrainSuPply:LIMit:POWer:STATus?	Queries whether to specify Drain / Collector Supply power as a limit detection condition.

:DrainSuPply:LiMit:POWer:VALue	Sets the upper limit of Drain / Collector Supply power used for the limit detection condition.
:DrainSuPply:LiMit:POWer:VALue?	Queries the upper limit of Drain / Collector Supply power used for the limit detection condition.
:DrainSuPply:HOLDtime:VALue1	Sets the output value when the output type of Drain / Collector Supply is MANUAL during the period of HOLD TIME1.
:DrainSuPply:HOLDtime:VALue1?	Queries the output value when the output type of Drain / Collector Supply is MANUAL during the period of HOLD TIME1.
:DrainSuPply:HOLDtime:VALue2	Sets the output value when the output type of Drain / Collector Supply is MANUAL during the period of HOLD TIME2.
:DrainSuPply:HOLDtime:VALue2?	Queries the output value when the output type of Drain / Collector Supply is MANUAL during the period of HOLD TIME2.
:DrainSuPply:HOLDtime:VALue3	Sets the output value when the output type of Drain / Collector Supply is MANUAL during the period of HOLD TIME3.
:DrainSuPply:HOLDtime:VALue3?	Queries the output value when the output type of Drain / Collector Supply is MANUAL during the period of HOLD TIME3.
:DrainSuPply:HOLDtime:TYPe1	Sets the output type of Drain / Collector Supply during the HOLD TIME 1 period.
:DrainSuPply:HOLDtime:TYPe1?	Queries the output type of Drain / Collector Supply during the HOLD TIME 1 period.
:DrainSuPply:HOLDtime:TYPe2	Sets the output type of Drain / Collector Supply during the HOLD TIME 2 period.
:DrainSuPply:HOLDtime:TYPe2?	Queries the output type of Drain / Collector Supply during the HOLD TIME 2 period.
:DrainSuPply:HOLDtime:TYPe3	Sets the output type of Drain / Collector Supply during the HOLD TIME 3 period.
:DrainSuPply:HOLDtime:TYPe3?	Queries the output type of Drain / Collector Supply during the HOLD TIME 3 period.
:DrainSuPply:SLOPe	Sets the rise / fall slope of the output of Drain / Collector Supply.
:DrainSuPply:SLOPe?	Queries the rise / fall slope of the output of Drain / Collector Supply.
:DrainSuPply:PULSe:DELAy	Sets the delay time of the output pulse when the Drain / Collector Supply mode (output waveform) is PULSE or LONG PULSE.
:DrainSuPply:PULSe:DELAy?	Queries the delay time of the output pulse when the Drain / Collector Supply mode (output waveform) is PULSE or LONG PULSE.
:DrainSuPply:PULSe:WIDTh	Sets the pulse width of the output pulse when the Drain / Collector Supply mode (output waveform) is PULSE or LONG PULSE.
:DrainSuPply:PULSe:WIDTh?	Queries the pulse width of the output pulse when the Drain / Collector Supply mode (output waveform) is PULSE or LONG PULSE.
:DrainSuPply:LOOPing	Sets the loop correction of the MV-SIN Unit of Drain / Collector Supply.
:DrainSuPply:LOOPing?	Queries the loop correction of the MV-SIN Unit of Drain / Collector Supply.
:DrainSuPply:INTerMittent	Sets INTERMITTENT (intermittent) in RECTIFIED SINE mode of MV-SIN Unit of Drain / Collector Supply.
:DrainSuPply:INTerMittent?	Queries INTERMITTENT (intermittent) in RECTIFIED SINE mode of MV-SIN Unit of Drain / Collector Supply.
:DrainSuPply:CHARge	Sets the charging voltage when SOURCE is CURRENT in the Drain / Collector Supply HC Unit.
:DrainSuPply:CHARge?	Queries the charging voltage when SOURCE is CURRENT in the Drain / Collector Supply HC Unit.
:DrainSuPply:SEARCh:ENABled	Sets the voltage search mode when the Drain / Collector supply unit is HC and the supply source is set to VOLTAGE.
:DrainSuPply:SEARCh:ENABled?	Queries the voltage search mode when the Drain / Collector supply unit is HC and the supply source is set to VOLTAGE.
:DrainSuPply:SEARCh:TARGet:TYPe	Sets the target specification method in the voltage search mode when the Drain / Collector supply unit is HC and supply source is set to VOLTAGE.
:DrainSuPply:SEARCh:TARGet:TYPe?	Queries the target specification method in the voltage search mode when the Drain / Collector supply unit is HC and supply source is set to VOLTAGE.
:DrainSuPply:SEARCh:TARGet:VALue	Sets the target value in the voltage search mode when the Drain / Collector

	supply unit is HC and supply source is set to VOLTAGE. This target value is used when the target specification method is set to MANUAL.
:DrainSuPply:SEARch:TARGet:VALue?	Queries the target value in the voltage search mode when the Drain / Collector supply unit is HC and supply source is set to VOLTAGE. This target value is used when the target specification method is set to MANUAL.
:DrainSuPply:SEARch:RESOLution	Sets the resolution of the search in the voltage search mode when the Drain / Collector Supply unit is HC and supply source is set to VOLTAGE.
:DrainSuPply:SEARch:RESOLution?	Queries the resolution of the search in the voltage search mode when the Drain / Collector Supply unit is HC and supply source is set to VOLTAGE.
:DrainSuPply:SEARch:EXTRact:MODE	Sets the value extraction method for extracting the waveform of measurement results in voltage search mode when the Drain / Collector supply unit is HC and the supply source is set to VOLTAGE.
:DrainSuPply:SEARch:EXTRact:MODE?	Queries the value extraction method for extracting the waveform of measurement results in voltage search mode when the Drain / Collector supply unit is HC and the supply source is set to VOLTAGE.
:DrainSuPply:SEARch:EXTRact:AUTO	Sets whether the characteristic curve is automatically extracted after measurement in voltage search mode when the Drain / Collector Supply unit is HC and supply source is set to VOLTAGE.
:DrainSuPply:SEARch:EXTRact:AUTO?	Queries whether the characteristic curve is automatically extracted after measurement in voltage search mode when the Drain / Collector Supply unit is HC and supply source is set to VOLTAGE.
:DrainSuPply:SEARch:EXTRact:EXECute?	Extracts the characteristic curve from the measurement results in the voltage search mode when the Drain / Collector Supply unit is HC and supply source is set to VOLTAGE.

Syntax	Function
:GateSuPply:AVAILable	Queries whether Gate / Base Supply is enabled or disabled.
:GateSuPply:UNIT	Sets the power supply unit to be used as Gate / Base Supply.
:GateSuPply:UNIT?	Queries the power supply unit to be used as Gate / Base Supply.
:GateSuPply:SOURce	Sets whether to use the selected Gate / Base Supply Unit as a voltage source or a current source.
:GateSuPply:SOURce?	Queries whether to use the selected Gate / Base Supply Unit as a voltage source or a current source.
:GateSuPply:MODE	Sets the output waveform of the selected Gate / Base Supply Unit.
:GateSuPply:MODE?	Queries the output waveform of the selected Gate / Base Supply Unit.
:GateSuPply:MAXimum	Sets the maximum output of the selected Gate / Base Supply Unit.
:GateSuPply:MAXimum?	Queries the maximum output of the selected Gate / Base Supply Unit.
:GateSuPply:POLarity	Sets the output polarity of the selected Gate / Base Supply Unit.
:GateSuPply:POLarity?	Queries the output polarity of the selected Gate / Base Supply Unit.
:GateSuPply:SWEep:ENABled	Sets ON (sweep) / OFF (fixed value) of the output sweep of Gate / Base Supply.
:GateSuPply:SWEep:ENABled?	Queries ON (sweep) / OFF (fixed value) of the output sweep of Gate / Base Supply.
:GateSuPply:SWEep:MODE	Sets the output change method when Gate / Base Supply is sweeping.
:GateSuPply:SWEep:MODE?	Queries the output change method when Gate / Base Supply is sweeping.
:GateSuPply:SWEep:DIRectioN	Sets the sweep direction when Gate / Base Supply is sweeping.
:GateSuPply:SWEep:DIRectioN?	Queries the sweep direction when Gate / Base Supply is sweeping.
:GateSuPply:SWEep:STARt	Sets the output value to start the Gate / Base Supply sweep.
:GateSuPply:SWEep:STARt?	Queries the output value to start the Gate / Base Supply sweep.
:GateSuPply:SWEep:STOP	Sets the output value to stop Gate / Base Supply sweep.
:GateSuPply:SWEep:STOP?	Queries the output value to stop Gate / Base Supply sweep.
:GateSuPply:SWEep:STEPs:COUNt	Sets the number of steps in the Gate / Base Supply sweep.
:GateSuPply:SWEep:STEPs:COUNt?	Queries the number of steps in the Gate / Base Supply sweep.
:GateSuPply:SWEep:STEPs:VALue?	Queries the step width when Gate / Base Supply is sweeping.

:GateSuPply:SWEep:LIST	Sets the output value list when the sweep mode of Gate/Base Supply is LIST.
:GateSuPply:SWEep:LIST?	Queries the output value list when the sweep mode of Gate/Base Supply is LIST.
:GateSuPply:SWEep:LIST:TRANSfer	This command transfers a file of output value lists stored in the PC to the curve tracer and applies it as a list of values to be output by Gate / Base Supply in the list sweep.
:GateSuPply:SWEep:LIST:TRANSfer?	Transfers a list of values to be output by Gate / Base Supply in the list sweep to the PC.
:GateSuPply:VOL TAge:TITLe	Sets the name given to the measured voltage of Gate / Base Supply.
:GateSuPply:VOL TAge:TITLe?	Queries the name given to the measured voltage of Gate / Base Supply.
:GateSuPply:VOL TAge:RANGe:MODE	Sets the Gate / Base Supply voltage measurement range determination method.
:GateSuPply:VOL TAge:RANGe:MODE?	Queries the Gate / Base Supply voltage measurement range determination method.
:GateSuPply:VOL TAge:RANGe:RANGe	Sets the measurement range applied when the Gate / Base Supply voltage measurement range determination method is FIX.
:GateSuPply:VOL TAge:RANGe:RANGe?	Queries the measurement range applied when the Gate / Base Supply voltage measurement range determination method is FIX.
:GateSuPply:VOL TAge:RANGe:MINimum	Sets the measurement range that is the lower limit of range search when the Gate / Base Supply voltage measurement range determination method is AUTO.
:GateSuPply:VOL TAge:RANGe:MINimum?	Queries the measurement range that is the lower limit of range search when the Gate / Base Supply voltage measurement range determination method is AUTO.
:GateSuPply:VOL TAge:RANGe:MAXimum	Sets the measurement range that is the upper limit of range search when the Gate / Base Supply voltage measurement range determination method is AUTO.
:GateSuPply:VOL TAge:RANGe:MAXimum?	Queries the measurement range that is the upper limit of range search when the Gate / Base Supply voltage measurement range determination method is AUTO.
:GateSuPply:VOL TAge:LIMit:UPPer:STATus	Sets whether to specify the upper limit for Gate / Base Supply voltage as a limit detection condition.
:GateSuPply:VOL TAge:LIMit:UPPer:STATus?	Queries whether to specify the upper limit for Gate / Base Supply voltage as a limit detection condition.
:GateSuPply:VOL TAge:LIMit:UPPer:VALue	Sets the upper limit of the Gate / Base Supply voltage used for the limit detection condition.
:GateSuPply:VOL TAge:LIMit:UPPer:VALue?	Queries the upper limit of the Gate / Base Supply voltage used for the limit detection condition.
:GateSuPply:VOL TAge:LIMit:LOWer:STATus	Sets whether to specify the lower limit for the Gate / Base Supply voltage as the detection condition of Limit.
:GateSuPply:VOL TAge:LIMit:LOWer:STATus?	Queries whether to specify the lower limit for the Gate / Base Supply voltage as the detection condition of Limit.
:GateSuPply:VOL TAge:LIMit:LOWer:VALue	Sets the lower limit of the Gate / Base Supply voltage used for the Limit detection condition.
:GateSuPply:VOL TAge:LIMit:LOWer:VALue?	Queries the lower limit of the Gate / Base Supply voltage used for the Limit detection condition.
:GateSuPply:AMPare:TITLe :GateSuPply:CURRent:TITLe	Sets the name given to the measured current of Gate / Base Supply.
:GateSuPply:AMPare:TITLe? :GateSuPply:CURRent:TITLe?	Queries the name given to the measured current of Gate / Base Supply.
:GateSuPply:AMPare:RANGe:MODE :GateSuPply:CURRent:RANGe:MODE	Sets the method for determining the current measurement range of Gate / Base Supply.
:GateSuPply:AMPare:RANGe:MODE? :GateSuPply:CURRent:RANGe:MODE?	Queries the method for determining the current measurement range of Gate / Base Supply.
:GateSuPply:AMPare:RANGe:RANGe :GateSuPply:CURRent:RANGe:RANGe	Sets the measurement range applied when the current measurement range determination method of Gate / Base Supply is FIX.
:GateSuPply:AMPare:RANGe:RANGe? :GateSuPply:CURRent:RANGe:RANGe?	Queries the measurement range applied when the current measurement range determination method of Gate / Base Supply is FIX.
:GateSuPply:AMPare:RANGe:MINimum :GateSuPply:CURRent:RANGe:MINimum	Sets the measurement range that is the lower limit of the range search when the Gate / Base Supply current measurement range determination method is AUTO.

:GateSuPply:AMPare:RANGe:MINimum? :GateSuPply:CURRent:RANGe:MINimum?	Queries the measurement range that is the lower limit of the range search when the Gate / Base Supply current measurement range determination method is AUTO.
:GateSuPply:AMPare:RANGe:MAXimum :GateSuPply:CURRent:RANGe:MAXimum	Sets the measurement range that is the upper limit of range search when the Gate / Base Supply current measurement range determination method is AUTO.
:GateSuPply:AMPare:RANGe:MAXimum? :GateSuPply:CURRent:RANGe:MAXimum?	Queries the measurement range that is the upper limit of range search when the Gate / Base Supply current measurement range determination method is AUTO.
:GateSuPply:AMPare:LIMit:UPPer:STATus :GateSuPply:CURRent:LIMit:UPPer:STATus	Sets whether to specify the upper limit for Gate / Base Supply current as a limit detection condition.
:GateSuPply:AMPare:LIMit:UPPer:STATus? :GateSuPply:CURRent:LIMit:UPPer:STATus?	Queries whether to specify the upper limit for Gate / Base Supply current as a limit detection condition.
:GateSuPply:AMPare:LIMit:UPPer:VALue :GateSuPply:CURRent:LIMit:UPPer:VALue	Sets the upper limit of the Gate / Base Supply current used for the limit detection condition.
:GateSuPply:AMPare:LIMit:UPPer:VALue? :GateSuPply:CURRent:LIMit:UPPer:VALue?	Queries the upper limit of the Gate / Base Supply current used for the limit detection condition.
:GateSuPply:AMPare:LIMit:LOWer:STATus :GateSuPply:CURRent:LIMit:LOWer:STATus	Sets whether to specify the lower limit for Gate / Base Supply current as a limit detection condition.
:GateSuPply:AMPare:LIMit:LOWer:STATus? :GateSuPply:CURRent:LIMit:LOWer:STATus?	Queries whether to specify the lower limit for Gate / Base Supply current as a limit detection condition.
:GateSuPply:AMPare:LIMit:LOWer:VALue :GateSuPply:CURRent:LIMit:LOWer:VALue	Sets the lower limit of the Gate / Base Supply current used for the limit detection condition.
:GateSuPply:AMPare:LIMit:LOWer:VALue? :GateSuPply:CURRent:LIMit:LOWer:VALue?	Queries the lower limit of the Gate / Base Supply current used for the limit detection condition.
:GateSuPply:LIMit:POWer:STATus :GateSuPply:LIMit:POWer:STATus?	Sets whether to specify Gate / Base Supply power as a limit detection condition.
:GateSuPply:LIMit:POWer:STATus?	Queries whether to specify Gate / Base Supply power as a limit detection condition.
:GateSuPply:LIMit:POWer:VALue	Sets the upper limit of Gate / Base Supply power used for the limit detection condition.
:GateSuPply:LIMit:POWer:VALue?	Queries the upper limit of Gate / Base Supply power used for the limit detection condition.
:GateSuPply:HOLDtime:VALue1	Sets the output value when the output type of Gate / Base Supply is MANUAL during the period of HOLD TIME1.
:GateSuPply:HOLDtime:VALue1?	Queries the output value when the output type of Gate / Base Supply is MANUAL during the period of HOLD TIME1.
:GateSuPply:HOLDtime:VALue2	Sets the output value when the output type of Gate / Base Supply is MANUAL during the period of HOLD TIME2.
:GateSuPply:HOLDtime:VALue2?	Queries the output value when the output type of Gate / Base Supply is MANUAL during the period of HOLD TIME2.
:GateSuPply:HOLDtime:VALue3	Sets the output value when the output type of Gate / Base Supply is MANUAL during the period of HOLD TIME3.
:GateSuPply:HOLDtime:VALue3?	Queries the output value when the output type of Gate / Base Supply is MANUAL during the period of HOLD TIME3.
:GateSuPply:HOLDtime:TYPe1	Sets the output type of Gate / Base Supply during the HOLD TIME1 period.
:GateSuPply:HOLDtime:TYPe1?	Queries the output type of Gate / Base Supply during the HOLD TIME1 period.
:GateSuPply:HOLDtime:TYPe2	Sets the output type of Gate / Base Supply during the HOLD TIME2 period.
:GateSuPply:HOLDtime:TYPe2?	Queries the output type of Gate / Base Supply during the HOLD TIME2 period.
:GateSuPply:HOLDtime:TYPe3	Sets the output type of Gate / Base Supply during the HOLD TIME3 period.
:GateSuPply:HOLDtime:TYPe3?	Queries the output type of Gate / Base Supply during the HOLD TIME3 period.
:GateSuPply:BASE	Sets the Base output value of Gate / Base Supply.
:GateSuPply:BASE?	Queries the Base output value of Gate / Base Supply.
:GateSuPply:SLOPe	Sets the rise / fall slope of the Gate / Base Supply output.
:GateSuPply:SLOPe?	Queries the rise / fall slope of the Gate / Base Supply output.
:GateSuPply:PULSe:DELAy	Sets the delay time of the output pulse when the Gate / Base Supply mode (output waveform) is PULSE or LONG PULSE.

:GateSuPply:PULSe:DELAy?	Queries the delay time of the output pulse when the Gate / Base Supply mode (output waveform) is PULSE or LONG PULSE.
:GateSuPply:PULSe:WIDTh	Sets the pulse width of the output pulse when the Gate / Base Supply mode (output waveform) is PULSE or LONG PULSE.
:GateSuPply:PULSe:WIDTh?	Queries the pulse width of the output pulse when the Gate / Base Supply mode (output waveform) is PULSE or LONG PULSE.
:GateSuPply:LOOPing	Sets the loop correction of GATE-SIN Unit of Gate / Base Supply.
:GateSuPply:LOOPing?	Queries the loop correction of GATE-SIN Unit of Gate / Base Supply.

Syntax	Function
:SMU:AVAILable?	Queries whether SMU (optional external unit) is enabled or disabled.
:SMU:UNIT	Sets the power supply unit to be used as SMU.
:SMU:UNIT?	Queries the power supply unit to be used as SMU.
:SMU:SOURce	Sets whether to use the selected SMU as a voltage source or a current source.
:SMU:SOURce?	Queries whether to use the selected SMU as a voltage source or a current source.
:SMU:MODE	Sets the output waveform of the selected SMU.
:SMU:MODE?	Queries the output waveform of the selected SMU.
:SMU:MAXimum	Sets the maximum output of the selected SMU.
:SMU:MAXimum?	Queries the maximum output of the selected SMU.
:SMU:POLarity	Sets the output polarity of the selected SMU.
:SMU:POLarity?	Queries the output polarity of the selected SMU.
:SMU:SWEEp:ENABled	Sets ON (sweep) / OFF (fixed value) of the output sweep of SMU.
:SMU:SWEEp:ENABled?	Queries ON (sweep) / OFF (fixed value) of the output sweep of SMU.
:SMU:SWEEp:MODE	Sets the output change method when SMU is sweeping.
:SMU:SWEEp:MODE?	Queries the output change method when SMU is sweeping.
:SMU:SWEEp:DIRection	Sets the sweep direction when SMU is sweeping.
:SMU:SWEEp:DIRection?	Queries the sweep direction when SMU is sweeping.
:SMU:SWEEp:STARt	Sets the output value to start the SMU Supply sweep.
:SMU:SWEEp:STARt?	Queries the output value to start the SMU Supply sweep.
:SMU:SWEEp:STOP	Sets the output value to stop the SMU sweep.
:SMU:SWEEp:STOP?	Queries the output value to stop the SMU sweep.
:SMU:SWEEp:STEPs:COUNT	Sets the number of steps in the SMU sweep.
:SMU:SWEEp:STEPs:COUNT?	Queries the number of steps in the SMU sweep.
:SMU:SWEEp:STEPs:VALue?	Queries the step width when SMU is sweeping.
:SMU:SWEEp:LIST	Sets the output value list when the sweep mode of SMU is LIST.
:SMU:SWEEp:LIST?	Queries the output value list when the sweep mode of SMU is LIST.
:SMU:SWEEp:LIST:TRANsfer	This command transfers a file of output value lists stored in the PC to the curve tracer and applies it as a list of values to be output by SMU in the list sweep.
:SMU:SWEEp:LIST:TRANsfer?	Transfers a list of values to be output by SMU in the list sweep to the PC.
:SMU:VOLTagE:TITLe	Sets the name given to the measured voltage of SMU.
:SMU:VOLTagE:TITLe?	Queries the name given to the measured voltage of SMU.
:SMU:VOLTagE:RANGe:MODE	Sets the SMU voltage measurement range determination method.
:SMU:VOLTagE:RANGe:MODE?	Queries the SMU voltage measurement range determination method.
:SMU:VOLTagE:RANGe:RANGe	Sets the measurement range applied when the SMU voltage measurement range determination method is FIX.
:SMU:VOLTagE:RANGe:RANGe?	Queries the measurement range applied when the SMU voltage measurement range determination method is FIX.
:SMU:VOLTagE:RANGe:MINimum	Sets the measurement range that is the lower limit of range search when the SMU voltage measurement range determination method is AUTO.
:SMU:VOLTagE:RANGe:MINimum?	Queries the measurement range that is the lower limit of range search when the SMU voltage measurement range determination method is AUTO.
:SMU:VOLTagE:RANGe:MAXimum	Sets the measurement range that is the upper limit of range search when the SMU voltage measurement range determination method is AUTO.

:SMU:VOLTagE:RANGe:MAXimum?	Queries the measurement range that is the upper limit of range search when the SMU voltage measurement range determination method is AUTO.
:SMU:VOLTagE:LIMit:UPPer:STATus	Sets whether to specify the upper limit for SMU voltage as a limit detection condition.
:SMU:VOLTagE:LIMit:UPPer:STATus?	Queries whether to specify the upper limit for SMU voltage as a limit detection condition.
:SMU:VOLTagE:LIMit:UPPer:VALue	Sets the upper limit of the SMU voltage used for the limit detection condition.
:SMU:VOLTagE:LIMit:UPPer:VALue?	Queries the upper limit of the SMU voltage used for the limit detection condition.
:SMU:VOLTagE:LIMit:LOWer:STATus	Sets whether to specify the lower limit for SMU voltage as a limit detection condition.
:SMU:VOLTagE:LIMit:LOWer:STATus?	Queries whether to specify the lower limit for SMU voltage as a limit detection condition.
:SMU:VOLTagE:LIMit:LOWer:VALue	Sets the lower limit of the SMU voltage used for the limit detection condition.
:SMU:VOLTagE:LIMit:LOWer:VALue?	Queries the lower limit of the SMU voltage used for the limit detection condition.
:SMU:AMPare:TITLe :SMU:CURRent:TITLe	Sets the name given to the measured current of SMU.
:SMU:AMPare:TITLe? :SMU:CURRent:TITLe?	Queries the name given to the measured current of SMU.
:SMU:AMPare:RANGe:MODE :SMU:CURRent:RANGe:MODE	Sets the method for determining the current measurement range of SMU.
:SMU:AMPare:RANGe:MODE? :SMU:CURRent:RANGe:MODE?	Queries the method for determining the current measurement range of SMU.
:SMU:AMPare:RANGe:RANGe :SMU:CURRent:RANGe:RANGe	Sets the measurement range applied when the current measurement range determination method of SMU is FIX.
:SMU:AMPare:RANGe:RANGe? :SMU:CURRent:RANGe:RANGe?	Queries the measurement range applied when the current measurement range determination method of SMU is FIX.
:SMU:AMPare:RANGe:MINimum :SMU:CURRent:RANGe:MINimum	Sets the measurement range that is the lower limit of the range search when the current measurement range determination method is AUTO.
:SMU:AMPare:RANGe:MINimum? :SMU:CURRent:RANGe:MINimum?	Queries the measurement range that is the lower limit of the range search when the current measurement range determination method is AUTO.
:SMU:AMPare:RANGe:MAXimum :SMU:CURRent:RANGe:MAXimum	Sets the measurement range that is the upper limit of the range search when the current measurement range determination method is AUTO.
:SMU:AMPare:RANGe:MAXimum? :SMU:CURRent:RANGe:MAXimum?	Queries the measurement range that is the upper limit of the range search when the current measurement range determination method is AUTO.
:SMU:AMPare:LIMit:UPPer:STATus :SMU:CURRent:LIMit:UPPer:STATus	Sets whether to specify the upper limit for SMU current as a limit detection condition.
:SMU:AMPare:LIMit:UPPer:STATus? :SMU:CURRent:LIMit:UPPer:STATus?	Queries whether to specify the upper limit for SMU current as a limit detection condition.
:SMU:AMPare:LIMit:UPPer:VALue :SMU:CURRent:LIMit:UPPer:VALue	Sets the upper limit of the SMU current used for the limit detection condition.
:SMU:AMPare:LIMit:UPPer:VALue? :SMU:CURRent:LIMit:UPPer:VALue?	Queries the upper limit of the SMU current used for the limit detection condition.
:SMU:AMPare:LIMit:LOWer:STATus :SMU:CURRent:LIMit:LOWer:STATus	Sets whether to specify the lower limit for SMU current as a limit detection condition.
:SMU:AMPare:LIMit:LOWer:STATus? :SMU:CURRent:LIMit:LOWer:STATus?	Queries whether to specify the lower limit for SMU current as a limit detection condition.
:SMU:AMPare:LIMit:LOWer:VALue :SMU:CURRent:LIMit:LOWer:VALue	Sets the lower limit of the SMU current used for the limit detection condition.
:SMU:AMPare:LIMit:LOWer:VALue? :SMU:CURRent:LIMit:LOWer:VALue?	Queries the lower limit of the SMU current used for the limit detection condition.
:SMU:LIMit:POWer:STATus	Sets whether to specify SMU power as a limit detection condition.
:SMU:LIMit:POWer:STATus?	Queries whether to specify SMU power as a limit detection condition.
:SMU:LIMit:POWer:VALue	Sets the upper limit of SMU power used for the limit detection condition.
:SMU:LIMit:POWer:VALue?	Queries the upper limit of SMU power used for the limit detection condition.
:SMU:HOLDtime:VALue1	Sets the output value when the output type of SMU Supply is MANUAL during the period of HOLD TIME1.
:SMU:HOLDtime:VALue1?	Queries the output value when the output type of SMU Supply is MANUAL during the period of HOLD TIME1.

:SMU:HOLDtime:VALue2	Sets the output value when the output type of SMU Supply is MANUAL during the period of HOLD TIME2.
:SMU:HOLDtime:VALue2?	Queries the output value when the output type of SMU Supply is MANUAL during the period of HOLD TIME2.
:SMU:HOLDtime:VALue3	Sets the output value when the output type of SMU Supply is MANUAL during the period of HOLD TIME3.
:SMU:HOLDtime:VALue3?	Queries the output value when the output type of SMU Supply is MANUAL during the period of HOLD TIME3.
:SMU:HOLDtime:TYPe1	Sets the output type of SMU during the HOLD TIME1 period.
:SMU:HOLDtime:TYPe1?	Queries the output type of SMU during the HOLD TIME1 period.
:SMU:HOLDtime:TYPe2	Sets the output type of SMU during the HOLD TIME2 period.
:SMU:HOLDtime:TYPe2?	Queries the output type of SMU during the HOLD TIME2 period.
:SMU:HOLDtime:TYPe3	Sets the output type of SMU during the HOLD TIME3 period.
:SMU:HOLDtime:TYPe3?	Queries the output type of SMU during the HOLD TIME3 period.
:SMU:BASE	Sets the Base output value of SMU.
:SMU:BASE?	Queries the Base output value of SMU.
:SMU:SLOPe	Sets the rise / fall slope of the SMU output.
:SMU:SLOPe?	Queries the rise / fall slope of the SMU output.

Syntax	Function
:SEMU:AVAILable?	Queries whether SEMU (optional external unit) is enabled or disabled.
:SEMU:AMPare:TITLe :SEMU:CURRent:TITLe	Sets the name given to the measured current of SEMU.
:SEMU:AMPare:TITLe? :SEMU:CURRent:TITLe?	Queries the name given to the measured current of SEMU.
:SEMU:AMPare:RANGe:MODE :SEMU:CURRent:RANGe:MODE	Sets the method for determining the current measurement range of SEMU.
:SEMU:AMPare:RANGe:MODE? :SEMU:CURRent:RANGe:MODE?	Queries the method for determining the current measurement range of SEMU.
:SEMU:AMPare:RANGe:RANGe :SEMU:CURRent:RANGe:RANGe	Sets the measurement range applied when the current measurement range determination method of SEMU is FIX.
:SEMU:AMPare:RANGe:RANGe? :SEMU:CURRent:RANGe:RANGe?	Queries the measurement range applied when the current measurement range determination method of SEMU is FIX.
:SEMU:AMPare:LIMit:UPPer:STATus :SEMU:CURRent:LIMit:UPPer:STATus	Sets whether to specify the upper limit for SEMU current as a limit detection condition.
:SEMU:AMPare:LIMit:UPPer:STATus? :SEMU:CURRent:LIMit:UPPer:STATus?	Queries whether to specify the upper limit for SEMU current as a limit detection condition.
:SEMU:AMPare:LIMit:UPPer:VALue :SEMU:CURRent:LIMit:UPPer:VALue	Sets the upper limit of the SEMU current used for the limit detection condition.
:SEMU:AMPare:LIMit:UPPer:VALue? :SEMU:CURRent:LIMit:UPPer:VALue?	Queries the upper limit of the SEMU current used for the limit detection condition.
:SEMU:AMPare:LIMit:LOWer:STATus :SEMU:CURRent:LIMit:LOWer:STATus	Sets whether to specify the lower limit for SEMU current as a limit detection condition.
:SEMU:AMPare:LIMit:LOWer:STATus? :SEMU:CURRent:LIMit:LOWer:STATus?	Queries whether to specify the lower limit for SEMU current as a limit detection condition.
:SEMU:AMPare:LIMit:LOWer:VALue :SEMU:CURRent:LIMit:LOWer:VALue	Sets the lower limit of the SEMU current used for the limit detection condition.
:SEMU:AMPare:LIMit:LOWer:VALue? :SEMU:CURRent:LIMit:LOWer:VALue?	Queries the lower limit of the SEMU current used for the limit detection condition.

Syntax	Function
:DISPlay:VIEW:XY	Sets XY display ON / OFF.

:DISPlay:VIEW:XY?	Queries XY display ON / OFF.
:DISPlay:VIEW:YT	Sets YT display ON / OFF.
:DISPlay:VIEW:YT?	Queries YT display ON / OFF.
:DISPlay:VIEW:DATAlist	Sets the data list display ON / OFF.
:DISPlay:VIEW:DATAlist?	Queries the data list display ON / OFF.
:DISPlay:VIEW:CURsor	Sets the cursor display ON / OFF.
:DISPlay:VIEW:CURsor?	Queries the cursor display ON / OFF.
:DISPlay:VECTor	Sets the waveform drawing method in XY display.
:DISPlay:VECTor?	Queries the waveform drawing method in XY display.
:DISPlay:BACKground	Sets the background color in XY display, YT display, data list display, and cursor display.
:DISPlay:BACKground?	Queries the background color in XY display, YT display, data list display, and cursor display.
:DISPlay:REFErence:VISible	Sets the REFERENCE waveform display in the XY screen ON/OFF.
:DISPlay:REFErence:VISible?	Queries the REFERENCE waveform display in the XY screen ON/OFF.
:DISPlay:REFErence:STATus?	Queries the status of the REFERENCE waveform data displayed on the XY screen.
:DISPlay:REFErence:TRANsfer	This command transfers the XY waveform data file (*.CSV) saved in the PC to the curve tracer and sets as the REFERENCE waveform to be displayed on the XY screen.
:DISPlay:REFErence:LOAD	Load the XY waveform data file (*.CSV) saved in the external USB memory or internal memory of the curve tracer and sets as the REFERENCE waveform to be displayed on the XY screen.
:DISPlay:REFErence:CLEar	Clears the REFERENCE waveform data displayed on the XY screen.
:DISPlay:XY:TITLe	Sets the title character string of XY display.
:DISPlay:XY:TITLe?	Queries the title character string of XY display.
:DISPlay:XY:RANGe:AUTO	Sets the X-axis auto range ON / OFF in the XY display.
:DISPlay:XY:RANGe:AUTO?	Queries the X-axis auto range ON / OFF in the XY display.
:DISPlay:XY:RANGe:ZERO	Sets the X-axis zero point display ON / OFF in the XY display.
:DISPlay:XY:RANGe:ZERO?	Queries the X-axis zero point display ON / OFF in the XY display.
:DISPlay:XY:RANGe:AutoSCaLe	The range and offset position of each axis in the XY display are automatically set.
:DISPlay:XY:MULTitrace	Sets multi-trace ON / OFF in XY display.
:DISPlay:XY:MULTitrace?	Queries multi-trace ON / OFF in XY display.
:DISPlay:XY:X:SOURce	Sets the data assigned to the X axis in a single trace on the XY display.
:DISPlay:XY:X:SOURce?	Queries the data assigned to the X axis in a single trace on the XY display.
:DISPlay:XY:X:SCALe	Sets the X-axis scale for a single trace in XY display.
:DISPlay:XY:X:SCALe?	Queries the X-axis scale for a single trace in XY display.
:DISPlay:XY:X:LINear:RANGe	Sets the range on the X-axis linear scale of a single trace in XY display.
:DISPlay:XY:X:LINear:RANGe?	Queries the range on the X-axis linear scale of a single trace in XY display.
:DISPlay:XY:X:LINear:POSition	Sets the display offset position on the X-axis linear scale of single trace of XY display in DIV (scale) units.
:DISPlay:XY:X:LINear:POSition?	Queries the display offset position on the X-axis linear scale of single trace of XY display in DIV (scale) units.
:DISPlay:XY:X:LOG:MINimum	Sets the minimum value of the logarithmic axis in the single trace X axis of XY display.
:DISPlay:XY:X:LOG:MINimum?	Queries the minimum value of the logarithmic axis in the single trace X axis of XY display.
:DISPlay:XY:X:LOG:MAXimum	Sets the maximum value of the logarithmic axis in the single trace X axis of XY display.
:DISPlay:XY:X:LOG:MAXimum?	Queries the maximum value of the logarithmic axis in the single trace X axis of XY display.
:DISPlay:XY:X:LOG:POLarity	Sets the polarity of the logarithmic axis on the X axis of a XY display single trace.
:DISPlay:XY:X:LOG:POLarity?	Queries the polarity of the logarithmic axis on the X axis of a XY display single trace.
:DISPlay:XY:X:INVert	Sets X-axis inversion ON / OFF in single trace of XY display.
:DISPlay:XY:X:INVert?	Queries X-axis inversion ON / OFF in single trace of XY display.
:DISPlay:XY:Y:SOURce	Sets the allocation data to the Y axis in the single trace of XY display.
:DISPlay:XY:Y:SOURce?	Queries the allocation data to the Y axis in the single trace of XY display.
:DISPlay:XY:Y:SCALe	Sets the Y-axis scale in a single trace of XY display.
:DISPlay:XY:Y:SCALe?	Queries the Y-axis scale in a single trace of XY display.
:DISPlay:XY:Y:LINear:RANGe	Sets the range on the Y-axis linear scale of a single trace in XY display.

:DISPlay:XY:Y:LINear:RANGe?	Queries the range on the Y-axis linear scale of a single trace in XY display.
:DISPlay:XY:Y:LINear:POSition	Sets the display offset position on the Y-axis linear scale of a single trace of XY display in DIV (scale) units.
:DISPlay:XY:Y:LINear:POSition?	Queries the display offset position on the Y-axis linear scale of a single trace of XY display in DIV (scale) units.
:DISPlay:XY:Y:LOG:MINimum	Sets the minimum value of the logarithmic axis in the single trace Y axis of XY display.
:DISPlay:XY:Y:LOG:MINimum?	Queries the minimum value of the logarithmic axis in the single trace Y axis of XY display.
:DISPlay:XY:Y:LOG:MAXimum	Sets the maximum value of the logarithmic axis in the single trace Y axis of XY display.
:DISPlay:XY:Y:LOG:MAXimum?	Queries the maximum value of the logarithmic axis in the single trace Y axis of XY display.
:DISPlay:XY:Y:LOG:POLarity	Sets the polarity of the logarithmic axis on the Y axis in single trace in XY display.
:DISPlay:XY:Y:LOG:POLarity?	Queries the polarity of the logarithmic axis on the Y axis in single trace in XY display.
:DISPlay:XY:Y:INVert	Sets Y-axis inversion ON / OFF in XY display single trace.
:DISPlay:XY:Y:INVert?	Queries Y-axis inversion ON / OFF in XY display single trace.
:DISPlay:XY:MULTitrace:X:SOURce	Sets the allocation data to the X axis in the multi-trace of XY display.
:DISPlay:XY:MULTitrace:X:SOURce?	Queries the allocation data to the X axis in the multi-trace of XY display.
:DISPlay:XY:MULTitrace:X:RANGe	Sets the range on the X-axis linear scale of multitrace in XY display.
:DISPlay:XY:MULTitrace:X:RANGe?	Queries the range on the X-axis linear scale of multitrace in XY display.
:DISPlay:XY:MULTitrace:X:POSition	Sets the display offset position on the X-axis linear scale of multi-trace of XY display in DIV (scale) units.
:DISPlay:XY:MULTitrace:X:POSition?	Queries the display offset position on the X-axis linear scale of multi-trace of XY display in DIV (scale) units.
:DISPlay:XY:MULTitrace:X:INVert	Sets X-axis inversion ON / OFF in multi-trace of XY display.
:DISPlay:XY:MULTitrace:X:INVert?	Queries X-axis inversion ON / OFF in multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y1:SOURce	Sets the allocation data to the Y1 axis in the multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y1:SOURce?	Queries the allocation data to the Y1 axis in the multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y2:SOURce	Sets the allocation data to the Y2 axis in the multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y2:SOURce?	Queries the allocation data to the Y2 axis in the multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y3:SOURce	Sets the allocation data to the Y3 axis in the multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y3:SOURce?	Queries the allocation data to the Y3 axis in the multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y4:SOURce	Sets the allocation data to the Y4 axis in the multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y4:SOURce?	Queries the allocation data to the Y4 axis in the multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y5:SOURce :DISPlay:XY:MULTitrace:MATH:SOURce	Sets the allocation data to the Y5 axis in the multi-trace of XY display. The Y5 axis (MATH axis) is the only axis to which MATH can be assigned in multi-trace.
:DISPlay:XY:MULTitrace:Y5:SOURce? :DISPlay:XY:MULTitrace:MATH:SOURce?	Queries the allocation data to the Y5 axis in the multi-trace of XY display. The Y5 axis (MATH axis) is the only axis to which MATH can be assigned in multi-trace.
:DISPlay:XY:MULTitrace:Y1:RANGe	Sets the range on the Y1 axis linear scale of multitrace in XY display.
:DISPlay:XY:MULTitrace:Y1:RANGe?	Queries the range on the Y1 axis linear scale of multitrace in XY display.
:DISPlay:XY:MULTitrace:Y2:RANGe	Sets the range on the Y2 axis linear scale of multitrace in XY display.
:DISPlay:XY:MULTitrace:Y2:RANGe?	Queries the range on the Y2 axis linear scale of multitrace in XY display.
:DISPlay:XY:MULTitrace:Y3:RANGe	Sets the range on the Y3 axis linear scale of multitrace in XY display.
:DISPlay:XY:MULTitrace:Y3:RANGe?	Queries the range on the Y3 axis linear scale of multitrace in XY display.
:DISPlay:XY:MULTitrace:Y4:RANGe	Sets the range on the Y4 axis linear scale of multitrace in XY display.
:DISPlay:XY:MULTitrace:Y4:RANGe?	Queries the range on the Y4 axis linear scale of multitrace in XY display.
:DISPlay:XY:MULTitrace:Y5:RANGe :DISPlay:XY:MULTitrace:MATH:RANGe	Sets the range on the Y5-axis linear scale of multi-trace in XY display.
:DISPlay:XY:MULTitrace:Y5:RANGe? :DISPlay:XY:MULTitrace:MATH:RANGe?	Queries the range on the Y5-axis linear scale of multi-trace in XY display.
:DISPlay:XY:MULTitrace:Y1:POSition	Sets the display offset position on the Y1 axis linear scale of multi-trace of XY display in DIV (scale) units.
:DISPlay:XY:MULTitrace:Y1:POSition?	Queries the display offset position on the Y1 axis linear scale of multi-trace of XY display in DIV (scale) units.

:DISPlay:XY:MULTitrace:Y2:POStion	Sets the display offset position on the Y2 axis linear scale of multi-trace of XY display in DIV (scale) units.
:DISPlay:XY:MULTitrace:Y2:POStion?	Queries the display offset position on the Y2 axis linear scale of multi-trace of XY display in DIV (scale) units.
:DISPlay:XY:MULTitrace:Y3:POStion	Sets the display offset position on the Y3 axis linear scale of multi-trace of XY display in DIV (scale) units.
:DISPlay:XY:MULTitrace:Y3:POStion?	Queries the display offset position on the Y3 axis linear scale of multi-trace of XY display in DIV (scale) units.
:DISPlay:XY:MULTitrace:Y4:POStion	Sets the display offset position on the Y4 axis linear scale of multi-trace of XY display in DIV (scale) units.
:DISPlay:XY:MULTitrace:Y4:POStion?	Queries the display offset position on the Y4 axis linear scale of multi-trace of XY display in DIV (scale) units.
:DISPlay:XY:MULTitrace:Y5:POStion :DISPlay:XY:MULTitrace:MATH:POStion	Sets the display offset position on the Y5 axis linear scale of multi-trace of XY display in DIV (scale) units.
:DISPlay:XY:MULTitrace:Y5:POStion? :DISPlay:XY:MULTitrace:MATH:POStion?	Queries the display offset position on the Y5 axis linear scale of multi-trace of XY display in DIV (scale) units.
:DISPlay:XY:MULTitrace:Y1:INVert	Sets Y1 axis inversion ON / OFF in multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y1:INVert?	Queries Y1 axis inversion ON / OFF in multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y2:INVert	Sets Y2 axis inversion ON / OFF in multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y2:INVert?	Queries Y2 axis inversion ON / OFF in multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y3:INVert	Sets Y3 axis inversion ON / OFF in multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y3:INVert?	Queries Y3 axis inversion ON / OFF in multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y4:INVert	Sets Y4 axis inversion ON / OFF in multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y4:INVert?	Queries Y4 axis inversion ON / OFF in multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y5:INVert :DISPlay:XY:MULTitrace:MATH:INVert	Sets Y5 axis inversion ON / OFF in XY display multi-trace.
:DISPlay:XY:MULTitrace:Y5:INVert? :DISPlay:XY:MULTitrace:MATH:INVert?	Queries Y5 axis inversion ON / OFF in XY display multi-trace.
:DISPlay:XY:MULTitrace:Y1:VISible	Sets Y1 trace display ON / OFF in multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y1:VISible?	Queries Y1 trace display ON / OFF in multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y2:VISible	Sets Y2 trace display ON / OFF in multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y2:VISible?	Queries Y2 trace display ON / OFF in multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y3:VISible	Sets Y3 trace display ON / OFF in multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y3:VISible?	Queries Y3 trace display ON / OFF in multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y4:VISible	Sets Y4 trace display ON / OFF in multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y4:VISible?	Queries Y4 trace display ON / OFF in multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y5:VISible :DISPlay:XY:MULTitrace:MATH:VISible	Sets Y5 trace display ON / OFF in multi-trace of XY display.
:DISPlay:XY:MULTitrace:Y5:VISible? :DISPlay:XY:MULTitrace:MATH:VISible?	Queries Y5 trace display ON / OFF in multi-trace of XY display.
:DISPlay:XY:MULTitrace:ACTive	Sets active Y-axis in multi-trace of XY display.
:DISPlay:XY:MULTitrace:ACTive?	Queries active Y-axis in multi-trace of XY display.
:DISPlay:YT:RANGe:AUTO	Sets the auto range ON / OFF in the YT display.
:DISPlay:YT:RANGe:AUTO?	Queries the auto range ON / OFF in the YT display.
:DISPlay:YT:RANGe:ZERO	Sets the zero point display ON / OFF in the YT display.
:DISPlay:YT:RANGe:ZERO?	Queries the zero point display ON / OFF in the YT display.
:DISPlay:YT:RANGe:AutoSCaLe	The range and offset position of all axes in the YT display are automatically set.
:DISPlay:YT:DRAIN V:RANGe :DISPlay:YT:COLLECTOR V:RANGe :DISPlay:YT:VDS:RANGe :DISPlay:YT:VCE:RANGe	Sets the display range of the Drain / Collector Supply voltage waveform of the YT display.

:DISPlay:YT:DRAIN V:RANGe? :DISPlay:YT:COLLECTOR V:RANGe? :DISPlay:YT:VDS:RANGe? :DISPlay:YT:VCE:RANGe?	Queries the display range of the Drain / Collector Supply voltage waveform of the YT display.
:DISPlay:YT:DRAIN I:RANGe :DISPlay:YT:COLLECTOR I:RANGe :DISPlay:YT:ID:RANGe :DISPlay:YT:IC:RANGe	Sets the display range of the Drain / Collector Supply current waveform of the YT display.
:DISPlay:YT:DRAIN I:RANGe? :DISPlay:YT:COLLECTOR I:RANGe? :DISPlay:YT:ID:RANGe? :DISPlay:YT:IC:RANGe?	Queries the display range of the Drain / Collector Supply current waveform of the YT display.
:DISPlay:YT:GATE V:RANGe :DISPlay:YT:BASE V:RANGe :DISPlay:YT:VGS:RANGe :DISPlay:YT:VBE:RANGe	Sets the display range of the Gate / Base Supply voltage waveform of the YT display.
:DISPlay:YT:GATE V:RANGe? :DISPlay:YT:BASE V:RANGe? :DISPlay:YT:VGS:RANGe? :DISPlay:YT:VBE:RANGe?	Queries the display range of the Gate / Base Supply voltage waveform of the YT display.
:DISPlay:YT:GATE I:RANGe :DISPlay:YT:BASE I:RANGe :DISPlay:YT:IG:RANGe :DISPlay:YT:IB:RANGe	Sets the display range of the Gate / Base Supply current waveform of the YT display.
:DISPlay:YT:GATE I:RANGe? :DISPlay:YT:BASE I:RANGe? :DISPlay:YT:IG:RANGe? :DISPlay:YT:IB:RANGe?	Queries the display range of the Gate / Base Supply current waveform of the YT display.
:DISPlay:YT:SMU V:RANGe :DISPlay:YT:VSMU:RANGe	Sets the display range of the SMU voltage waveform of the YT display.
:DISPlay:YT:SMU V:RANGe? :DISPlay:YT:VSMU:RANGe?	Queries the display range of the SMU voltage waveform of the YT display.
:DISPlay:YT:SMU I:RANGe :DISPlay:YT:ISMU:RANGe	Sets the display range of the SMU current waveform of the YT display.
:DISPlay:YT:SMU I:RANGe? :DISPlay:YT:ISMU:RANGe?	Queries the display range of the SMU current waveform of the YT display.
:DISPlay:YT:SE I:RANGe :DISPlay:YT:ISS:RANGe :DISPlay:YT:ISE RANGe	Sets the display range of the SEMU current waveform of the YT display.
:DISPlay:YT:SE I:RANGe? :DISPlay:YT:ISS:RANGe? :DISPlay:YT:ISE RANGe?	Queries the display range of the SEMU current waveform of the YT display.
:DISPlay:YT:DRAIN V:POSition :DISPlay:YT:COLLECTOR V:POSition :DISPlay:YT:VDS:POSition :DISPlay:YT:VCE:POSition	Sets the display offset position in the voltage waveform of Drain / Collector Supply of YT display in DIV (scale) units.
:DISPlay:YT:DRAIN V:POSition? :DISPlay:YT:COLLECTOR V:POSition? :DISPlay:YT:VDS:POSition? :DISPlay:YT:VCE:POSition?	Queries the display offset position in the voltage waveform of Drain / Collector Supply of YT display in DIV (scale) units.
:DISPlay:YT:DRAIN I:POSition :DISPlay:YT:COLLECTOR I:POSition :DISPlay:YT:ID:POSition :DISPlay:YT:IC:POSition	Sets the display offset position of the current waveform of Drain / Collector Supply in YT display in DIV (scale) units.
:DISPlay:YT:DRAIN I:POSition?	Queries the display offset position of the current waveform of Drain / Collector Supply in

:DISPlay:YT:COLLECTOR I:POStion? :DISPlay:YT:ID:POStion? :DISPlay:YT:IC:POStion?	YT display in DIV (scale) units.
:DISPlay:YT:GATE V:POStion :DISPlay:YT:BASE V:POStion :DISPlay:YT:VGS:POStion :DISPlay:YT:VBE:POStion	Sets the display offset position of the Gate / Base Supply Voltage waveform of the YT display in DIV (scale) units.
:DISPlay:YT:GATE V:POStion? :DISPlay:YT:BASE V:POStion? :DISPlay:YT:VGS:POStion? :DISPlay:YT:VBE:POStion?	Queries the display offset position of the Gate / Base Supply Voltage waveform of the YT display in DIV (scale) units.
:DISPlay:YT:GATE I:POStion :DISPlay:YT:BASE I:POStion :DISPlay:YT:IG:POStion :DISPlay:YT:IB:POStion	Sets the display offset position of the Gate / Base Supply Current waveform of the YT display in DIV (scale) units.
:DISPlay:YT:GATE I:POStion? :DISPlay:YT:BASE I:POStion? :DISPlay:YT:IG:POStion? :DISPlay:YT:IB:POStion?	Queries the display offset position of the Gate / Base Supply Current waveform of the YT display in DIV (scale) units.
:DISPlay:YT:SMU V:POStion :DISPlay:YT:VSMU:POStion	Sets the display offset position of the SMU Voltage waveform of the YT display in DIV (scale) units.
:DISPlay:YT:SMU V:POStion? :DISPlay:YT:VSMU:POStion?	Queries the display offset position of the SMU Voltage waveform of the YT display in DIV (scale) units.
:DISPlay:YT:SMU I:POStion :DISPlay:YT:ISMU:POStion	Sets the display offset position of the SMU Current waveform of the YT display in DIV (scale) units.
:DISPlay:YT:SMU I:POStion? :DISPlay:YT:ISMU:POStion?	Queries the display offset position of the SMU Current waveform of the YT display in DIV (scale) units.
:DISPlay:YT:SE I:POStion :DISPlay:YT:ISS:POStion :DISPlay:YT:ISE:POStion	Sets the display offset position of the SEMU Current waveform of the YT display in DIV (scale) units.
:DISPlay:YT:SE I:POStion? :DISPlay:YT:ISS:POStion? :DISPlay:YT:ISE:POStion?	Queries the display offset position of the SEMU Current waveform of the YT display in DIV (scale) units.
:DISPlay:YT:DRAIN V:VISIble :DISPlay:YT:COLLECTOR V:VISIble :DISPlay:YT:VDS:VISIble :DISPlay:YT:VCE:VISIble	Sets the waveform display ON / OFF of Drain / Collector Supply Voltage in YT display.
:DISPlay:YT:DRAIN V:VISIble? :DISPlay:YT:COLLECTOR V:VISIble? :DISPlay:YT:VDS:VISIble? :DISPlay:YT:VCE:VISIble?	Queries the waveform display ON / OFF of Drain / Collector Supply Voltage in YT display.
:DISPlay:YT:DRAIN I:VISIble :DISPlay:YT:COLLECTOR I:VISIble :DISPlay:YT:ID:VISIble :DISPlay:YT:IC:VISIble	Sets the waveform display ON / OFF of Drain / Collector Supply Current in YT display.
:DISPlay:YT:DRAIN I:VISIble? :DISPlay:YT:COLLECTOR I:VISIble? :DISPlay:YT:ID:VISIble? :DISPlay:YT:IC:VISIble?	Queries the waveform display ON / OFF of Drain / Collector Supply Current in YT display.
:DISPlay:YT:GATE V:VISIble :DISPlay:YT:BASE V:VISIble :DISPlay:YT:VGS:VISIble :DISPlay:YT:VBE:VISIble	Sets the waveform display ON / OFF of Gate / Base Supply Voltage in YT display.
:DISPlay:YT:GATE V:VISIble? :DISPlay:YT:BASE V:VISIble?	Queries the waveform display ON / OFF of Gate / Base Supply Voltage in YT display.

:DISPlay:YT:VGS:VISIble?	
:DISPlay:YT:VBE:VISIble?	
:DISPlay:YT:GATE I:VISIble :DISPlay:YT:BASE I:VISIble :DISPlay:YT:IG:VISIble :DISPlay:YT:IB:VISIble	Sets the waveform display ON / OFF of Gate / Base Supply Current in YT display.
:DISPlay:YT:GATE I:VISIble? :DISPlay:YT:BASE I:VISIble? :DISPlay:YT:IG:VISIble? :DISPlay:YT:IB:VISIble?	Queries the waveform display ON / OFF of Gate / Base Supply Current in YT display.
:DISPlay:YT:SMU V:VISIble :DISPlay:YT:VSMU:VISIble	Sets the waveform display ON / OFF of SMU Voltage in YT display.
:DISPlay:YT:SMU V:VISIble? :DISPlay:YT:VSMU:VISIble?	Queries the waveform display ON / OFF of SMU Voltage in YT display.
:DISPlay:YT:SMU I:VISIble :DISPlay:YT:ISMU:VISIble	Sets the waveform display ON / OFF of SMU Current in YT display.
:DISPlay:YT:SMU I:VISIble? :DISPlay:YT:ISMU:VISIble?	Queries the waveform display ON / OFF of SMU Current in YT display.
:DISPlay:YT:SE I:VISIble :DISPlay:YT:ISS:VISIble :DISPlay:YT:ISE:VISIble	Sets the waveform display ON / OFF of SEMU Current in YT display.
:DISPlay:YT:SE I:VISIble? :DISPlay:YT:ISS:VISIble? :DISPlay:YT:ISE:VISIble?	Queries the waveform display ON / OFF of SEMU Current in YT display.
:DISPlay:YT:CURsor	Sets the position of the time cursor on the YT screen.
:DISPlay:YT:CURsor?	Queries the position of the time cursor on the YT screen.

Syntax	Function
:MATH:TYPE	Sets the calculation type of MATH data.
:MATH:TYPE?	Queries the calculation type of MATH data.
:MATH:REFereNce:VISIble	Sets the MATH REFERENCE waveform (set as MATH reference data) display in the XY screen ON/OFF.
:MATH:REFereNce:VISIble?	Queries the MATH REFERENCE waveform (set as MATH reference data) display in the XY screen ON/OFF.
:MATH:REFereNce:STATus?	Queries the status of the REFERENCE waveform used as reference data when the MATH type is reference.
:MATH:REFereNce:TRANSfer	This command transfers the XY waveform data file (*.CSV) saved in the PC to the curve tracer and set as a reference data to be used when the MATH type is reference.
:MATH:REFereNce:LOAD	Load the XY waveform data file (*.CSV) saved in the external USB memory or internal memory of the curve tracer and set as a reference data to be used when the MATH type is reference.
:MATH:REFereNce:CLEar	Clears the REFERENCE data used when the MATH type is a reference.

Syntax	Function
:LIST:DRAIN V :LIST:COLLECTOR V :LIST:VDS :LIST:VCE	Sets the display ON / OFF of the Drain / Collector Supply voltage measurement value column on the data list screen.
:LIST:DRAIN V? :LIST:COLLECTOR V? :LIST:VDS? :LIST:VCE?	Queries the display ON / OFF of the Drain / Collector Supply voltage measurement value column on the data list screen.
:LIST:DRAIN I	Sets the display ON / OFF of the Drain / Collector Supply current measurement value column

:LIST:COLLECTOR I :LIST:ID :LIST:IC	on the data list screen.
:LIST:DRAIN I? :LIST:COLLECTOR I? :LIST:ID? :LIST:IC?	Queries the display ON / OFF of the Drain / Collector Supply current measurement value column on the data list screen.
:LIST:GATE V :LIST:BASE V :LIST:VGS :LIST:VBE	Sets the display ON / OFF of the Gate / Base Supply voltage measurement value column on the data list screen.
:LIST:GATE V? :LIST:BASE V? :LIST:VGS? :LIST:VBE?	Queries the display ON / OFF of the Gate / Base Supply voltage measurement value column on the data list screen.
:LIST:GATE I :LIST:BASE I :LIST:IG :LIST:IB	Sets the display ON / OFF of the Gate / Base Supply current measurement value column on the data list screen.
:LIST:GATE I? :LIST:BASE I? :LIST:IG? :LIST:IB?	Queries the display ON / OFF of the Gate / Base Supply current measurement value column on the data list screen.
:LIST:SMU V :LIST:VSMU	Sets the display ON / OFF of the SMU voltage measurement value column on the data list screen.
:LIST:SMU V? :LIST:VSMU?	Queries the display ON / OFF of the SMU voltage measurement value column on the data list screen.
:LIST:SMU I :LIST:ISMU	Sets the display ON / OFF of the SMU current measurement value column on the data list screen.
:LIST:SMU I? :LIST:ISMU?	Queries the display ON / OFF of the SMU current measurement value column on the data list screen.
:LIST:SE I :LIST:ISE :LIST:ISS	Sets the display ON / OFF of the SEMU current measurement value column on the data list screen.
:LIST:SE I? :LIST:ISE? :LIST:ISS?	Queries the display ON / OFF of the SEMU current measurement value column on the data list screen.
:LIST:MATH :LIST:RON	Sets the display ON / OFF of the MATH calculation value column on the data list screen.
:LIST:MATH? :LIST:RON?	Queries the display ON / OFF of the MATH calculation value column on the data list screen.
:LIST:PRImary :LIST:PrimaryOUTput	Sets the display ON / OFF of the primary output value column on the data list screen.
:LIST:PRImary? :LIST:PrimaryOUTput?	Queries the display ON / OFF of the primary output value column on the data list screen.
:LIST:SECondary :LIST:SecondaryOUTput	Sets the display ON / OFF of the secondary output value column on the data list screen.
:LIST:SECondary? :LIST:SecondaryOUTput?	Queries the display ON / OFF of the secondary output value column on the data list screen.
:LIST:CONStant :LIST:ConstantOUTput	Sets the display ON / OFF of the constant output value column on the data list screen.
:LIST:CONStant? :LIST:ConstantOUTput?	Queries the display ON / OFF of the constant output value column on the data list screen.
:LIST:MARKer:VISIble	Sets ON / OFF of the marker display on the XY screen of the data list selection line.
:LIST:MARKer:VISIble?	Queries ON / OFF of the marker display on the XY screen of the data list selection line.

:LIST:MARKer:SecondaryInDeX	Sets the secondary index of the marker specified row.
:LIST:MARKer:SecondaryInDeX?	Queries the secondary index of the marker specified row.
:LIST:MARKer:PrimaryInDeX	Sets the primary index of the marker specified row.
:LIST:MARKer:PrimaryInDeX?	Queries the primary index of the marker specified row.
:LIST:MARKer:X?	Queries the value in the marker specified line of the data assigned to the X-axis source on the XY screen.
:LIST:MARKer:Y?	Queries the value in the marker specified row of the data assigned to the Y-axis source on the XY screen. For multi-trace display, the active Y-axis is the target.
:LIST:MARKer:DRAIN_V? :LIST:MARKer:COLLECTOR_V? :LIST:MARKer:VDS? :LIST:MARKer:VCE?	Queries the Drain / Collector Supply voltage measurement value in the marker specification line.
:LIST:MARKer:DRAIN_I? :LIST:MARKer:COLLECTOR_I? :LIST:MARKer:ID? :LIST:MARKer:IC?	Queries the Drain / Collector Supply current measurement value in the marker specification line.
:LIST:MARKer:GATE_V? :LIST:MARKer:BASE_V? :LIST:MARKer:VGS? :LIST:MARKer:VBE?	Queries the Gate / Base Supply voltage measurement value in the marker specification line.
:LIST:MARKer:GATE_I? :LIST:MARKer:BASE_I? :LIST:MARKer:IG? :LIST:MARKer:IB?	Queries the Gate / Base Supply current measurement value in the marker specification line.
:LIST:MARKer:SMU_V? :LIST:MARKer:VSMU?	Queries the SMU voltage measurement value in the marker specification line.
:LIST:MARKer:SMU_I? :LIST:MARKer:ISMU?	Queries the SMU current measurement value in the marker specification line.
:LIST:MARKer:SE_I? :LIST:MARKer:ISE? :LIST:MARKer:ISS?	Queries the SEMU current measurement value in the marker specification line.
:LIST:MARKer:PRImary? :LIST:MARKer:PrimaryOUTput?	Queries the output value of the supply unit assigned to the Primary Sweep in the marker specification line.
:LIST:MARKer:SECOndary? :LIST:MARKer:SecondaryOUTput? :LIST:MARKer:OUTput?	Queries the output value of the supply unit assigned to the Secondary Sweep in the marker specification line.
:LIST:MARKer:CONStant? :LIST:MARKer:ConstantOUTput?	Queries the output value of the supply unit used as the Constant Output in the marker specification line.
:LIST:MARKer:MATH? :LIST:MARKer:RON?	Queries the MATH calculation value in the marker specification line.

Syntax	Function
:CURsor:MODE	Sets the cursor measurement mode.
:CURsor:MODE?	Queries the cursor measurement mode.
:CURsor:SecondaryInDeX	Sets the index of Secondary Sweep that indicates the waveform to be measured by the cursor.
:CURsor:SecondaryInDeX?	Queries the index of Secondary Sweep that indicates the waveform to be measured by the cursor.
:CURsor:FREE:LINE1:TYPE	Sets the type of LINE1 cursor for FREE cursor measurement.
:CURsor:FREE:LINE1:TYPE?	Queries the type of LINE1 cursor for FREE cursor measurement.
:CURsor:FREE:LINE1:SecondaryInDeX	Sets the index of Secondary Sweep that indicates the waveform to be measured by the cursor.
:CURsor:FREE:LINE1:SecondaryInDeX?	Queries the index of Secondary Sweep that indicates the waveform to be measured

	by the cursor.
:CURsor:FREE:LINE1:POSitionX	Sets the LINE1 cursor position on the X axis when the type of LINE1 cursor is X (vertical) cursor in FREE cursor measurement.
:CURsor:FREE:LINE1:POSitionX?	Queries the LINE1 cursor position on the X axis when the type of LINE1 cursor is X (vertical) cursor in FREE cursor measurement.
:CURsor:FREE:LINE1:POSitionY	Sets the LINE1 cursor position on the Y axis when the type of LINE1 cursor is Y (horizontal) cursor in FREE cursor measurement.
:CURsor:FREE:LINE1:POSitionY?	Queries the LINE1 cursor position on the Y axis when the type of LINE1 cursor is Y (horizontal) cursor in FREE cursor measurement.
:CURsor:FREE:LINE2:TYPE	Sets the type of LINE2 cursor for FREE cursor measurement.
:CURsor:FREE:LINE2:TYPE?	Queries the type of LINE2 cursor for FREE cursor measurement.
:CURsor:FREE:LINE2:POSitionX	Sets the LINE2 cursor position on the X axis when the type of LINE2 cursor is X (vertical) cursor in FREE cursor measurement.
:CURsor:FREE:LINE2:POSitionX?	Queries the LINE2 cursor position on the X axis when the type of LINE2 cursor is X (vertical) cursor in FREE cursor measurement.
:CURsor:FREE:LINE2:POSitionY	Sets the LINE2 cursor position on the Y axis when the type of LINE2 cursor is Y (horizontal) cursor in FREE cursor measurement.
:CURsor:FREE:LINE2:POSitionY?	Queries the LINE2 cursor position on the Y axis when the type of LINE2 cursor is Y (horizontal) cursor in FREE cursor measurement.
:CURsor:FREE:LINE2:SecondaryENabled	Sets the enable / disable of the index specification of Secondary Sweep indicating the waveform to be measured by the LINE2 cursor in FREE cursor measurement.
:CURsor:FREE:LINE2:SecondaryENabled?	Queries the enable / disable of the index specification of Secondary Sweep indicating the waveform to be measured by the LINE2 cursor in FREE cursor measurement.
:CURsor:FREE:LINE2:SecondaryInDeX	Sets the index of Secondary Sweep that indicates the waveform to be measured by the LINE2 cursor in FREE cursor measurement.
:CURsor:FREE:LINE2:SecondaryInDeX?	Queries the index of Secondary Sweep that indicates the waveform to be measured by the LINE2 cursor in FREE cursor measurement.
:CURsor:DOT:SecondaryInDeX	Sets the index of Secondary Sweep that indicates the waveform to be measured by the cursor.
:CURsor:DOT:SecondaryInDeX?	Queries the index of Secondary Sweep that indicates the waveform to be measured by the cursor.
:CURsor:DOT:PrimaryInDeX	Sets the index of the Primary Sweep that is the measurement target of DOT cursor measurement.
:CURsor:DOT:PrimaryInDeX?	Queries the index of the Primary Sweep that is the measurement target of DOT cursor measurement.
:CURsor:DOT:GRADient:VISible	Sets ON / OFF of the tilt line display of DOT cursor measurement.
:CURsor:DOT:GRADient:VISible?	Queries ON / OFF of the tilt line display of DOT cursor measurement.
:CURsor:DOT:GRADient:GRADient :CURsor:DOT:GRADient:ANGLE	Sets the slope (dY / dX) of the slope line for DOT cursor measurement.
:CURsor:DOT:GRADient:GRADient? :CURsor:DOT:GRADient:ANGLE?	Queries the slope (dY / dX) of the slope line for DOT cursor measurement.
:CURsor:RESult:X1?	Queries the X-axis value of the LINE1 cursor for cursor measurement.
:CURsor:RESult:Y1?	Queries the Y-axis value of the LINE1 cursor for cursor measurement.
:CURsor:RESult:OUTput1?	Queries the Secondary Sweep output value of the cursor measurement target of LINE1.
:CURsor:RESult:X2?	Queries the X-axis value of the LINE2 cursor for cursor measurement.
:CURsor:RESult:Y2?	Queries the Y-axis value of the LINE2 cursor for cursor measurement.
:CURsor:RESult:OUTput2?	Queries the Secondary Sweep output value of the cursor measurement target of LINE2.
:CURsor:RESult:DeLTaX?	Queries the X-axis value difference (X2 - X1) between LINE2 and LINE1 in FREE cursor measurement.
:CURsor:RESult:DeLTaY?	Queries the difference (Y2 - Y1) in Y-axis values between LINE2 and LINE1 in FREE cursor measurement.

:CURsor:RESult:DeLTaOut ? :CURsor:RESult:DELTAOUTPUT?	Queries the difference (OUT2 - OUT1) in the Secondary Sweep output value between LINE2 and LINE1 in FREE cursor measurement.
:CURsor:RESult:GRADient?	When the cursor mode is FREE, returns the slope of a straight line connecting the intersection of LINE1 and the target waveform-the intersection of LINE2 and the target waveform. (DELTA Y / DELTA X) When the cursor mode is DOT, returns the slope (dY/dX) of the gradient line.
:CURsor:RESult:ReciprocalGRADient?	Returns the reciprocal of the gradient cursor measurement.
:CURsor:RESult:GM? :CURsor:RESult:BETA?	When the cursor mode is FREE, returns the value obtained by dividing the Y-axis value difference (DELTA Y) between LINE2 and LINE1 by the Secondary Sweep output value difference (DELTA OUT) between LINE2 and LINE1. When the cursor mode is DOT, returns the value obtained by dividing the Y-axis value by the Secondary Sweep output value.
:CURsor:RESult:INTErcept?	When the cursor mode is FREE, returns the X-intercept of a straight line connecting the intersection of LINE1 and the target waveform - the intersection of LINE2 and the target waveform. When the cursor mode is DOT, returns the X-intercept of the gradient line.
:CURsor:RESult:YT:DRAIN V? :CURsor:RESult:YT:COLLECTOR V? :CURsor:RESult:YT:VDS? :CURsor:RESult:YT:VCE?	Queries the value of the intersection of the time cursor on the YT screen and the Drain / Collector Supply Voltage waveform.
:CURsor:RESult:YT:DRAIN I? :CURsor:RESult:YT:COLLECTOR I? :CURsor:RESult:YT:ID? :CURsor:RESult:YT:IC?	Queries the value of the intersection of the time cursor on the YT screen and the Drain / Collector Supply Current waveform.
:CURsor:RESult:YT:GATE V? :CURsor:RESult:YT:BASE V? :CURsor:RESult:YT:VGS? :CURsor:RESult:YT:VBE?	Queries the value of the intersection of the time cursor on the YT screen and the Gate / Base Supply voltage waveform.
:CURsor:RESult:YT:GATE I? :CURsor:RESult:YT:BASE I? :CURsor:RESult:YT:IG? :CURsor:RESult:YT:IB?	Queries the value of the intersection of the time cursor on the YT screen and the Gate / Base Supply Current waveform.
:CURsor:RESult:YT:SMU V? :CURsor:RESult:YT:VSMU?	Queries the value of the intersection of the time cursor on the YT screen and the SMU voltage waveform.
:CURsor:RESult:YT:SMU I? :CURsor:RESult:YT:ISMU?	Queries the value of the intersection of the time cursor on the YT screen and the SMU current waveform.
:CURsor:RESult:YT:SE I? :CURsor:RESult:YT:ISE? :CURsor:RESult:YT:ISS?	Queries the value of the intersection of the time cursor on the YT screen and the SEMU current waveform.
:CURsor:RESult:DOT:DRAIN V? :CURsor:RESult:DOT:COLLECTOR V? :CURsor:RESult:DOT:VDS? :CURsor:RESult:DOT:VCE?	Queries the Drain / Collector Supply voltage measurement value at the DOT cursor position.
:CURsor:RESult:DOT:DRAIN I? :CURsor:RESult:DOT:COLLECTOR I? :CURsor:RESult:DOT:ID? :CURsor:RESult:DOT:IC?	Queries the Drain / Collector Supply current measurement value at the DOT cursor position.
:CURsor:RESult:DOT:GATE V? :CURsor:RESult:DOT:BASE V? :CURsor:RESult:DOT:VGS? :CURsor:RESult:DOT:VBE?	Queries the Gate / Base Supply voltage measurement value at the DOT cursor position.
:CURsor:RESult:DOT:GATE I? :CURsor:RESult:DOT:BASE I? :CURsor:RESult:DOT:IG? :CURsor:RESult:DOT:IB?	Queries the Gate / Base Supply current measurement value at the DOT cursor position.

:CURsor:RESult:DOT:SMU V? :CURsor:RESult:DOT:VSMU?	Queries the SMU voltage measurement value at the DOT cursor position.
:CURsor:RESult:DOT:SMU I? :CURsor:RESult:DOT:ISMU?	Queries the SMU current measurement value at the DOT cursor position.
:CURsor:RESult:DOT:SE I? :CURsor:RESult:DOT:ISE? :CURsor:RESult:DOT:ISS?	Queries the SEMU current measurement value at the DOT cursor position.
:CURsor:RESult:DOT:PRImary? :CURsor:RESult:DOT:PrimaryOUTput?	Queries the output value of the supply unit assigned to the Primary Sweep at the DOT cursor position.
:CURsor:RESult:DOT:SECondary? :CURsor:RESult:DOT:SecondaryOUTput?	Queries the output value of the supply unit assigned to the Secondary Sweep at the DOT cursor position.
:CURsor:RESult:DOT:CONStant? :CURsor:RESult:DOT:ConstantOUTput?	Queries the output value of the supply unit used as the Constant Output at the DOT cursor position.
:CURsor:RESult:DOT:MATH? :CURsor:RESult:DOT:RON?	Queries the MATH calculation value at the DOT cursor position.

Syntax	Function
:ANALysis:RESult?	Queries the analysis result by the ANALYSIS function.
:ANALysis:COMParison:ACTIon	Sets the action when the exceeding high/low limit is detected in the COMPARISON.
:ANALysis:COMParison:ACTIon?	Queries the action when the exceeding high/low limit is detected in the COMPARISON.
:ANALysis:COMParison:HIGH:ENABled	Sets ON/OFF of the higher limit judgement by the COMPARISON function.
:ANALysis:COMParison:HIGH:ENABled?	Queries ON/OFF of the higher limit judgement by the COMPARISON function.
:ANALysis:COMParison:HIGH:STATus?	Queries the status of the REFERENCE waveform used as higher limit criterion for the COMPARISON function.
:ANALysis:COMParison:HIGH:TRANsfer	This command transfers the XY waveform data file (*.CSV) saved in the PC to the curve tracer and set as the higher limit criterion of the COMPARISON function.
:ANALysis:COMParison:HIGH:LOAD	Load the XY waveform data file (*.CSV) saved in the external USB memory or internal memory of the curve tracer and set as the higher limit criterion of the COMPARISON function.
:ANALysis:COMParison:HIGH:CLEAr	Clears the REFERENCE data used as the higher limit criterion in the COMPARISON function.
:ANALysis:COMParison:LOW:ENABled	Sets ON/OFF of the lower limit judgement by the COMPARISON function.
:ANALysis:COMParison:LOW:ENABled?	Queries ON/OFF of the lower limit judgement by the COMPARISON function.
:ANALysis:COMParison:LOW:STATus?	Queries the status of the REFERENCE waveform used as lower limit criterion for the COMPARISON function.
:ANALysis:COMParison:LOW:TRANsfer	This command transfers the XY waveform data file (*.CSV) saved in the PC to the curve tracer and set as the lower limit criterion of the COMPARISON function.
:ANALysis:COMParison:LOW:LOAD	Load the XY waveform data file (*.CSV) saved in the external USB memory or internal memory of the curve tracer and set as the lower limit criterion of the COMPARISON function.
:ANALysis:COMParison:LOW:CLEAr	Clears the REFERENCE data used as the lower limit criterion in the COMPARISON function.
:ANALysis:EXTRAct:TARGET	Sets the method of specifying the target value to be extracted for the EXTRACT CURVE function.
:ANALysis:EXTRAct:TARGET?	Queries the method of specifying the target value to be extracted for the EXTRACT CURVE function.
:ANALysis:EXTRAct:INDeX	Sets the primary index used in the EXTRACT CURVE function when the method of specifying the target value to be extracted is INDEX.
:ANALysis:EXTRAct:INDeX?	Queries the primary index used in the EXTRACT CURVE function when the method of specifying the target value to be extracted is INDEX.
:ANALysis:EXTRAct:MODE	Sets the method of the extraction in the EXTRACT CURVE function when the method of specifying the target value to be extracted is VALUE.
:ANALysis:EXTRAct:MODE?	Queries the method of the extraction in the EXTRACT CURVE function when the

	method of specifying the target value to be extracted is VALUE.
:ANALysis:EXTRact:SOURce	Sets the data type to be extracted in the EXTRACT CURVE function when the method of specifying the target value to be extracted is VALUE.
:ANALysis:EXTRact:SOURce?	Queries the data type to be extracted in the EXTRACT CURVE function when the method of specifying the target value to be extracted is VALUE.
:ANALysis:EXTRact:VALue	Sets the value to be extracted to be used in the EXTRACT CURVE function when the method of specifying the target value to be extracted is VALUE.
:ANALysis:EXTRact:VALue?	Queries the value to be extracted to be used in the EXTRACT CURVE function when the method of specifying the target value to be extracted is VALUE.
:ANALysis:EXTRact:EXECute?	Execute the extraction by the EXTRACT CURVE function.

Syntax	Function
:SYStem:INITialize	Initializes the device settings to the specified values.
:SYStem:DATEtime	Sets the current time.
:SYStem:DATEtime?	Queries the current time.
:SYStem:EXTernalUnit?	Queries the status of the external unit that is actively set.
:SYStem:FRONTpanel:SAVEkey	Sets the behavior when the [SAVE] key on the front panel is pressed.
:SYStem:FRONTpanel:SAVEkey?	Queries the behavior when the [SAVE] key on the front panel is pressed.
:SYStem:FRONTpanel:LOCKState?	Queries the current locked state of the front panel.
:SYStem:FRONTpanel:LOCK	Sets ON / OFF of the front panel lock.
:SYStem:FRONTpanel:LOCK?	Queries ON / OFF of the front panel lock.
:SYStem:FRONTpanel:LOCKatRemote	Sets the front panel lock (SYSTEM menu / FRONT PANEL "LOCK WHILE REMOTE CONTROL") linked with the remote state.
:SYStem:FRONTpanel:LOCKatRemote?	Queries the front panel lock (SYSTEM menu / FRONT PANEL "LOCK WHILE REMOTE CONTROL") linked with the remote state.
:SYStem:FRONTpanel:BACKlight	Sets the brightness of the LCD backlight.
:SYStem:FRONTpanel:BACKlight?	Queries the brightness of the LCD backlight.
:SYStem:FOOTer:COMMENT:TEXT	Sets the comment character string to be displayed in the footer area.
:SYStem:FOOTer:COMMENT:TEXT?	Queries the comment character string to be displayed in the footer area.
:SYStem:FOOTer:COMMENT:VISIble	Sets the comment display ON / OFF in the footer area.
:SYStem:FOOTer:COMMENT:VISIble?	Queries the comment display ON / OFF in the footer area.
:SYStem:FOOTer:DATEtime:VISIble	Sets the date / time display ON / OFF in the footer area.
:SYStem:FOOTer:DATEtime:VISIble?	Queries the date / time display ON / OFF in the footer area.
:SYStem:TriggeROUTPUT	Sets ON / OFF of the rear panel trigger output terminal.
:SYStem:TriggeROUTPUT?	Queries ON / OFF of the rear panel trigger output terminal.
:SYStem:ReCaLIReSuLT?	Queries the execution result of the last recall of a template file (*.CTT) or waveform data file (*.CTW).

Syntax	Function
:AUX:OUTPut:OUTPut	Sets ON / OFF of AUX terminal output on the rear panel.
:AUX:OUTPut:OUTPut?	Queries ON / OFF of AUX terminal output on the rear panel.
:AUX:OUTPut:VOLTag	Sets the output voltage of AUX terminal on the rear panel.
:AUX:OUTPut:VOLTag?	Queries the output voltage of AUX terminal on the rear panel.
:AUX:OUTPut:COMMon	Sets the reference voltage of AUX terminal output on the rear panel.
:AUX:OUTPut:COMMon?	Queries the reference voltage of AUX terminal output on the rear panel.
:AUX:FIXTure:AUX1	Sets ON / OFF of AUX1 terminal output of the fixture.
:AUX:FIXTure:AUX1?	Queries ON / OFF of AUX1 terminal output of the fixture.
:AUX:FIXTure:AUX2	Sets ON / OFF of AUX2 terminal output of the fixture.
:AUX:FIXTure:AUX2?	Queries ON / OFF of AUX2 terminal output of the fixture.

Syntax	Function
:TEMPlate:TRANsfer	This command transfers the template (*.CTT) saved in the PC to the curve tracer and changes the operation settings.
:TEMPlate:TRANsfer?	This query saves the current operation settings in a template and transfers them to your PC.
:TEMPlate:SAVe	Save the current operation settings as a template file (*.CTT) in the internal memory or external USB memory of the curve tracer.
:TEMPlate:ReCaLI	Recall the internal memory of the curve tracer or the template saved to external USB memory to update the operation settings of the curve tracer.

Syntax	Function
:WAVEform:AVAlIable?	Queries for the existence of valid waveform data.
:WAVEform:BINary:TRANsfer	This command transfers the waveform data file (*.CTW) saved in the PC to the curve tracer and executes the waveform recall.
:WAVEform:BINary:TRANsfer?	This query transfers the currently displayed waveform data to the PC.
:WAVEform:BINary:SAVe	Save the currently displayed waveform data as a waveform data file (*.CTW) in the internal memory or external USB memory of the curve tracer.
:WAVEform:BINary:ReCaLI	Recalls the waveform data file (*.CTW) saved to external USB memory or the internal memory of the curve tracer.
:WAVEform:XY:TRANsfer?	Converts the XY characteristic curve data to a text file with the same format as the XY-TEXT (*.CSV) output on the curve tracer, and transfers it to the PC.
:WAVEform:XY:SAVe	Executes XY-TEXT (*.CSV) output and saves it as a text file (*.CSV) in the internal memory or external USB memory of the curve tracer.
:WAVEform:XY:TEXT?	Specify the secondary Index and data type, convert the data column to comma-separated text, and return it.
:WAVEform:YT:TRANsfer?	Converts YT waveform data to a text file with the same format as the YT-TEXT (*.CSV) output on the curve tracer, and transfers it to the PC.
:WAVEform:YT:SAVe	Executes YT-TEXT (*.CSV) output and saves it as a text file (*.CSV) in the internal memory or external USB memory of the curve tracer.
:WAVEform:YT:TEXT?	Converts YT waveform data of the specified data type at the measurement points specified by Secondary Index and Primary Index into comma-separated text and returns it.
:WAVEform:YT:COUNT?	Queries the number of YT waveform data corresponding to the specified index.

Syntax	Function
:ScreenCOpy:TRANsfer?	Execute screen copy and transfer the image data to the PC.
:ScreenCOpy:SAVe	Execute screen copy and save the image data in the internal memory or external USB memory of the curve tracer. This command cannot be used with multi-commands.

Syntax	Function
:FILE:TRANsfer	This command transfers any file saved on the PC to the curve tracer and saves it in the internal memory or external USB memory.
:FILE:TRANsfer?	This query transfers any file stored on the internal memory or external USB memory to your PC.

2.4 Common Command

2.4.1 *IDN Query (Identification Number)

Queries the Instrument-specific information of the instrument.

Query Syntax

*IDN?

Response message <maker_name>,<model_number>,<serial_number>,<software_revision>

<maker_name>	Manufacture name	IWATSU
<model_number>	Model name	CS-8020 (or CS-8200, CS-8500)
<serial_number>	Serial number	ASCII string
<software_revision>	Revision number	ASCII number (unsigned <NR2>)

The Response message is text in the <ARBITRARY ASCII RESPONSE DATA> format, which is a comma-separated list of the above four fields.

2.4.2 *RST Command (Reset)

Recall the default template and initialize the operation settings of the main unit to the default values.

It does not change the settings related to the remote interface.

Command Syntax

*RST

Remarks

If this command is executed during measurement, the measurement will be stopped.

2.4.3 *OPC Command / Query (Operation Complete)

When the command is received, the operation completion message (OPC bit) of the Standard Event Status Register is set to 1 when all the Instrument operations specified by the command or query preceding this command are completed.

In the case of query, ASCII character 1 is returned as a response when all Instrument operations specified by the command or query that precedes the command are completed. (Do not set in Standard Event Status Register)

*OPC command waits for the measurement to complete only if the measurement has been started by *TRG. If a measurement is started by the :ACQuisition:STATus command or manually, the OPC bit is set immediately even if the measurement is in progress. *OPC? query also waits for the measurement to complete only if the measurement is started by *TRG.

Command Syntax

*OPC

Query Syntax

*OPC?

Response message 1

The response data is 1 in < NR1 NUMERIC RESPONSE DATA > format.

2.4.4 *WAI Command (Wait)

The execution of the subsequent command or query is suspended until all the Instrument actions specified by the command or query that precedes the command are completed.

*WAI command waits for the measurement to complete only if the measurement has been started by *TRG.

If the measurement is started by :ACquisition:STATus command or manual operation, the subsequent command or query is executed without waiting for the measurement to be completed even in the measurement state.

Command Syntax

*WAI

2.4.5 *CLS Command (Clear Status)

Clears the Standard Event Status Register of the instrument and the event register unique to the instrument. In addition, it clears the summary bits in the Status Byte Register that reflect the contents of these registers or queues.

Command Syntax

*CLS

2.4.6 *ESE Command / Query (Event Status Enable)

Sets / Queries the Standard Event Status Enable Register.

For details on the register, refer to "2.2.5 Standard Event Status Enable Register".

Command Syntax

*ESE <mask_arg>

<mask_arg> is a parameter for setting the Standard Event Status Enable Register, and is a numerical value in the range of 0 to 255 in <DECIMAL NUMERIC PROGRAM DATA> format. Numerical values outside the range are rounded to the maximum or minimum values and set, resulting in an execution error.

The Standard Event Status Register has one meaning assigned to each bit. When the corresponding bit of the enable register is set to 1, the corresponding event is enabled (reflected in the Status Byte Register), and when it is set to 0, it is disabled. (It is not reflected in the Status Byte Register).

Query Syntax

*ESE?

Response message <mask>

<mask> is a value obtained by weighting the setting of each bit of the Standard Event Status Enable register by a power of 2, and is a value in the range of 0 to 189 of <NR1 NUMERIC RESPONSE DATA> format.

For details on the contents of each bit, refer to "2.2.5 Standard Event Status Enable Register".

2.4.7 *ESR Query (Event Status Register)

Queries the current contents of the Standard Event Status Register. The contents of the Standard Event Status Register are cleared by reading.

For details on the register, refer to "2.2.4 Standard Event Status Register".

Query Syntax

*ESR?

Response message <status>

<status> is a value obtained by weighting the value of each bit of the standard event status register by a power of 2, and is a value in the range of 0 to 189 of <NR1 NUMERIC RESPONSE DATA> format. For the contents of each bit, refer to "2.2.4 Standard Event Status Register".

2.4.8 *PSC Command / Query (Power on Status Clear)

Controls the automatic clearing of the Service Request Enable Register, Standard Event Status Enable Register, and Instrument-specific Event Enable Register when the power is turned on. You can use *PSC? query to know the setting value by *PSC command.

A value of 0 in the response data indicates that the state of each enable register is retained during power failure. When the value of the response data is 1, it means that each of the above enable registers is cleared when the power is turned on again.

Command Syntax

*PSC <psc_flag_arg>

<psc_flag_arg> is a parameter for setting the power-on status clear flag, and is a value of <DECIMAL NUMERIC PROGRAM DATA> format in the range of -32767 to +32767. When set to 0, the state of each enable register is retained during power failure. When set to 1 (non-zero), each enable register is cleared on power cycle.

Query Syntax

*PSC?

Response message <psc_flag>

<psc_flag> is a numerical value indicating the contents of the power-on status clear flag, and is 0 or 1 of <NR1 NUMERIC RESPONSE DATA> format.

2.4.9 *SRE Command / Query (Service Request Enable)

Sets / Queries the Service Request Enable Register.

For details on the register, refer to "2.2.3 Service Request Enable Register".

Command Syntax

*SRE <mask_arg>

<mask_arg> is a parameter for setting the Service Request Enable Register, and is a numerical value in the range of 0 to 255 in <DECIMAL NUMERIC PROGRAM DATA> format. Numerical values outside the range are rounded to the maximum or minimum values and set, resulting in an execution error. A meaning is assigned to each bit of the Service Request Enable Register. When the corresponding bit of the enable register is set to 1, the corresponding event is enabled (which causes a service request), and when it is set to 0, it is disabled (It does not cause a service request).

Query Syntax

*SRE?

Response message <mask>

<mask> is a value that weights the setting of each bit of the Service Request Enable Register by a power of 2, and is a value in the range of 0 to 185 of <NR1 NUMERIC RESPONSE DATA> format. For the contents of each bit, refer to "2.2.3 Service Request Enable Register".

2.4.10 *STB Query (Status Byte)

Queries the Status Byte Register and Master Summary Status bit (MSS message).

For details on the register, refer to "2.2.2 Status Byte Register".

Query Syntax

*STB?

Response message <status>

<status> is a value obtained by weighting the value of each bit of the Status Byte Register by a power of 2, and is a value in the range of 0 to 249 of <NR1 NUMERIC RESPONSE DATA> format. For the contents of each bit, refer to "2.2.2 Status Byte Register".

2.4.11 *TRG Command (Trigger)

Sets a single measurement.

Command Syntax

*TRG

Remarks

If this command is executed during a measurement, the measurement is interrupted and a single measurement is started. If this command is executed when measurement cannot be started (OUTPUT ENABLE is OFF, interlock, overheat, etc.), an execution error occurs.

When measurement is started by the command, you can wait for the measurement to be completed by using the *OPC command, *OPC? query, and *WAI command.

2.4.12 *RCL Command (Recall)

Recall the template saved in the internal memory or external USB memory of the curve tracer and update the operation settings of the curve tracer.

The command has exactly the same operation as the Instrument-specific command ":TEMPLate:ReCaLI" command.

Please note that the parameters are different from the general IEEE 488.2 compliant *RCL command.

Command Syntax

*RCL <storage>,<file_path>

<storage>

<CHARACTER PROGRAM DATA>	Description of settings
INTERNAL	Save to internal memory
USB	Save to external USB memory

<file_path>

<STRING PROGRAM DATA>	Description of settings
<ul style="list-style-type: none">• Available characters Alphabet a-z, A-ZNumbers 0-9Symbol -. ! @ # \$ % ^ & () +, [] { } ; ~ ` =Blank SPDirectory separator /• Enclose in double quotes (")• Extension (".CTT") can be omitted	Specify the file name to be saved in the internal memory or external USB memory. The save destination directory can be described with a relative path from the root directory of the media specified by <storage>. The directory separator is "/" (slash).

Remarks

Template recalls may not be complete due to differences in hardware configurations. Details on the results of such recalls can be obtained by using the ":SYStem:ReCaLIReSuLT?" query.

2.4.13 *SAV Command (Save)

Save the current operation settings as a template file (*.CTT) in the internal memory or external USB memory of the curve tracer.

The command has exactly the same operation as the Instrument-specific command ":TEMPLate:SAVe" command.

Please note that the parameters are different from the general IEEE 488.2 compliant *SAV command.

Command Syntax

*SAV <storage>,<file_path>,<recall_action>

<storage>

<CHARACTER PROGRAM DATA>	Description of settings
INTERNAL	Save to internal memory
USB	Save to external USB memory

<file_path>

<STRING PROGRAM DATA>	Description of settings
<ul style="list-style-type: none">Available characters<ul style="list-style-type: none">Alphabet a-z, A-ZNumbers 0-9Symbol -. ! @ # \$ % ^ & () +, [] { } ; ' ~ ` =Blank SPDirectory separator /Enclose in double quotes ("")Extension (".CTT") can be omitted	Specify the file name to be saved in the internal memory or external USB memory. The save destination directory can be described with a relative path from the root directory of the media specified by <storage>. The directory separator is "/" (slash).

<recall_action>

<CHARACTER PROGRAM DATA>	Description of settings
SINGLE	SINGLE measurement execution after recalling the save template
REPEAT	REPEAT measurement execution after recalling the save template
STOP	Measurement stopped after recalling the save template

<recall_action> is optional. If omitted, STOP is used.

2.5 Instrument Specific Command

2.5.1 :STATus Sub-system (Instrument-specific status byte related)

2.5.1.1 :STATus:DECR Query

Queries the Device Dependent Error Condition Status Register.

For details on the register, refer to "2.2.7 Device Dependent Error Condition Status Register".

Query Syntax

:STATus:DECR?

There is no change in the register value by reading.

Response message <status>

<status> is <NR1 NUMERIC RESPONSE DATA> format.

Returns a value from 0 to 65535 (16 bits).

For the contents of each bit, refer to "2.2.7 Device Dependent Error Condition Status Register".

2.5.1.2 :STATus:DEER Query

Queries the Device Dependent Error Event Status Register.

For details on the register, refer to "2.2.8 Device Dependent Error Event Status Register".

Query Syntax

:STATus:DEER?

The register is cleared to 0 after reading.

Response message <status>

<status> is <NR1 NUMERIC RESPONSE DATA> format.

Returns a value from 0 to 65535 (16 bits).

For details on the contents of each bit, see "2.2.8 Device Dependent Error Event Status Register"

2.5.1.3 :STATus:DEEE Command / Query

Sets / Queries the Device Dependent Error Event Enable Register.

For details on the registers, see "2.2.9 Device Dependent Error Event Enable Register"

Command Syntax

:STATus:DEEE <status_mask>

<status_mask>

<DECIMAL NUMERIC PROGRAM DATA>
0 to 65535

Numbers outside the range are rounded to the maximum or minimum value, resulting in an execution error. If 1 is set for a bit that is not used in the instrument, it becomes invalid. No execution error occurs.

Query Syntax

:STATus:DEEE?

Response message <status_mask>

<status_mask> is <NR1 NUMERIC RESPONSE DATA> format.

Returns a value from 0 to 65535 (16 bits).

For details on the contents of each bit, see "2.2.9 Device Dependent Error Event Enable Register".

2.5.1.4 :STATus:MCSR Query

Queries the Measurement Condition Status Register.

For details on the registers, refer to "2.2.10 Measurement Condition Status Register".

Query Syntax

:STATus:MCSR?

There is no change in the register value by reading.

Response message <status>

<status> is <NR1 NUMERIC RESPONSE DATA> format.

Returns a value from 0 to 255 (8 bits).

For the contents of each bit, refer to "2.2.10 Measurement Condition Status Register".

2.5.1.5 :STATus:MESE Query

Queries the Measurement Event Status Register.

For details on the register, refer to "2.2.11 Measurement Event Status Register".

Query Syntax

:STATus:MESE?

The register is cleared to 0 after reading.

Response message <status>

<status> is <NR1 NUMERIC RESPONSE DATA> format.

Returns a value from 0 to 255 (8 bits).

For the contents of each bit, refer to "2.2.11 Measurement Event Status Register".

2.5.1.6 :STATus:MESE Command / Query

Sets / Queries the Measurement Event Enable Register.

For details on the register, refer to "2.2.12 Measurement Event Enable Register".

Command Syntax

:STATus:MESE <status_mask>

<status_mask>

<DECIMAL NUMERIC PROGRAM DATA>
0 to 255

Numbers outside the range are rounded to the maximum or minimum value, resulting in an execution error. If 1 is set for a bit that is not used in the instrument, it becomes invalid. No execution error occurs.

Query Syntax

:STATus:MESE?

Response message <status_mask>

<status_mask> is <NR1 NUMERIC RESPONSE DATA> format.

Returns a value from 0 to 255 (8 bits).

For the contents of each bit, refer to "2.2.12 Measurement Event Enable Register".

2.5.2 :CONFig Sub-system (Configuration related)

2.5.2.1 :CONFig:DEVIce Command / Query

Sets / Queries the type of device to be measured.

Command Syntax

:CONFig:DEVIce <device_type>

<device_type>

<CHARACTER PROGRAM DATA>	Description of settings
FET	FET
IGBT	IGBT
BJT	BJT
DIODE_FORWARD	DIODE (Forward)
DIODE_REVERSE	DIODE (Reverse)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:CONFig:DEVIce?

Response message <device_type>

<device_type> is <CHARACTER RESPONSE DATA> format.

2.5.2.2 :CONFig:CONFig Command / Query

Sets / Queries the configuration by fixture.

Command Syntax

:CONFig:CONFig <drain>, <gate>, <source>

Parameters	Description of settings	<CHARACTER PROGRAM DATA>
<drain>	Connection setting to the Drain terminal (in the case of FET) to be measured	See CONFIG parameter list
<gate>	Connection setting to the Gate terminal (in the case of FET) to be measured	See CONFIG parameter list
<source>	Connection setting to the Source terminal (in the case of FET) to be measured	See CONFIG parameter list

CONFIG parameter list

<CHARACTER PROGRAM DATA>		Description of settings
Standard name	alias	

DRAIN SUPPLY	DSP DRAIN COLLECTORSUPPLY CSP COLLECTOR	Connect Drain / Collector Supply
GATE SUPPLY	GSP GATE BASESUPPLY BSP BASE	Connect Gate / Base Supply
OPEN	—	OPEN
COMMON	—	COMMON

If the connection settings for each terminal are not valid, a command error occurs.

List of valid configurations

CONFIGURATION		Each terminal connection setting		
CATEGORY	CONFIGURATION	<drain>	<gate>	<source>
STANDARD TEST	STANDARD	DRAINSUPPLY	GATESUPPLY	COMMON
DRAIN/COLLECTOR TEST	GATE/BASE COMMON	DRAINSUPPLY	COMMON	COMMON
	GATE/BASE OPEN	DRAINSUPPLY	OPEN	COMMON
GATE/BASE TEST	DRAIN/COLLECTOR COMMON	COMMON	DRAINSUPPLY	COMMON
	DRAIN/COLLECTOR – GATE/BASE SHORT	DRAINSUPPLY	DRAINSUPPLY	COMMON
	DRAIN/COLLECTOR OPEN	OPEN	DRAINSUPPLY	COMMON
	DRAIN/COLLECTOR COMMON (Gate/Base Supply)	COMMON	GATESUPPLY	COMMON
	DRAIN/COLLECTOR – GATE/BASE SHORT (Gate/Base Supply)	GATESUPPLY	GATESUPPLY	COMMON
	DRAIN/COLLECTOR OPEN (Gate/Base Supply)	OPEN	GATESUPPLY	COMMON
COMMON GATE/BASE TEST	COMMON GATE/BASE	DRAINSUPPLY	COMMON	GATESUPPLY
	SOURCE/EMITTER OPEN	DRAINSUPPLY	COMMON	OPEN

Remarks

If this command is executed during measurement, an execution error occurs without doing anything. If the fixture used is CS-320 or no fixture is used, only STANDARD TEST – STANDARD (DRAINSUPPLY, GATESUPPLY, COMMON) is valid. Any other setting will result in an execution error.

Query Syntax

:CONFig:CONFig?

Response message <drain>, <gate>, <source>

Each parameter returns a standard name in <CHARACTER RESPONSE DATA> format.

2.5.2.3 :CONFig:GateRESistor Command / Query

Sets / Queries ON / OFF of gate resistance.

Command Syntax

:CONFig:GateRESistor <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If the fixture to be used is CS-320, or if the fixture is not used, or if the configuration does not use Gate / Base Supply, setting it to ON will result in an execution error without doing anything. If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:CONFig:GateRESistor?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.2.4 :CONFig:NOFlxture Query

Queries the fixture usage status.

Query Syntax

:CONFig:NOFlxture?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means that the fixture is used, and 1 means that the fixture is not used.

2.5.2.5 :CONFig:LEAKage Command / Query

Sets / Queries LEAKAGE ON / OFF.

Command Syntax

:CONFig:LEAKage <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (other than 0)

Remarks

LEAKAGE is valid only when UNIT of Drain / Collector Supply is HV and SOURCE is VOLTAGE. If it is set to ON in other cases, an execution error occurs without doing anything. If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:CONFig:LEAKage?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.2.6 :CONFig:GrouNDUnit Command / Query

Sets / Queries ON / OFF of GROUND UNIT.

Command Syntax

:CONFig:GrouNDUnit <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (other than 0)

Remarks

If this command is executed when the Drain / Collector Supply Unit is HC or LEAKAGE is ON, an execution error occurs without doing anything.

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:CONFig:GrouNDUnit?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.2.7 :CONFig:SENSe:DRAIn:High :CONFig:SENSe:COLLector:High Command / Query

Sets / Queries the measurement point on the High side of Drain / Collector Supply.

Two command strings, “:CONFig:SENSe:DRAIn:High” and “:CONFig:SENSe:COLLector:High” are exactly the same behavior, only the difference in the command string.

Command Syntax

:CONFig:SENSe:DRAIn:High <sense_point>

:CONFig:SENSe:COLLector:High <sense_point>

<sense_point>

<CHARACTER PROGRAM DATA>	Description of settings
SENSE	SENSE
INTERNAL	INTERNAL

Remarks

If this command is executed during measurement, an execution error occurs without doing anything. If the Unit of Drain / Collector Supply is other than MV or MV-SIN, an execution error occurs without doing anything.

Query Syntax

:CONFig:SENSe:DRAIn:High?

:CONFig:SENSe:COLLector:High?

Response message <sense_point>

<sense_point> is <CHARACTER RESPONSE DATA> format.

2.5.2.8 :CONFig:SENSe:DRAIn:LOw :CONFig:SENSe:COLLector:LOw Command / Query

Sets / Queries the measurement point on the Low side of Drain / Collector Supply.

Two command strings, “:CONFig:SENSe:DRAIn:LOw” and “:CONFig:SENSe:COLLector:LOw” are exactly the same behavior, only the difference in the command string.

Command Syntax

:CONFig:SENSe:DRAIn:LOw <sense_point>

:CONFig:SENSe:COLLector:LOw <sense_point>

<sense_point>

<CHARACTER PROGRAM DATA>	Description of settings
SENSE	SENSE
INTERNAL	INTERNAL

Remarks

If this command is executed during measurement, an execution error occurs without doing anything. If the Unit of Drain / Collector Supply is other than MV or MV-SIN, an execution error occurs without doing anything.

Query Syntax

:CONFig:SENSe:DRAIn:LOw?

:CONFig:SENSe:COLLector:LOw?

Response message <sense_point>

<sense_point> is <CHARACTER RESPONSE DATA> format.

**2.5.2.9 :CONFig:SENSe:GATE:Hlgh
:CONFig:SENSe:BASE:Hlgh Command / Query**

Sets / Queries the measurement point on the High side of Gate / Base Supply.
Two command strings, “:CONFig:SENSe:GATE:Hlgh” and “:CONFig:SENSe:BASE:Hlgh” are exactly the same behavior, only the difference in the command string.

Command Syntax

:CONFig:SENSe:GATE:Hlgh <sense_point>
:CONFig:SENSe:BASE:Hlgh <sense_point>

<sense_point>

<CHARACTER PROGRAM DATA>	Description of settings
SENSE	SENSE
INTERNAL	INTERNAL

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:CONFig:SENSe:GATE:Hlgh?
:CONFig:SENSe:BASE:Hlgh?

Response message <sense_point>

<sense_point> is <CHARACTER RESPONSE DATA> format.

**2.5.2.10 :CONFig:SENSe:GATE:LOw
:CONFig:SENSe:BASE:LOw Command / Query**

Sets / Queries the measurement point on the Low side of Gate / Base Supply.
Two command strings, “:CONFig:SENSe:GATE:LOw” and “:CONFig:SENSe:BASE:LOw” are exactly the same behavior, only the difference in the command string.

Command Syntax

:CONFig:SENSe:GATE:LOw <sense_point>
:CONFig:SENSe:BASE:LOw <sense_point>

<sense_point>

<CHARACTER PROGRAM DATA>	Description of settings
SENSE	SENSE
INTERNAL	INTERNAL

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:CONFig:SENSe:GATE:LOW?

:CONFig:SENSe:BASE:LOW?

Response message <sense_point>

<sense_point> is <CHARACTER RESPONSE DATA> format.

2.5.2.11 :CONFig:SENSe:SMU:High Command / Query

Sets / Queries the measurement point on the High side of SMU (optional external unit).

Command Syntax

:CONFig:SENSe:SMU:High <sense_point>

<sense_point>

<CHARACTER PROGRAM DATA>	Description of settings
SENSE	SENSE
INTERNAL	INTERNAL

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:CONFig:SENSe:SMU:High?

Response message <sense_point>

<sense_point> is <CHARACTER RESPONSE DATA> format.

2.5.2.12 :CONFig:SENSe:SMU:Low Command / Query

Sets / Queries the measurement point on the Low side of SMU (optional external unit).

Command Syntax

:CONFig:SENSe:SMU:Low <sense_point>

<sense_point>

<CHARACTER PROGRAM DATA>	Description of settings
SENSE	SENSE
INTERNAL	INTERNAL

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:CONFig:SENSe:SMU:Low?

Response message <sense_point>

<sense_point> is <CHARACTER RESPONSE DATA> format.

2.5.2.13 :CONFig:FORCe:SMU:Low Command / Query

Sets / Queries output voltage reference potential of SMU (optional external unit).

Command Syntax

:CONFig:FORCe:SMU:Low <force_point>

<force_point>

<CHARACTER PROGRAM DATA>	Description of settings
INTERNAL	INTERNAL GND
EXTERNAL	EXTERNAL GND

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:CONFig:FORCe:SMU:Low?

Response message <force_point>

<force_point> is <CHARACTER RESPONSE DATA> format.

2.5.2.14 :CONFig:SMU:ENabled Command / Query

Sets / Queries whether SMU (optional external unit) is enabled or disabled.

Command Syntax

:CONFig:SMU:ENabled <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If set to ON while the SMU is not active, an execution error occurs.

Query Syntax

:CONFig:SMU:ENabled?

Response message <off_on>
 <off_on> is <NR1 NUMERIC RESPONSE DATA> format.
 0 means OFF and 1 means ON.

2.5.2.15 :CONFig:SEMU:ENabled Command / Query

Sets / Queries whether SEMU (optional external unit) is enabled or disabled.

Command Syntax

:CONFig:SEMU:ENabled <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If set to ON while the SEMU is not active, an execution error occurs.

Query Syntax

:CONFig:SEMU:ENabled?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.
 0 means OFF and 1 means ON.

2.5.2.16 :CONFig:SEMU:EmittorForce:SHORT Command / Query

Sets / Queries the short/open of the FORCE contact for Emitter (or Source) terminal of the SEMU (optional external unit).

Command Syntax

:CONFig:SEMU:EmittorForce:SHORT <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>	Description
OFF	0	OPEN
ON	1 (Non-zero)	SHORT

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If set to OFF(OPEN) while SEMU is not enabled, an execution error occurs.

Query Syntax

:CONFig:SEMU:EmittorForce:SHORT?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.2.17 :CONFig:SEMU:EmittorSense:SHORT Command / Query

Sets / Queries the short/open of the SENSE contact for Emitter (or Source) terminal of the SEMU (optional external unit).

Command Syntax

:CONFig:SEMU:EmittorSense:SHORT <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>	Description
OFF	0	OPEN
ON	1 (Non-zero)	SHORT

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If set to OFF(OPEN) while SEMU is not enabled, an execution error occurs.

Query Syntax

:CONFig:SEMU:EmittorSense:SHORT?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.2.18 :CONFig:SEMU:SenseEmittorForce:SHORT Command / Query

Sets / Queries the short/open of the FORCE contact for Sense Emitter (or Sense Source) terminal of the SEMU (optional external unit).

Command Syntax

:CONFig:SEMU:SenseEmittorForce:SHORT <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>	Description
OFF	0	OPEN
ON	1 (Non-zero)	SHORT

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If set to OFF(OPEN) while SEMU is not enabled, an execution error occurs.

If set to OFF(OPEN) while current measurement by SEMU is enabled, an execution error occurs.

Query Syntax

:CONFig:SEMU:SenseEmittorForce:SHORT?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.2.19 :CONFig:SEMU:SenseEmittorSense:SHORT Command / Query

Sets / Queries the short/open of the SENSE contact for Sense Emitter (or Sense Source) terminal of the SEMU (optional external unit).

Command Syntax

:CONFig:SEMU:SenseEmittorSense:SHORT <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>	Description
OFF	0	OPEN
ON	1 (Non-zero)	SHORT

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If set to OFF(OPEN) while SEMU is not enabled, an execution error occurs.

Query Syntax

:CONFig:SEMU:SenseEmittorSense:SHORT?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.2.20 :CONFig:ACQuisitionCHannel Command / Query

Sets / Queries the data types (up to 5) to be measured.

Command Syntax

:CONFig:ACQuisitionCHannel <ch1>,<ch2>,<ch3>,<ch4>,<ch5>

The data type specified in <ch1> to <ch5> will be measured. Data types not specified are not measured.

There are two ways to specify the data type: <CHARACTER PROGRAM DATA> and the TITLE character string attached to each data type.

Specified by <CHARACTER PROGRAM DATA>

<CHARACTER PROGRAM DATA>		Setting
Standard Name	Alias	
DRAIN_V	COLLECTOR_V VDS VCE	Drain / Collector Supply Voltage
DRAIN_I	COLLECTOR_I ID IC	Drain / Collector Supply Current
GATE_V	BASE_V VGS VBE	Gate / Base Supply Voltage
GATE_I	BASE_I IG IB	Gate / Base Supply Current
SMU_V	VSMU	SMU Voltage
SMU_I	ISMU	SMU Current
SE_I	ISS ISE	SEMU Current

Specified by TITLE string

<STRING PROGRAM DATA>
Title specification string enclosed in double quotes or single quotes

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If a data type that cannot be turned ON is specified, or if a data type that cannot be turned OFF is not specified, an execution error occurs without doing anything.

When SENSE SELECTOR (optional unit) is used, the data types that can be specified vary depending on the INPUT 1 to 4 settings.

When SENSE SELECTOR (optional unit) is not used, both GATE_V and SMU_V cannot be specified; the same applies to GATE_I and SMU_I.

Query Syntax

:CONFig:ACQuisitionCHannel?

Response message <ch1>, <ch2>, <ch3>, <ch4>, <ch5>

Returns the data types (up to 5) specified for the measurement target.

<ch1> to <ch5> returns standard names in <CHARACTER RESPONSE DATA> format.

2.5.3 :ACquisition Sub-system (Measurement control related)

2.5.3.1 :ACquisition:OUTPut Command / Query

Sets / Queries OUTPUT ENABLE.

Command Syntax

:ACquisition:OUTPut <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

If it is set to ON when overheating or overdrive is occurring, an execution error occurs and the setting will not be changed.

Query Syntax

:ACquisition:OUTPut?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.3.2 :ACquisition:STATus Command / Query

Sets / Queries the measurement status.

Command Syntax

:ACquisition:STATus <acq_status>

<off_on>

<CHARACTER PROGRAM DATA>	Description
SINGLE	Start single measurement
REPEAT	Start repeat measurement
STOP	Stop the measurement

Remarks

If SINGLE / REPEAT is specified during measurement execution, the measurement will be interrupted before setting. If SINGLE / REPEAT is specified when measurement cannot be started (OUTPUT ENABLE is OFF, interlock, overheat, etc.), an execution error occurs.

Query Syntax

:ACquisition:STATus?

Response message <acq_status>
<acq_status> is <CHARACTER RESPONSE DATA> format.

2.5.3.3 :ACquisition:WaitSinGLe Query

Starts a single measurement, waits for the measurement to complete, and then returns a response.

Query Syntax

:ACquisition:WaitSinGLe?

Response message 1

When the measurement is completed, "1" of <NR1 NUMERIC RESPONSE DATA> format is returned.

Remarks

If this query is executed during measurement, the measurement will be interrupted and then single measurement will be started. If this query is executed in a state where measurement cannot be started (OUTPUT ENABLE is OFF, interlock, overheat, etc.), an execution error occurs and no response is returned.

This query operates in the same way as the "*TRG; *OPC?" query.

2.5.3.4 :ACquisition:INTerLock Query

Queries the current interlock status.

Query Syntax

:ACquisition:INTerLock?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means non-interlocked and 1 means interlocked.

2.5.3.5 :ACquisition:OverHeat Query

Queries the current overheat occurrence status.

Query Syntax

:ACquisition:OverHeat?

Response message <overheat_status>

<overheat_status> is a number in <NR1 NUMERIC RESPONSE DATA> format that indicates the overheat status.

The value is the value obtained by weighting each Bit of the <overheat_status> Bit definition below by a power of 2.

<overheat_status> Bit definition

Bit	Weighting	Description
9-15	-	Not used in the instrument (always 0)
8	256	Overheat occurs at SMU (optional unit)
7	-	Not used in the instrument (always 0)
6	64	Overheat occurs in the external unit of the HC of Drain / Collector Supply
5	32	Overheat occurs at GNDU (ground unit)
4	16	Overheat occurs at AUX output
3	8	Overheat occurs in HV Unit of Drain / Collector Supply
2	4	Overheat occurs in Gate / Base Supply Unit
1	2	Overheat occurs at Drain / Collector Supply in MV Unit
0	1	Not used in the instrument (always 0)

2.5.3.6 :ACquisition:OVeRDrive Query

Queries the current overdrive occurrence status.

Query Syntax

:ACquisition:OVeRDrive?

Response message <overdrive_status>

<overdrive_status> is a number in the <NR1 NUMERIC RESPONSE DATA> format that indicates the overdrive status.

The value is the weighting of each Bit in the <overdrive_status> Bit definition below by a power of 2.

<overdrive_status> Bit definition

Bit	Weighting	Description
7	128	Not used in the instrument (always 0)
6	64	Not used in the instrument (always 0)
5	32	Not used in the instrument (always 0)
4	16	POWER EXPANDER (optional unit) Overdrive occurred (warning)
3	8	POWER EXPANDER (optional unit) Overdrive occurred (caution)
2	4	Overdrive occurs at AUX output
1	2	Overdrive occurred (warning)
0	1	Overdrive occurred (caution)

2.5.3.7 :ACquisition:LASTresult Query

Queries the end cause of the last executed measurement.

Query Syntax

:ACquisition:LASTresult?

Response message <last_result>

<last_result> is a numerical value in <NR1 NUMERIC RESPONSE DATA> format that indicates the cause of the end of measurement.

The value is the weighting of each Bit in the <last_result> Bit definition below by a power of 2.

If the measurement is completed normally, it will be "0".

<last_result> Bit definition

Bit	Weighting	Description
13-15	-	Not used in the instrument (always 0)
12	4096	POWER EXPANDER (optional unit) Overdrive notification.
11	2048	POWER EXPANDER (optional unit) Overdrive caution.
10	1024	External unit Overdrive notification.
9	512	External unit Overdrive caution.
8	256	End by COMPARISON function.
7	128	Interruption by emergency stop switch (optional).
6	64	Interruption due to hardware protection
5	32	Interruption due to hardware control error detection
4	16	End by LIMIT detection
3	8	Interruption due to OUTPUT ENABLE turned off
2	4	Interruption due to overdrive status detection
1	2	Interruption due to overheat condition detection
0	1	Interruption due to interlock status detection

2.5.3.8 :ACquisition:DATAStatus Query

Queries the status of the currently displayed XY waveform data.

Query Syntax

:ACquisition:DATAStatus?

Response message <data_status>

<data_status> is a numerical value in <NR1 NUMERIC RESPONSE DATA> format that indicates the state of the measurement data.

The value is the weighting of each Bit in the <data_status> Bit definition below by a power of 2.

<data_status> Bit definition

Bit	Weighting	Description
31	-	Not used in the instrument (always 0)
30	1073741824	Detected SEMU current exceeding lower limit.
29	536870912	Detected SEMU current exceeding upper limit.
28	268435456	Detected SMU power exceeding limit.
27	134217728	Detected SMU current exceeding lower limit.
26	67108864	Detected SMU current exceeding upper limit.
25	33554432	Detected SMU voltage exceeding lower limit.
24	16777216	Detected SMU voltage exceeding upper limit.
21 – 23	-	Not used in the instrument (always 0)
20	1048576	Detected Gate/Base Supply power exceeding limit.
19	524288	Detected Gate/Base Supply current exceeding lower limit.
18	262144	Detected Gate/Base Supply current exceeding upper limit.
17	131072	Detected Gate/Base Supply voltage exceeding lower limit.
16	65536	Detected Gate/Base Supply voltage exceeding upper limit.
13 – 15	-	Not used in the instrument (always 0)

12	4096	Detected Drain/Collector Supply power exceeding limit.
11	2048	Detected Drain/Collector Supply current exceeding lower limit.
10	1024	Detected Drain/Collector Supply current exceeding upper limit.
9	512	Detected Drain/Collector Supply voltage exceeding lower limit.
8	256	Detected Drain/Collector Supply voltage exceeding upper limit.
7	-	Not used in the instrument (always 0)
6	64	Detected SEMU current saturation (out of acquisition range).
5	32	Detected SMU current saturation (out of acquisition range).
4	16	Detected SMU voltage saturation (out of acquisition range).
3	8	Detected Gate/Base Supply current saturation (out of acquisition range).
2	4	Detected Gate/Base Supply voltage saturation (out of acquisition range).
1	2	Detected Drain/Collector Supply current saturation (out of acquisition range).
0	1	Detected Drain/Collector Supply voltage saturation (out of acquisition range).

2.5.3.9 :ACQuisition:PRImary Command / Query

Sets / Queries the supply unit to be the primary sweep.

Command Syntax

:ACQuisition:PRImary <supply_unit>

<supply_unit>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
DRAINSUPPLY	DSP DRAIN COLLECTORSUPPLY CSP COLLECTOR	Drain / Collector Supply
GATESUPPLY	GSP GATE BASESUPPLY BSP BASE	Gate / Base Supply
SMU	-	SMU (optional unit)

Remarks

If a supply unit that cannot be set (e.g., an unused supply unit in the CONFIG setting, or a SMU when SMU is not used) is specified, an execution error occurs.

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:ACQuisition:PRImary?

Response message <supply_unit>

<supply_unit> returns a Standard Name in <CHARACTER RESPONSE DATA> format.

2.5.3.10 :ACQuisition:SECondary Command / Query

Sets / Queries the supply unit to be the secondary sweep.

Command Syntax

:ACQuisition:SECondary <supply_unit>

<supply_unit>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
DRAINSUPPLY	DSP DRAIN COLLECTORSUPPLY CSP COLLECTOR	Drain / Collector Supply
GATESUPPLY	GSP GATE BASESUPPLY BSP BASE	Gate / Base Supply
SMU	-	SMU (optional unit)

Remarks

If a supply unit that cannot be set (e.g., an unit specified in the primary sweep, an unused supply unit in the CONFIG setting, or a SMU when SMU is not used) is specified, an execution error occurs.

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:ACQuisition:SECondary?

Response message <supply_unit>

<supply_unit> returns a Standard Name in <CHARACTER RESPONSE DATA> format.

If there is no supply unit to be secondary sweep, NONE is returned.

2.5.3.11 :ACQuisition:CONStant Query

Queries the supply unit set to constant output when SMU (optional) is used.

Query Syntax

:ACQuisition:CONStant?

Response message <supply_unit>

<supply_unit>

<CHARACTER RESPONSE DATA>	Description of settings
GATESUPPLY	Gate / Base Supply

SMU	SMU (optional unit)
NONE	No supply units set at constant output

<supply_unit> is <CHARACTER RESPONSE DATA> format.

2.5.3.12 :ACQuisition:SECondary:MaxSTeps Command / Query

Sets / Queries the maximum steps of the secondary sweep. The maximum steps of the primary sweep also changes according to this setting.

Command Syntax

:ACQuisition:SECondary:MaxSTeps <max_steps>

<max_steps>

<DECIMAL NUMERIC PROGRAM DATA>	Maximum steps of the primary sweep
5	4,000
10	2,000
20	1,000

Remarks

When the Drain / Collector Supply unit is HC, SOURCE is VOLTAGE, and constant voltage search mode is selected, the maximum step is a fixed value of 1,000.

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:ACQuisition:SECondary:MaxSTeps?

Response message <max_steps>

<max_steps> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.3.13 :ACQuisition:PRImary:MaxSTeps Query

Queries the maximum steps of the primary sweep.

Query Syntax

:ACQuisition:PRImary:MaxSTeps?

Response message <max_steps>

<max_steps> is a number in <NR3 NUMERIC RESPONSE DATA> format.

20,000 is returned when the sweep mode of the secondary sweep is NONE, or when CONFIG is set to not use the secondary sweep.

80 is returned when the Drain / Collector Supply unit is HC, SOURCE is VOLTAGE, and constant voltage search mode is selected.

Otherwise, the value determined by the secondary sweep maximum steps setting is returned.

2.5.3.14 :ACQuisition:PeriodMODe Command / Query

Sets / Queries the measurement cycle mode.

Command Syntax

:ACQuisition:PeriodMODe <period_mode>

<period_mode>

<CHARACTER PROGRAM DATA>	Description of settings
AUTO	The measurement cycle is set automatically. The value to be set sets the shortest cycle within the valid range in the current setting.
MANUAL	Manually set the measurement cycle.

Remarks

When the mode of Drain / Collector Supply or Gate / Base Supply is SIN or AC, the measurement cycle is fixed (or according to the intermittent setting), so this command does not affect the measurement operation.

Query Syntax

:ACQuisition:PeriodMODe?

Response message <period_mode>

<period_mode> is <CHARACTER RESPONSE DATA> format.

2.5.3.15 :ACQuisition:PERIod Command / Query

Sets / Queries the measurement cycle.

Command Syntax

:ACQuisition:PERIod <period>

<period>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution Note	Number of significant digits Note
+2.0E-3 to +5.0E+0	10.0E-6	3

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

If the mode of Drain / Collector Supply or Gate / Base Supply is SIN or AC, nothing is done and an execution error occurs.

If the measurement cycle mode is AUTO, nothing is done and an execution error occurs. If this command is executed during SINGLE measurement, the measurement will be interrupted and the setting will be changed.

If this command is executed during REPEAT measurement, the measurement is interrupted, the setting is changed, and then the measurement is restarted.

Query Syntax

:ACQuisition:PERIod?

Response message <period>

<period> is a number in <NR3 NUMERIC RESPONSE DATA> format.

If the mode of Drain / Collector Supply or Gate / Base Supply is SIN or AC, the measurement cycle is determined by the Intermittent setting of Drain / Collector Supply.

When the measurement cycle mode is AUTO, the measurement cycle is automatically set.

2.5.3.16 :ACQuisition:MeasPOInt Command / Query

Sets / Queries the measurement start point (sampling start point).

Command Syntax

:ACQuisition:MeasPOInt <meas_point>

<meas_point>

Case	<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution <small>Note</small>	Number of significant digits <small>Note</small>
Either Drain / Collector Supply or Gate / Base Supply mode is PULSE or PULSE (LONG)	+0.0E-6 to +1.6E+0	0.5E-6	4
Other than those above	+0E-6 to +5.0E+0	1E-6	—

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

If the mode of Drain / Collector Supply or Gate / Base Supply is SIN or AC, nothing is done and an execution error occurs.

If this command is executed during SINGLE measurement, the measurement will be interrupted and the setting will be changed.

If this command is executed during REPEAT measurement, the measurement is interrupted, the setting is changed, and then the measurement is restarted.

Query Syntax

:ACQuisition:MeasPOInt?

Response message <meas_point>

<meas_point> is a number in <NR3 NUMERIC RESPONSE DATA> format.

If the mode of Drain / Collector Supply or Gate / Base Supply is SIN or AC, an execution error occurs and no response is returned.

2.5.3.17 :ACQuisition:MeasTIme Command / Query

Sets / Queries the measurement period (sampling period).

Command Syntax

:ACQuisition:MeasTIme <meas_time>

<meas_time>

Case	<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution ^{Note}	Number of significant digits ^{Note}
Either Drain / Collector Supply or Gate / Base Supply mode is PULSE or PULSE (LONG)	+1.0E-6 to +1.6E+0	0.1E-6	4
Other than those above	+1.0E-6 to +2.0E+0	It varies depending on the set value. Refer to the measurement period setting resolution table (DC mode)	4

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Measurement period setting resolution table (DC mode)

Measurement period <meas_time>	Minimum resolution
Up to 0.1E-3	0.1E-6
Up to 0.2E-3	0.2E-6
Up to 0.5E-3	0.5E-6
Up to 1.0E-3	1E-6
Up to 2.0E-3	2E-6
Up to 5.0E-3	5E-6
Up to 10.0E-3	0.01E-3
Up to 20.0E-3	0.02E-3
Up to 50.0E-3	0.05E-3
Up to 0.1E+0	0.1E-3
Up to 0.2E+0	0.2E-3
Up to 0.5E+0	0.5E-3
Up to 1.0E+0	1E-3
Up to 2.0E+0	2E-3

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

If the mode of Drain / Collector Supply or Gate / Base Supply is SIN or AC, nothing is done and an execution error occurs.

If this command is executed during SINGLE measurement, the measurement will be interrupted and the setting will be changed.

If this command is executed during REPEAT measurement, the measurement is interrupted, the setting is changed, and then the measurement is restarted.

Query Syntax

:ACQuisition:MeasTIme?

Response message <meas_time>

<meas_time> is a number in <NR3 NUMERIC RESPONSE DATA> format.

If the mode of Drain / Collector Supply or Gate / Base Supply is SIN or AC, an execution error occurs and no response is returned.

2.5.3.18 :ACquisition:HOLDtime:ENabled1 Command / Query

Sets / Queries ON / OFF of HOLD TIME1.

Command Syntax

:ACquisition:HOLDtime:ENabled1 <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If the Drain / Collector Supply or Gate / Base Supply mode is SIN or AC, this setting does not affect the measurement. If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:ACquisition:HOLDtime:ENabled1?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.3.19 :ACquisition:HOLDtime:ENabled2 Command / Query

Sets / Queries ON / OFF of HOLD TIME2.

Command Syntax

:ACquisition:HOLDtime:ENabled2 <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If the Drain / Collector Supply or Gate / Base Supply mode is SIN or AC, this setting does not affect the measurement.

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:ACQuisition:HOLDtime:ENAbled2?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.3.20 :ACQuisition:HOLDtime:ENAbled3 Command / Query

Sets / Queries ON / OFF of HOLD TIME3.

Command Syntax

:ACQuisition:HOLDtime:ENAbled3 <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If the Drain / Collector Supply or Gate / Base Supply mode is SIN or AC, this setting does not affect the measurement.

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:ACQuisition:HOLDtime:ENAbled3?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.3.21 :ACQuisition:HOLDtime:TIME1 Command / Query

Sets / Queries the period of HOLD TIME1.

Command Syntax

:ACQuisition:HOLDtime:TIME1 <hold_time>

<hold_time>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution Note	Number of significant digits Note
0.0 E+0 to 5.0E+0	0.01E-3	4

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

If the Drain / Collector Supply or Gate / Base Supply mode is SIN or AC, this setting does not affect the measurement.

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:ACQuisition:HOLDtime:TIME1?

Response message <hold_time>

<hold_time> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.3.22 :ACQuisition:HOLDtime:TIME2 Command / Query

Sets / Queries the period of HOLD TIME2.

Command Syntax

:ACQuisition:HOLDtime:TIME2 <hold_time>

<hold_time>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution Note	Number of significant digits Note
0.0 E+0 to 5.0E+0	0.01E-3	4

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

If the Drain / Collector Supply or Gate / Base Supply mode is SIN or AC, this setting does not affect the measurement.

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:ACQuisition:HOLDtime:TIME2?

Response message <hold_time>

<hold_time> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.3.23 :ACQuisition:HOLDtime:TIME3 Command / Query

Sets / Queries the period of HOLD TIME3.

Command Syntax

:ACQuisition:HOLDtime:TIME3 <hold_time>

<hold_time>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution Note	Number of significant digits Note
0.0 E+0 to 5.0E+0	0.01E-3	4

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

If the Drain / Collector Supply or Gate / Base Supply mode is SIN or AC, this setting does not affect the measurement.

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:ACQuisition:HOLDtime:TIME3?

Response message <hold_time>

<hold_time> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.3.24 :ACQuisition:AVERage:STATus Command / Query

Sets / Queries ON / OFF of AVERAGE processing.

Command Syntax

:ACQuisition:AVERage:STATus <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:ACQuisition:AVERage:STATus?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.3.25 :ACQuisition:AVERage:COUNt Command / Query

Sets / Queries the average number of AVERAGE processes.

Command Syntax

:ACQuisition:AVERage:COUNt <average_count>

< average_count >

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
2 to 100	1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:ACQuisition:AVERage:COUNt?

Response message <average_count>

<average_count> is a number in <NR1 NUMERIC RESPONSE DATA> format.

2.5.3.26 :ACQuisition:LIMitAction Command / Query

Sets / Queries ACTION when a LIMIT condition is detected.

Command Syntax

:ACQuisition:LIMitAction <action>

<action>

<CHARACTER PROGRAM DATA>	Description of settings
SKIP	Suspend PRIMARY SWEEP, advance SECONDARY SWEEP one step, and then resume measurement.
STOP	End the measurement

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:ACQuisition:LIMitAction?

Response message <action>

<action> is <CHARACTER RESPONSE DATA> format.

2.5.3.27 :ACQuisition:SYNC

Sets / Queries ON / OFF of SYNC WITH PRIMARY.

Command Syntax

:ACQuisition:SYNC <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If ON is set when the CONFIG setting where no supply unit is assigned to the secondary sweep, an execution error occurs without doing anything.

If ON is set when the SOURCE setting is different between the supply unit assigned to the primary sweep and the supply unit assigned to the secondary sweep, an execution error occurs without doing anything.

If ON is set when the Drain / Collector Supply unit is HC, SOURCE is VOLTAGE, and constant voltage search mode is selected, an execution error occurs without doing anything.

Query Syntax

:ACQuisition:SYNC?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means that the unit is disabled and 1 means that the unit is enabled.

2.5.4 :DrainSuPply / :CollectorSuPply Sub-system (DRAIN / COLLECTOR SUPPLY related)

In this Sub-system, two command strings, ":DrainSuPply" and ":CollectorSuPply", are defined. Whichever command string you use, the behavior is exactly the same.

Hereafter, ":DrainSuPply" is used in this manual, but all can be replaced with ":CollectorSuPply".

2.5.4.1 :DrainSuPply:AVAlable Query

Queries whether Drain / Collector Supply is enabled or disabled.

Disabled in CONFIG settings that do not use Drain/Collector Supply, otherwise enabled.

Query Syntax

:DrainSuPply:AVAlable?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means that the unit is disabled and 1 means that the unit is enabled.

2.5.4.2 :DrainSuPply:UNIT Command / Query

Sets / Queries the power supply unit to be used as Drain / Collector Supply.

Command Syntax

:DrainSuPply:UNIT <unit>

<unit>

<CHARACTER PROGRAM DATA>	Description of settings
MV	MV Unit
MV_SIN	MV-SIN Unit
HV	HV Unit
HC	HC Unit

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

If "HV" is set on a model (CS-8020) that does not have an HV Unit, an execution error occurs without doing anything.

If "HC" is set while the HC Unit is not active, an execution error occurs without doing anything.

If is set "HV" or "HC" when the fixture used is CS-320, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:UNIT?

Response message <unit>

<unit> is <CHARACTER RESPONSE DATA> format.

If the CONFIG setting does not use Drain / Collector Supply, an execution error occurs and no response is returned.

2.5.4.3 :DrainSuPply:SOURce Command / Query

Sets / Queries whether to use the selected Drain / Collector Supply Unit as a voltage source or a current source.

Command Syntax

:DrainSuPply:SOURce <source>

<source>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
VOLTAGE	VOLT	Voltage source

CURRENT	CURR	Current source
---------	------	----------------

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If "CURRENT" is set when the MV-SIN unit is selected, an execution error occurs without doing anything.

If "CURRENT" is set when the HV unit is selected in the model CS-8500, an execution error occurs without doing anything. If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:SOURce?

Response message <source>

<source> returns a standard name in <CHARACTER RESPONSE DATA> format.

2.5.4.4 :DrainSuPply:MODE Command / Query

Sets / Queries the output waveform of the selected Drain / Collector Supply Unit.

Command Syntax

:DrainSuPply:MODE <mode>

<mode>

Drain/Collector Supply Unit	<CHARACTER PROGRAM DATA>		Description of settings
	Standard Name	Alias	
MV	DC	—	DC (200mA)
	PULSE	—	PULSE (2.0A)
	LONGPULSE	LONG	PULSE (LONG) (200mA)
MV-SIN	AC	—	AC
	SINE	SIN	RECTIFIED SINE
HV	DC	—	DC
	PULSE	—	PULSE
HC	PULSE ^{Note}	—	PULSE
	LONGPULSE ^{Note}	LONG	PULSE (LONG)

Note: For the HC Unit, the output waveform is determined by the maximum output setting. 2kA, to 1kA is PULSE, 500A or less is PULSE (LONG).

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:MODE?

Response message <mode>

<mode> returns a standard name in <CHARACTER RESPONSE DATA> format.

2.5.4.5 :DrainSuPply:MAXimum Command / Query

Sets / Queries the maximum output of the selected Drain / Collector Supply Unit.

Command Syntax

:DrainSuPply:MAXimum <maximum>

<maximum>

Drain/Collector Supply Unit	Supply Source	Supply Mode	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
MV	VOLTAGE	Don't care	20.0E+0 to 200.0E+0	1, 2, 5 Step
	CURRENT	PULSE	5.0E-9 to 2.0E+0	
DC, LONGPULSE		5.0E-9 to 200.0E+3		
MV-SIN	VOLTAGE	RECTIFIED SINE	20.0E+0 to 200.0E+0	
		AC	20.0E+0 to 100.0E+0	
HV	CS-8500	VOLTAGE	200.0E+0 to 5.0E+3	
	CS-8200	VOLTAGE	200.0E+0 to 2.0E+3	
CURRENT		Don't care	50.0E-6 to 20.0E-3	
HC	VOLTAGE	PULSE	5.0E+0 to 2.0E+3	
		LONGPULSE	5.0E+0 to 500.0E+0	
	CURRENT	PULSE	5.0E+0 to 2.0E+3	
		LONGPULSE	5.0E+0 to 500.0E+0	

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:DrainSuPply:MAXimum?

Response message <maximum>

<maximum> is <NR3 NUMERIC RESPONSE DATA> format.

2.5.4.6 :DrainSuPply:POLarity Command / Query

Sets / Queries the output polarity of the selected Drain / Collector Supply Unit.

Command Syntax

:DrainSuPply:POLarity <polarity>

<polarity>

Drain/Collector Supply Unit	<CHARACTER PROGRAM DATA>		Description of settings
	Standard Name	Alias	
MV	POSITIVE	POS	Positive electrode
	NEGATIVE	NEG	Negative electrode
	BIPOLAR	—	Bipolar
MV-SIN	POSITIVE	POS	Positive electrode
	NEGATIVE	NEG	Negative electrode
	BIPOLAR	—	Bipolar
HV	POSITIVE	POS	Positive electrode
	NEGATIVE	NEG	Negative electrode
HC	POSITIVE	POS	Positive electrode
	NEGATIVE	NEG	Negative electrode

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

If "BIPOLAR" is set when the maximum output setting is 200V when using MV as a voltage source, an execution error occurs without doing anything.

If "POSITIVE" or "NEGATIVE" is set when the output waveform of MV-SIN is AC, an execution error occurs without doing anything.

If "BIPOLAR" is set when the output waveform of MV-SIN is RECTIFIED SINE, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:POLarity?

Response message <polarity>

<polarity> returns a Standard Name in <CHARACTER RESPONSE DATA> format.

2.5.4.7 :DrainSuPply:SWEep:ENABled Command / Query

Sets / Queries ON (sweep) / OFF (fixed value) of the output sweep of Drain / Collector Supply.

Command Syntax

:DrainSuPply:SWEep:ENABled <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

If the Gate / Base Supply Unit is GATE-SIN and is set to ON, an execution error occurs without doing anything.

If ON is set when the Drain / Collector Supply is in CONSTANT output mode – is not specified for either PRIMARY SWEEP or SECONDARY SWEEP –, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:SWEEp:ENabled?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.4.8 :DrainSuPply:SWEEp:MODE Command / Query

Sets / Queries the output change method when sweeping Drain / Collector Supply.

Command Syntax

:DrainSuPply:SWEEp:MODE <mode>

<mode>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
LINEAR	LIN	Linear sweep
LOG	—	Log sweep
LIST	—	List sweep
NONE	—	Sweep OFF

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If NONE is set when sweep is ON, an execution error occurs without doing anything.

If LINEAR and LOG are set when sweep is OFF, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

If LOG is set when the unit of Drain / Collector Supply is MV-SIN or when the output polarity of Drain / Collector Supply is BIPOLAR, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:SWEEp:MODE?

Response message <mode>

<mode> returns a standard name in <CHARACTER RESPONSE DATA> format.

2.5.4.9 :DrainSuPply:SWEep:DIRection Command / Query

Sets / Queries the sweep direction when sweeping Drain / Collector Supply.

Command Syntax

:DrainSuPply:DIRection <direction>

<direction>

<CHARACTER PROGRAM DATA>	Description of settings
SINGLE	Unidirectional (START → STOP)
DOUBLE	Bidirectional (START → STOP → START)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:DIRection?

Response message <direction>

<direction> is <CHARACTER RESPONSE DATA> format.

2.5.4.10 :DrainSuPply:SWEep:STARt Command / Query

Sets / Queries the output value to start the Drain / Collector Supply sweep.

Command Syntax

:DrainSuPply:SWEep:STARt <start>

<start>

When Sweep Mode is LINEAR (except when SOURCE is VOLTAGE in HC unit)

Drain / Collector Supply		<DECIMAL NUMERIC PROGRAM DATA>		Minimum resolution ^{Note1}
Mode	Polarity	Minimum value ^{Note1}	Maximum value ^{Note1}	
DC, PULSE PULSE(LONG)	POSITIVE	0.0E+0	Max. output setting value	Max. output setting value / 20000
	NEGATIVE	Max. output setting value * -1	0.0E+0	Max. output setting value / 20000
	BIPOLAR	Max. output setting value * -1	Max. output setting value	Max. output setting value / 20000
SIN	POSITIVE	0.0E+0	Max. output setting value	Max. output setting value / 1000
	NEGATIVE	Max. output setting value * -1	0.0E+0	Max. output setting value / 1000
AC	BIPOLAR	0.0E+0	Max. output setting value	Max. output setting value / 1000

When Sweep Mode is LOG

Drain / Collector Supply		<DECIMAL NUMERIC PROGRAM DATA>		Minimum resolution ^{Note1}	Number of significant digits ^{Note1}
Mode	Polarity	Minimum value	Maximum value		
DC, PULSE PULSE(LONG)	POSITIVE	0.0E+0	Max. output setting value	Output setting minimum range / 20000 ^{Note2}	4
	NEGATIVE	Max. output setting value * -1	0.0E+0		

Note1: The minimum resolution is compared with the minimum digit determined by the number of significant digits and rounded to the coarser value.

Note2: The output setting minimum range means the minimum value of the Supply Unit maximum output setting range.

If the SOURCE is VOLTAGE in the HC unit, it will be as follows.

Drain / Collector Supply		<DECIMAL NUMERIC PROGRAM DATA>		Minimum resolution ^{Note1, Note2}	Number of significant digits ^{Note2}
Max	Polarity	Minimum value	Maximum value		
2kA	POSITIVE	0.0E+0	41.0E+0	2.5E-3	4
	NEGATIVE	-41.0E+0	0.0E+0		
5A ~ 1kA	POSITIVE	0.0E+0	50.0E+0		
	NEGATIVE	-50.0E+0	0.0E+0		

Note1: On the display, it is rounded to the digit of 1E-3.

Note2: When SWEEP MODE is LOG, the minimum resolution is compared with the minimum digit determined from the number of significant digits and rounded to the coarser value. For LINEAR, the number of significant digits is ignored.

Remarks

If this command is executed while the sweep is OFF, an execution error occurs without doing anything. Use the ":DrainSuPply:SWEEp:STOP" command to change the output when sweep is off.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:SWEEp:START?

Response message <start>

<start> is a number in <NR3 NUMERIC RESPONSE DATA> format.

When sweep is OFF, the STOP setting value is returned.

2.5.4.11 :DrainSuPply:SWEEp:STOP Command / Query

Sets / Queries the output value to stop Drain / Collector Supply sweep.

When the sweep is OFF., sets / queries the output value of Drain / Collector Supply.

Command Syntax

:DrainSuPply:SWEEp:STOP <stop>

<stop>

When Sweep Mode is NONE, LINEAR (Except when SOURCE is VOLTAGE in the HC unit).

Drain / Collector Supply		<DECIMAL NUMERIC PROGRAM DATA>		Minimum resolution
Mode	Polarity	Minimum value	Maximum value	

DC, PULSE PULSE(LONG)	POSITIVE	0.0E+0	Max. output setting value	Max. output setting value / 20000
	NEGATIVE	Max. output setting value * -1	0.0E+0	Max. output setting value / 20000
	BIPOLAR	Max. output setting value * -1	Max. output setting value	Max. output setting value / 20000
SIN	POSITIVE	0.0E+0	Max. output setting value	Max. output setting value / 1000
	NEGATIVE	Max. output setting value * -1	0.0E+0	Max. output setting value / 1000
AC	BIPOLAR	0.0E+0	Max. output setting value	Max. output setting value / 1000

When Sweep Mode is LOG (Except when SOURCE is VOLTAGE in the HC unit)

Drain / Collector Supply		<DECIMAL NUMERIC PROGRAM DATA>		Minimum resolution ^{Note1}	Number of significant digits ^{Note1}
Mode	Polarity	Minimum value	Maximum value		
DC, PULSE PULSE(LONG)	POSITIVE	0.0E+0	Max. output setting value	Output setting minimum range / 20000 ^{Note2}	4
	NEGATIVE	Max. output setting value * -1	0.0E+0		

Note1: The minimum resolution is compared with the minimum digit determined by the number of significant digits and rounded to the coarser value.

Note2: The output setting minimum range means the minimum value of the Supply Unit maximum output setting range.

If the SOURCE is VOLTAGE in the HC unit, it will be as follows.

Drain / Collector Supply		<DECIMAL NUMERIC PROGRAM DATA>		Minimum resolution ^{Note1, Note2}	Number of significant digits ^{Note2}
Max	Polarity	Minimum value	Maximum value		
2kA	POSITIVE	0.0E+0	41.0E+0	2.5E-3	4
	NEGATIVE	-41.0E+0	0.0E+0		
5A ~ 1kA	POSITIVE	0.0E+0	50.0E+0		
	NEGATIVE	-50.0E+0	0.0E+0		

Note1: On the display, it is rounded to the digit of 1E-3.

Note2: When SWEEP MODE is LOG, the minimum resolution is compared with the minimum digit determined from the number of significant digits and rounded to the coarser value. For LINEAR, the number of significant digits is ignored.

Remarks

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:SWEep:STOP?

Response message <stop>

<stop> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.4.12 :DrainSuPply:SWEep:STEPS:COUNT Command / Query

Sets / Queries the number of sweep steps for Drain / Collector Supply.

Command Syntax

:DrainSuPply:SWEep:STEPS:COUNT <step_count>

<step_count>

When Drain / Collector Supply is assigned to Primary Sweep

Secondary Sweep	Secondary Sweep Max Steps	<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
Enabled	5	1 to 4000	1
	10	1 to 2000	1
	20	1 to 1000	1
Disabled	Don't care	1 to 20000	1

When Drain / Collector Supply is assigned to Secondary Sweep

Secondary Sweep Max Steps	<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
5	1 to 5	1
10	1 to 10	1
20	1 to 20	1

If Drain / Collector Supply sweep is disabled
0 (fixed value)

Remarks

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

Query Syntax

:DrainSuPply:SWEep:STEPs:COUNT?

Response message <step_count>

<step_count> is a number in <NR1 NUMERIC RESPONSE DATA> format.

If sweep is OFF, "0" is returned.

2.5.4.13 :DrainSuPply:SWEep:STEPs:VALue Query

Queries the step width during a linear sweep of Drain / Collector Supply.

Query Syntax

:DrainSuPply:SWEep:STEPs:VALue?

Response message <step_value>

Sweep Mode	Response
LINEAR	Step width
LOG	NaN (9.91E+37)
LIST	NaN (9.91E+37)
NONE (Sweep OFF)	NaN (9.91E+37)

<step_value> is a number in <NR3 NUMERIC RESPONSE DATA> format.

If this query is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs and no response is returned.

2.5.4.14 :DrainSuPply:SWEep:LIST Command / Query

Sets / Queries the output value list when the sweep mode of Drain/Collector Supply is LIST.

Command Syntax

:DrainSuPply:SWEep:LIST <value_list>

<value_list> is text in <ARBITRARY ASCII RESPONSE DATA> format consisting of comma separated numeric strings in <NR3 numeric response data> format.

The <SUFFIX PROGRAM DATA> representing the unit cannot be added. For <SUFFIX PROGRAM DATA>, see "2.1.8.2 < DECIMAL NUMERIC PROGRAM DATA > / < NUMERIC RESPONSE DATA >".

Remarks

Due to system limitations, command strings exceeding 32,768 bytes in length including parameters cannot be sent. If you wish to transfer an output value list longer than this, please use the ":DrainSuPply:SWEep:LIST:TRANSfer" command.

This command does not round the value even if the value outside the output range determined by maximum output and polarity. Values outside the output range are rounded to within the range when measuring.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Example of use

Case of outputting in order of 1.0mV, 2.0mV, 5.0mV.

> :DrainSuPply:SWEep:LIST 1.0E-3, 2.0E-3, 5.0E-3

Query Syntax

:DrainSuPply:SWEep:LIST?

Response message <value_list>

<value_list> is text in <ARBITRARY ASCII RESPONSE DATA> format consisting of comma separated numeric strings in <NR3 numeric response data> format.

2.5.4.15 :DrainSuPply:SWEep:LIST:TRANSfer Command / Query

This command transfers a file of output value lists stored in the PC to the curve tracer and applies it as a list of values to be output by Drain / Collector Supply in the list sweep. Query transfers the currently specified value lists to the PC.

This command and query cannot be used with multi-commands.

Command Syntax

:DrainSuPply:SWEEp:LIST:TRANSfer<delimiter><preamble><list_file>

<delimiter>

LF or CR+LF

<preamble>

#9xxxxxxxx

xxxxxxxx : 9-digit ASCII character string representing the file size (number of bytes) of
<list_file>

If the number of bytes is less than 9 digits, insert 0 at the beginning to make it 9 digits.

If the file size of <list_file> is 40,226 bytes, it will be "#9000040226".

<list_file>

The available value list files are as follows.

- List of values read by a DrainSuPply:SWEEp:LIST:TRANSfer? query.
- Value list file (*.lst) saved by operating the curve tracer
- Text file edited on a PC (plain text format with one value per line)

Remarks

Send this command in the following two steps.

Step 1:

Send the ":DrainSuPply:SWEEp:LIST:TRANSfer" command with delimiters without any parameters. As a result, the curve tracer is ready to receive list data (including preambles).

Step 2:

Following the above <preamble>, send <list_file>

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:SWEEp:LIST:TRANSfer?

Response message <preamble><list_file>

Same format as sent in step 2 of command.

2.5.4.16 :DrainSuPply:VOLTage:TITLe Command / Query

Sets / Queries the name given to the measured voltage of Drain / Collector Supply.

Command Syntax

:DrainSuPply:VOLTage:TITLe <title>

<title>

<STRING PROGRAM DATA>
<ul style="list-style-type: none">• A string enclosed in double quotes or single quotes (32 characters or less).• Available characters 7bit ASCII characters (excluding control code) (If you use the same character as the enclosing character, you need to duplicate it (the same character must be repeated twice)).

Remarks

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:VOLTage:TITLe?

Response message <title>

<title> is <string response data> format.

2.5.4.17 :DrainSuPply:VOLTage:RANGe:MODE Command / Query

Sets / Queries the method for determining the measurement range in the Drain / Collector Supply voltage.

Command Syntax

:DrainSuPply:VOLTage:RANGe:MODE <mode>

<mode>

<CHARACTER PROGRAM DATA>	Description of settings
AUTO	Automatic setting
FIX	Fixed range
SYSTEM	System dependent (linked to output settings)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Depending on the combination of Drain / Collector Supply Unit and Supply Source, the available options will change as shown in the table below.

Drain / Collector Supply Unit	Supply Source	AUTO	FIX	SYSTEM
MV	VOLTAGE	○	○	○
	CURRENT	○	○	×
MV-SIN	VOLTAGE	○	○	○
HV	VOLTAGE	○	○	○
	CURRENT	○	○	×
HC	VOLTAGE	○	○	×
	CURRENT	○	○	×

If you set an unusable option, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:VOLTage:RANGe:MODE?

Response message <mode>

<mode> is <CHARACTER RESPONSE DATA> format.

2.5.4.18 :DrainSuPply:VOLTage:RANGe:RANGe Command / Query

Sets / Queries the Drain / Collector Supply measurement range applied when the voltage measurement range determination method is FIX.

Command Syntax

:DrainSuPply:VOLTage:RANGe:RANGe <range>

<range>

Drain / Collector Supply Unit	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
MV	200.0E-3 to 200.0E+0 ^{Note}	1, 2, 5 Step
MV-SIN	200.0E-3 to 200.0E+0	
HV	50.0E+0 to 5.0E+3	
HC	500.0E-3 to 50.0E+0	

Note: When the SOURCE is CURRENT and the maximum output setting is 2A, 100.0E+0 is the maximum value.

Remarks

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:DrainSuPply:VOLTage:RANGe:RANGe?

Response message <range>

<range> is the <NR3 NUMERIC RESPONSE DATA> format.

2.5.4.19 :DrainSuPply:VOLTage:RANGe:MINimum Command / Query

Sets / Queries the measurement range that is the lower limit of range search when the Drain / Collector Supply voltage measurement range determination method is AUTO.

Command Syntax

:DrainSuPply:VOLTage:RANGe:MINimum <minimum_range>

<minimum_range>

Drain / Collector Supply Unit	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
MV	200.0E-3 to 200.0E+0 ^{Note}	1, 2, 5 Step
MV-SIN	200.0E-3 to 200.0E+0	
HV	50.0E+0 to 5.0E+3	
HC	500.0E-3 to 50.0E+0	

Note: When the SOURCE is CURRENT and the maximum output setting is 2A, 100.0E+0 is the maximum value.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:DrainSuPply:VOLTage:RANGe:MINimum?

Response message <minimum_range>

<minimum_range> is <NR3 NUMERIC RESPONSE DATA> format.

2.5.4.20 :DrainSuPply:VOLTage:RANGe:MAXimum Command / Query

Sets / Queries the measurement range that is the upper limit of range search when the Drain / Collector Supply voltage measurement range determination method is AUTO.

Command Syntax

:DrainSuPply:VOLTage:RANGe:MAXimum <maximum_range>

<maximum_range>

Drain / Collector Supply Unit	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
MV	200.0E-3 to 200.0E+0 ^{Note}	1, 2, 5 Step
MV-SIN	200.0E-3 to 200.0E+0	
HV	50.0E+0 to 5.0E+3	
HC	500.0E-3 to 50.0E+0	

Note: When the SOURCE is CURRENT and the maximum output setting is 2A, 100.0E+0 is the maximum value.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Values outside the range are rounded to maximum or minimum values, resulting in an execution error. Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:DrainSuPply:VOLTage:RANGe:MAXimum?

Response message <maximum_range>

<maximum_range> is <NR3 NUMERIC RESPONSE DATA> format.

2.5.4.21 :DrainSuPply:VOLTage:LIMit:UPPer:STATus Command / Query

Sets / Queries whether to specify the upper limit for the Drain / Collector Supply voltage as a limit detection condition.

Command Syntax

:DrainSuPply:VOLTage:LIMit:UPPer:STATus <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:VOLTage:LIMit:UPPer:STATus?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.4.22 :DrainSuPply:VOLTage:LIMit:UPPer:VALue Command / Query

Sets / Queries the upper limit of the Drain / Collector Supply voltage used for the Limit detection condition.

Command Syntax

:DrainSuPply:VOLTage:LIMit:UPPer:VALue <upper_limit>

<upper_limit>

Drain / Collector Supply Unit	<DECIMAL NUMERIC PROGRAM DATA>	Resolution Note	Number of significant digits Note
MV	-200.0E+0 to 200.0E+0	10.0E-6	4
MV-SIN	-200.0E+0 to 200.0E+0	10.0E-6	
HV	-5.0E+3 to 5.0E+3	10.0E-3	
HC	-50.0E+0 to 50.0E+0	100.0E-6	

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:VOLTage:LIMit:UPPer:VALue?

Response message <upper_limit>

<upper_limit> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.4.23 :DrainSuPply:VOLTage:LIMit:LOWer:STATus Command / Query

Sets / Queries whether to specify the lower limit for the Drain / Collector Supply voltage as a limit detection condition.

Command Syntax

:DrainSuPply:VOLTage:LIMit:LOWer:STATus <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:VOLTage:LIMit:LOWer:STATus?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.4.24 :DrainSuPply:VOLTage:LIMit:LOWer:VALue Command / Query

Sets / Queries the lower limit of the Drain / Collector Supply voltage used for the limit detection condition.

Command Syntax

:DrainSuPply:VOLTage:LIMit:LOWer:VALue <lower_limit>

< lower_limit >

Drain / Collector Supply Unit	<DECIMAL NUMERIC PROGRAM DATA>	Resolution Note	Number of significant digits Note
MV	-200.0E+0 to 200.0E+0	10.0E-6	4
MV-SIN	-200.0E+0 to 200.0E+0	10.0E-6	
HV	-5.0E+3 to 5.0E+3	10.0E-3	
HC	-50.0E+0 to 50.0E+0	100.0E-6	

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:VOLTage:LIMit:LOWer:VALue?

Response message <lower_limit>

<lower_limit> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.4.25 :DrainSuPply:AMPare:TITLe :DrainSuPply:CURRent:TITLe Command / Query

Sets / Queries the name given to the measured current of Drain / Collector Supply.

Two command strings, ":DrainSuPply:AMPare:TITLe" and ":DrainSuPply:CURRent:TITLe" are exactly the same operation, only the difference in the command string.

Command Syntax

:DrainSuPply:AMPare:TITLe <title>

:DrainSuPply:CURRent:TITLe <title>

<title>

<STRING PROGRAM DATA>
<ul style="list-style-type: none"> • A string enclosed in double quotes or single quotes (32 characters or less). • Available characters 7bit ASCII characters (excluding control code) (If you use the same character as the enclosing character, you need to duplicate it (the same character must be repeated twice)).

Remarks

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:AMPare:TITLe?
:DrainSuPply:CURRent:TITLe?

Response message <title>

<title> is <string response data> format.

2.5.4.26 :DrainSuPply:AMPare:RANGe:MODE :DrainSuPply:CURRent:RANGe:MODE Command / Query

Sets / Queries how to determine the Drain / Collector Supply current measurement range.

Two command strings, ":DrainSuPply:AMPare:RANGe:MODE" and

":DrainSuPply:CURRent:RANGe:MODE" are exactly the same operation, only the difference in the command string.

Command Syntax

:DrainSuPply:AMPare:RANGe:MODE <mode>
:DrainSuPply:CURRent:RANGe:MODE <mode>

<mode>

<CHARACTER PROGRAM DATA>	Description of settings
AUTO	Automatic setting
FIX	Fixed range
SYSTEM	System dependent (linked to output settings)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Depending on the combination of Drain / Collector Supply Unit and Supply Source, the available options will change as shown in the table below.

Drain/Collector Supply Unit	Supply Source	AUTO	FIX	SYSTEM
MV	VOLTAGE	○	○	×
	CURRENT	×	×	○
MV-SIN	VOLTAGE	○	○	×
HV	VOLTAGE	○	○	×
	CURRENT	×	×	○
HC	VOLTAGE	×	×	○
	CURRENT	×	×	○

If you set an unusable option, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:AMPare:RANGe:MODE?
 :DrainSuPply:CURRent:RANGe:MODE?

Response message <mode>

<mode> is <CHARACTER RESPONSE DATA> format.

**2.5.4.27 :DrainSuPply:AMPare:RANGe:RANGe
 :DrainSuPply:CURRent:RANGe:RANGe Command / Query**

Sets / Queries the measurement range applied when the measurement range determination method of Drain / Collector Supply Voltage is FIX.

Two command strings, ":DrainSuPply:AMPare:RANGe:RANGe " and ":DrainSuPply:CURRent:RANGe:RANGe" are exactly the same operation, only the difference in the command string.

Command Syntax

:DrainSuPply:AMPare:RANGe:RANGe <range>
 :DrainSuPply:CURRent:RANGe:RANGe <range>

<range>

Drain / Collector Supply Unit	Supply Source	Other conditions	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
MV	VOLTAGE	SUPPLY MODE PULSE	5.0E-9 to 2.0E+0 ^{Note1}	1, 2, 5 Step
		SUPPLY MODE DC / LONGPULSE	5.0E-9 to 200.0E-3	
	CURRENT	—	— ^{Note2}	
MV-SIN	VOLTAGE	—	5.0E-9 to 200.0E-3	
HV	VOLTAGE	LEAKAGE OFF	50.0E-6 to 20.0E-3	
		LEAKAGE ON	5.0E-9 to 2.0E-3	
	CURRENT	—	— ^{Note2}	
HC	VOLTAGE	—	— ^{Note2}	
		CURRENT	— ^{Note2}	

Note1: When the maximum output setting is 200V, 1.0E+0 is the maximum value.

Note2: If the Supply Source is CURRENT or HC Unit, the current measurement range is fixed to SYSTEM (system dependent), so there is no setting.

Remarks

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:DrainSuPply:AMPare:RANGe:RANGe?

:DrainSuPply:CURRent:RANGe:RANGe?

Response message <range>

<range> is the <NR3 NUMERIC RESPONSE DATA> format.

2.5.4.28 :DrainSuPply:AMPare:RANGe:MINimum :DrainSuPply:CURRent:RANGe:MINimum Command / Query

Sets / Queries the measurement range that is the lower limit of range search when the Drain / Collector Supply current measurement range determination method is AUTO.

Two command strings, ":DrainSuPply:AMPare:RANGe:MINimum" and

":DrainSuPply:CURRent:RANGe:MINimum" are exactly the same operation, only the difference in the command string.

Command Syntax

:DrainSuPply:AMPare:RANGe:MINimum <minimum_range>

:DrainSuPply:CURRent:RANGe:MINimum <minimum_range>

<minimum_range>

Drain / Collector Supply Unit	Supply Source	Supply Mode (Output waveform)	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
MV	VOLTAGE	PULSE	5.0E-9 to 2.0E+0 ^{Note1}	1, 2, 5 Step
		DC, LONGPULSE	5.0E-9 to 200.0E-3	
	CURRENT	—	— ^{Note2}	
MV-SIN	VOLTAGE	—	5.0E-9 to 200.0E-3	
HV	VOLTAGE	—	5.0E-9 to 20.0E-3	
	CURRENT	—	— ^{Note2}	
HC	VOLTAGE	—	— ^{Note2}	
	CURRENT	—	— ^{Note2}	

Note1: When the maximum output setting is 200V, 1.0E+0 is the maximum value.

Note2: If the Supply Source is CURRENT or HC Unit, the current measurement range is fixed to SYSTEM (system dependent), so there is no setting.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:DrainSuPply:AMPare:RANGe:MINimum?

:DrainSuPply:CURRent:RANGe:MINimum?

Response message <minimum_range>
 <minimum_range> is <NR3 NUMERIC RESPONSE DATA> format.

**2.5.4.29 :DrainSuPply:AMPare:RANGe:MAXimum
 :DrainSuPply:CURRent:RANGe:MAXimum Command / Query**

Sets / Queries the measurement range that is the upper limit of range search when the Drain / Collector Supply current measurement range determination method is AUTO.

Two command strings, ":DrainSuPply:AMPare:RANGe:MAXimum" and ":DrainSuPply:CURRent:RANGe:MAXimum" are exactly the same, only the command string is different.

Command Syntax

:DrainSuPply:AMPare:RANGe:MAXimum <maximum_range>
 :DrainSuPply:CURRent:RANGe:MAXimum <maximum_range>

<maximum_range>

Drain / Collector Supply Unit	Supply Source	Supply Mode (Output waveform)	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
MV	VOLTAGE	PULSE	5.0E-9 to 2.0E+0 ^{Note1}	1,2,5 Step
		DC, LONGPULSE	5.0E-9 to 200.0E-3	
	CURRENT	—	— ^{Note2}	
MV-SIN	VOLTAGE	—	5.0E-9 to 200.0E-3	
HV	VOLTAGE	—	5.0E-9 to 20.0E-3	
	CURRENT	—	— ^{Note2}	
HC	VOLTAGE	—	— ^{Note2}	
	CURRENT	—	— ^{Note2}	

Note1: When the maximum output setting is 200V, 1.0E+0 is the maximum value.

Note2: If the Supply Source is CURRENT or HC Unit, the current measurement range is fixed to SYSTEM (system dependent), so there is no setting.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Values outside the range are rounded to maximum or minimum values, resulting in an execution error. Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:DrainSuPply:AMPare:RANGe:MAXimum?
 :DrainSuPply:CURRent:RANGe:MAXimum?

Response message <maximum_range>
 <maximum_range> is the <NR3 NUMERIC RESPONSE DATA> format.

**2.5.4.30 :DrainSuPply:AMPare:LIMit:UPPer:STATus
:DrainSuPply:CURRent:LIMit:UPPer:STATus Command / Query**

Sets / Queries whether to specify the upper limit for the Drain / Collector Supply current as a limit detection condition.

Two command strings, ":DrainSuPply:AMPare:LIMit:UPPer:STATus" and ":DrainSuPply:CURRent:LIMit:UPPer:STATus" are exactly the same, only the command string is different.

Command Syntax

:DrainSuPply:AMPare:LIMit:UPPer:STATus <off_on>
:DrainSuPply:CURRent:LIMit:UPPer:STATus <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:AMPare:LIMit:UPPer:STATus?
:DrainSuPply:CURRent:LIMit:UPPer:STATus?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

**2.5.4.31 :DrainSuPply:AMPare:LIMit:UPPer:VALue
:DrainSuPply:CURRent:LIMit:UPPer:VALue Command / Query**

Sets / Queries the upper limit of the Drain / Collector Supply current used for the limit detection condition.

Two command strings, ":DrainSuPply:AMPare:LIMit:UPPer" and ":DrainSuPply:CURRent:LIMit:UPPer" are exactly the same operation, only the difference in the command string.

Command Syntax

:DrainSuPply:AMPare:LIMit:UPPer:VALue <upper_limit>
:DrainSuPply:CURRent:LIMit:UPPer:VALue <upper_limit>

<upper_limit>

Drain / Collector Supply Unit	Supply Source	<DECIMAL NUMERIC PROGRAM DATA>	Resolution Note	Number of significant digits Note
MV	—	-2.0E+0 to 2.0E+0	1.0E-12	4
MV-SIN	—	-2.0E+0 to 2.0E+0	1.0E-12	
HV	VOLTAGE	-20.0E-3 to 20.0E-3	1.0E-12	
	CURRENT	-20.0E-3 to 20.0E-3	10.0E-9	
HC	—	-2.0E+3 to 2.0E+3	10.0E-3	

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:AMPare:LIMit:UPPer:VALue?

:DrainSuPply:CURREnt:LIMit:UPPer:VALue?

Response message <upper_limit>

<upper_limit> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.4.32 :DrainSuPply:AMPare:LIMit:LOWer:STATus :DrainSuPply:CURREnt:LIMit:LOWer:STATus Command / Query

Sets / Queries whether to specify the lower limit for the Drain / Collector Supply current as a limit detection condition.

Two command strings, ":DrainSuPply:AMPare:LIMit:LOWer:STATus" and ":DrainSuPply:CURREnt:LIMit:LOWer:STATus" are exactly the same operation, only the difference in the command string.

Command Syntax

:DrainSuPply:AMPare:LIMit:LOWer:STATus <off_on>

:DrainSuPply:CURREnt:LIMit:LOWer:STATus <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:AMPare:LIMit:LOWer:STATus?
:DrainSuPply:CURRent:LIMit:LOWer:STATus?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.4.33 :DrainSuPply:AMPare:LIMit:LOWer:VALue :DrainSuPply:CURRent:LIMit:LOWer:VALue Command / Query

Sets / Queries the lower limit of the Drain / Collector Supply current used for the limit detection condition.

Two command strings, ":DrainSuPply:AMPare:LIMit:LOWer" and

":DrainSuPply:CURRent:LIMit:LOWer" are exactly the same operation, only the difference in the command string.

Command Syntax

:DrainSuPply:AMPare:LIMit:LOWer:VALue <lower_limit>
:DrainSuPply:CURRent:LIMit:LOWer:VALue <lower_limit>

<lower_limit>

Drain / Collector Supply Unit	Supply Source	<DECIMAL NUMERIC PROGRAM DATA>	Resolution Note	Number of significant digits Note
MV	—	-2.0E+0 to 2.0E+0	1.0E-12	4
MV-SIN	—	-2.0E+0 to 2.0E+0	1.0E-12	
HV	VOLTAGE	-20.0E-3 to 20.0E-3	1.0E-12	
	CURRENT	-20.0E-3 to 20.0E-3	1.0E-9	
HC	—	-2.0E+3 to 2.0E+3	1.0E-3	

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:AMPare:LIMit:LOWer:VALue?
:DrainSuPply:CURRent:LIMit:LOWer:VALue?

Response message <lower_limit>

<lower_limit> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.4.34 :DrainSuPply:LIMit:POWer:STATus Command / Query

Sets / Queries whether to specify Drain / Collector Supply power as a limit detection condition.

Command Syntax

:DrainSuPply:LIMit:POWer:STATus <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:LIMit:POWer:STATus?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.4.35 :DrainSuPply:LIMit:POWer:VALue Command / Query

Sets / Queries the upper limit of Drain / Collector Supply power used for the limit detection condition.

Command Syntax

:DrainSuPply:LIMit:POWer:VALue <power_limit>

<power_limit>

Drain / Collector Supply Unit	<DECIMAL NUMERIC PROGRAM DATA>	Resolution Note	Number of significant digits Note
MV	1.0E-3 to 400.0E+0	1.0E-3	4
MV-SIN	1.0E-3 to 400.0E+0	1.0E-3	
HV	1.0E-3 to 40.0E+0	1.0E-3	
HC	100.0E-3 to 100.0E+3	100.0E-3	

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:LIMit:POWer:VALue?

Response message <power_limit>

<power_limit> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.4.36 :DrainSuPply:HOLDtime:VALue1 Command / Query

Sets / Queries the output value when the output type of Drain / Collector Supply is MANUAL during the period of HOLD TIME1.

Command Syntax

:DrainSuPply:HOLDtime:VALue1 <hold_value>

<hold_value>

When Sweep Mode is NONE, LINEAR

Drain / Collector Supply		<DECIMAL NUMERIC PROGRAM DATA>		Minimum resolution
Mode	Polarity	Minimum value ^{Note}	Maximum value ^{Note}	
DC, PULSE PULSE(LONG)	POSITIVE	0.0E+0	Max. output setting value	Max. output setting value / 20000
	NEGATIVE	Max. output setting value * -1	0.0E+0	Max. output setting value / 20000
	BIPOLAR	Max. output setting value * -1	Max. output setting value	Max. output setting value / 20000

Note: When the unit of Drain / Collector Supply is MV, the mode is PULSE, and the SOURCE is CURRENT, 200mA (or -200mA) is the maximum value (or minimum value) even if the maximum output setting value is 2A.

When Sweep Mode is LOG, the output value is fixed at 0.0.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

If the mode of Drain / Collector Supply is SIN or AC, nothing is done and an execution error occurs.

Query Syntax

:DrainSuPply:HOLDtime:VALue1?

Response message <hold_value>

<hold_value> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.4.37 :DrainSuPply:HOLDtime:VALue2 Command / Query

Sets / Queries the output value when the output type of Drain / Collector Supply is MANUAL during the period of HOLD TIME2.

Command Syntax

:DrainSuPply:HOLDtime:VALue2 <hold_value>

<hold_value>

When Sweep Mode is NONE, LINEAR

Drain / Collector Supply		<DECIMAL NUMERIC PROGRAM DATA>		Minimum resolution
Mode	Polarity	Minimum value <small>Note</small>	Maximum value <small>Note</small>	
DC, PULSE PULSE(LONG)	POSITIVE	0.0E+0	Max. output setting value	Max. output setting value / 20000
	NEGATIVE	Max. output setting value * -1	0.0E+0	Max. output setting value / 20000
	BIPOLAR	Max. output setting value * -1	Max. output setting value	Max. output setting value / 20000

Note: When the unit of Drain / Collector Supply is MV, the mode is PULSE, and the SOURCE is CURRENT, 200mA (or -200mA) is the maximum value (or minimum value) even if the maximum output setting value is 2A.

When Sweep Mode is LOG, the output value is fixed at 0.0.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

If the mode of Drain / Collector Supply is SIN or AC, nothing is done and an execution error occurs.

Query Syntax

:DrainSuPply:HOLDtime:VALue2?

Response message <hold_value>

<hold_value> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.4.38 :DrainSuPply:HOLDtime:VALue3 Command / Query

Sets / Queries the output value when the output type of Drain / Collector Supply is MANUAL during the period of HOLD TIME3.

Command Syntax

:DrainSuPply:HOLDtime:VALue3 <hold_value>

<hold_value>

When Sweep Mode is NONE, LINEAR

Drain / Collector Supply		<DECIMAL NUMERIC PROGRAM DATA>		Minimum resolution
Mode	Polarity	Minimum value ^{Note}	Maximum value ^{Note}	
DC, PULSE PULSE(LONG)	POSITIVE	0.0E+0	Max. output setting value	Max. output setting value / 20000
	NEGATIVE	Max. output setting value * -1	0.0E+0	Max. output setting value / 20000
	BIPOLAR	Max. output setting value * -1	Max. output setting value	Max. output setting value / 20000

Note: When the unit of Drain / Collector Supply is MV, the mode is PULSE, and the SOURCE is CURRENT, 200mA (or -200mA) is the maximum value (or minimum value) even if the maximum output setting value is 2A.

When Sweep Mode is LOG, the output value is fixed at 0.0.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

If the mode of Drain / Collector Supply is SIN or AC, nothing is done and an execution error occurs.

Query Syntax

:DrainSuPply:HOLDtime:VALue3?

Response message <hold_value>

<hold_value> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.4.39 :DrainSuPply:HOLDtime:TYPe1 Command / Query

Sets / Queries the output type of Drain / Collector Supply during the HOLD TIME 1 period.

Command Syntax

:DrainSuPply:HOLDtime:TYPe1 <hold_type>

<hold_type>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
ZERO	START	PULSE, PULSE(LONG) : 0.0E+0 DC : Sweep start output value
MANUAL	—	User set value

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

If the mode of Drain / Collector Supply is SIN or AC, nothing is done and an execution error occurs.

If the Unit of Drain / Collector Supply is set to "MANUAL" in HC, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:HOLDtime:TYPe1?

Response message <hold_type>

<hold_type> returns a Standard Name in <CHARACTER RESPONSE DATA> format.

2.5.4.40 :DrainSuPply:HOLDtime:TYPe2 Command / Query

Sets / Queries the output type of Drain / Collector Supply during the HOLD TIME 2 period.

Command Syntax

:DrainSuPply:HOLDtime:TYPe2 <hold_type>

<hold_type>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
ZERO	START	PULSE, PULSE(LONG) : 0.0E+0 DC : Sweep start output value
MANUAL	—	User set value

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

If the mode of Drain / Collector Supply is SIN or AC, nothing is done and an execution error occurs.

If the Unit of Drain / Collector Supply is set to "MANUAL" in HC, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:HOLDtime:TYPe2?

Response message <hold_type>

<hold_type> returns a Standard Name in <CHARACTER RESPONSE DATA> format.

2.5.4.41 :DrainSuPply:HOLDtime:TYPe3 Command / Query

Sets / Queries the output type of Drain / Collector Supply during the HOLD TIME 3 period.

Command Syntax

:DrainSuPply:HOLDtime:TYPe3 <hold_type>

<hold_type>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
ZERO	START	PULSE, PULSE(LONG) : 0.0E+0 DC : Sweep start output value
MANUAL	—	User set value

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

If the mode of Drain / Collector Supply is SIN or AC, nothing is done and an execution error occurs.

If the Unit of Drain / Collector Supply is set to "MANUAL" in HC, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:HOLDtime:TYPe3?

Response message <hold_type>

<hold_type> returns a Standard Name in <CHARACTER RESPONSE DATA> format.

2.5.4.42 :DrainSuPply:SLOPe Command / Query

Sets / Queries the rise / fall slope of the output of Drain / Collector Supply.

Command Syntax

:DrainSuPply:SLOPe <slope>

<slope>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
0 to 100	1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

If this command is executed when the Drain / Collector Supply Unit is MV-SIN or HC, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:SLOPe?

Response message <slope>

<slope> is a number in <NR1 NUMERIC RESPONSE DATA> format.

2.5.4.43 :DrainSuPply:PULSe:DELAy Command / Query

Sets / Queries the delay time of the output pulse when the Drain / Collector Supply mode (output waveform) is PULSE or LONG PULSE.

Command Syntax

:DrainSuPply:PULSe:DELAy <delay>

<delay>

<DECIMAL NUMERIC PROGRAM DATA>	Resolution ^{Note}	Number of significant digits ^{Note}
0.0E+0 to 4.6E+0	1.0E-6	4

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

If this command is executed when the Drain / Collector Supply Unit is MV-SIN, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:PULSe:DELAy?

Response message <delay>

<delay> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.4.44 :DrainSuPply:PULSe:WIDTh Command / Query

Sets / Queries the pulse width of the output pulse when the Drain / Collector Supply mode (output waveform) is PULSE or LONG PULSE.

Command Syntax

:DrainSuPply:PULSe:WIDTh <width>

<width>

Drain / Collector Supply Unit	Drain / Collector Supply Mode	Gate / Base Supply Mode	<DECIMAL NUMERIC PROGRAM DATA>	Resolution ^{Note}	Number of significant digits ^{Note}
MV	PULSE	Don't care	50.0E-6 to 10.0E-3	1.0E-6	3

	LONGPULSE	PULSE, LONGPULSE	50.0E-6 to 4.6E+0		
		DC, AC	50.0E-6 to 1.6E+0		
HV	PULSE	PULSE, LONGPULSE	20.0E-3 to 4.6E+0		
		DC, AC	20.0E-3 to 1.6E+0		
HC	PULSE	Don't care	10.0E-6 to 500.0E-6		
	LONGPULSE		10.0E-6 to 1.0E-3		

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

If this command is executed when the Drain / Collector Supply Unit is MV-SIN, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:PULSe:WIDTh?

Response message <width>

<width> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.4.45 :DrainSuPply:LOOPing Command / Query

Sets / Queries the loop correction of the MV-SIN Unit of Drain / Collector Supply.

Command Syntax

:DrainSuPply:LOOPing <looping>

<looping>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
0 to 100	5

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

If this command is executed when the Drain / Collector Supply Unit is other than MV-SIN, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:LOOPing?

Response message <looping>

<looping> is a number in <NR1 NUMERIC RESPONSE DATA> format.

2.5.4.46 :DrainSuPply:INTerMittent Command / Query

Sets / Queries INTERMITTENT (intermittent) in RECTIFIED SINE mode of MV-SIN Unit of Drain / Collector Supply.

Command Syntax

:DrainSuPply:INTerMittent <intermittent>

<intermittent>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
0 to 49	1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

If this command is executed when the Drain / Collector Supply Unit is other than MV-SIN, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:INTerMittent?

Response message <intermittent>

<intermittent> is a number in <NR1 NUMERIC RESPONSE DATA> format.

2.5.4.47 :DrainSuPply:CHARge Command / Query

Sets / Queries the charging voltage when SOURCE is CURRENT in the Drain / Collector Supply HC Unit.

Command Syntax

:DrainSuPply:CHARge <charge_volt>

< charge_volt >

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
0.0 to 50.0	0.1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

If this command is executed in the CONFIG setting that does not use Drain / Collector Supply, an execution error occurs without doing anything.

If this command is executed when the Drain/ Collector Supply unit is other than HC or the Supply Source is other than CURRENT, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:CHARge?

Response message <charge_volt>

<charge_volt> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.4.48 :DrainSuPply:SEARch:ENABled Command / Query

Sets / Queries the voltage search mode when the Drain / Collector supply unit is HC and the supply source is set to VOLTAGE.

Command Syntax

:DrainSuPply:SEARch:ENABled <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed when the Drain/ Collector supply unit is other than HC or the supply source is other than VOLTAGE, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:SEARch:ENABled?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.4.49 :DrainSuPply:SEARch:TARGet:TYPE Command / Query

Sets / Queries the target specification method in the voltage search mode when the Drain / Collector supply unit is HC and supply source is set to VOLTAGE.

Command Syntax

:DrainSuPply:SEARch:TARGet:TYPE <target_type>

<target_type>

<CHARACTER PROGRAM DATA>	Description
MANUAL	Targeted search for arbitrary voltage values

SECONDARY	Targeted search for the output setting value of the supply unit to be Secondary Sweep.
-----------	--

Remarks

If this command is executed when the Drain / Collector supply unit is other than HC or the supply source is other than VOLTAGE, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:SEARch:TARGet:TYPE?

Response message <target_type>

<target_type> is <CHARACTER RESPONSE DATA> format.

2.5.4.50 :DrainSuPply:SEARch:TARGet:VALue Command / Query

Sets / Queries the target value in the voltage search mode when the Drain / Collector supply unit is HC and supply source is set to VOLTAGE. This target value is used when the target specification method is set to MANUAL.

Command Syntax

:DrainSuPply:SEARch:TARGet:VALue <target_value>

< target_value >

Drain/Collector Supply		<DECIMAL NUMERIC PROGRAM DATA>		Minimum resolution Note
Max	Polarity	Minimum value	Maximum value	
2kA	POSITIVE	0.0E+0	41.0E+0	2.5E-3
	NEGATIVE	-41.0E+0	0.0E+0	
5A to 1kA	POSITIVE	0.0E+0	50.0E+0	
	NEGATIVE	-50.0E+0	0.0E+0	

Note: The UI displays rounded to 1E-3 digit.

Remarks

If this command is executed when the Drain / Collector supply unit is other than HC or the supply source is other than VOLTAGE, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:SEARch:TARGet:VALue?

Response message <target_value>

<target_value> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.4.51 :DrainSuPply:SEARch:RESOlution Command / Query

Sets / Queries the resolution of the search in the voltage search mode when the Drain / Collector Supply unit is HC and supply source is set to VOLTAGE.

Command Syntax

:DrainSuPply:SEARch:RESOLution <resolution>

< resolution >

<CHARACTER PROGRAM DATA>	Description
FINE	Search with highest resolution
COARSE	Fast search (coarser resolution)

Remarks

If this command is executed when the Drain/ Collector supply unit is other than HC or the supply source is other than VOLTAGE, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:SEARch:RESOLution?

Response message <resolution>

<resolution> is <CHARACTER RESPONSE DATA> format.

2.5.4.52 :DrainSuPply:SEARch:EXTRact:MODE Command / Query

Sets / Queries the value extraction method for extracting the waveform of measurement results in voltage search mode when the Drain / Collector supply unit is HC and the supply source is set to VOLTAGE.

Command Syntax

:DrainSuPply:SEARch:EXTRact:MODE <mode>

<mode>

<CHARACTER PROGRAM DATA>	Description of settings
INTERPOLATE	Interpolate from measured values before and after crossing the target value and extract value
NEAREST	Extract closer value among the measured values before and after crossing the target value
UPPER	Extract the value that is greater than the target value among the measured values before and after crossing the target value.
LOWER	Extract the value that is less than the target value among the measured values before and after crossing the target value.

Query Syntax

:DrainSuPply:SEARch:EXTRact:MODE?

Response message <mode>

<mode> is the <CHARACTER RESPONSE DATA> format.

2.5.4.53 :DrainSuPply:SEARch:EXTRact:AUTO Command / Query

Sets / Queries whether the characteristic curve is automatically extracted after measurement in voltage search mode when the Drain / Collector Supply unit is HC and supply source is set to VOLTAGE.

Command Syntax

:DrainSuPply:SEARch:EXTRact:AUTO <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed when the Drain / Collector supply unit is other than HC or the supply source is other than VOLTAGE, an execution error occurs without doing anything.

Query Syntax

:DrainSuPply:SEARch:EXTRact:AUTO?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.4.54 :DrainSuPply:SEARch:EXTRact:EXECute Query

Extracts the characteristic curve from the measurement results in the voltage search mode when the Drain / Collector Supply unit is HC and supply source is set to VOLTAGE.

Query Syntax

:DrainSuPply:SEARch:EXTRact:EXECute?

Response message <extract_result>

<extract_result> is <NR1 NUMERIC RESPONSE DATA> format.

This response indicates the result of the extraction run.

1 means success, -1 means failure.

2.5.5 :GateSuPply / :BaseSuPply Sub-system (GATE / BASE SUPPLY related)

In this Sub-system, two command strings, ":GateSuPply" and ":BaseSuPply", are defined.

Whichever command string you use, the behavior is exactly the same.

Hereafter, ":GateSuPply" is used in this manual, but all can be replaced with ":BaseSuPply".

2.5.5.1 :GateSuPply:AVAllable Query

Queries whether Gate / Base Supply is enabled or disabled.

Disabled in CONFIG settings that do not use Gate / Base Supply, otherwise enabled.

Query Syntax

:GateSuPply:AVAlable?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means that the unit is disabled and 1 means that the unit is enabled.

2.5.5.2 :GateSuPply:UNIT Command / Query

Sets / Queries the power supply unit to be used as Gate / Base Supply.

Command Syntax

:GateSuPply:UNIT <unit>

<unit>

<CHARACTER PROGRAM DATA>	Description of settings
GATE	GATE Unit
GATE SIN	GATE-SIN Unit

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:UNIT?

Response message <unit>

<unit> is <CHARACTER RESPONSE DATA> format.

If the CONFIG setting does not use Gate / Base Supply, an execution error occurs and no response is returned.

2.5.5.3 :GateSuPply:SOURce Command / Query

Sets / Queries whether to use the selected Gate / Base Supply Unit as a voltage source or a current source.

Command Syntax

:GateSuPply:SOURce <source>

<source>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
VOLTAGE	VOLT	Voltage source

CURRENT	CURR	Current source
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Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

If "CURRENT" is set in GATE-SIN Unit, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:SOURce?

Response message <source>

<source> returns a standard name in <CHARACTER RESPONSE DATA> format.

2.5.5.4 :GateSuPply:MODE Command / Query

Sets / Queries the output waveform of the selected Gate / Base Supply Unit.

Command Syntax

:GateSuPply:MODE <mode>

<mode>

Gate / Base Supply Unit	<CHARACTER PROGRAM DATA>		Description of settings
	Standard Name	Alias	
GATE	DC	—	DC (100mA)
	PULSE	—	PULSE (1.0A)
	LONGPULSE	LONG	PULSE(LONG) (100mA)
GATE-SIN	AC	—	AC

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:MODE?

Response message <mode>

<mode> returns a standard name in <CHARACTER RESPONSE DATA> format.

2.5.5.5 :GateSuPply:MAXimum Command / Query

Sets / Queries the maximum output of the selected Gate / Base Supply Unit.

Command Syntax

:GateSuPply:MAXimum <maximum>

<maximum>

Gate / Base Supply Unit	Supply Source	Supply Mode	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
GATE	VOLTAGE	Don't care	1.0E+0 to 20.0E+0 , 40.0E+0	1, 2, 5 Step (Excluding 40.0E+0)
	CURRENT	PULSE	5.0E-9 to 1.0E+0	1, 2, 5 Step
DC, LONGPULSE		5.0E-9 to 100.0E-3		
GATE-SIN	VOLTAGE	AC	1.0E+0 to 20.0E+0 , 40.0E+0	1, 2, 5 Step (Excluding 40.0E+0)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:GateSuPply:MAXimum?

Response message <maximum>

<maximum> is <NR3 NUMERIC RESPONSE DATA> format.

2.5.5.6 :GateSuPply:POLarity Command / Query

Sets / Queries the output polarity of the selected Gate / Base Supply Unit.

Command Syntax

:GateSuPply:POLarity <polarity>

<polarity>

Gate / Base Supply Unit	<CHARACTER PROGRAM DATA>		Description of settings
	Standard Name	Alias	
GATE	POSITIVE	POS	Positive electrode
	NEGATIVE	NEG	Negative electrode
	BIPOLAR	—	Bipolar
GATE-SIN	BIPOLAR	—	Bipolar

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:POLarity?

Response message <polarity>

<polarity> returns a Standard Name in <CHARACTER RESPONSE DATA> format.

2.5.5.7 :GateSuPply:SWEep:ENAbled Command / Query

Sets / Queries ON (sweep) / OFF (fixed value) of the output sweep of Gate / Base Supply.

Command Syntax

:GateSuPply:SWEep:ENAbled <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

If ON is set when the Gate / Base Supply is in CONSTANT output mode – is not specified for either PRIMARY SWEEP or SECONDARY SWEEP –, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:SWEep:ENAbled?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.5.8 :GateSuPply:SWEep:MODE Command / Query

Sets / Queries the output change method when Gate / Base Supply is sweeping.

Command Syntax

:GateSuPply:SWEep:MODE <mode>

<mode>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
LINEAR	LIN	Linear sweep
LIST	—	List sweep
NONE	—	Sweep OFF

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

If NONE is set when sweep is ON, an execution error occurs without doing anything.

If LINEAR is set when sweep is OFF, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:SWEEp:MODE?

Response message <mode>

<mode> returns a standard name in <CHARACTER RESPONSE DATA> format.

2.5.5.9 :GateSuPply:SWEEp:DIRrection Command / Query

Sets / Queries the sweep direction when Gate / Base Supply is sweeping.

Command Syntax

:GateSuPply:DIRrection <direction>

<direction>

<CHARACTER PROGRAM DATA>	Description of settings
SINGLE	Unidirectional (START → STOP)
DOUBLE	Bidirectional (START → STOP → START)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:DIRrection?

Response message <direction>

<direction> is <CHARACTER RESPONSE DATA> format.

2.5.5.10 :GateSuPply:SWEep:STARt Command / Query

Sets / Queries the output value to start the Gate / Base Supply sweep.

Command Syntax

:GateSuPply:SWEep:STARt <start>

<start>

Gate / Base Supply		<DECIMAL NUMERIC PROGRAM DATA>		Minimum resolution
Mode	Polarity	Minimum value	Maximum value	
DC, PULSE PULSE(LONG)	POSITIVE	0.0E+0	Max. output setting value	Max. output setting value / 20000
	NEGATIVE	Max. output setting value * -1	0.0E+0	Max. output setting value / 20000
	BIPOLAR	Max. output setting value * -1	Max. output setting value	Max. output setting value / 20000
AC	BIPOLAR	0.0E+0	Max. output setting value	Max. output setting value / 1000

Remarks

If this command is executed while the sweep is OFF, an execution error occurs without doing anything. Use the ":GateSuPply:SWEep:STOP" command to change the output when the sweep is OFF.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:SWEep:STARt?

Response message <start>

<start> is a number in <NR3 NUMERIC RESPONSE DATA> format.

When sweep is OFF, the STOP setting value is returned.

2.5.5.11 :GateSuPply:SWEep:STOP Command / Query

Sets / Queries the output value to stop Gate / Base Supply sweep.

When the sweep is OFF., sets / queries the output value of Gate / Base Supply.

Command Syntax

:GateSuPply:SWEep:STOP <stop>

<stop>

Gate / Base Supply		<DECIMAL NUMERIC PROGRAM DATA>		Minimum resolution
Mode	Polarity	Minimum value	Maximum value	
DC, PULSE PULSE(LONG)	POSITIVE	0.0E+0	Max. output setting value	Max. output setting value / 20000
	NEGATIVE	Max. output setting value * -1	0.0E+0	Max. output setting value / 20000
	BIPOLAR	Max. output setting value * -1	Max. output setting value	Max. output setting value / 20000
AC	BIPOLAR	0.0E+0	Max. output setting value	Max. output setting value / 1000

Remarks

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:SWEep:STOP?

Response message <stop>

<stop> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.5.12 :GateSuPply:SWEep:STEPs:COUNT Command / Query

Sets / Queries the number of steps in the Gate / Base Supply sweep.

Command Syntax

:GateSuPply:SWEep:STEPs:COUNT <step_count>

<step_count>

When Gate / Base Supply is assigned to Primary Sweep

Secondary Sweep	Secondary Sweep Max Steps	<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
Enabled	5	1 to 4000	1
	10	1 to 2000	1
	20	1 to 1000	1
Disabled	Don't care	1 to 20000	1

When Gate / Base Supply is assigned to Secondary Sweep

Secondary Sweep Max Steps	<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
5	1 to 5	1
10	1 to 10	1
20	1 to 20	1

If Gate / Base Supply sweep is disabled

0 (fixed value)

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:SWEep:STEPs:COUNT?

Response message <step_count>
<step_count> is a number in <NR1 NUMERIC RESPONSE DATA> format.
If sweep is OFF, "0" is returned.

2.5.5.13 :GateSuPply:SWEep:STEPs:VALue Query

Queries the step width when Gate / Base Supply is sweeping.

Query Syntax

:GateSuPply:SWEep:STEPs:VALue?

Response message <step_value>

Sweep Mode	Description
LINEAR	Step width
LIST	NaN (9.91E+37)
NONE (Sweep OFF)	NaN (9.91E+37)

<step_value> is a number in <NR3 NUMERIC RESPONSE DATA> format.
If this query is executed with CONFIG settings that do not use Gate / Base Supply, an execution error occurs and is returned.

2.5.5.14 :GateSuPply:SWEep:LIST Command / Query

Sets / Queries the output value list when the sweep mode of Gate/Base Supply is LIST.

Command Syntax

:GateSuPply:SWEep:LIST <value_list>

<value_list> is text in <ARBITRARY ASCII RESPONSE DATA> format consisting of comma separated numeric strings in <NR3 numeric response data> format.

The <SUFFIX PROGRAM DATA> representing the unit cannot be added. For <SUFFIX PROGRAM DATA>, see "2.1.8.2 < DECIMAL NUMERIC PROGRAM DATA > / < NUMERIC RESPONSE DATA >".

Remarks

Due to system limitations, command strings exceeding 32,768 bytes in length including parameters cannot be sent. If you wish to transfer an output value list longer than this, please use the ":GateSuPply:SWEep:LIST:TRANSfer" command.

This command does not round the value even if the value outside the output range determined by maximum output and polarity. Values outside the output range are rounded to within the range when measuring.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Example of use

Case of outputting in order of 1.0mV, 2.0mV, 5.0mV.

> :GateSuPply:SWEep:LIST 1.0E-3, 2.0E-3, 5.0E-3

Query Syntax

:GateSuPply:SWEep:LIST?

Response message <value_list>

<value_list> is text in <ARBITRARY ASCII RESPONSE DATA> format consisting of comma separated numeric strings in <NR3 numeric response data> format.

2.5.5.15 :GateSuPply:SWEep:LIST:TRANSfer Command / Query

This command transfers a file of output value lists stored in the PC to the curve tracer and applies it as a list of values to be output by Gate / Base Supply in the list sweep.

This command and query cannot be used with multi-commands.

Command Syntax

:GateSuPply:SWEep:LIST:TRANSfer<delimiter><preamble><list_file>

<delimiter>

LF or CR+LF

<preamble>

#9xxxxxxxx

xxxxxxxx : 9-digit ASCII character string representing the file size (number of bytes) of <list_file>

If the number of bytes is less than 9 digits, insert 0 at the beginning to make it 9 digits.

If the file size of <list_file> is 40,226 bytes, it will be "#9000040226".

<list_file>

The available value list files are as follows.

- List of values read by a GateSuPply:SWEep:LIST:TRANSfer? query.
- Value list file (*.lst) saved by operating the curve tracer
- Text file edited on a PC (plain text format with one value per line)

Remarks

Send this command in the following two steps.

Step 1:

Send the ":GateSuPply:SWEep:LIST:TRANSfer" command with delimiters without any parameters. As a result, the curve tracer is ready to receive list data (including preambles).

Step 2:

Following the above <preamble>, send <list_file>

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:SWEep:LIST:TRANSfer?

Response message <preamble><list_file>

Same format as sent in step 2 of command.

2.5.5.16 :GateSuPply:VOLTage:TITLe Command / Query

Sets / Queries the name given to the measured voltage of Gate / Base Supply.

Command Syntax

:GateSuPply:VOLTage:TITLe <title>

<title>

<STRING PROGRAM DATA>
<ul style="list-style-type: none">• A string enclosed in double quotes or single quotes (32 characters or less).• Available characters 7bit ASCII characters (excluding control code) (If you use the same character as the enclosing character, you need to duplicate it (the same character must be repeated twice)).

Remarks

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:VOLTage:TITLe?

Response message <title>

<title> is <string response data> format.

2.5.5.17 :GateSuPply:VOLTage:RANGe:MODE Command / Query

Sets / Queries the Gate / Base Supply voltage measurement range determination method.

Command Syntax

:GateSuPply:VOLTage:RANGe:MODE <mode>

<mode>

<CHARACTER PROGRAM DATA>	Description of settings
AUTO	Automatic setting
FIX	Fixed range
SYSTEM	System dependent (linked to output settings)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Depending on the combination of Gate / Base Supply Unit and Supply Source, the available options will change as shown in the table below.

Gate / Base Supply Unit	Supply Source	AUTO	FIX	SYSTEM
GATE	VOLTAGE	○	○	○
	CURRENT	○	○	×
GATE-SIN	VOLTAGE	○	○	○

If you set an unusable option, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:VOLTage:RANGe:MODE?

Response message <mode>

<mode> is <CHARACTER RESPONSE DATA> format.

2.5.5.18 :GateSuPply:VOLTage:RANGe:RANGe Command / Query

Sets / Queries the measurement range applied when the Gate / Base Supply voltage measurement range determination method is FIX.

Command Syntax

:GateSuPply:VOLTage:RANGe:RANGe <range>

<range>

Gate / Base Supply Unit	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
GATE	1.0E+0 to 50.0E+0	1, 2, 5 Step
GATE-SIN	1.0E+0 to 50.0E+0	

Remarks

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:GateSuPply:VOLTage:RANGe:RANGe?

Response message <range>

<range> is the <NR3 NUMERIC RESPONSE DATA> format.

2.5.5.19 :GateSuPply:VOLTage:RANGe:MINimum Command / Query

Sets / Queries the measurement range that is the lower limit of range search when the Gate / Base Supply voltage measurement range determination method is AUTO.

Command Syntax

:GateSuPply:VOLTage:RANGe:MINimum <minimum_range>

<minimum_range>

Gate / Base Supply Unit	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
GATE	1.0E+0 to 50.0E+0	1, 2, 5 Step
GATE-SIN	1.0E+0 to 50.0E+0	

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:GateSuPply:VOLTage:RANGe:MINimum?

Response message <minimum_range>

<minimum_range> is the <NR3 NUMERIC RESPONSE DATA> format.

2.5.5.20 :GateSuPply:VOLTage:RANGe:MAXimum Command / Query

Sets / Queries the measurement range that is the upper limit of range search when the Gate / Base Supply voltage measurement range determination method is AUTO.

Command Syntax

:GateSuPply:VOLTage:RANGe:MAXimum <maximum_range>

<maximum_range>

Gate / Base Supply Unit	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
GATE	1.0E+0 to 50.0E+0	1, 2, 5 Step
GATE-SIN	1.0E+0 to 50.0E+0	

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:GateSuPply:VOLTage:RANGe:MAXimum?

Response message <maximum_range>

<maximum_range> is the <NR3 NUMERIC RESPONSE DATA> format.

2.5.5.21 :GateSuPply:VOLTage:LIMit:UPPer:STATus Command / Query

Sets / Queries whether to specify the upper limit for Gate / Base Supply voltage as a limit detection condition.

Command Syntax

:GateSuPply:VOLTage:LIMit:UPPer:STATus <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:VOLTage:LIMit:UPPer:STATus?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.5.22 :GateSuPply:VOLTage:LIMit:UPPer:VALue Command / Query

Sets / Queries the upper limit of the Gate / Base Supply voltage used for the limit detection condition.

Command Syntax

:GateSuPply:VOLTage:LIMit:UPPer:VALue <upper_limit>

<upper_limit>

Gate / Base Supply Unit	<DECIMAL NUMERIC PROGRAM DATA>	Resolution Note	Number of significant digits Note
GATE	-50.0E+0 to 50.0E+0	100.0E-6	4
GATE-SIN	-50.0E+0 to 50.0E+0	100.0E-6	

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:VOLTage:LIMit:UPPer:VALue?

Response message <upper_limit>

<upper_limit> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.5.23 :GateSuPply:VOLTage:LIMit:LOWer:STATus Command / Query

Sets / Queries whether to specify the lower limit for the Gate / Base Supply voltage as the detection condition of Limit.

Command Syntax

:GateSuPply:VOLTage:LIMit:LOWer:STATus <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:VOLTage:LIMit:LOWer:STATus?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.5.24 :GateSuPply:VOLTage:LIMit:LOWer:VALue Command / Query

Sets / Queries the lower limit of the Gate / Base Supply voltage used for the Limit detection condition.

Command Syntax

:GateSuPply:VOLTage:LIMit:LOWer:VALue <lower_limit>

< lower_limit >

Gate / Base Supply Unit	<DECIMAL NUMERIC PROGRAM DATA>	Resolution n ^{Note}	Number of significant digits Note
GATE	-50.0E+0 to 50.0E+0	100.0E-6	4
GATE-SIN	-50.0E+0 to 50.0E+0	100.0E-6	

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:VOLTage:LIMit:LOWer:VALue?

Response message <lower_limit>

<lower_limit> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.5.25 :GateSuPply:AMPare:TITLe :GateSuPply:CURRent:TITLe Command / Query

Sets / Queries the name given to the measured current of Gate / Base Supply.

Two command strings, ":GateSuPply:AMPare:TITLe" and ":GateSuPply:CURRent:TITLe" are exactly the same operation, only the difference in the command string.

Command Syntax

:GateSuPply:AMPare:TITLe <title>

:GateSuPply:CURRent:TITLe <title>

<title>

<STRING PROGRAM DATA>
<ul style="list-style-type: none"> • A string enclosed in double quotes or single quotes (32 characters or less). • Available characters 7bit ASCII characters (excluding control code) (If you use the same character as the enclosing character, you need to duplicate it (the same character must be repeated twice)).

Remarks

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:AMPare:TITLe?
:GateSuPply:CURRent:TITLe?

Response message <title>

<title> is <string response data> format.

2.5.5.26 :GateSuPply:AMPare:RANGe:MODE :GateSuPply:CURRent:RANGe:MODE Command / Query

Sets / Queries the method for determining the current measurement range of Gate / Base Supply. Two command strings, ":GateSuPply:AMPare:RANGe:MODE" and ":GateSuPply:CURRent:RANGe:MODE" are exactly the same operation, only the difference in the command string.

Command Syntax

:GateSuPply:AMPare:RANGe:MODE <mode>
:GateSuPply:CURRent:RANGe:MODE <mode>

<mode>

<CHARACTER PROGRAM DATA>	Description of settings
AUTO	Automatic setting
FIX	Fixed range
SYSTEM	System dependent (linked to output settings)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Depending on the combination of Gate / Base Supply Unit and Supply Source, the available options will change as shown in the table below.

Gate / Base Supply Unit	Supply Source	AUTO	FIX	SYSTEM
GATE	VOLTAGE	○	○	×
	CURRENT	×	×	○
GATE-SIN	VOLTAGE	○	○	×

If you set an unusable option, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:AMPare:RANGe:MODE?

:GateSuPply:CURRent:RANGe:MODE?

Response message <mode>

<mode> is <CHARACTER RESPONSE DATA> format.

**2.5.5.27 :GateSuPply:AMPare:RANGe:RANGe
:GateSuPply:CURRent:RANGe:RANGe Command / Query**

Sets / Queries the measurement range applied when the current measurement range determination method of Gate / Base Supply is FIX.

Two command strings, ":GateSuPply:AMPare:RANGe:RANGe" and

":GateSuPply:CURRent:RANGe:RANGe" are exactly the same operation, only the difference in the command string.

Command Syntax

:GateSuPply:AMPare:RANGe:RANGe <range>

:GateSuPply:CURRent:RANGe:RANGe <range>

<range>

Gate / Base Supply Unit	Supply Source	Supply Mode (Output Waveform)	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
GATE	VOLTAGE	PULSE	5.0E-9 to 1.0E+0	1, 2, 5 Step
		DC, LONGPULSE	5.0E-9 to 100.0E-3	
	CURRENT	—	— Note	
GATE-SIN	VOLTAGE	—	5.0E-9 to 100.0E-3	

Note: When Supply Source is CURRENT, the current measurement range is fixed to SYSTEM (system dependent), so there is no setting.

Remarks

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:GateSuPply:AMPare:RANGe:RANGe?

:GateSuPply:CURRent:RANGe:RANGe?

Response message <range>

<range> is the <NR3 NUMERIC RESPONSE DATA> format.

**2.5.5.28 :GateSuPply:AMPare:RANGe:MINimum
:GateSuPply:CURRent:RANGe:MINimum Command / Query**

Sets / Queries the measurement range that is the lower limit of the range search when the Gate / Base Supply current measurement range determination method is AUTO.

Two command strings, ":GateSuPply:AMPare:RANGe:MINimum" and ":GateSuPply:CURRent:RANGe:MINimum" are exactly the same operation, only the difference in the command string.

Command Syntax

```
:GateSuPply:AMPare:RANGe:MINimum <minimum_range>
:GateSuPply:CURRent:RANGe:MINimum <minimum_range>
```

<minimum_range>

Gate / Base Supply Unit	Supply Source	Supply Mode (Output Waveform)	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
GATE	VOLTAGE	PULSE	5.0E-9 to 1.0E+0	1, 2, 5 Step
		DC, LONGPULSE	5.0E-9 to 100.0E-3	
	CURRENT	—	— Note	
GATE-SIN	VOLTAGE	—	5.0E-9 to 100.0E-3	

Note: If the Supply Source is CURRENT, the current measurement range is fixed to SYSTEM (system dependent), so there is no setting.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

```
:GateSuPply:AMPare:RANGe:MINimum?
:GateSuPply:CURRent:RANGe:MINimum?
```

Response message <minimum_range>

<minimum_range> is<NR3 NUMERIC RESPONSE DATA> format.

2.5.5.29 :GateSuPply:AMPare:RANGe:MAXimum :GateSuPply:CURRent:RANGe:MAXimum Command / Query

Sets / Queries the measurement range that is the upper limit of range search when the Gate / Base Supply current measurement range determination method is AUTO.

Two command strings, ":GateSuPply:AMPare:RANGe:MAXimum" and

":GateSuPply:CURRent:RANGe:MAXimum" are exactly the same operation, only the difference in the command string.

Command Syntax

```
:GateSuPply:AMPare:RANGe:MAXimum <maximum_range>
:GateSuPply:CURRent:RANGe:MAXimum <maximum_range>
```

<maximum_range>

Gate / Base Supply Unit	Supply Source	Supply Mode (Output waveform)	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
GATE	VOLTAGE	PULSE	5.0E-9 to 1.0E+0	1, 2, 5 Step
		DC, LONGPULSE	5.0E-9 to 100.0E-3	
	CURRENT	—	— Note	
GATE-SIN	VOLTAGE	—	5.0E-9 to 100.0E-3	

Note: When Supply Source is CURRENT, the current measurement range is fixed to SYSTEM (system dependent), so there is no setting.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:GateSuPply:AMPare:RANGe:MAXimum?
 :GateSuPply:CURRent:RANGe:MAXimum?

Response message <maximum_range>

<maximum_range> is <NR3 NUMERIC RESPONSE DATA> format.

2.5.5.30 :GateSuPply:AMPare:LIMit:UPPer:STATus :GateSuPply:CURRent:LIMit:UPPer:STATus Command / Query

Sets / Queries whether to specify the upper limit for Gate / Base Supply current as a limit detection condition.

Two command strings, ":GateSuPply:AMPare:LIMit:UPPer:STATus" and

":GateSuPply:CURRent:LIMit:UPPer:STATus" are exactly the same operation, only the difference in the command string.

Command Syntax

:GateSuPply:AMPare:LIMit:UPPer:STATus <off_on>
 :GateSuPply:CURRent:LIMit:UPPer:STATus <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:AMPare:LIMit:UPPer:STATus?

:GateSuPply:CURRent:LIMit:UPPer:STATus?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.5.31 :GateSuPply:AMPare:LIMit:UPPer:VALue :GateSuPply:CURRent:LIMit:UPPer:VALue Command / Query

Sets / Queries the upper limit of the Gate / Base Supply current used for the limit detection condition.

Two command strings, ":GateSuPply:AMPare:LIMit:UPPer" and

":GateSuPply:CURRent:LIMit:UPPer" are exactly the same operation, only the difference in the command string.

Command Syntax

:GateSuPply:AMPare:LIMit:UPPer:VALue <upper_limit>

:GateSuPply:CURRent:LIMit:UPPer:VALue <upper_limit>

<upper_limit>

Gate / Base Supply Unit	<DECIMAL NUMERIC PROGRAM DATA>	Resolution Note	Number of significant digits Note
GATE	-1.0E+0 to 1.0E+0	1.0E-12	4
GATE-SIN	-1.0E+0 to 1.0E+0	1.0E-12	

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:AMPare:LIMit:UPPer:VALue?

:GateSuPply:CURRent:LIMit:UPPer:VALue?

Response message <upper_limit>
<upper_limit> is a number in <NR3 NUMERIC RESPONSE DATA> format.

**2.5.5.32 :GateSuPply:AMPare:LIMit:LOWer:STATus
:GateSuPply:CURRent:LIMit:LOWer:STATus Command / Query**

Sets / Queries whether to specify the lower limit for Gate / Base Supply current as a limit detection condition.

Two command strings, ":GateSuPply:AMPare:LIMit:LOWer:STATus" and ":GateSuPply:CURRent:LIMit:LOWer:STATus" are exactly the same operation, only the difference in the command string.

Command Syntax

:GateSuPply:AMPare:LIMit:LOWer:STATus <off_on>
:GateSuPply:CURRent:LIMit:LOWer:STATus <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:AMPare:LIMit:LOWer:STATus?
:GateSuPply:CURRent:LIMit:LOWer:STATus?

Response message <off_on>
<off_on> is <NR1 NUMERIC RESPONSE DATA> format.
0 means OFF and 1 means ON.

**2.5.5.33 :GateSuPply:AMPare:LIMit:LOWer:VALue
:GateSuPply:CURRent:LIMit:LOWer:VALue Command / Query**

Sets / Queries the lower limit of the Gate / Base Supply current used for the limit detection condition.

Two command strings, ":GateSuPply:AMPare:LIMit:LOWer" and ":GateSuPply:CURRent:LIMit:LOWer" are exactly the same operation, only the difference in the command string.

Command Syntax

:GateSuPply:AMPare:LIMit:LOWer:VALue <lower_limit>
:GateSuPply:CURRent:LIMit:LOWer:VALue <lower_limit>

<lower_limit>

Gate / Base Supply Unit	<DECIMAL NUMERIC PROGRAM DATA>	Resolution Note	Number of significant digits Note
GATE	-1.0E+0 to 1.0E+0	1.0E-12	4
GATE-SIN	-1.0E+0 to 1.0E+0	1.0E-12	

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:AMPare:LIMit:LOWer:VALue?

:GateSuPply:CURRent:LIMit:LOWer:VALue?

Response message <lower_limit>

<lower_limit> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.5.34 :GateSuPply:LIMit:POWer:STATus Command / Query

Sets / Queries whether to specify Gate / Base Supply power as a limit detection condition.

Command Syntax

:GateSuPply:LIMit:POWer:STATus <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:LIMit:POWer:STATus?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.5.35 :GateSuPply:LIMit:POWer:VALue Command / Query

Sets / Queries the upper limit of Gate / Base Supply power used for the limit detection condition.

Command Syntax

:GateSuPply:LIMit:POWer:VALue <power_limit>

-

<power_limit>

Gate / Base Supply Unit	<DECIMAL NUMERIC PROGRAM DATA>	Resolution Note	Number of significant digits Note
GATE	1.0E-3 to 40.0E+0	1.0E-3	4
GATE-SIN	1.0E-3 to 40.0E+0	1.0E-3	

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:LIMit:POWer:VALue?

Response message <power_limit>

<power_limit> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.5.36 :GateSuPply:HOLDtime:VALue1 Command / Query

Sets / Queries the output value when the output type of Gate / Base Supply is MANUAL during the period of HOLD TIME1.

Command Syntax

:GateSuPply:HOLDtime:VALue1 <hold_value>

<hold_value>

Gate / Base Supply		<DECIMAL NUMERIC PROGRAM DATA>		Minimum resolution
Mode	Polarity	Minimum value Note	Maximum value Note	
DC, PULSE PULSE(LONG)	POSITIVE	0.0E+0	Max. output setting value	Max. output setting value / 20000
	NEGATIVE	Max. output setting value * -1	0.0E+0	Max. output setting value / 20000
	BIPOLAR	Max. output setting value * -1	Max. output setting value	Max. output setting value / 20000

Note: When the Gate / Base Supply mode is PULSE and SOURCE is CURRENT, 100mA (or -100mA) is the maximum value (or minimum value) even if the maximum output setting value is 1A.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

If the Gate / Base Supply mode is AC, nothing is done and an execution error occurs.

Query Syntax

:GateSuPply:HOLDtime:VALue1?

Response message <hold_value>

<hold_value> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.5.37 :GateSuPply:HOLDtime:VALue2 Command / Query

Sets / Queries the output value when the output type of Gate / Base Supply is MANUAL during the period of HOLD TIME2.

Command Syntax

:GateSuPply:HOLDtime:VALue2 <hold_value>

<hold_value>

Gate / Base Supply		<DECIMAL NUMERIC PROGRAM DATA>		Minimum resolution
Mode	Polarity	Minimum value <small>Note</small>	Maximum value <small>Note</small>	
DC, PULSE PULSE(LONG)	POSITIVE	0.0E+0	Max. output setting value	Max. output setting value / 20000
	NEGATIVE	Max. output setting value * -1	0.0E+0	Max. output setting value / 20000
	BIPOLAR	Max. output setting value * -1	Max. output setting value	Max. output setting value / 20000

Note: When the Gate / Base Supply mode is PULSE and SOURCE is CURRENT, 100mA (or -100mA) is the maximum value (or minimum value) even if the maximum output setting value is 1A.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

If the Gate / Base Supply mode is AC, nothing is done and an execution error occurs.

Query Syntax

:GateSuPply:HOLDtime:VALue2?

Response message <hold_value>

<hold_value> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.5.38 :GateSuPply:HOLDtime:VALue3 Command / Query

Sets / Queries the output value when the output type of Gate / Base Supply is MANUAL during the period of HOLD TIME3.

Command Syntax

:GateSuPply:HOLDtime:VALue3 <hold_value>

<hold_value>

Gate / Base Supply		<DECIMAL NUMERIC PROGRAM DATA>		Minimum resolution
Mode	Polarity	Minimum value ^{Note}	Maximum value ^{Note}	
DC, PULSE PULSE(LONG)	POSITIVE	0.0E+0	Max. output setting value	Max. output setting value / 20000
	NEGATIVE	Max. output setting value * -1	0.0E+0	Max. output setting value / 20000
	BIPOLAR	Max. output setting value * -1	Max. output setting value	Max. output setting value / 20000

Note: When the Gate / Base Supply mode is PULSE and SOURCE is CURRENT, 100mA (or -100mA) is the maximum value (or minimum value) even if the maximum output setting value is 1A.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

If the Gate / Base Supply mode is AC, nothing is done and an execution error occurs.

Query Syntax

:GateSuPply:HOLDtime:VALue3?

Response message <hold_value>

<hold_value> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.5.39 :GateSuPply:HOLDtime:TYPe1 Command / Query

Sets / Queries the output type of Gate / Base Supply during the HOLD TIME1 period.

Command Syntax

:GateSuPply:HOLDtime:TYPe1 <hold_type>

<hold_type>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
BASE	START	PULSE, PULSE(LONG) : Base output value DC : Sweep start output value
MANUAL	—	User set value

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

If the Gate / Base Supply mode is AC, nothing is done and an execution error occurs.

Query Syntax

:GateSuPply:HOLDtime:TYPe1?

Response message <hold_type>

<hold_type> returns a standard name in <CHARACTER RESPONSE DATA> format.

2.5.5.40 :GateSuPply:HOLDtime:TYPe2 Command / Query

Sets / Queries the output type of Gate / Base Supply during the HOLD TIME2 period.

Command Syntax

:GateSuPply:HOLDtime:TYPe2 <hold_type>

<hold_type>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
BASE	START	PULSE, PULSE(LONG) : Base output value DC : Sweep start output value
MANUAL	—	User set value

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

If the Gate / Base Supply mode is AC, nothing is done and an execution error occurs.

Query Syntax

:GateSuPply:HOLDtime:TYPe2?

Response message <hold_type>

<hold_type> returns a standard name in <CHARACTER RESPONSE DATA> format.

2.5.5.41 :GateSuPply:HOLDtime:TYPe3 Command / Query

Sets / Queries the output type of Gate / Base Supply during the HOLD TIME3 period.

Command Syntax

:GateSuPply:HOLDtime:TYPe3 <hold_type>

<hold_type>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
BASE	START	PULSE, PULSE(LONG) : Base output value DC : Sweep start output value
MANUAL	—	User set value

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

If the Gate / Base Supply mode is AC, nothing is done and an execution error occurs.

Query Syntax

:GateSuPply:HOLDtime:TYPE3?

Response message <hold_type>

<hold_type> returns a standard name in <CHARACTER RESPONSE DATA> format.

2.5.5.42 :GateSuPply:BASE Command / Query

Sets / Queries the Base output value of Gate / Base Supply.

Command Syntax

:GateSuPply:BASE <base_value>

<base_value>

Gate / Base Supply		<DECIMAL NUMERIC PROGRAM DATA>		Minimum resolution
Mode	Polarity	Minimum value ^{Note}	Maximum value ^{Note}	
DC, PULSE PULSE(LONG)	POSITIVE	0.0E+0	Max. output setting value	Max. output setting value / 20000
	NEGATIVE	Max. output setting value * -1	0.0E+0	Max. output setting value / 20000
	BIPOLAR	Max. output setting value * -1	Max. output setting value	Max. output setting value / 20000

Note: When the Gate / Base Supply mode is PULSE and SOURCE is CURRENT, 100mA (or -100mA) is the maximum value (or minimum value) even if the maximum output setting value is 1A.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

If the Gate / Base Supply mode is AC, nothing is done and an execution error occurs.

Query Syntax

:GateSuPply:BASE?

Response message <base_value>

<base_value> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.5.43 :GateSuPply:SLOPe Command / Query

Sets / Queries the rise / fall slope of the Gate / Base Supply output.

Command Syntax

:GateSuPply:SLOPe <slope>

<slope>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
0 to 100	1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

If this command is executed when the Gate / Base Supply Unit is GATE-SIN, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:SLOPe?

Response message <slope>

<slope> is a number in <NR1 NUMERIC RESPONSE DATA> format.

2.5.5.44 :GateSuPply:PULSe:DELAy Command / Query

Sets / Queries the delay time of the output pulse when the Gate / Base Supply mode (output waveform) is PULSE or LONG PULSE.

Command Syntax

:GateSuPply:PULSe:DELAy <delay>

<delay>

<DECIMAL NUMERIC PROGRAM DATA>	Resolution ^{Note}	Number of significant digits ^{Note}
0.0E+0 to 4.6E+0	1.0E-6	4

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

If this command is executed when the Gate / Base Supply Unit is GATE-SIN, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:PULSe:DELAy?

Response message <delay>

<delay> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.5.45 :GateSuPply:PULSe:WIDTh Command / Query

Sets / Queries the pulse width of the output pulse when the Gate / Base Supply mode (output waveform) is PULSE or LONG PULSE.

Command Syntax

:GateSuPply:PULSe:WIDTh <width>

<width>

Gate / Base Supply Mode	Drain/Collector Supply Mode	<DECIMAL NUMERIC PROGRAM DATA>	Resolution Note	Number of significant digits Note
PULSE	Don't care	50.0E-6 to 10.0E-3	1.0E-6	3
LONGPULSE	PULSE, LONGPULSE	50.0E-6 to 4.6E+0		
	DC, AC	50.0E-6 to 1.6E+0		

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

If this command is executed when the Gate / Base Supply Unit is GATE-SIN, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:PULSe:WIDTh?

Response message <width>

<width> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.5.46 :GateSuPply:LOOPing Command / Query

Sets / Queries the loop correction of GATE-SIN Unit of Gate / Base Supply.

Command Syntax

:GateSuPply:LOOPing <looping>

<looping>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
0 to 100	5

Remarks

If this command is executed in the CONFIG setting that does not use Gate / Base Supply, an execution error occurs without doing anything.

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

If this command is executed when the Gate / Base Supply Unit is other than GATE-SIN, an execution error occurs without doing anything.

Query Syntax

:GateSuPply:LOOPing?

Response message <looping>

<looping> is a number in <NR1 NUMERIC RESPONSE DATA> format.

2.5.6 :SMU Sub-system

2.5.6.1 :SMU:AVAlable Query

Queries whether SMU (optional external unit) is enabled or disabled.

Enabled when SMU is active and SMU is enabled in the CONFIG setting. Otherwise, it is disabled.

Query Syntax

:SMU:AVAlable?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means that the unit is disabled and 1 means that the unit is enabled.

2.5.6.2 :SMU:UNIT Command / Query

Sets / Queries the power supply unit to be used as SMU.

Command Syntax

:SMU:UNIT <unit>

<unit>

<CHARACTER PROGRAM DATA>	Description of settings
LPSMU	CS-401(LPSMU)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:UNIT?

Response message <unit>

<unit> is <CHARACTER RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.3 :SMU:SOURce Command / Query

Sets / Queries whether to use the selected SMU as a voltage source or a current source.

Command Syntax

:SMU:SOURce <source>

<source>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
VOLTAGE	VOLT	Voltage source
CURRENT	CURR	Current source

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:SOURce?

Response message <source>

<source> returns a standard name in <CHARACTER RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.4 :SMU:MODE Command / Query

Sets / Queries the output waveform of the selected SMU.

Command Syntax

:SMU:MODE <mode>

<mode>

SMU	<CHARACTER PROGRAM DATA>	Description of settings
CS-401(LPSMU)	DC	DC

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:MODE?

Response message <mode>

<mode> returns a standard name in <CHARACTER RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.5 :SMU:MAXimum Command / Query

Sets / Queries the maximum output of the selected SMU.

Command Syntax

:SMU:MAXimum <maximum>

<maximum>

SMU	Supply Source	Supply Mode	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
CS-401 (LPSMU)	VOLTAGE	DC	500.0E-3 to 100.0E+0	1, 2, 5 Step
	CURRENT	DC	5.0E-9 to 200.0E-3	

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:SMU:MAXimum?

Response message <maximum>

<maximum> is <NR3 NUMERIC RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.6 :SMU:POLarity Command / Query

Sets / Queries the output polarity of the selected SMU.

Command Syntax

:SMU:POLarity <polarity>

<polarity>

SMU	<CHARACTER PROGRAM DATA>		Description of settings
	Standard Name	Alias	
CS-401 (LPSMU)	POSITIVE	POS	Positive electrode
	NEGATIVE	NEG	Negative electrode
	BIPOLAR	—	Bipolar

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

In CS-401 (LPSMU), if "BIPOLAR" is set when the power supply is set to voltage and the maximum output is set to 100V, an execution error occurs without doing anything.

Query Syntax

:SMU:POLarity?

Response message <polarity>

<polarity> returns a Standard Name in <CHARACTER RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.7 :SMU:SWEep:ENABled Command / Query

Sets / Queries ON (sweep) / OFF (fixed value) of the output sweep of SMU.

Command Syntax

:SMU:SWEep:ENABled <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
--------------------------	--------------------------------

OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

If ON is set when the SMU is in CONSTANT output mode – is not specified for either PRIMARY SWEEP or SECONDARY SWEEP –, an execution error occurs without doing anything.

Query Syntax

:SMU:SWEep:ENABled?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.8 :SMU:SWEep:MODE Command / Query

Sets / Queries the output change method when SMU is sweeping.

Command Syntax

:SMU:SWEep:MODE <mode>

<mode>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
LINEAR	LIN	Linear sweep
LIST	–	List sweep
NONE	–	Sweep OFF

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

If NONE is set when sweep is ON, an execution error occurs without doing anything.

If LINEAR is set when sweep is OFF, an execution error occurs without doing anything.

Query Syntax

:SMU:SWEep:MODE?

Response message <mode>

<mode> returns a standard name in <CHARACTER RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.9 :SMU:SWEep:DIRection Command / Query

Sets / Queries the sweep direction when SMU is sweeping.

Command Syntax

:SMU:DIRection <direction>

<direction>

<CHARACTER PROGRAM DATA>	Description of settings
SINGLE	Unidirectional (START → STOP)
DOUBLE	Bidirectional (START → STOP → START)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:DIRection?

Response message <direction>

<direction> returns a standard name in <CHARACTER RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.10 :SMU:SWEep:STARt Command / Query

Sets / Queries the output value to start the SMU Supply sweep.

Command Syntax

:SMU:SWEep:STARt <start>

<start>

SMU	Mode	Polarity	<DECIMAL NUMERIC PROGRAM DATA>		Minimum resolution
			Minimum value	Maximum value	
CS-401 (LPSMU)	DC	POSITIVE	0.0E+0	Max. output setting value	Max. output setting value / 20000
		NEGATIVE	Max. output setting value * -1	0.0E+0	Max. output setting value / 20000
		BIPOLAR	Max. output setting value * -1	Max. output setting value	Max. output setting value / 20000

Remarks

If this command is executed while the sweep is OFF, an execution error occurs without doing anything. Use the ":SMU:SWEep:STOP" command to change the output when the sweep is OFF. If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:SWEep:START?

Response message <start>

<start> is a number in <NR3 NUMERIC RESPONSE DATA> format.

When sweep is OFF, the STOP setting value is returned.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.11 :SMU:SWEep:STOP Command / Query

Sets / Queries the output value to stop the SMU sweep.

When the sweep is OFF., sets / queries the output value of the SMU.

Command Syntax

:SMU:SWEep:STOP <stop>

<stop>

SMU	Mode	Polarity	<DECIMAL NUMERIC PROGRAM DATA>		Minimum resolution
			Minimum value	Maximum value	
CS-401 (LPSMU)	DC	POSITIVE	0.0E+0	Max. output setting value	Max. output setting value / 20000
		NEGATIVE	Max. output setting value * -1	0.0E+0	Max. output setting value / 20000
		BIPOLAR	Max. output setting value * -1	Max. output setting value	Max. output setting value / 20000

Remarks

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:SWEep:STOP?

Response message <stop>

<stop> is a number in <NR3 NUMERIC RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.12 :SMU:SWEep:STEPS:COUNT Command / Query

Sets / Queries the number of steps in the SMU sweep.

Command Syntax

:SMU:SWEep:STEPs:COUNT <step_count>

<step_count>

When SMU is assigned to Primary Sweep

Secondary Sweep	Secondary Sweep Max Steps	<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
Enabled	5	1 to 4000	1
	10	1 to 2000	1
	20	1 to 1000	1
Disabled	Don't care	1 to 20000	1

When SMU is assigned to Secondary Sweep

Secondary Sweep Max Steps	<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
5	1 to 5	1
10	1 to 10	1
20	1 to 20	1

If SMU sweep is disabled

0 (fixed value)

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:SWEep:STEPs:COUNT?

Response message <step_count>

<step_count> is a number in <NR1 NUMERIC RESPONSE DATA> format.

If sweep is OFF, "0" is returned.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.13 :SMU:SWEep:STEPs:VALue Query

Queries the step width when SMU is sweeping.

Query Syntax

:SMU:SWEep:STEPs:VALue?

Response message <step_value>

Sweep Mode	Description
LINEAR	Step width

LIST	NaN (9.91E+37)
NONE (Sweep OFF)	NaN (9.91E+37)

<step_value> is a number in <NR3 NUMERIC RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.14 :SMU:SWEep:LIST Command / Query

Sets / Queries the output value list when the sweep mode of SMU is LIST.

Command Syntax

:SMU:SWEep:LIST <value_list>

<value_list> is text in <ARBITRARY ASCII RESPONSE DATA> format consisting of comma separated numeric strings in <NR3 numeric response data> format.

The <SUFFIX PROGRAM DATA> representing the unit cannot be added. For <SUFFIX PROGRAM DATA>, see "2.1.8.2 < DECIMAL NUMERIC PROGRAM DATA > / < NUMERIC RESPONSE DATA >".

Remarks

Due to system limitations, command strings exceeding 32,768 bytes in length including parameters cannot be sent. If you wish to transfer an output value list longer than this, please use the ":SMU:SWEep:LIST:TRANSfer" command.

This command does not round the value even if the value outside the output range determined by maximum output and polarity. Values outside the output range are rounded to within the range when measuring.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Example of use

Case of outputting in order of 1.0mV, 2.0mV, 5.0mV.

```
> :SMU:SWEep:LIST 1.0E-3, 2.0E-3, 5.0E-3
```

Query Syntax

```
:SMU:SWEep:LIST?
```

Response message <value_list>

<value_list> is text in <ARBITRARY ASCII RESPONSE DATA> format consisting of comma separated numeric strings in <NR3 numeric response data> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.15 :SMU:SWEep:LIST:TRANSfer Command / Query

This command transfers a file of output value lists stored in the PC to the curve tracer and applies it as a list of values to be output by SMU in the list sweep.

This command and query cannot be used with multi-commands.

Command Syntax

:SMU:SWEep:LIST:TRANSfer<delimiter><preamble><list_file>

<delimiter>

LF or CR+LF

<preamble>

#9xxxxxxxx

xxxxxxxx : 9-digit ASCII character string representing the file size (number of bytes) of <list_file>

If the number of bytes is less than 9 digits, insert 0 at the beginning to make it 9 digits.

If the file size of <list_file> is 40,226 bytes, it will be "#9000040226".

<list_file>

The available value list files are as follows.

- List of values read by a :SMU:SWEep:LIST:TRANSfer? query.
- Value list file (*.lst) saved by operating the curve tracer
- Text file edited on a PC (plain text format with one value per line)

Remarks

Send this command in the following two steps.

Step 1:

Send the ":SMU:SWEep:LIST:TRANSfer" command with delimiters without any parameters.

As a result, the curve tracer is ready to receive list data (including preambles).

Step 2:

Following the above <preamble>, send <list_file>

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:SWEep:LIST:TRANSfer?

Response message <preamble><list_file>

Same format as sent in step 2 of command.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.16 :SMU:VOLTage:TITLe Command / Query

Sets / Queries the name given to the measured voltage of SMU.

Command Syntax

:SMU:VOLTage:TITLe <title>

<title>

<STRING PROGRAM DATA>
<ul style="list-style-type: none">• A string enclosed in double quotes or single quotes (32 characters or less).• Available characters 7bit ASCII characters (excluding control code) (If you use the same character as the enclosing character, you need to duplicate it (the same character must be repeated twice)).

Remarks

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:VOLTage:TITLe?

Response message <title>

<title> is <string response data> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.17 :SMU:VOLTage:RANGe:MODE Command / Query

Sets / Queries the SMU voltage measurement range determination method.

Command Syntax

:SMU:VOLTage:RANGe:MODE <mode>

<mode>

<CHARACTER PROGRAM DATA>	Description of settings
AUTO	Automatic setting
FIX	Fixed range
SYSTEM	System dependent (linked to output settings)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Depending on the combination of SMU and Supply Source, the available options will change as shown in the table below.

SMU	Supply Source	AUTO	FIX	SYSTEM
CS-401 (LPSMU)	VOLTAGE	○	○	○
	CURRENT	○	○	×

If you set an unusable option, an execution error occurs without doing anything.

Query Syntax

:SMU:VOLTage:RANGe:MODE?

Response message <mode>

<mode> is <CHARACTER RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.18 :SMU:VOLTage:RANGe:RANGe Command / Query

Sets / Queries the measurement range applied when the SMU voltage measurement range determination method is FIX.

Command Syntax

:SMU:VOLTage:RANGe:RANGe <range>

<range>

SMU	SOURCE	MAX	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
CS-401 (LPSMU)	VOLTAGE	Don't Care	500.0E-3 to 100.0E+0	1, 2, 5 Step
	CURRENT	100mA to 200mA	500.0E-3 to 20.0E+0	
		5nA to 50mA	500.0E-3 to 50.0E+0	

Remarks

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:VOLTage:RANGe:RANGe?

Response message <range>

<range> is the <NR3 NUMERIC RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.19 :SMU:VOLTage:RANGe:MINimum Command / Query

Sets / Queries the measurement range that is the lower limit of range search when the SMU voltage measurement range determination method is AUTO.

Command Syntax

:SMU:VOLTage:RANGe:MINimum <minimum_range>

<minimum_range>

SMU	SOURCE	MAX	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
CS-401 (LPSMU)	VOLTAGE	Don't Care	500.0E-3 to 100.0E+0	1, 2, 5 Step
	CURRENT	100mA to 200mA	500.0E-3 to 20.0E+0	
		5nA to 50mA	500.0E-3 to 50.0E+0	

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:SMU:VOLTage:RANGe:MINimum?

Response message <minimum_range>

<minimum_range> is the <NR3 NUMERIC RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.20 :SMU:VOLTage:RANGe:MAXimum Command / Query

Sets / Queries the measurement range that is the upper limit of range search when the SMU voltage measurement range determination method is AUTO.

Command Syntax

:SMU:VOLTage:RANGe:MAXimum <maximum_range>

<maximum_range>

SMU	SOURCE	MAX	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
CS-401 (LPSMU)	VOLTAGE	Don't Care	500.0E-3 to 100.0E+0	1, 2, 5 Step
	CURRENT	100mA to 200mA	500.0E-3 to 20.0E+0	
		5nA to 50mA	500.0E-3 to 50.0E+0	

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:SMU:VOLTage:RANGe:MAXimum?

Response message <maximum_range>

<maximum_range> is the <NR3 NUMERIC RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.21 :SMU:VOLTage:LIMit:UPPer:STATus Command / Query

Sets / Queries whether to specify the upper limit for SMU voltage as a limit detection condition.

Command Syntax

:SMU:VOLTage:LIMit:UPPer:STATus <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:VOLTage:LIMit:UPPer:STATus?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.22 :SMU:VOLTage:LIMit:UPPer:VALue Command / Query

Sets / Queries the upper limit of the SMU voltage used for the limit detection condition.

Command Syntax

:SMU:VOLTage:LIMit:UPPer:VALue <upper_limit>

<upper_limit>

SMU	<DECIMAL NUMERIC PROGRAM DATA>	Resolution ^{Note}	Number of significant digits ^{Note}
CS-401	-100.0E+0 to 100.0E+0	10.0E-6	4
(LPSMU)	-100.0E+0 to 100.0E+0	10.0E-6	

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:VOLTage:LIMit:UPPer:VALue?

Response message <upper_limit>

<upper_limit> is a number in <NR3 NUMERIC RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.23 :SMU:VOLTage:LIMit:LOWer:STATus Command / Query

Sets / Queries whether to specify the lower limit for SMU voltage as a limit detection condition.

Command Syntax

:SMU:VOLTage:LIMit:LOWer:STATus <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:VOLTage:LIMit:LOWer:STATus?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.24 :SMU:VOLTage:LIMit:LOWer:VALue Command / Query

Sets / Queries the lower limit of the SMU voltage used for the limit detection condition.

Command Syntax

:SMU:VOLTage:LIMit:LOWer:VALue <lower_limit>

<lower_limit>

SMU	<DECIMAL NUMERIC PROGRAM DATA>	Resolution Note	Number of significant digits Note
CS-401 (LPSMU)	-100.0E+0 to 100.0E+0	10.0E-6	4
	-100.0E+0 to 100.0E+0	10.0E-6	

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:VOLTage:LIMit:LOWer:VALue?

Response message <lower_limit>

<lower_limit> is a number in <NR3 NUMERIC RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.25 :SMU:AMPare:TITLe :SMU:CURRent:TITLe Command / Query

Sets / Queries the name given to the measured current of SMU.

Two command strings, ":SMU:AMPare:TITLe" and ":SMU:CURRent:TITLe" are exactly the same operation, only the difference in the command string.

Command Syntax

:SMU:AMPare:TITLe <title>
:SMU:CURRent:TITLe <title>

<title>

<STRING PROGRAM DATA>
<ul style="list-style-type: none">• A string enclosed in double quotes or single quotes (32 characters or less).• Available characters 7bit ASCII characters (excluding control code) (If you use the same character as the enclosing character, you need to duplicate it (the same character must be repeated twice)).

Remarks

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:AMPare:TITLe?
:SMU:CURRent:TITLe?

Response message <title>

<title> is <string response data> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.26 :SMU:AMPare:RANGe:MODE :SMU:CURRent:RANGe:MODE Command / Query

Sets / Queries the method for determining the current measurement range of SMU.

Two command strings, ":SMU:AMPare:RANGe:MODE" and ":SMU:CURRent:RANGe:MODE" are exactly the same operation, only the difference in the command string.

Command Syntax

:SMU:AMPare:RANGe:MODE <mode>
:SMU:CURRent:RANGe:MODE <mode>

<mode>

<CHARACTER PROGRAM DATA>	Description of settings
AUTO	Automatic setting
FIX	Fixed range
SYSTEM	System dependent (linked to output settings)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Depending on the combination of SMU and Supply Source, the available options will change as shown in the table below.

SMU	Supply Source	AUTO	FIX	SYSTEM
CS-401 (LPSMU)	VOLTAGE	○	○	×
	CURRENT	×	×	○

If you set an unusable option, an execution error occurs without doing anything.

Query Syntax

:SMU:AMPare:RANGe:MODE?

:SMU:CURRent:RANGe:MODE?

Response message <mode>

<mode> is <CHARACTER RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.27 :SMU:AMPare:RANGe:RANGe :SMU:CURRent:RANGe:RANGe Command / Query

Sets / Queries the measurement range applied when the current measurement range determination method of SMU is FIX.

Two command strings, ":SMU:AMPare:RANGe:RANGe" and ":SMU:CURRent:RANGe:RANGe" are exactly the same operation, only the difference in the command string.

Command Syntax

:SMU:AMPare:RANGe:RANGe <range>

:SMU:CURRent:RANGe:RANGe <range>

<range>

SMU	Supply Source	MAX	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
CS-401 (LPSMU)	VOLTAGE	100V	5.0E-9 to 50.0E-3	1, 2, 5 Step
		50V	5.0E-9 to 100.0E-3	
	500mV to 20V	5.0E-9 to 200.0E-3		
	CURRENT	—	— Note	

Note: When Supply Source is CURRENT, the current measurement range is fixed to SYSTEM (system dependent), so there is no setting.

Remarks

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:SMU:AMPare:RANGe:RANGe?
:SMU:CURRent:RANGe:RANGe?

Response message <range>

<range> is the <NR3 NUMERIC RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.28 :SMU:AMPare:RANGe:MINimum :SMU:CURRent:RANGe:MINimum Command / Query

Sets / Queries the measurement range that is the lower limit of the range search when the current measurement range determination method is AUTO.

Two command strings, ":SMU:AMPare:RANGe:MINimum" and

":SMU:CURRent:RANGe:MINimum" are exactly the same operation, only the difference in the command string.

Command Syntax

:SMU:AMPare:RANGe:MINimum <minimum_range>
:SMU:CURRent:RANGe:MINimum <minimum_range>

<minimum_range>

SMU	Supply Source	MAX	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
CS-401 (LPSMU)	VOLTAGE	100V	5.0E-9 to 50.0E-3	1, 2, 5 Step
		50V	5.0E-9 to 100.0E-3	
	500mV to 20V	5.0E-9 to 200.0E-3		
	CURRENT	—	— Note	

Note: If the Supply Source is CURRENT, the current measurement range is fixed to SYSTEM (system dependent), so there is no setting.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:SMU:AMPare:RANGe:MINimum?
:SMU:CURRent:RANGe:MINimum?

Response message <minimum_range>

<minimum_range> is <NR3 NUMERIC RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

**2.5.6.29 :SMU:AMPare:RANGe:MAXimum
:SMU:CURRent:RANGe:MAXimum Command / Query**

Sets / Queries the measurement range that is the upper limit of the range search when the current measurement range determination method is AUTO.

Two command strings, ":SMU:AMPare:RANGe:MAXimum" and ":SMU:CURRent:RANGe:MAXimum" are exactly the same operation, only the difference in the command string.

Command Syntax

:SMU:AMPare:RANGe:MAXimum <maximum_range>

:SMU:CURRent:RANGe:MAXimum <maximum_range>

<maximum_range>

SMU	Supply Source	MAX	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
CS-401 (LPSMU)	VOLTAGE	100V	5.0E-9 to 50.0E-3	1, 2, 5 Step
		50V	5.0E-9 to 100.0E-3	
	CURRENT	500mV to 20V	5.0E-9 to 200.0E-3	
		—	— Note	

Note: If the Supply Source is CURRENT, the current measurement range is fixed to SYSTEM (system dependent), so there is no setting.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:SMU:AMPare:RANGe:MAXimum?

:SMU:CURRent:RANGe:MAXimum?

Response message <maximum_range>

<maximum_range> is<NR3 NUMERIC RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

**2.5.6.30 :SMU:AMPare:LIMit:UPPer:STATus
:SMU:CURRent:LIMit:UPPer:STATus Command / Query**

Sets / Queries whether to specify the upper limit for SMU current as a limit detection condition.

Two command strings, ":SMU:AMPare:LIMit:UPPer:STATus" and ":SMU:CURRent:LIMit:UPPer:STATus" are exactly the same operation, only the difference in the command string.

Command Syntax

```
:SMU:AMPare:LIMit:UPPer:STATus <off_on>
:SMU:CURRent:LIMit:UPPer:STATus <off_on>
```

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

```
:SMU:AMPare:LIMit:UPPer:STATus?
:SMU:CURRent:LIMit:UPPer:STATus?
```

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.31 :SMU:AMPare:LIMit:UPPer:VALue :SMU:CURRent:LIMit:UPPer:VALue Command / Query

Sets / Queries the upper limit of the SMU current used for the limit detection condition.

Two command strings, ":SMU:AMPare:LIMit:UPPer" and ":SMU:CURRent:LIMit:UPPer" are exactly the same operation, only the difference in the command string.

Command Syntax

```
:SMU:AMPare:LIMit:UPPer:VALue <upper_limit>
:SMU:CURRent:LIMit:UPPer:VALue <upper_limit>
```

<upper_limit>

SMU	<DECIMAL NUMERIC PROGRAM DATA>	Resolution ^{Note}	Number of significant digits ^{Note}
CS-401 (LPSMU)	-200.0E-3 to 200.0E-3	1.0E-12	4

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:AMPare:LIMit:UPPer:VALue?

:SMU:CURRent:LIMit:UPPer:VALue?

Response message <upper_limit>

<upper_limit> is a number in <NR3 NUMERIC RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

**2.5.6.32 :SMU:AMPare:LIMit:LOWer:STATus
:SMU:CURRent:LIMit:LOWer:STATus Command / Query**

Sets / Queries whether to specify the lower limit for SMU current as a limit detection condition.

Two command strings, ":SMU:AMPare:LIMit:LOWer:STATus" and

":SMU:CURRent:LIMit:LOWer:STATus" are exactly the same operation, only the difference in the command string.

Command Syntax

:SMU:AMPare:LIMit:LOWer:STATus <off_on>

:SMU:CURRent:LIMit:LOWer:STATus <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:AMPare:LIMit:LOWer:STATus?

:SMU:CURRent:LIMit:LOWer:STATus?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

**2.5.6.33 :SMU:AMPare:LIMit:LOWer:VALue
:SMU:CURRent:LIMit:LOWer:VALue Command / Query**

Sets / Queries the lower limit of the SMU current used for the limit detection condition. Two command strings, ":SMU:AMPare:LIMit:LOWer" and ":SMU:CURRent:LIMit:LOWer" are exactly the same operation, only the difference in the command string.

Command Syntax

:SMU:AMPare:LIMit:LOWer:VALue <lower_limit>
:SMU:CURRent:LIMit:LOWer:VALue <lower_limit>

<lower_limit>

SMU	<DECIMAL NUMERIC PROGRAM DATA>	Resolution Note	Number of significant digits Note
CS-401 (LPSMU)	-200.0E-3 to 200.0E-3	1.0E-12	4

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:AMPare:LIMit:LOWer:VALue?
:SMU:CURRent:LIMit:LOWer:VALue?

Response message <lower_limit>

<lower_limit> is a number in <NR3 NUMERIC RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.34 :SMU:LIMit:POWer:STATus Command / Query

Sets / Queries whether to specify SMU power as a limit detection condition.

Command Syntax

:SMU:LIMit:POWer:STATus <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0

ON	1 (Non-zero)
----	--------------

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:LIMit:POWer:STATus?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.35 :SMU:LIMit:POWer:VALue Command / Query

Sets / Queries the upper limit of SMU power used for the limit detection condition.

Command Syntax

:SMU:LIMit:POWer:VALue <power_limit>

-

<power_limit>

SMU	<DECIMAL NUMERIC PROGRAM DATA>	Resolution ^{Note}	Number of significant digits ^{Note}
CS-401 (LPSMU)	1.0E-3 to 5.00E+0	1.0E-3	4

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:LIMit:POWer:VALue?

Response message <power_limit>

<power_limit> is a number in <NR3 NUMERIC RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.36 :SMU:HOLDtime:VALue1 Command / Query

Sets / Queries the output value when the output type of SMU Supply is MANUAL during the period of HOLD TIME1.

Command Syntax

:SMU:HOLDtime:VALue1 <hold_value>

<hold_value>

SMU	Mode	Polarity	<DECIMAL NUMERIC PROGRAM DATA>		Minimum resolution
			Minimum value	Maximum value	
CS-401 (LPSMU)	DC	POSITIVE	0.0E+0	Max. output setting value	Max. output setting value / 20000
		NEGATIVE	Max. output setting value * -1	0.0E+0	Max. output setting value / 20000
		BIPOLAR	Max. output setting value * -1	Max. output setting value	Max. output setting value / 20000

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:HOLDtime:VALue1?

Response message <hold_value>

<hold_value> is a number in <NR3 NUMERIC RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.37 :SMU:HOLDtime:VALue2 Command / Query

Sets / Queries the output value when the output type of SMU Supply is MANUAL during the period of HOLD TIME2.

Command Syntax

:SMU:HOLDtime:VALue2 <hold_value>

<hold_value>

SMU	Mode	Polarity	<DECIMAL NUMERIC PROGRAM DATA>		Minimum resolution
			Minimum value	Maximum value	
CS-401 (LPSMU)	DC	POSITIVE	0.0E+0	Max. output setting value	Max. output setting value / 20000
		NEGATIVE	Max. output setting value * -1	0.0E+0	Max. output setting value / 20000
		BIPOLAR	Max. output setting value * -1	Max. output setting value	Max. output setting value / 20000

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:HOLDtime:VALue2?

Response message <hold_value>

<hold_value> is a number in <NR3 NUMERIC RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.38 :SMU:HOLDtime:VALue3 Command / Query

Sets / Queries the output value when the output type of SMU Supply is MANUAL during the period of HOLD TIME3.

Command Syntax

:SMU:HOLDtime:VALue3 <hold_value>

<hold_value>

SMU	Mode	Polarity	<DECIMAL NUMERIC PROGRAM DATA>		Minimum resolution
			Minimum value	Maximum value	
CS-401 (LPSMU)	DC	POSITIVE	0.0E+0	Max. output setting value	Max. output setting value / 20000
		NEGATIVE	Max. output setting value * -1	0.0E+0	Max. output setting value / 20000
		BIPOLAR	Max. output setting value * -1	Max. output setting value	Max. output setting value / 20000

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:HOLDtime:VALue3?

Response message <hold_value>

<hold_value> is a number in <NR3 NUMERIC RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.39 :SMU:HOLDtime:TYPe1 Command / Query

Sets / Queries the output type of SMU during the HOLD TIME1 period.

Command Syntax

:SMU:HOLDtime:TYPe1 <hold_type>

<hold_type>

<CHARACTER PROGRAM DATA>	Description of settings
START	Sweep start output value
MANUAL	User set value

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:HOLDtime:TYPe1?

Response message <hold_type>

<hold_type> is <CHARACTER RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.40 :SMU:HOLDtime:TYPe2 Command / Query

Sets / Queries the output type of SMU during the HOLD TIME2 period.

Command Syntax

:SMU:HOLDtime:TYPe2 <hold_type>

<hold_type>

<CHARACTER PROGRAM DATA>	Description of settings
START	Sweep start output value
MANUAL	User set value

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:HOLDtime:TYPe2?

Response message <hold_type>

<hold_type> is <CHARACTER RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.41 :SMU:HOLDtime:TYPe3 Command / Query

Sets / Queries the output type of SMU during the HOLD TIME3 period.

Command Syntax

:SMU:HOLDtime:TYPe3 <hold_type>

<hold_type>

<CHARACTER PROGRAM DATA>	Description of settings
START	Sweep start output value
MANUAL	User set value

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:HOLDtime:TYPe3?

Response message <hold_type>

<hold_type> is <CHARACTER RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.42 :SMU:BASE Command / Query

Sets / Queries the Base output value of SMU.

Command Syntax

:SMU:BASE <base_value>

<base_value>

SMU	Mode	Polarity	<DECIMAL NUMERIC PROGRAM DATA>		Minimum resolution
			Minimum value	Maximum value	
CS-401 (LPSMU)	DC	POSITIVE	0.0E+0	Max. output setting value	Max. output setting value / 20000
		NEGATIVE	Max. output setting value * -1	0.0E+0	Max. output setting value / 20000
		BIPOLAR	Max. output setting value * -1	Max. output setting value	Max. output setting value / 20000

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:BASE?

Response message <base_value>

<base_value> is a number in <NR3 NUMERIC RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.6.43 :SMU:SLOPe Command / Query

Sets / Queries the rise / fall slope of the SMU output.

Command Syntax

:SMU:SLOPe <slope>

<slope>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
0 to 100	1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

If this command is executed when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SMU:SLOPe?

Response message <slope>

<slope> is a number in <NR1 NUMERIC RESPONSE DATA> format.

If the SMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.7 :SEMU Sub-system

2.5.7.1 :SEMU:AVAlable Query

Queries whether SEMU (optional external unit) is enabled or disabled.

Enabled when SEMU is active and SEMU is enabled in the CONFIG setting. Otherwise, it is disabled.

Query Syntax

:SEMU:AVAlable?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means that the unit is disabled and 1 means that the unit is enabled.

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means that the unit is disabled and 1 means that the unit is enabled.

**2.5.7.2 :SEMUA:AMPare:TITLe
:SEMUA:CURRent:TITLe Command / Query**

Sets / Queries the name given to the measured current of SEMU.

Two command strings, ":SEMUA:AMPare:TITLe" and ":SEMUA:CURRent:TITLe" are exactly the same operation, only the difference in the command string.

Command Syntax

:SEMUA:AMPare:TITLe <title>

:SEMUA:CURRent:TITLe <title>

<title>

<STRING PROGRAM DATA>
<ul style="list-style-type: none">• A string enclosed in double quotes or single quotes (32 characters or less).• Available characters 7bit ASCII characters (excluding control code) (If you use the same character as the enclosing character, you need to duplicate it (the same character must be repeated twice)).

Remarks

If this command is executed when SEMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SEMUA:AMPare:TITLe?

:SEMUA:CURRent:TITLe?

Response message <title>

<title> is <string response data> format.

If the SEMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

**2.5.7.3 :SEMUA:AMPare:RANGe:MODE
:SEMUA:CURRent:RANGe:MODE Command / Query**

Sets / Queries the method for determining the current measurement range of SEMU.

Two command strings, ":SEMUA:AMPare:RANGe:MODE" and ":SEMUA:CURRent:RANGe:MODE" are exactly the same operation, only the difference in the command string.

Command Syntax

:SEMUA:AMPare:RANGe:MODE <mode>

:SEMUA:CURRent:RANGe:MODE <mode>

<mode>

<CHARACTER PROGRAM DATA>	Description of settings
FIX	Fixed range

Remarks

In SEMU, the measurement range mode is fixed to FIX.

If this command is executed when SEMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SEMU:AMPare:RANGe:MODE?

:SEMU:CURRent:RANGe:MODE?

Response message <mode>

<mode> is <CHARACTER RESPONSE DATA> format.

If the SEMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

**2.5.7.4 :SEMU:AMPare:RANGe:RANGe
:SEMU:CURRent:RANGe:RANGe Command / Query**

Sets / Queries the measurement range applied when the current measurement range determination method of SEMU is FIX.

Two command strings, ":SEMU:AMPare:RANGe:RANGe" and

":SEMU:CURRent:RANGe:RANGe" are exactly the same operation, only the difference in the command string.

Command Syntax

:SEMU:AMPare:RANGe:RANGe <range>

:SEMU:CURRent:RANGe:RANGe <range>

<range>

<DECIMAL NUMERIC PROGRAM DATA>	Resolution
500.0E-9 to 200.0E-3	1, 2, 5 Step

Remarks

If this command is executed when SEMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:SEMU:AMPare:RANGe:RANGe?

:SEMU:CURRent:RANGe:RANGe?

Response message <range>

<range> is the <NR3 NUMERIC RESPONSE DATA> format.

If the SEMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

**2.5.7.5 :SEMU:AMPare:LIMit:UPPer:STATus
:SEMU:CURRent:LIMit:UPPer:STATus Command / Query**

Sets / Queries whether to specify the upper limit for SEMU current as a limit detection condition. Two command strings, ":SEMU:AMPare:LIMit:UPPer:STATus" and ":SEMU:CURRent:LIMit:UPPer:STATus" are exactly the same operation, only the difference in the command string.

Command Syntax

:SEMU:AMPare:LIMit:UPPer:STATus <off_on>
:SEMU:CURRent:LIMit:UPPer:STATus <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SEMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SEMU:AMPare:LIMit:UPPer:STATus?
:SEMU:CURRent:LIMit:UPPer:STATus?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

If the SEMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

**2.5.7.6 :SEMU:AMPare:LIMit:UPPer:VALue
:SEMU:CURRent:LIMit:UPPer:VALue Command / Query**

Sets / Queries the upper limit of the SEMU current used for the limit detection condition. Two command strings, ":SEMU:AMPare:LIMit:UPPer" and ":SEMU:CURRent:LIMit:UPPer" are exactly the same operation, only the difference in the command string.

Command Syntax

:SEMU:AMPare:LIMit:UPPer:VALue <upper_limit>
:SEMU:CURRent:LIMit:UPPer:VALue <upper_limit>

<upper_limit>

<DECIMAL NUMERIC PROGRAM DATA>	Resolution ^{Note}	Number of significant digits ^{Note}
-200.0E-3 to 200.0E-3	1.0E-12	4

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SEMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SEMU:AMPare:LIMit:UPPer:VALue?

:SEMU:CURRent:LIMit:UPPer:VALue?

Response message <upper_limit>

<upper_limit> is a number in <NR3 NUMERIC RESPONSE DATA> format.

If the SEMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.7.7 :SEMU:AMPare:LIMit:LOWer:STATus :SEMU:CURRent:LIMit:LOWer:STATus Command / Query

Sets / Queries whether to specify the lower limit for SEMU current as a limit detection condition. Two command strings, ":SEMU:AMPare:LIMit:LOWer:STATus" and ":SEMU:CURRent:LIMit:LOWer:STATus" are exactly the same operation, only the difference in the command string.

Command Syntax

:SEMU:AMPare:LIMit:LOWer:STATus <off_on>

:SEMU:CURRent:LIMit:LOWer:STATus <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SEMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SEMU:AMPare:LIMit:LOWer:STATus?

:SEMUCURRENTLIMITLOWERSTATUS?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

If the SEMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

**2.5.7.8 :SEMUPARELIMITLOWERVALUE
:SEMUCURRENTLIMITLOWERVALUE Command / Query**

Sets / Queries the lower limit of the SEMU current used for the limit detection condition.

Two command strings, ":SEMUPARELIMITLOWER" and ":SEMUCURRENTLIMITLOWER" are exactly the same operation, only the difference in the command string.

Command Syntax

:SEMUPARELIMITLOWERVALUE <lower_limit>

:SEMUCURRENTLIMITLOWERVALUE <lower_limit>

<lower_limit>

<DECIMAL NUMERIC PROGRAM DATA>	Resolution ^{Note}	Number of significant digits ^{Note}
-200.0E-3 to 200.0E-3	1.0E-12	4

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If this command is executed when SEMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:SEMUPARELIMITLOWERVALUE?

:SEMUCURRENTLIMITLOWERVALUE?

Response message <lower_limit>

<lower_limit> is a number in <NR3 NUMERIC RESPONSE DATA> format.

If the SEMU is not enabled in the CONFIG setting, an execution error occurs and no response is returned.

2.5.8 :DISPLAY Sub-system (XY screen, YT screen related)

2.5.8.1 :DISPLAY:VIEW:XY Command / Query

Sets / Queries XY display ON / OFF.

Command Syntax

:DISPlay:VIEW:XY <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Query Syntax

:DISPlay:VIEW:XY?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.8.2 :DISPlay:VIEW:YT Command / Query

Sets / Queries YT display ON / OFF.

Command Syntax

:DISPlay:VIEW:YT <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Query Syntax

:DISPlay:VIEW:YT?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.8.3 :DISPlay:VIEW:DATAlist Command / Query

Sets / Queries the data list display ON / OFF.

Command Syntax

:DISPlay:VIEW:DATAlist <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Query Syntax

:DISPlay:VIEW:DATAlist?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.8.4 :DISPlay:VIEW:CURsor Command / Query

Sets / Queries the cursor display ON / OFF.

Command Syntax

:DISPlay:VIEW:CURsor <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Query Syntax

:DISPlay:VIEW:CURsor?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.8.5 :DISPlay:VECTor Command / Query

Sets / Queries the waveform drawing method in XY display.

Command Syntax

:DISPlay:VECTor <vector>

<vector>

<CHARACTER PROGRAM DATA>	Description of settings
DOT	Dot display
LINE	Line display

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:VECTor?

Response message <vector>

<vector> is the <CHARACTER RESPONSE DATA> format.

2.5.8.6 :DISPlay:BACKground Command / Query

Sets / Queries the background color in XY display, YT display, data list display, and cursor display.

Command Syntax

:DISPlay:BACKground <background>

<background>

<CHARACTER PROGRAM DATA>	Description of settings
BLACK	Black
WHITE	White

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:BACKground?

Response message <background>

<background> is the <CHARACTER RESPONSE DATA> format.

2.5.8.7 :DISPlay:REFErence:VISible Command / Query

Sets / Queries the REFERENCE waveform display in the XY screen ON/OFF.

Command Syntax

:DISPlay:REFErence:VISible <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If the XY screen is set to multi-trace display, setting it to ON will result in an execution error without doing anything.

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:REFErence:VISible?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.8.8 :DISPlay:REFErence:STATus Query

Queries the status of the REFERENCE waveform data displayed on the XY screen.

Query Syntax

:DISPlay:REFErence:STATus?

Response message <ref_status>

<CHARACTER PROGRAM DATA>	Description of status
EMPTY	REFERENCE Waveform data not set.
LOADED	REFERENCE Waveform data has the target data for X-axis and Y-axis.
INVALID	REFERENCE Waveform data has no the target data for X-axis and Y-axis.

<ref_status> is the <CHARACTER RESPONSE DATA> format.

2.5.8.9 :DISPlay:REFErence:TRANsfer Command

This command transfers the XY waveform data file (*.CSV) saved in the PC to the curve tracer and sets as the REFERENCE waveform to be displayed on the XY screen.

This command cannot be used with multi-commands.

Command Syntax

:DISPlay:REFErence:TRANsfer<delimiter><preamble><ref_file>

<delimiter>

LF or CR+LF

<preamble>

#9xxxxxxxx

xxxxxxxx : 9-digit ASCII character string representing the file size (number of bytes) of <ref_file>

If the number of bytes is less than 9 digits, insert 0 at the beginning to make it 9 digits.

If the file size of <ref_file> is 40,226 bytes, it will be "#9000040226".

<ref_file>

The XY waveform data that can be used are as follows.

- XY waveform data read by :WAVEform:XY:TRANsfer? query
- XY waveform data (*.CSV) saved by :WAVEform:XY:SAVe command
- XY waveform data (*.CSV) saved by operating the curve tracer

Remarks

Send this command in the following two steps.

Step 1:

Send the ":DISPlay:REFErence:TRANSfer" command with delimiters without any parameters.
As a result, the main unit is ready to receive XY waveform data (including preambles).

Step 2:

Following the above <preamble>, send <ref_file>

If this command is executed during measurement, an execution error occurs without doing anything.

2.5.8.10 :DISPlay:REFErence:LOAD Command

Load the XY waveform data file (*.CSV) saved in the external USB memory or internal memory of the curve tracer and sets as the REFERENCE waveform to be displayed on the XY screen.

Command Syntax

:DISPlay:REFErence:LOAD <storage>,<file_path>

<storage>

<CHARACTER PROGRAM DATA>	Description of settings
INTERNAL	Save to internal memory
USB	Save to external USB memory

<file_path>

<STRING PROGRAM DATA>	Description of settings
<ul style="list-style-type: none"> • Available characters Alphabet a-z, A-Z Numbers 0-9 Symbol -_! @ # \$% ^ & () +, [] {} ; '~ ` = Blank SP Directory separator / • Enclose in double quotes (") • Extension (".CSV") can be omitted 	Specify the file name to be saved in the internal memory or external USB memory. The save destination directory can be described with a relative path from the root directory of the media specified by <storage>. The directory separator is "/" (slash).

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

2.5.8.11 :DISPlay:REFErence:CLEAr Command

Clears the REFERENCE waveform data displayed on the XY screen.

Command Syntax

:DISPlay:REFErence:CLEAr

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

2.5.8.12 :DISPlay:XY:TITLe Command / Query

Sets / Queries the title character string of XY display.

Command Syntax

:DISPlay:XY:TITLe <title>

<title>

<STRING PROGRAM DATA>
<ul style="list-style-type: none">• A string enclosed in double quotes or single quotes (32 characters or less).• Available characters 7bit ASCII characters (excluding control code) (If you use the same character as the enclosing character, you need to duplicate it (the same character must be repeated twice)).

Query Syntax

:DISPlay:XY:TITLe?

Response message <title>

<title> is <string response data> format.

2.5.8.13 :DISPlay:XY:RANGe:AUTO Command / Query

Sets / Queries the X-axis auto range ON / OFF in the XY display.

Command Syntax

:DISPlay:XY:RANGe:AUTO <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:RANGe:AUTO?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.8.14 :DISPlay:XY:RANGe:ZERO Command / Query

Sets / Queries the X-axis zero point display ON / OFF in the XY display.

Command Syntax

:DISPlay:XY:RANGe:ZERO <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:RANGe:ZERO?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.8.15 :DISPlay:XY:RANGe:AutoSCaLe Command

The range and offset position of each axis in the XY display are automatically set.

Command Syntax

:DISPlay:XY:RANGe:AutoSCaLe <target_axis>

<target_axis>

Multi-trace	<CHARACTER PROGRAM DATA>	Description of settings
OFF (Single trace)	ALL	X axis, Y axis
	X	X axis
	Y	Y axis
ON (Multi-trace)	ALL	X axis, Y1toY5 axis
	X	X axis
	Y1	Y1 axis
	Y2	Y2 axis
	Y3	Y3 axis
	Y4	Y4 axis
Y5	Y5 axis	

2.5.8.16 :DISPlay:XY:MULTItrace Command / Query

Sets / Queries multi-trace ON / OFF in XY display.

Command Syntax

:DISPlay:XY:MULTItrace <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
--------------------------	--------------------------------

OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:MULTItrace?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.8.17 :DISPlay:XY:X:SOURce Command / Query

Sets / Queries the data assigned to the X axis in a single trace on the XY display.

Note that MATH cannot be assigned to the X axis.

Command Syntax

:DISPlay:XY:X:SOURce <source>

:DISPlay:XY:X:SOURce <source_title>

<source>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
DRAIN_V	COLLECTOR_V VDS VCE	Drain/Collector Supply Voltage
DRAIN_I	COLLECTOR_I ID IC	Drain/Collector Supply Current
GATE_V	BASE_V VGS VBE	Gate/Base Supply Voltage
GATE_I	BASE_I IG IB	Gate/Base Supply Current
SMU_V	VSMU	SMU Voltage
SMU_I	ISMU	SMU Current
SE_I	ISS ISE	SEMU Current
PRIMARY	PRI POUT PRIMARYOUTPUT	Primary Sweep Output setting value of specified supply unit
SECONDARY	SEC SOUT SECONDARYOUTPUT	Secondary Sweep Output setting value of specified supply unit

<source_title>

The voltage / current of Drain / Collector Supply, the voltage / current of Gate / Base Supply, the voltage / current of SMU, the current of SEMU can be set by the character string specified by TITLE.

<STRING PROGRAM DATA>
Title specification string enclosed in double quotes or single quotes

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If it is set to a data type not specified in the acquisition channel settings, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:X:SOURce?

Response message <source>

<source> returns a standard name in <CHARACTER RESPONSE DATA> format.

2.5.8.18 :DISPlay:XY:X:SCALe Command / Query

Sets / Queries the X-axis scale for a single trace in XY display.

Command Syntax

:DISPlay:XY:X:SCALe <scale>

<scale>

<CHARACTER PROGRAM DATA>	Description of settings
LINEAR	Linear scale
LOG	Log scale

Query Syntax

:DISPlay:XY:X:SCALe?

Response message <scale>

<scale> is <CHARACTER RESPONSE DATA> format.

2.5.8.19 :DISPlay:XY:X:LINear:RANGe Command / Query

Sets / Queries the range on the X-axis linear scale of a single trace in XY display.

Sets the range to a value equivalent to 1 DIV (scale).

Command Syntax

:DISPlay:XY:X:LINear:RANGe <range>

<range>

Axis source unit	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
Voltage [V]	1.0E-3 to 1.0E+3	1, 2, 5 Step
Current [A]	1.0E-12 to 1.0E+3	1, 2, 5 Step

Remarks

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:DISPlay:XY:X:LINear:RANGe?

Response message <range>

<range> is the <NR3 NUMERIC RESPONSE DATA> format.

2.5.8.20 :DISPlay:XY:X:LINear:POSition Command / Query

Sets / Queries the display offset position on the X-axis linear scale of single trace of XY display in DIV (scale) units.

Command Syntax

:DISPlay:XY:X:LINear:POSition <position>

< position>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
-1000 to 1000	1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

Query Syntax

:DISPlay:XY:X:LINear:POSition?

Response message <position>

<position> is a number in <NR1 NUMERIC RESPONSE DATA> format.

2.5.8.21 :DISPlay:XY:X:LOG:MINimum Command / Query

Sets / Queries the minimum value of the logarithmic axis in the single trace X axis of XY display.

Command Syntax

:DISPlay:XY:X:LOG:MINimum <minimum>

<minimum>

<DECIMAL NUMERIC PROGRAM DATA>	Resolution
--------------------------------	------------

1E-12 to 10.0E+9	1,10,100 Step
------------------	---------------

Remarks

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:DISPlay:XY:X:LOG:MINimum?

Response message <minimum>

<minimum> is <NR3 NUMERIC RESPONSE DATA> format.

2.5.8.22 :DISPlay:XY:X:LOG:MAXimum Command / Query

Sets / Queries the maximum value of the logarithmic axis in the single trace X axis of XY display.

Command Syntax

:DISPlay:XY:X:LOG:MAXimum <maximum>

<maximum>

<DECIMAL NUMERIC PROGRAM DATA>	Resolution
1E-12 to 10.0E+9	1,10,100 Step

Remarks

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:DISPlay:XY:X:LOG:MAXimum?

Response message <maximum>

<maximum> is <NR3 NUMERIC RESPONSE DATA> format.

2.5.8.23 :DISPlay:XY:X:LOG:POLarity Command / Query

Sets / Queries the polarity of the logarithmic axis on the X axis of a XY display single trace.

Command Syntax

:DISPlay:XY:X:LOG:POLarity <polarity>

<polarity>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
POSITIVE	POS	Positive electrode
NEGATIVE	NEG	Negative electrode

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:X:LOG:POLarity?

Response message <polarity>

<polarity> is <CHARACTER RESPONSE DATA> format.

2.5.8.24 :DISPlay:XY:X:INVert Command / Query

Sets / Queries X-axis inversion ON / OFF in single trace of XY display.

Command Syntax

:DISPlay:XY:X:INVert <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:X:INVert?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.8.25 :DISPlay:XY:Y:SOURce Command / Query

Sets / Queries the allocation data to the Y axis in the single trace of XY display.

Command Syntax

:DISPlay:XY:Y:SOURce <source>

:DISPlay:XY:Y:SOURce <source_title>

<source>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	

DRAIN_V	COLLECTOR_V VDS VCE	Drain/Collector Supply Voltage
DRAIN_I	COLLECTOR_I ID IC	Drain/Collector Supply Current
GATE_V	BASE_V VGS VBE	Gate/Base Supply Voltage
GATE_I	BASE_I IG IB	Gate/Base Supply Current
SMU_V	VSMU	SMU Voltage
SMU_I	ISMU	SMU Current
SE_I	ISS ISE	SEMU Current
PRIMARY	PRI POUT PRIMARYOUTPUT	Primary Sweep Output setting value of specified supply unit
SECONDARY	SEC SOUT SECONDARYOUTPUT	Secondary Sweep Output setting value of specified supply unit
RON	MATH	MATH calculation value

<source_title>

The voltage / current of Drain / Collector Supply, the voltage / current of Gate / Base Supply, the voltage / current of SMU, the current of SEMU can be set by the character string specified by TITLE.

<STRING PROGRAM DATA>
Title specification string enclosed in double quotes or single quotes

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If MATH type is set to OFF, setting this to MATH will result in an execution error without doing anything.

If it is set to a data type not specified in the acquisition channel settings, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:Y:SOURce?

Response message <source>

<source> returns a standard name in <CHARACTER RESPONSE DATA> format.

2.5.8.26 :DISPlay:XY:Y:SCALE Command / Query

Sets / Queries the Y-axis scale in a single trace of XY display.

Command Syntax

:DISPlay:XY:Y:SCALe <scale>

<scale>

<CHARACTER PROGRAM DATA>	Description of settings
LINEAR	Linear scale
LOG	Log scale

Query Syntax

:DISPlay:XY:Y:SCALe?

Response message <scale>

<scale> is <CHARACTER RESPONSE DATA> format.

2.5.8.27 :DISPlay:XY:Y:LINear:RANGe Command / Query

Sets / Queries the range on the Y-axis linear scale of a single trace in XY display.
Set the range to a value equivalent to 1 DIV (scale).

Command Syntax

:DISPlay:XY:Y:LINear:RANGe <range>

<range>

Axis source unit	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
Voltage [V]	1.0E-3 to 1.0E+3	1, 2, 5 Step
Current [A]	1.0E-12 to 1.0E+3	1, 2, 5 Step
Resistance [Ω]	1.0E-6 to 1.0E+9	1, 2, 5 Step

Remarks

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:DISPlay:XY:Y:LINear:RANGe?

Response message <range>

<range> is the <NR3 NUMERIC RESPONSE DATA> format.

2.5.8.28 :DISPlay:XY:Y:LINear:POSition Command / Query

Sets / Queries the display offset position on the Y-axis linear scale of a single trace of XY display in DIV (scale) units.

Command Syntax

:DISPlay:XY:Y:LINear:POSition <position>

<position>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
-1000 to 1000	1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

Query Syntax

:DISPlay:XY:Y:LINear:POSition?

Response message <position>

<position> is a number in <NR1 NUMERIC RESPONSE DATA> format.

2.5.8.29 :DISPlay:XY:Y:LOG:MINimum Command / Query

Sets / Queries the minimum value of the logarithmic axis in the single trace Y axis of XY display.

Command Syntax

:DISPlay:XY:Y:LOG:MINimum <minimum>

<minimum>

<DECIMAL NUMERIC PROGRAM DATA>	Resolution
1E-12 to 10.0E+9	1,10,100 Step

Remarks

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:DISPlay:XY:Y:LOG:MINimum?

Response message <minimum>

<minimum> is <NR3 NUMERIC RESPONSE DATA> format.

2.5.8.30 :DISPlay:XY:Y:LOG:MAXimum Command / Query

Sets / Queries the maximum value of the logarithmic axis in the single trace Y axis of XY display.

Command Syntax

:DISPlay:XY:Y:LOG:MAXimum <maximum>

<maximum>

<DECIMAL NUMERIC PROGRAM DATA>	Resolution
1E-12 to 10.0E+9	1,10,100 Step

Remarks

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:DISPlay:XY:Y:LOG:MAXimum?

Response message <maximum>

<maximum> is <NR3 NUMERIC RESPONSE DATA> format.

2.5.8.31 :DISPlay:XY:Y:LOG:POLarity Command / Query

Sets / Queries the polarity of the logarithmic axis on the Y axis in single trace in XY display.

Command Syntax

:DISPlay:XY:Y:LOG:POLarity <polarity>

<polarity>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
POSITIVE	POS	Positive
NEGATIVE	NEG	Negative

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:Y:LOG:POLarity?

Response message <polarity>

<polarity> is <CHARACTER RESPONSE DATA> format.

2.5.8.32 :DISPlay:XY:Y:INVert Command / Query

Sets / Queries Y-axis inversion ON / OFF in XY display single trace.

Command Syntax

:DISPlay:XY:Y:INVert <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:Y:INVert?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.8.33 :DISPlay:XY:MULTItrace:X:SOURce Command / Query

Sets / Queries the allocation data to the X axis in the multi-trace of XY display.

Note that MATH cannot be assigned to the X axis.

Command Syntax

:DISPlay:XY:MULTItrace:X:SOURce <source>

:DISPlay:XY:MULTItrace:X:SOURce <source_title>

<source>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
DRAIN_V	COLLECTOR_V VDS VCE	Drain/Collector Supply Voltage
DRAIN_I	COLLECTOR_I ID IC	Drain/Collector Supply Current
GATE_V	BASE_V VGS VBE	Gate/Base Supply Voltage
GATE_I	BASE_I IG IB	Gate/Base Supply Current
SMU_V	VSMU	SMU Voltage
SMU_I	ISMU	SMU Current
SE_I	ISS ISE	SEMU Current
PRIMARY	PRI POUT PRIMARYOUTPUT	Primary Sweep Output setting value of specified supply unit
SECONDARY	SEC SOUT SECONDARYOUTPUT	Secondary Sweep Output setting value of specified supply unit

<source_title>

The voltage / current of Drain / Collector Supply, the voltage / current of Gate / Base Supply, the voltage / current of SMU, the current of SEMU can be set by the character string specified by TITLE.

<STRING PROGRAM DATA>
Title specification string enclosed in double quotes or single quotes

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If it is set to a data type not specified in the acquisition channel settings, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:MULTItrace:X:SOURce?

Response message <source>

<source> returns a standard name in <CHARACTER RESPONSE DATA> format.

2.5.8.34 :DISPlay:XY:MULTItrace:X:RANGe Command / Query

Sets / Queries the range on the X-axis linear scale of multitrace in XY display.

Sets the range to a value equivalent to 1 DIV (scale).

Command Syntax

:DISPlay:XY:MULTItrace:X:RANGe <range>

<range>

Axis source unit	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
Voltage [V]	1.0E-3 to 1.0E+3	1, 2, 5 Step
Current [A]	1.0E-12 to 1.0E+3	1, 2, 5 Step

Remarks

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error occurs.

Query Syntax

:DISPlay:XY:MULTItrace:X:RANGe?

Response message <range>

<range> is the <NR3 NUMERIC RESPONSE DATA> format.

2.5.8.35 :DISPlay:XY:MULTItrace:X:POSition Command / Query

Sets / Queries the display offset position on the X-axis linear scale of multi-trace of XY display in DIV (scale) units.

Command Syntax

:DISPlay:XY:MULTItrace:X:POSition <position>

< position>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
-1000 to 1000	1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

Query Syntax

:DISPlay:XY:MULTItrace:X:POSition?

Response message <position>

<position> is a number in <NR1 NUMERIC RESPONSE DATA> format.

2.5.8.36 :DISPlay:XY:MULTItrace:X:INVert Command / Query

Sets / Queries X-axis inversion ON / OFF in multi-trace of XY display.

Command Syntax

:DISPlay:XY:MULTItrace:X:INVert <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:MULTItrace:X:INVert?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.8.37 :DISPlay:XY:MULTItrace:Y1:SOURce Command / Query

Sets / Queries the allocation data to the Y1 axis in the multi-trace of XY display.

Note that MATH cannot be assigned to Y1 axis. MATH can only be assigned to Y5 axis (MATH axis).

Command Syntax

:DISPlay:XY:MULTitrace:Y1:SOURce <source>
 :DISPlay:XY:MULTitrace:Y1:SOURce <source_title>

<source>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
DRAIN_V	COLLECTOR_V VDS VCE	Drain/Collector Supply Voltage
DRAIN_I	COLLECTOR_I ID IC	Drain/Collector Supply Current
GATE_V	BASE_V VGS VBE	Gate/Base Supply Voltage
GATE_I	BASE_I IG IB	Gate/Base Supply Current
SMU_V	VSMU	SMU Voltage
SMU_I	ISMU	SMU Current
SE_I	ISS ISE	SEMU Current
PRIMARY	PRI POUT PRIMARYOUTPUT	Primary Sweep Output setting value of specified supply unit
SECONDARY	SEC SOUT SECONDARYOUTPUT	Secondary Sweep Output setting value of specified supply unit

<source_title>

The voltage / current of Drain / Collector Supply, the voltage / current of Gate / Base Supply, the voltage / current of SMU, the current of SEMU can be set by the character string specified by TITLE.

<STRING PROGRAM DATA>
Title specification string enclosed in double quotes or single quotes

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If it is set to a data type not specified in the acquisition channel settings, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:MULTitrace:Y1:SOURce?

Response message <source>

<source> returns a standard name in <CHARACTER RESPONSE DATA> format.

2.5.8.38 :DISPlay:XY:MUlTitrace:Y2:SOuRce Command / Query

Sets / Queries the allocation data to the Y2 axis in the multi-trace of XY display.

Note that MATH cannot be assigned to Y2 axis. MATH can only be assigned to Y5 axis (MATH axis).

Command Syntax

:DISPlay:XY:MUlTitrace:Y2:SOuRce <source>

:DISPlay:XY:MUlTitrace:Y2:SOuRce <source_title>

<source>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
DRAIN_V	COLLECTOR_V VDS VCE	Drain/Collector Supply Voltage
DRAIN_I	COLLECTOR_I ID IC	Drain/Collector Supply Current
GATE_V	BASE_V VGS VBE	Gate/Base Supply Voltage
GATE_I	BASE_I IG IB	Gate/Base Supply Current
SMU_V	VSMU	SMU Voltage
SMU_I	ISMU	SMU Current
SE_I	ISS ISE	SEMU Current
PRIMARY	PRI POUT PRIMARYOUTPUT	Primary Sweep Output setting value of specified supply unit
SECONDARY	SEC SOUT SECONDARYOUTPUT	Secondary Sweep Output setting value of specified supply unit

<source_title>

The voltage / current of Drain / Collector Supply, the voltage / current of Gate / Base Supply, the voltage / current of SMU, the current of SEMU can be set by the character string specified by TITLE.

<STRING PROGRAM DATA>
Title specification string enclosed in double quotes or single quotes

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If it is set to a data type not specified in the acquisition channel settings, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:MULTitrace:Y2:SOURce?

Response message <source>

<source> returns a standard name in <CHARACTER RESPONSE DATA> format.

2.5.8.39 :DISPlay:XY:MULTitrace:Y3:SOURce Command / Query

Sets / Queries the allocation data to the Y3 axis in the multi-trace of XY display.

Note that MATH cannot be assigned to Y3 axis. MATH can only be assigned to Y5 axis (MATH axis).

Command Syntax

:DISPlay:XY:MULTitrace:Y3:SOURce <source>

:DISPlay:XY:MULTitrace:Y3:SOURce <source_title>

<source>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
DRAIN_V	COLLECTOR_V VDS VCE	Drain/Collector Supply Voltage
DRAIN_I	COLLECTOR_I ID IC	Drain/Collector Supply Current
GATE_V	BASE_V VGS VBE	Gate/Base Supply Voltage
GATE_I	BASE_I IG IB	Gate/Base Supply Current
SMU_V	VSMU	SMU Voltage
SMU_I	ISMU	SMU Current
SE_I	ISS ISE	SEMU Current
PRIMARY	PRI POUT PRIMARYOUTPUT	Primary Sweep Output setting value of specified supply unit
SECONDARY	SEC SOUT SECONDARYOUTPUT	Secondary Sweep Output setting value of specified supply unit

<source_title>

The voltage / current of Drain / Collector Supply, the voltage / current of Gate / Base Supply, the voltage / current of SMU, the current of SEMU can be set by the character string specified by TITLE.

<STRING PROGRAM DATA>
Title specification string enclosed in double quotes or single quotes

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If it is set to a data type not specified in the acquisition channel settings, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:MULTItrace:Y3:SOURce?

Response message <source>

<source> returns a standard name in <CHARACTER RESPONSE DATA> format.

2.5.8.40 :DISPlay:XY:MULTItrace:Y4:SOURce Command / Query

Sets / Queries the allocation data to the Y4 axis in the multi-trace of XY display.

Note that MATH cannot be assigned to Y4 axis. MATH can only be assigned to Y5 axis (MATH axis).

Command Syntax

:DISPlay:XY:MULTItrace:Y4:SOURce <source>

:DISPlay:XY:MULTItrace:Y4:SOURce <source_title>

<source>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
DRAIN_V	COLLECTOR_V VDS VCE	Drain/Collector Supply Voltage
DRAIN_I	COLLECTOR_I ID IC	Drain/Collector Supply Current
GATE_V	BASE_V VGS VBE	Gate/Base Supply Voltage
GATE_I	BASE_I IG IB	Gate/Base Supply Current
SMU_V	VSMU	SMU Voltage
SMU_I	ISMU	SMU Current
SE_I	ISS	SEMU Current

	ISE	
PRIMARY	PRI POUT PRIMARYOUTPUT	Primary Sweep Output setting value of specified supply unit
SECONDARY	SEC SOUT SECONDARYOUTPUT	Secondary Sweep Output setting value of specified supply unit

<source_title>

The voltage / current of Drain / Collector Supply, the voltage / current of Gate / Base Supply, the voltage / current of SMU, the current of SEMU can be set by the character string specified by TITLE.

<STRING PROGRAM DATA>
Title specification string enclosed in double quotes or single quotes

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If it is set to a data type not specified in the acquisition channel settings, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:MULTItrace:Y4:SOURce?

Response message <source>

<source> returns a standard name in <CHARACTER RESPONSE DATA> format.

2.5.8.41 :DISPlay:XY:MULTItrace:Y5:SOURce :DISPlay:XY:MULTItrace:MATH:SOURce Command / Query

Sets / Queries the allocation data to the Y5 axis in the multi-trace of XY display. The Y5 axis (MATH axis) is the only axis to which MATH can be assigned in multi-trace.

Two command strings, “:DISPlay:XY:MULTItrace:Y5:SOURce” and “:DISPlay:XY:MULTItrace:MATH:SOURce” are exactly the same operation, only the difference in the command string.

Command Syntax

:DISPlay:XY:MULTItrace:Y5:SOURce <source>

:DISPlay:XY:MULTItrace:Y5:SOURce <source_title>

:DISPlay:XY:MULTItrace:MATH:SOURce <source>

:DISPlay:XY:MULTItrace:MATH:SOURce <source_title>

<source>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
DRAIN_V	COLLECTOR_V	Drain/Collector Supply Voltage

	VDS VCE	
DRAIN_I	COLLECTOR_I ID IC	Drain/Collector Supply Current
GATE_V	BASE_V VGS VBE	Gate/Base Supply Voltage
GATE_I	BASE_I IG IB	Gate/Base Supply Current
SMU_V	VSMU	SMU Voltage
SMU_I	ISMU	SMU Current
SE_I	ISS ISE	SEMU Current
PRIMARY	PRI POUT PRIMARYOUTPUT	Primary Sweep Output setting value of specified supply unit
SECONDARY	SEC SOUT SECONDARYOUTPUT	Secondary Sweep Output setting value of specified supply unit
RON	MATH	MATH calculation value

<source_title>

The voltage / current of Drain / Collector Supply, the voltage / current of Gate / Base Supply, the voltage / current of SMU, the current of SEMU can be set by the character string specified by TITLE.

<STRING PROGRAM DATA>
Title specification string enclosed in double quotes or single quotes

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

If MATH type is set to OFF, setting this to MATH will result in an execution error without doing anything.

If it is set to a data type not specified in the acquisition channel settings, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:MULTItrace:Y5:SOURce?

:DISPlay:XY:MULTItrace:MATH:SOURce?

Response message <source>

<source> returns a standard name in <CHARACTER RESPONSE DATA> format.

2.5.8.42 :DISPlay:XY:MULTItrace:Y1:RANGe Command / Query

Sets / Queries the range on the Y1 axis linear scale of multitrace in XY display.

Set the range to a value equivalent to 1 DIV (scale).

Command Syntax

:DISPlay:XY:MULTiTrace:Y1:RANGe <range>

<range>

Axis source unit	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
Voltage [V]	1.0E-3 to 1.0E+3	1, 2, 5 Step
Current [A]	1.0E-12 to 1.0E+3	1, 2, 5 Step

Remarks

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error is occurs.

Query Syntax

:DISPlay:XY:MULTiTrace:Y1:RANGe?

Response message <range>

<range> is the <NR3 NUMERIC RESPONSE DATA> format.

2.5.8.43 :DISPlay:XY:MULTiTrace:Y2:RANGe Command / Query

Sets / Queries the range on the Y2 axis linear scale of multitrace in XY display.

Set the range to a value equivalent to 1 DIV (scale).

Command Syntax

:DISPlay:XY:MULTiTrace:Y2:RANGe <range>

<range>

Axis source unit	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
Voltage [V]	1.0E-3 to 1.0E+3	1, 2, 5 Step
Current [A]	1.0E-12 to 1.0E+3	1, 2, 5 Step

Remarks

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error is occurs.

Query Syntax

:DISPlay:XY:MULTiTrace:Y2:RANGe?

Response message <range>

<range> is the <NR3 NUMERIC RESPONSE DATA> format.

2.5.8.44 :DISPlay:XY:MULTItrace:Y3:RANGe Command / Query

Sets / Queries the range on the Y3 axis linear scale of multitrace in XY display.
Set the range to a value equivalent to 1 DIV (scale).

Command Syntax

:DISPlay:XY:MULTItrace:Y3:RANGe <range>

<range>

Axis source unit	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
Voltage [V]	1.0E-3 to 1.0E+3	1, 2, 5 Step
Current [A]	1.0E-12 to 1.0E+3	1, 2, 5 Step

Remarks

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error is occurs.

Query Syntax

:DISPlay:XY:MULTItrace:Y3:RANGe?

Response message <range>

<range> is the <NR3 NUMERIC RESPONSE DATA> format.

2.5.8.45 :DISPlay:XY:MULTItrace:Y4:RANGe Command / Query

Sets / Queries the range on the Y4 axis linear scale of multitrace in XY display.
Set the range to a value equivalent to 1 DIV (scale).

Command Syntax

:DISPlay:XY:MULTItrace:Y4:RANGe <range>

<range>

Axis source unit	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
Voltage [V]	1.0E-3 to 1.0E+3	1, 2, 5 Step
Current [A]	1.0E-12 to 1.0E+3	1, 2, 5 Step

Remarks

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error is occurs.

Query Syntax

:DISPlay:XY:MULTItrace:Y4:RANGe?

Response message <range>

<range> is the <NR3 NUMERIC RESPONSE DATA> format.

2.5.8.46 :DISPlay:XY:MULTitrace:Y5:RANGe
:DISPlay:XY:MULTitrace:MATH:RANGe Command / Query

Sets / Queries the range on the Y5-axis linear scale of multi-trace in XY display. Set the range to a value equivalent to 1 DIV (scale).

Two command strings, “:DISPlay:XY:MULTitrace:Y5:RANGe” and “:DISPlay:XY:MULTitrace:MATH:RANGe” are exactly the same operation, only the difference in the command string.

Command Syntax

:DISPlay:XY:MULTitrace:Y5:RANGe <range>

:DISPlay:XY:MULTitrace:MATH:RANGe <range>

<range>

Axis source unit	<DECIMAL NUMERIC PROGRAM DATA>	Resolution
Voltage [V]	1.0E-3 to 1.0E+3	1, 2, 5 Step
Current [A]	1.0E-12 to 1.0E+3	1, 2, 5 Step
Resistance [Ω]	1.0E-6 to 1.0E+9	1, 2, 5 Step

Remarks

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error is occurs.

Query Syntax

:DISPlay:XY:MULTitrace:Y5:RANGe?

:DISPlay:XY:MULTitrace:MATH:RANGe?

Response message <range>

<range> is the <NR3 NUMERIC RESPONSE DATA> format.

2.5.8.47 :DISPlay:XY:MULTitrace:Y1:POSition Command / Query

Sets / Queries the display offset position on the Y1 axis linear scale of multi-trace of XY display in DIV (scale) units.

Command Syntax

:DISPlay:XY:MULTitrace:Y1:POSition <position>

< position>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
--------------------------------	--------------------

-1000 to 1000	1
---------------	---

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

Query Syntax

:DISPlay:XY:MUlTitrace:Y1:POSition?

Response message <position>

<position> is a number in <NR1 NUMERIC RESPONSE DATA> format.

2.5.8.48 :DISPlay:XY:MUlTitrace:Y2:POSition Command / Query

Sets / Queries the display offset position on the Y2 axis linear scale of multi-trace of XY display in DIV (scale) units.

Command Syntax

:DISPlay:XY:MUlTitrace:Y2:POSition <position>

< position>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
-1000 to 1000	1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

Query Syntax

:DISPlay:XY:MUlTitrace:Y2:POSition?

Response message <position>

<position> is a number in <NR1 NUMERIC RESPONSE DATA> format.

2.5.8.49 :DISPlay:XY:MUlTitrace:Y3:POSition Command / Query

Sets / Queries the display offset position on the Y3 axis linear scale of multi-trace of XY display in DIV (scale) units.

Command Syntax

:DISPlay:XY:MUlTitrace:Y3:POSition <position>

< position>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
-1000 to 1000	1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

Query Syntax

:DISPlay:XY:MULTItrace:Y3:POSition?

Response message <position>

<position> is a number in <NR1 NUMERIC RESPONSE DATA> format.

2.5.8.50 :DISPlay:XY:MULTItrace:Y4:POSition Command / Query

Sets / Queries the display offset position on the Y4 axis linear scale of multi-trace of XY display in DIV (scale) units.

Command Syntax

:DISPlay:XY:MULTItrace:Y4:POSition <position>

< position>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
-1000 to 1000	1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

Query Syntax

:DISPlay:XY:MULTItrace:Y4:POSition?

Response message <position>

<position> is a number in <NR1 NUMERIC RESPONSE DATA> format.

**2.5.8.51 :DISPlay:XY:MULTItrace:Y5:POSition
:DISPlay:XY:MULTItrace:MATH:POSition Command / Query**

Sets / Queries the display offset position on the Y5 axis linear scale of multi-trace of XY display in DIV (scale) units.

Two command strings, “:DISPlay:XY:MULTItrace:Y5:POSition” and “:DISPlay:XY:MULTItrace:MATH:POSition” are exactly the same operation, only the difference in the command string.

Command Syntax

:DISPlay:XY:MULTItrace:Y5:POSition <position>

:DISPlay:XY:MULTItrace:MATH:POSition <position>

< position>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
-1000 to 1000	1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

Query Syntax

:DISPlay:XY:MULTItrace:Y5:POSition?
:DISPlay:XY:MULTItrace:MATH:POSition?

Response message <position>

<position> is a number in <NR1 NUMERIC RESPONSE DATA> format.

2.5.8.52 :DISPlay:XY:MULTItrace:Y1:INVert Command / Query

Sets / Queries Y1 axis inversion ON / OFF in multi-trace of XY display.

Command Syntax

:DISPlay:XY:MULTItrace:Y1:INVert <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:MULTItrace:Y1:INVert?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.
0 means OFF and 1 means ON.

2.5.8.53 :DISPlay:XY:MULTItrace:Y2:INVert Command / Query

Sets / Queries Y2 axis inversion ON / OFF in multi-trace of XY display.

Command Syntax

:DISPlay:XY:MULTItrace:Y2:INVert <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
--------------------------	--------------------------------

OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:MULTitrace:Y2:INVert?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.8.54 :DISPlay:XY:MULTitrace:Y3:INVert Command / Query

Sets / Queries Y3 axis inversion ON / OFF in multi-trace of XY display.

Command Syntax

:DISPlay:XY:MULTitrace:Y3:INVert <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:MULTitrace:Y3:INVert?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.8.55 :DISPlay:XY:MULTitrace:Y4:INVert Command / Query

Sets / Queries Y4 axis inversion ON / OFF in multi-trace of XY display.

Command Syntax

:DISPlay:XY:MULTitrace:Y4:INVert <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0

ON	1 (Non-zero)
----	--------------

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:MULTitrace:Y4:INVert?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

**2.5.8.56 :DISPlay:XY:MULTitrace:Y5:INVert
:DISPlay:XY:MULTitrace:MATH:INVert Command / Query**

Sets / Queries Y5 axis inversion ON / OFF in XY display multi-trace.

Two command strings, “:DISPlay:XY:MULTitrace:Y5:INVert” and “:DISPlay:XY:MULTitrace:MATH:INVert” are exactly the same operation, only the difference in the command string.

Command Syntax

:DISPlay:XY:MULTitrace:Y5:INVert <off_on>

:DISPlay:XY:MULTitrace:MATH:INVert <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:MULTitrace:Y5:INVert?

:DISPlay:XY:MULTitrace:MATH:INVert?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.8.57 :DISPlay:XY:MULTitrace:Y1:VISible Command / Query

Sets / Queries Y1 trace display ON / OFF in multi-trace of XY display.

Command Syntax

:DISPlay:XY:MULTItrace:Y1:VISIble <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:MULTItrace:Y1:VISIble?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.8.58 :DISPlay:XY:MULTItrace:Y2:VISIble Command / Query

Sets / Queries Y2 trace display ON / OFF in multi-trace of XY display.

Command Syntax

:DISPlay:XY:MULTItrace:Y2:VISIble <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:MULTItrace:Y2:VISIble?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.8.59 :DISPlay:XY:MULTItrace:Y3:VISIble Command / Query

Sets / Queries Y3 trace display ON / OFF in multi-trace of XY display.

Command Syntax

:DISPlay:XY:MULTItrace:Y3:VISIble <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:MULTItrace:Y3:VISIble?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.8.60 :DISPlay:XY:MULTItrace:Y4:VISIble Command / Query

Sets / Queries Y4 trace display ON / OFF in multi-trace of XY display.

Command Syntax

:DISPlay:XY:MULTItrace:Y4:VISIble <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:MULTItrace:Y4:VISIble?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.8.61 :DISPlay:XY:MULTItrace:Y5:VISIble :DISPlay:XY:MULTItrace:MATH:VISIble Command / Query

Sets / Queries Y5 trace display ON / OFF in multi-trace of XY display.

Two command strings, “:DISPlay:XY:MUlTitrace:Y5:VISIble” and “:DISPlay:XY:MUlTitrace:MATH:VISIble” are exactly the same operation, only the difference in the command string.

Command Syntax

:DISPlay:XY:MUlTitrace:Y5:VISIble <off_on>
 :DISPlay:XY:MUlTitrace:MATH:VISIble <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:XY:MUlTitrace:Y5:VISIble?
 :DISPlay:XY:MUlTitrace:MATH:VISIble?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.
 0 means OFF and 1 means ON.

2.5.8.62 :DISPlay:XY:MUlTitrace:ACTive Command / Query

Sets / Queries active Y-axis in multi-trace of XY display.

Command Syntax

:DISPlay:XY:MUlTitrace:ACTive <active_trace>

<active_trace>

<CHARACTER PROGRAM DATA>	Description of settings
TRACE1	Set the Y1 axis to active trace.
TRACE2	Set the Y2 axis to active trace.
TRACE3	Set the Y3 axis to active trace.
TRACE4	Set the Y4 axis to active trace.
TRACE5	Set the Y5 axis to active trace.

Query Syntax

:DISPlay:XY:MUlTitrace:ACTive?

Response message <active_trace>

<active_trace> is <CHARACTER RESPONSE DATA> format.

2.5.8.63 :DISPlay:YT:RANGe:AUTO Command / Query

Sets / Queries the auto range ON / OFF in the YT display.

Command Syntax

:DISPlay:YT:RANGe:AUTO <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:YT:RANGe:AUTO?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.8.64 :DISPlay:YT:RANGe:ZERO Command / Query

Sets / Queries the zero point display ON / OFF in the YT display.

Command Syntax

:DISPlay:YT:RANGe:ZERO <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:YT:RANGe:ZERO?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.8.65 :DISPlay:YT:RANGe:AutoSCaLe Command

The range and offset position of all axes in the YT display are automatically set.

Command Syntax

:DISPlay:XY:RANGe:AutoSCaLe

2.5.8.66 :DISPlay:YT:DRAIN_V:RANGe :DISPlay:YT:COLLECTOR_V:RANGe :DISPlay:YT:VDS:RANGe :DISPlay:YT:VCE:RANGe Command / Query

Sets / Queries the display range of the Drain / Collector Supply voltage waveform of the YT display.

Sets the range to a value equivalent to 1 DIV (scale).

Four command strings, ":DISPlay:YT:DRAIN_V:RANGe",

":DISPlay:YT:COLLECTOR_V:RANGe", ":DISPlay:YT:VDS:RANGe" and

":DISPlay:YT:VCE:RANGe" are exactly the same operation, only the difference in the command string.

Command Syntax

:DISPlay:YT:DRAIN_V:RANGe <range>

:DISPlay:YT:COLLECTOR_V:RANGe <range>

:DISPlay:YT:VDS:RANGe <range>

:DISPlay:YT:VCE:RANGe <range>

<range>

<DECIMAL NUMERIC PROGRAM DATA>	Resolution
1.0E-3 to 1.0E+3	1, 2, 5 Step

Remarks

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error is occurs.

Query Syntax

:DISPlay:YT:DRAIN_V:RANGe?

:DISPlay:YT:COLLECTOR_V:RANGe?

:DISPlay:YT:VDS:RANGe?

:DISPlay:YT:VCE:RANGe?

Response message <range>

<range> is the <NR3 NUMERIC RESPONSE DATA> format.

2.5.8.67 :DISPlay:YT:DRAIN_I:RANGe :DISPlay:YT:COLLECTOR_I:RANGe

:DISPlay:YT:ID:RANGe
:DISPlay:YT:IC:RANGe Command / Query

Sets / Queries the display range of the Drain / Collector Supply current waveform of the YT display.

Sets the range to a value equivalent to 1 DIV (scale)

Four command strings, ":DISPlay:YT:DRAIN_I:RANGe", ":DISPlay:YT:COLLECTOR_I:RANGe", ":DISPlay:YT:ID:RANGe" and ":DISPlay:YT:IC:RANGe" are exactly the same operation, only the difference in the command string.

Command Syntax

:DISPlay:YT:DRAIN_I:RANGe <range>

:DISPlay:YT:COLLECTOR_I:RANGe <range>

:DISPlay:YT:ID:RANGe <range>

:DISPlay:YT:IC:RANGe <range>

<range>

<DECIMAL NUMERIC PROGRAM DATA>	Resolution
1.0E-12 to 1.0E+3	1, 2, 5 Step

Remarks

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error is occurs.

Query Syntax

:DISPlay:YT:DRAIN_I:RANGe?

:DISPlay:YT:COLLECTOR_I:RANGe?

:DISPlay:YT:ID:RANGe?

:DISPlay:YT:IC:RANGe?

Response message <range>

<range> is the <NR3 NUMERIC RESPONSE DATA> format.

2.5.8.68 :DISPlay:YT:GATE_V:RANGe
:DISPlay:YT:BASE_V:RANGe
:DISPlay:YT:VGS:RANGe
:DISPlay:YT:VBE:RANGe Command / Query

Sets / Queries the display range of the Gate / Base Supply voltage waveform of the YT display.

Sets the range to a value equivalent to 1 DIV (scale).

Four command strings, ":DISPlay:YT:GATE_V:RANGe", ":DISPlay:YT:BASE_V:RANGe", ":DISPlay:YT:VGS:RANGe" and ":DISPlay:YT:VBE:RANGe" are exactly the same operation, only the difference in the command string.

Command Syntax

:DISPlay:YT:GATE_V:RANGe <range>
:DISPlay:YT:BASE_V:RANGe <range>
:DISPlay:YT:VGS:RANGe <range>
:DISPlay:YT:VBE:RANGe <range>

<range>

<DECIMAL NUMERIC PROGRAM DATA>	Resolution
1.0E-3 to 1.0E+3	1, 2, 5 Step

Remarks

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error is occurs.

Query Syntax

:DISPlay:YT:GATE_V:RANGe?
:DISPlay:YT:BASE_V:RANGe?
:DISPlay:YT:VGS:RANGe?
:DISPlay:YT:VBE:RANGe?

Response message <range>

<range> is the <NR3 NUMERIC RESPONSE DATA> format.

2.5.8.69 :DISPlay:YT:GATE_I:RANGe :DISPlay:YT:BASE_I:RANGe :DISPlay:YT:IG:RANGe :DISPlay:YT:IB:RANGe Command / Query

Sets / Queries the display range of the Gate / Base Supply current waveform of the YT display.

Sets the range to a value equivalent to 1 DIV (scale).

Four command strings, ":DISPlay:YT:GATE_I:RANGe", ":DISPlay:YT:BASE_I:RANGe", ":DISPlay:YT:IG:RANGe" and ":DISPlay:YT:IB:RANGe" are exactly the same operation, only the difference in the command string.

Command Syntax

:DISPlay:YT:GATE_I:RANGe <range>
:DISPlay:YT:BASE_I:RANGe <range>
:DISPlay:YT:IG:RANGe <range>
:DISPlay:YT:IB:RANGe <range>

<range>

<DECIMAL NUMERIC PROGRAM DATA>	Resolution
1.0E-12 to 1.0E+3	1, 2, 5 Step

Remarks

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error is occurs.

Query Syntax

:DISPlay:YT:GATE_I:RANGe?

:DISPlay:YT:BASE_I:RANGe?

:DISPlay:YT:IG:RANGe?

:DISPlay:YT:IB:RANGe?

Response message <range>

<range> is the <NR3 NUMERIC RESPONSE DATA> format.

**2.5.8.70 :DISPlay:YT:SMU_V:RANGe
:DISPlay:YT:VSMU:RANGe Command / Query**

Sets / Queries the display range of the SMU voltage waveform of the YT display.

Sets the range to a value equivalent to 1 DIV (scale).

Two command strings, ":DISPlay:YT:SMU_V:RANGe" and ":DISPlay:YT:VSMU:RANGe" are exactly the same operation, only the difference in the command string.

Command Syntax

:DISPlay:YT:SMU_V:RANGe <range>

:DISPlay:YT:VSMU:RANGe <range>

<range>

<DECIMAL NUMERIC PROGRAM DATA>	Resolution
1.0E-3 to 1.0E+3	1, 2, 5 Step

Remarks

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error is occurs.

Query Syntax

:DISPlay:YT:SMU_V:RANGe?

:DISPlay:YT:VSMU:RANGe?

Response message <range>

<range> is the <NR3 NUMERIC RESPONSE DATA> format.

2.5.8.71 :DISPlay:YT:SMU_I:RANGe
:DISPlay:YT:ISMU:RANGe Command / Query

Sets / Queries the display range of the SMU current waveform of the YT display.
Sets the range to a value equivalent to 1 DIV (scale).
Two command strings, ":DISPlay:YT:SMU_I:RANGe" and ":DISPlay:YT:ISMU:RANGe" are exactly the same operation, only the difference in the command string.

Command Syntax

:DISPlay:YT:SMU_I:RANGe <range>
:DISPlay:YT:ISMU:RANGe <range>

<range>

<DECIMAL NUMERIC PROGRAM DATA>	Resolution
1.0E-12 to 1.0E+3	1, 2, 5 Step

Remarks

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error is occurs.

Query Syntax

:DISPlay:YT:SMU_I:RANGe?
:DISPlay:YT:ISMU:RANGe?

Response message <range>

<range> is the <NR3 NUMERIC RESPONSE DATA> format.

2.5.8.72 :DISPlay:YT:SE_I:RANGe
:DISPlay:YT:ISS:RANGe
:DISPlay:YT:ISE RANGe Command / Query

Sets / Queries the display range of the SEMU current waveform of the YT display.
Sets the range to a value equivalent to 1 DIV (scale).
Three command strings, ":DISPlay:YT:SE_I:RANGe", ":DISPlay:YT:ISS:RANGe" and ":DISPlay:YT:ISE:RANGe" are exactly the same operation, only the difference in the command string.

Command Syntax

:DISPlay:YT:SE_I:RANGe <range>
:DISPlay:YT:ISS:RANGe <range>
:DISPlay:YT:ISE:RANGe <range>

<range>

<DECIMAL NUMERIC PROGRAM DATA>	Resolution
1.0E-12 to 1.0E+3	1, 2, 5 Step

Remarks

Values outside the range are rounded to maximum or minimum values, resulting in an execution error.

Values other than the specified value are rounded to the larger value. No execution error is occurs.

Query Syntax

:DISPlay:YT:SE_I:RANGe?

:DISPlay:YT:ISS:RANGe?

:DISPlay:YT:ISE:RANGe?

Response message <range>

<range> is the <NR3 NUMERIC RESPONSE DATA> format.

**2.5.8.73 :DISPlay:YT:DRAIN_V:POSition
:DISPlay:YT:COLLECTOR_V:POSition
:DISPlay:YT:VDS:POSition
:DISPlay:YT:VCE:POSition Command / Query**

Sets / Queries the display offset position of the Drain / Collector Supply voltage waveform of YT display in DIV (scale) units.

Four command strings, ":DISPlay:YT:DRAIN_V:POSition",

":DISPlay:YT:COLLECTOR_V:POSition", ":DISPlay:YT:VDS:POSition" and

":DISPlay:YT:VCE:POSition" are exactly the same operation, only the difference in the command string.

Command Syntax

:DISPlay:YT:DRAIN_V:POSition <position>

:DISPlay:YT:COLLECTOR_V:POSition <position>

:DISPlay:YT:VDS:POSition <position>

:DISPlay:YT:VCE:POSition <position>

< position>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
-1000 to 1000	1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

Query Syntax

:DISPlay:YT:DRAIN_V:POSition?

:DISPlay:YT:COLLECTOR_V:POSition?

:DISPlay:YT:VDS:POSition?

:DISPlay:YT:VCE:POSition?

Response message <position>

<position> is a number in <NR1 NUMERIC RESPONSE DATA> format.

**2.5.8.74 :DISPlay:YT:DRAIN_I:POSition
:DISPlay:YT:COLLECTOR_I:POSition
:DISPlay:YT:ID:POSition
:DISPlay:YT:IC:POSition Command / Query**

Sets / Queries the display offset position of the Drain / Collector Supply current waveform of YT display in DIV (scale) units.

Four command strings, ":DISPlay:YT:DRAIN_I:POSition",

":DISPlay:YT:COLLECTOR_I:POSition", ":DISPlay:YT:ID:POSition" and

":DISPlay:YT:IC:POSition" are exactly the same operation, only the difference in the command string.

Command Syntax

:DISPlay:YT:DRAIN_I:POSition <position>

:DISPlay:YT:COLLECTOR_I:POSition <position>

:DISPlay:YT:ID:POSition <position>

:DISPlay:YT:IC:POSition <position>

< position>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
-1000 to 1000	1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

Query Syntax

:DISPlay:YT:DRAIN_I:POSition?

:DISPlay:YT:COLLECTOR_I:POSition?

:DISPlay:YT:ID:POSition?

:DISPlay:YT:IC:POSition?

Response message <position>

<position> is a number in <NR1 NUMERIC RESPONSE DATA> format.

**2.5.8.75 :DISPlay:YT:GATE_V:POSition
:DISPlay:YT:BASE_V:POSition
:DISPlay:YT:VGS:POSition
:DISPlay:YT:VBE:POSition Command / Query**

Sets / Queries the display offset position of the Gate / Base Supply voltage waveform of YT display in DIV (scale) units.

Four command strings, ":DISPlay:YT:GATE_V:POSition", ":DISPlay:YT:BASE_V:POSition", ":DISPlay:YT:VGS:POSition" and ":DISPlay:YT:VBE:POSition" are exactly the same operation, only the difference in the command string.

Command Syntax

```
:DISPlay:YT:GATE_V:POSition <position>
:DISPlay:YT:BASE_V:POSition <position>
:DISPlay:YT:VGS:POSition <position>
:DISPlay:YT:VBE:POSition <position>
```

< position>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
-1000 to 1000	1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

Query Syntax

```
:DISPlay:YT:GATE_V:POSition?
:DISPlay:YT:BASE_V:POSition?
:DISPlay:YT:VGS:POSition?
:DISPlay:YT:VBE:POSition?
```

Response message <position>

<position> is a number in <NR1 NUMERIC RESPONSE DATA> format.

2.5.8.76 :DISPlay:YT:GATE_I:POSition :DISPlay:YT:BASE_I:POSition :DISPlay:YT:IG:POSition :DISPlay:YT:IB:POSition Command / Query

Sets / Queries the display offset position of the Gate / Base Supply current waveform of YT display in DIV (scale) units.

Four command strings, ":DISPlay:YT:GATE_I:POSition", ":DISPlay:YT:BASE_I:POSition", ":DISPlay:YT:IG:POSition" and ":DISPlay:YT:IB:POSition" are exactly the same operation, only the difference in the command string.

Command Syntax

```
:DISPlay:YT:GATE_I:POSition <position>
:DISPlay:YT:BASE_I:POSition <position>
:DISPlay:YT:IG:POSition <position>
:DISPlay:YT:IB:POSition <position>
```

< position>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution

-1000 to 1000	1
---------------	---

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

Query Syntax

:DISPlay:YT:GATE_I:POSition?
 :DISPlay:YT:BASE_I:POSition?
 :DISPlay:YT:IG:POSition?
 :DISPlay:YT:IB:POSition?

Response message <position>

<position> is a number in <NR1 NUMERIC RESPONSE DATA> format.

**2.5.8.77 :DISPlay:YT:SMU_V:POSition
 :DISPlay:YT:VSMU:POSition Command / Query**

Sets / Queries the display offset position of the SMU voltage waveform of the YT display in DIV (scale) units.

Two command strings, ":DISPlay:YT:SMU_V:POSition" and ":DISPlay:YT:VSMU:POSition" are exactly the same operation, only the difference in the command string.

Command Syntax

:DISPlay:YT:SMU_V:POSition <position>
 :DISPlay:YT:VSMU:POSition <position>

< position>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
-1000 to 1000	1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

Query Syntax

:DISPlay:YT:SMU_V:POSition?
 :DISPlay:YT:VSMU:POSition?

Response message <position>

<position> is a number in <NR1 NUMERIC RESPONSE DATA> format.

**2.5.8.78 :DISPlay:YT:SMU_I:POSition
 :DISPlay:YT:ISMU:POSition Command / Query**

Sets / Queries the display offset position of the SMU current waveform of the YT display in DIV (scale) units.

Two command strings, ":DISPlay:YT:SMU_I:POSition" and ":DISPlay:YT:ISMU:POSition" are exactly the same operation, only the difference in the command string.

Command Syntax

:DISPlay:YT:SMU_I:POSition <position>
 :DISPlay:YT:ISMU:POSition <position>

< position>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
-1000 to 1000	1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

Query Syntax

:DISPlay:YT:SMU_I:POSition?
 :DISPlay:YT:ISMU:POSition?

Response message <position>

<position> is a number in <NR1 NUMERIC RESPONSE DATA> format.

**2.5.8.79 :DISPlay:YT:SE_I:POSition
 :DISPlay:YT:ISS:POSition
 :DISPlay:YT:ISE:POSition Command / Query**

Sets / Queries the display offset position of the SEMU current waveform of the YT display in DIV (scale) units.

Three command strings, ":DISPlay:YT:SE_I:POSition", ":DISPlay:YT:ISS:POSition" and ":DISPlay:YT:ISE:POSition" are exactly the same operation, only the difference in the command string.

Command Syntax

:DISPlay:YT:SE_I:POSition <position>
 :DISPlay:YT:ISS:POSition <position>
 :DISPlay:YT:ISE:POSition <position>

< position>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
-1000 to 1000	1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

Query Syntax

:DISPlay:YT:SE_I:POSition?
:DISPlay:YT:ISS:POSition?
:DISPlay:YT:ISE:POSition?

Response message <position>

<position> is a number in <NR1 NUMERIC RESPONSE DATA> format.

2.5.8.80 :DISPlay:YT:DRAIN_V:VISible :DISPlay:YT:COLLECTOR_V:VISible :DISPlay:YT:VDS:VISible :DISPlay:YT:VCE:VISible Command / Query

Sets / Queries the waveform display ON / OFF of Drain / Collector Supply voltage in YT display. Four command strings, “:DISPlay:YT:DRAIN_V:VISible”, “:DISPlay:YT:COLLECTOR_V:VISible”, “:DISPlay:YT:VDS:VISible” and “:DISPlay:YT:VCE:VISible” are exactly the same operation, only the difference in the command string.

Command Syntax

:DISPlay:YT:DRAIN_V:VISible <off_on>
:DISPlay:YT:COLLECTOR_V:VISible <off_on>
:DISPlay:YT:VDS:VISible <off_on>
:DISPlay:YT:VCE:VISible <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:YT:DRAIN_V:VISible?
:DISPlay:YT:COLLECTOR_V:VISible?
:DISPlay:YT:VDS:VISible?
:DISPlay:YT:VCE:VISible?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.8.81 :DISPlay:YT:DRAIN_I:VISible :DISPlay:YT:COLLECTOR_I:VISible

:DISPlay:YT:ID:VISIble
:DISPlay:YT:IC:VISIble Command / Query

Sets / Queries the waveform display ON / OFF of Drain / Collector Supply current in YT display. Four command strings, ":DISPlay:YT:DRAIN_I:VISIble", ":DISPlay:YT:COLLECTOR_I:VISIble", ":DISPlay:YT:ID:VISIble" and ":DISPlay:YT:IC:VISIble" are exactly the same operation, only the difference in the command string.

Command Syntax

:DISPlay:YT:DRAIN_I:VISIble <off_on>
:DISPlay:YT:COLLECTOR_I:VISIble <off_on>
:DISPlay:YT:ID:VISIble <off_on>
:DISPlay:YT:IC:VISIble <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:YT:DRAIN_I:VISIble?
:DISPlay:YT:COLLECTOR_I:VISIble?
:DISPlay:YT:ID:VISIble?
:DISPlay:YT:IC:VISIble?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.
0 means OFF and 1 means ON.

2.5.8.82 :DISPlay:YT:GATE_V:VISIble
:DISPlay:YT:BASE_V:VISIble
:DISPlay:YT:VGS:VISIble
:DISPlay:YT:VBE:VISIble Command / Query

Sets / Queries the waveform display ON / OFF of Gate / Base Supply voltage in YT display. Four command strings, ":DISPlay:YT:GATE_V:VISIble", ":DISPlay:YT:BASE_V:VISIble", ":DISPlay:YT:VGS:VISIble" and ":DISPlay:YT:VBE:VISIble" are exactly the same operation, only the difference in the command string.

Command Syntax

:DISPlay:YT:GATE_V:VISIble <off_on>
:DISPlay:YT:BASE_V:VISIble <off_on>
:DISPlay:YT:VGS:VISIble <off_on>

:DISPlay:YT:VBE:VISIble <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:YT:GATE_V:VISIble?

:DISPlay:YT:BASE_V:VISIble?

:DISPlay:YT:VGS:VISIble?

:DISPlay:YT:VBE:VISIble?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

**2.5.8.83 :DISPlay:YT:GATE_I:VISIble
:DISPlay:YT:BASE_I:VISIble
:DISPlay:YT:IG:VISIble
:DISPlay:YT:IB:VISIble Command / Query**

Sets / Queries the waveform display ON / OFF of Gate / Base Supply current in YT display.

Four command strings, ":DISPlay:YT:GATE_I:VISIble", ":DISPlay:YT:BASE_I:VISIble",

":DISPlay:YT:IG:VISIble" and ":DISPlay:YT:IB:VISIble" are exactly the same operation, only the difference in the command string.

Command Syntax

:DISPlay:YT:GATE_I:VISIble <off_on>

:DISPlay:YT:BASE_I:VISIble <off_on>

:DISPlay:YT:IG:VISIble <off_on>

:DISPlay:YT:IB:VISIble <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:YT:GATE_I:VISible?
:DISPlay:YT:BASE_I:VISible?
:DISPlay:YT:IG:VISible?
:DISPlay:YT:IB:VISible?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.
0 means OFF and 1 means ON.

**2.5.8.84 :DISPlay:YT:SMU_V:VISible
:DISPlay:YT:VSMU:VISible Command / Query**

Sets / Queries the waveform display ON / OFF of SMU voltage in YT display.
Two command strings, ":DISPlay:YT:SMU_V:VISible" and ":DISPlay:YT:VSMU:VISible" are exactly the same operation, only the difference in the command string.

Command Syntax

:DISPlay:YT:SMU_V:VISible <off_on>
:DISPlay:YT:VSMU:VISible <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:YT:SMU_V:VISible?
:DISPlay:YT:VSMU:VISible?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.
0 means OFF and 1 means ON.

**2.5.8.85 :DISPlay:YT:SMU_I:VISible
:DISPlay:YT:ISMU:VISible Command / Query**

Sets / Queries the waveform display ON / OFF of SMU current in YT display.
Two command strings, ":DISPlay:YT:SMU_I:VISible" and ":DISPlay:YT:ISMU:VISible" are exactly the same operation, only the difference in the command string.

Command Syntax

:DISPlay:YT:SMU_I:VISible <off_on>

:DISPlay:YT:ISMU:VISIble <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:YT:SMU_I:VISIble?

:DISPlay:YT:ISMU:VISIble?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

**2.5.8.86 :DISPlay:YT:SE_I:VISIble
:DISPlay:YT:ISS:VISIble
:DISPlay:YT:ISE:VISIble Command / Query**

Sets / Queries the waveform display ON / OFF of SEMU current in YT display.

Three command strings, ":DISPlay:YT:SE_I:VISIble", ":DISPlay:YT:ISS:VISIble" and

":DISPlay:YT:ISE:VISIble" are exactly the same operation, only the difference in the command string.

Command Syntax

:DISPlay:YT:SE_I:VISIble <off_on>

:DISPlay:YT:ISS:VISIble <off_on>

:DISPlay:YT:ISE:VISIble <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:DISPlay:YT:SE_I:VISIble?

:DISPlay:YT:ISS:VISIble?

:DISPlay:YT:ISE:VISIble?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.8.87 :DISPlay:YT:CURsor Command / Query

Sets / Queries the position of the time cursor on the YT screen.

Command Syntax

:DISPlay:YT:CURsor <cursor_position>

<cursor_position>

Drain/Collector Supply mode	<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
Drain / Collector Supply or Gate / Base Supply Either mode is AC	0.0E+0 to 19.98E-3	0.02E-3
Drain / Collector Supply or Gate / Base Supply Either mode is RECTIFIED SIN	0.0E+0 to 9.99E-3	0.01E-3
Drain / Collector Supply or Gate / Base Supply Either mode is PULSE or PULSE (LONG)	It varies depending on the shorter pulse width setting of Drain / Collector Supply and Gate / Base Supply. Refer to the time cursor setting range table (PULSE mode)	
Both Drain / Collector Supply and Gate / Base Supply Mode is DC or unused	It varies depending on the MEAS.TIME setting. Refer to the time cursor setting range table (DC mode)	

Time cursor setting range table (PULSE mode)

PULSE WIDTH	<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
Up to 80.0E-6	-10.0E-6 to 89.9E-6	0.1E-6
Up to 0.16E-3	-20.0E-6 to 179.8E-6	0.2E-6
Up to 0.4E-3	-50.0E-6 to 449.5E-6	0.5E-6
Up to 0.8E-3	-100E-6 to 899E-6	1E-6
Up to 1.6E-3	-0.2E-3 to 1.798E-3	0.002E-3
Up to 4.0E-3	-0.5E-3 to 4.495E-3	0.005E-3
Up to 8.0E-3	-1.0E-3 to 8.99E-3	0.01E-3
Up to 16.0E-3	-2.0E-3 to 17.98E-3	0.02E-3
Up to 40.0E-3	-5.0E-3 to 44.95E-3	0.05E-3
Up to 80.0E-3	-10.0E-3 to 89.9E-3	0.1E-3
Up to 0.16E+0	-20.0E-3 to 179.8E-3	0.2E-3
Up to 0.4E+0	-50.0E-3 to 449.5E-3	0.5E-3
Up to 0.8E+0	-100E-3 to 899E-3	1E-3
Up to 1.6E+0	-0.2E+0 to 1.798E+0	0.002E+0

Time cursor setting range table (DC mode)

MEAS.TIME	<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
Up to 0.1E-3	0.0E-6 to 99.9E-6	0.1E-6
Up to 0.2E-3	0.0E-6 to 199.8E-6	0.2E-6
Up to 0.5E-3	0.0E-6 to 499.5E-6	0.5E-6
Up to 1.0E-3	0.0E-6 to 999E-6	1E-6
Up to 2.0E-3	0.0E-3 to 1.998E-3	0.002E-3

Up to 5.0E-3	0.0E-3 to 4.995E-3	0.005E-3
Up to 10.0E-3	0.0E-3 to 9.99E-3	0.01E-3
Up to 20.0E-3	0.0E-3 to 19.98E-3	0.02E-3
Up to 50.0E-3	0.0E-3 to 49.95E-3	0.05E-3
Up to 0.1E+0	0.0E-3 to 99.9E-3	0.1E-3
Up to 0.2E+0	0.0E-3 to 199.8E-3	0.2E-3
Up to 0.5E+0	0.0E-3 to 499.5E-3	0.5E-3
Up to 1.0E+0	0.0E-3 to 999E-3	1E-3
Up to 2.0E+0	0.0E+0 to 1.998E+0	0.002E+0

Query Syntax

:DISPlay:YT:CURsor?

Response message <cursor_position>

<cursor_position> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.9 :MATH Sub-system (MATH calculation related)

2.5.9.1 :MATH:TYPE Command / Query

Sets / Queries the calculation type of MATH data.

Command Syntax

:MATH:TYPE <math_type>

<math_type>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
OFF	–	Not calculate
RON	–	ON resistance value (Drain/Collector Supply voltage divided by current)
REF_DRAIN_V	REF_COLLECTOR_V	Drain/Collector Supply voltage – Reference
REF_DRAIN_I	REF_COLLECTOR_I	Drain/Collector Supply current – Reference
REF_GATE_V	REF_BASE_V	Gate/Base Supply voltage – Reference
REF_GATE_I	REF_BASE_I	Gate/Base Supply current – Reference
REF_SMU_V	–	SMU voltage – Reference
REF_SMU_I	–	SMU current – Reference
REF_SE_I	–	SEMU current – Reference

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:MATH:TYPE?

Response message <math_type>

<math_type> returns a standard name in <CHARACTER RESPONSE DATA> format.

2.5.9.2 :MATH:REFERENCE:VISIBLE Command / Query

Sets / Queries the MATH REFERENCE waveform (set as MATH reference data) display in the XY screen ON/OFF.

Command Syntax

:MATH:REFERENCE:VISIBLE <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

Under the following conditions, setting it to ON will result in an execution error without doing anything.

MATH is not assigned to the Y-axis (MATH-axis in multi-trace) in the XY screen.

MATH type is set to OFF or RON.

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:MATH:REFERENCE:VISIBLE?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.9.3 :MATH:REFERENCE:STATUS Query

Queries the status of the REFERENCE waveform used as reference data when the MATH type is reference.

Query Syntax

:MATH:REFERENCE:STATUS?

Response message <ref_status>

<CHARACTER RESPONSE DATA>	Description of status
EMPTY	REFERENCE Waveform data not set.
LOADED	REFERENCE Waveform is set and MATH calculation is valid. (REFERENCE Waveform data has the target data for X-axis and Y-axis (or MATH calculation).)
INVALID	REFERENCE waveform is set, but MATH operation is invalid. (REFERENCE Waveform data has no the target data for X-axis or Y-axis (or MATH calculation), or both.)

<ref_status> is the <CHARACTER RESPONSE DATA> format.

2.5.9.4 :MATH:REFErence:TRANSfer Command

This command transfers the XY waveform data file (*.CSV) saved in the PC to the curve tracer and set as a reference data to be used when the MATH type is reference. This command cannot be used with multi-commands.

Command Syntax

:MATH:REFErence:TRANSfer<delimiter><preamble><ref_file>

<delimiter>

LF or CR+LF

<preamble>

#9xxxxxxxx

xxxxxxxx : 9-digit ASCII character string representing the file size (number of bytes) of <ref_file>

If the number of bytes is less than 9 digits, insert 0 at the beginning to make it 9 digits.

If the file size of <ref_file> is 40,226 bytes, it will be "#9000040226".

<ref_file>

The XY waveform data that can be used are as follows.

- XY waveform data read by :WAVEform:XY:TRANSfer? query
- XY waveform data (*.CSV) saved by :WAVEform:XY:SAVe command
- XY waveform data (*.CSV) saved by operating the curve tracer

Remarks

Send this command in the following two steps.

Step 1:

Send the ":MATH:REFErence:TRANSfer" command with delimiters without any parameters.

As a result, the main unit is ready to receive XY waveform data (including preambles).

Step 2:

Following the above <preamble>, send <ref_file>

If this command is executed during measurement, an execution error occurs without doing anything.

2.5.9.5 :MATH:REFErence:LOAD Command

Load the XY waveform data file (*.CSV) saved in the external USB memory or internal memory of the curve tracer and set as a reference data to be used when the MATH type is reference.

Command Syntax

:MATH:REFErence:LOAD <storage>,<file_path>

<storage>

<CHARACTER PROGRAM DATA>	Description of settings
INTERNAL	Save to internal memory
USB	Save to external USB memory

<file_path>

<STRING PROGRAM DATA>	Description of settings
<ul style="list-style-type: none">• Available characters Alphabet a-z, A-Z Numbers 0-9 Symbol -. ! @ # \$ % ^ & () +, [] { } ; ~ ` = Blank SP Directory separator /• Enclose in double quotes (“• Extension (“.CSV”) can be omitted	Specify the file name to be saved in the internal memory or external USB memory. The save destination directory can be described with a relative path from the root directory of the media specified by <storage>. The directory separator is “/” (slash).

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

2.5.9.6 :MATH:REFERENCE:CLEAr Command

Clears the REFERENCE data used when the MATH type is a reference.

Command Syntax

:MATH:REFERENCE:CLEAr

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

2.5.10 :LIST Sub-system (DATA LIST display related)

2.5.10.1 :LIST:DRAIN_V :LIST:COLLECTOR_V :LIST:VDS :LIST:VCE Command / Query

Sets / Queries the display ON / OFF of the Drain / Collector Supply voltage measurement value column on the data list screen.

Four command strings, “:LIST:DRAIN_V”, “:LIST:COLLECTOR_V”, “:LIST:VDS” and “:LIST:VCE” are exactly the same operation, only the difference in the command string.

Command Syntax

:LIST:DRAIN_V <off_on>

:LIST:COLLECTOR_V <off_on>

:LIST:VDS <off_on>

:LIST:VCE <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If it is set to ON in a configuration that does not use Drain / Collector Supply, an execution error occurs without doing anything.

If it is set to ON when Drain / Collector Supply voltage is not specified in the acquisition channel setting, an execution error occurs without doing anything.

Query Syntax

:LIST:DRAIN_V?

:LIST:COLLECTOR_V?

:LIST:VDS?

:LIST:VCE?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.10.2 :LIST:DRAIN_I :LIST:COLLECTOR_I :LIST:ID :LIST:IC Command / Query

Sets / Queries the display ON / OFF of the Drain / Collector Supply current measurement value column on the data list screen.

Four command strings, “:LIST:DRAIN_I”, “:LIST:COLLECTOR_I”, “:LIST:ID” and “:LIST:IC” are exactly the same operation, only the difference in the command string.

Command Syntax

:LIST:DRAIN_I <off_on>

:LIST:COLLECTOR_I <off_on>

:LIST:ID <off_on>

:LIST:IC <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If it is set to ON in a configuration that does not use Drain / Collector Supply, an execution error occurs without doing anything.

If it is set to ON when Drain / Collector Supply current is not specified in the acquisition channel setting, an execution error occurs without doing anything.

Query Syntax

:LIST:DRAIN_I?

:LIST:COLLECTOR_I?

:LIST:ID?

:LIST:IC?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

**2.5.10.3 :LIST:GATE_V
:LIST:BASE_V
:LIST:VGS
:LIST:VBE Command / Query**

Sets / Queries the display ON / OFF of the Gate / Base Supply voltage measurement value column on the data list screen.

Four command strings, ":LIST:GATE_V", ":LIST:BASE_V", ":LIST:VGS" and ":LIST:VBE" are exactly the same operation, only the difference in the command string.

Command Syntax

:LIST:GATE_V <off_on>

:LIST:BASE_V <off_on>

:LIST:VGS <off_on>

:LIST:VBE <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If it is set to ON in a configuration that does not use Gate / Base Supply, an execution error occurs without doing anything.

If it is set to ON when Gate / Base Supply voltage is not specified in the acquisition channel setting, an execution error occurs without doing anything.

Query Syntax

:LIST:GATE_V?

:LIST:BASE_V?

:LIST:VGS?
:LIST:VBE?

Response message <off_on>
<off_on> is <NR1 NUMERIC RESPONSE DATA> format.
0 means OFF and 1 means ON.

2.5.10.4 :LIST:GATE_I
:LIST:BASE_I
:LIST:IG
:LIST:IB Command / Query

Sets / Queries the display ON / OFF of the Gate / Base Supply current measurement value column on the data list screen.

Four command strings, ":LIST:GATE_I", ":LIST:BASE_I", ":LIST:IG" and ":LIST:IB" are exactly the same operation, only the difference in the command string.

Command Syntax

:LIST:GATE_I <off_on>
:LIST:BASE_I <off_on>
:LIST:IG <off_on>
:LIST:IB <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If it is set to ON in a configuration that does not use Gate / Base Supply, an execution error occurs without doing anything.

If it is set to ON when Gate / Base Supply current is not specified in the acquisition channel setting, an execution error occurs without doing anything.

Query Syntax

:LIST:GATE_I?
:LIST:BASE_I?
:LIST:IG?
:LIST:IB?

Response message <off_on>
<off_on> is <NR1 NUMERIC RESPONSE DATA> format.
0 means OFF and 1 means ON.

**2.5.10.5 :LIST:SMU_V
:LIST:VSMU Command / Query**

Sets / Queries the display ON / OFF of the SMU (optional external unit) voltage measurement value column on the data list screen.

Two command strings, ":LIST:SMU_V" and ":LIST:VSMU" are exactly the same operation, only the difference in the command string.

Command Syntax

:LIST:SMU_V <off_on>

:LIST:VSMU <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If it is set to ON when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

If it is set to ON when SMU voltage is not specified in the acquisition channel setting, an execution error occurs without doing anything.

Query Syntax

:LIST:SMU_V?

:LIST:VSMU?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

**2.5.10.6 :LIST:SMU_I
:LIST:ISMU Command / Query**

Sets / Queries the display ON / OFF of the SMU (optional external unit) current measurement value column on the data list screen.

Two command strings, ":LIST:SMU_I" and ":LIST:ISMU" are exactly the same operation, only the difference in the command string.

Command Syntax

:LIST:SMU_I <off_on>

:LIST:ISMU <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If it is set to ON when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

If it is set to ON when SMU current is not specified in the acquisition channel setting, an execution error occurs without doing anything.

Query Syntax

:LIST:SMU_I?

:LIST:ISMU?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.10.7 :LIST:SE_I

:LIST:ISE

:LIST:ISS Command / Query

Sets / Queries the display ON / OFF of the SEMU (optional external unit) current measurement value column on the data list screen.

Three command strings, ":LIST:SE_I", ":LIST:ISE" and ":LIST:ISS" are exactly the same operation, only the difference in the command string.

Command Syntax

:LIST:SE_I <off_on>

:LIST:ISE <off_on>

:LIST:ISS <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If it is set to ON when SEMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

If it is set to ON when SEMU current is not specified in the acquisition channel setting, an execution error occurs without doing anything.

Query Syntax

:LIST:SE_I?

:LIST:ISE?

:LIST:ISS?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.10.8 :LIST:MATH :LIST:RON Command / Query

Sets / Queries the display ON / OFF of the MATH calculation value column on the data list screen.

Two command strings, ":LIST:MATH" and ":LIST:RON" are exactly the same operation, only the difference in the command string.

Command Syntax

:LIST:MATH <off_on>

:LIST:RON <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If the MATH type is set to OFF, setting it to ON will result in an execution error without doing anything.

Query Syntax

:LIST:MATH?

:LIST:RON?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.10.9 :LIST:PRImary :LIST:PrimaryOUTput Command / Query

Sets / Queries the display ON / OFF of the primary output value column on the data list screen.

The primary output value is the output setting value of the power supply assigned to the Primary Sweep.

Two command strings, ":LIST:PRImary" and ":LIST:PrimaryOUTput" are exactly the same operation, only the difference in the command string.

Command Syntax

:LIST:PRImary <off_on>

:LIST:PrimaryOUTput <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Query Syntax

:LIST:PRImary?

:LIST:PrimaryOUTput?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.10.10 :LIST:SECondary :LIST:SecondaryOUTput Command / Query

Sets / Queries the display ON / OFF of the secondary output value column on the data list screen.

The secondary output value is the output setting value of the power supply assigned to the Secondary Sweep.

Two command strings, ":LIST:SECondary" and ":LIST:SecondaryOUTput" are exactly the same operation, only the difference in the command string.

Command Syntax

:LIST:SECondary <off_on>

:LIST:SecondaryOUTput <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If it is set to ON in a configuration that uses only one power supply, an execution error occurs without doing anything.

Query Syntax

:LIST:SECondary?

:LIST:SecondaryOUTput?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.10.11 :LIST:CONStant :LIST:ConstantOUTput Command / Query

Sets / Queries the display ON / OFF of the constant output value column on the data list screen.
The constant output value is the output setting value of the power supply that is not assigned to a Primary Sweep or Secondary Sweep when the SMU (optional external unit) is in use.

Two command strings, ":LIST:CONStant" and ":LIST:ConstantOUTput" are exactly the same operation, only the difference in the command string.

Command Syntax

:LIST:CONStant <off_on>
:LIST:ConstantOUTput <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If it is set to ON when SMU is not enabled in the CONFIG setting, an execution error occurs without doing anything.

Query Syntax

:LIST:CONStant?
:LIST:ConstantOUTput?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.10.12 :LIST:MARKer:VISIble Command / Query

Sets / Queries ON / OFF of the marker display on the XY screen of the data list selection line.

Command Syntax

:LIST:MARKer:VISIble <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Query Syntax

:LIST:MARKer:VISIble?

Response message <off_on>
<off_on> is <NR1 NUMERIC RESPONSE DATA> format.
0 means OFF and 1 means ON.

2.5.10.13 :LIST:MARKer:SecondaryInDeX Command / Query

Sets / Queries the secondary index of the marker specified row.

Command Syntax

:LIST:MARKer:SecondaryInDeX <index>

<index>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
0 to 1000	1

Remarks

If you specify an Index that does not have valid data, it will be rounded to a value in the range where valid data exists, resulting in an execution error.

Query Syntax

:LIST:MARKer:SecondaryInDeX?

Response message <index>

<index> is a number in <NR1 NUMERIC RESPONSE DATA> format.

2.5.10.14 :LIST:MARKer:PrimaryInDeX Command / Query

Sets / Queries the primary index of the marker specified row.

Command Syntax

:LIST:MARKer:PrimaryInDeX <index>

<index>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
0 to 40001	1

Remarks

If you specify an Index that does not have valid data, it will be rounded to a value in the range where valid data exists, resulting in an execution error.

Query Syntax

:LIST:MARKer:PrimaryInDeX?

Response message <index>

<index> is a number in <NR1 NUMERIC RESPONSE DATA> format.

2.5.10.15 :LIST:MARKer:X Query

Queries the value in the marker specified line of the data assigned to the X-axis source on the XY screen.

Query Syntax

:LIST:MARKer:X?

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.10.16 :LIST:MARKer:Y Query

Queries the value in the marker specified row of the data assigned to the Y-axis source on the XY screen. For multi-trace display, the active Y-axis is the target.

Query Syntax

:LIST:MARKer:Y?

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.10.17 :LIST:MARKer:DRAIN_V :LIST:MARKer:COLLECTOR_V :LIST:MARKer:VDS :LIST:MARKer:VCE Query

Queries the Drain / Collector Supply voltage measurement value in the marker specification line. Four command strings, “:LIST:MARKer:DRAIN_V”, “:LIST:MARKer:COLLECTOR_V”, “:LIST:MARKer:VDS” and “:LIST:MARKer:VCE” are exactly the same operation, only the difference in the command string.

Query Syntax

:LIST:MARKer:DRAIN_V?

:LIST:MARKer:COLLECTOR_V?

:LIST:MARKer:VDS?

:LIST:MARKer:VCE?

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.10.18 :LIST:MARKer:DRAIN_I
:LIST:MARKer:COLLECTOR_I
:LIST:MARKer:ID
:LIST:MARKer:IC Query

Queries the Drain / Collector Supply current measurement value in the marker specification line. Four command strings, “:LIST:MARKer:DRAIN_I”, “:LIST:MARKer:COLLECTOR_I”, “:LIST:MARKer:ID” and “:LIST:MARKer:IC” are exactly the same operation, only the difference in the command string.

Query Syntax

:LIST:MARKer:DRAIN_I?
:LIST:MARKer:COLLECTOR_I?
:LIST:MARKer:ID?
:LIST:MARKer:IC?

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.10.19 :LIST:MARKer:GATE_V
:LIST:MARKer:BASE_V
:LIST:MARKer:VGS
:LIST:MARKer:VBE Query

Queries the Gate / Base Supply voltage measurement value in the marker specification line. Four command strings, “:LIST:MARKer:GATE_V”, “:LIST:MARKer:BASE_V”, “:LIST:MARKer:VGS” and “:LIST:MARKer:VBE” are exactly the same operation, only the difference in the command string.

Query Syntax

:LIST:MARKer:GATE_V?
:LIST:MARKer:BASE_V?
:LIST:MARKer:VGS?
:LIST:MARKer:VBE?

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.10.20 :LIST:MARKer:GATE_I
:LIST:MARKer:BASE_I

:LIST:MARKer:IG
:LIST:MARKer:IB Query

Queries the Gate / Base Supply current measurement value in the marker specification line. Four command strings, “:LIST:MARKer:GATE_I”, “:LIST:MARKer:BASE_I”, “:LIST:MARKer:IG” and “:LIST:MARKer:IB” are exactly the same operation, only the difference in the command string.

Query Syntax

:LIST:MARKer:GATE_I?
:LIST:MARKer:BASE_I?
:LIST:MARKer:IG?
:LIST:MARKer:IB?

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.10.21 :LIST:MARKer:SMU_V
:LIST:MARKer:VSMU Query

Queries the SMU (optional external unit) voltage measurement value in the marker specification line. Two command strings, “:LIST:MARKer:SMU_V” and “:LIST:MARKer:VSMU” are exactly the same operation, only the difference in the command string.

Query Syntax

:LIST:MARKer:SMU_V?
:LIST:MARKer:VSMU?

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.10.22 :LIST:MARKer:SMU_I
:LIST:MARKer:ISMU Query

Queries the SMU (optional external unit) current measurement value in the marker specification line. Two command strings, “:LIST:MARKer:SMU_I” and “:LIST:MARKer:ISMU” are exactly the same operation, only the difference in the command string.

Query Syntax

:LIST:MARKer:SMU_I?

:LIST:MARKer:ISMU?

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.10.23 :LIST:MARKer:SE_I
:LIST:MARKer:ISE
:LIST:MARKer:ISS Query

Queries the SEMU (optional external unit) current measurement value in the marker specification line.

Three command strings, “:LIST:MARKer:SE_I”, “:LIST:MARKer:ISE” and “:LIST:MARKer:ISS” are exactly the same operation, only the difference in the command string.

Query Syntax

:LIST:MARKer:SE_I?

:LIST:MARKer:ISE?

:LIST:MARKer:ISS?

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.10.24 :LIST:MARKer:PRImary
:LIST:MARKer:PrimaryOUTput Query

Queries the output value of the supply unit assigned to the Primary Sweep in the marker specification line.

Two command strings, “:LIST:MARKer:PRImary” and “:LIST:MARKer:PrimaryOUTput” are exactly the same operation, only the difference in the command string.

Query Syntax

:LIST:MARKer:PRImary?

:LIST:MARKer:PrimaryOUTput?

Response message <result>

<result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

**2.5.10.25 :LIST:MARKer:SECondary
:LIST:MARKer:SecondaryOUTput
:LIST:MARKer:OUTput Query**

Queries the output value of the supply unit assigned to the Secondary Sweep in the marker specification line.

Three command strings, “:LIST:MARKer:SECondary”, “:LIST:MARKer:SecondaryOUTput” and “:LIST:MARKer:OUTput” are exactly the same operation, only the difference in the command string.

Query Syntax

:LIST:MARKer:SECondary?
:LIST:MARKer:SecondaryOUTput?
:LIST:MARKer:OUTput?

Remarks

If no supply unit is assigned to Secondary Sweep, NaN (9.91E+37) is returned.

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

**2.5.10.26 :LIST:MARKer:CONStant
:LIST:MARKer:ConstantOUTput Query**

Queries the output value of the supply unit used as the Constant Output in the marker specification line.

Two command strings, “:LIST:MARKer:CONStant” and “:LIST:MARKer:ConstantOUTput” are exactly the same operation, only the difference in the command string.

Query Syntax

:LIST:MARKer:CONStant?
:LIST:MARKer:ConstantOUTput?

Remarks

If no supply unit is used as Constant Output, NaN (9.91E+37) is returned.

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

**2.5.10.27 :LIST:MARKer:MATH
:LIST:MARKer:RON Query**

Queries the MATH calculation value in the marker specification line.

Two command strings, ":LIST:MARKer:MATH", ":LIST:MARKer:RON" are exactly the same operation, only the difference in the command string.

Query Syntax

:LIST:MARKer:MATH?
:LIST:MARKer:RON?

Response message <result>

<result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11 :CURsor Sub-system (Cursor measurement related)

2.5.11.1 :CURsor:MODE Command / Query

Sets / Queries the cursor measurement mode.

Command Syntax

:CURsor:MODE <mode>

<mode>

<CHARACTER PROGRAM DATA>	Description of settings
OFF	Cursor measurement OFF
FREE	FREE Cursor
DOT	DOT Cursor

Query Syntax

:CURsor:MODE?

Response message <mode>

<mode> is the <CHARACTER RESPONSE DATA> format.

2.5.11.2 :CURsor:SecondaryInDeX Command / Query

Sets / Queries the index of Secondary Sweep that indicates the waveform to be measured by the cursor.

Three command strings, ":CURsor:SecondaryInDeX", ":CURsor:FREE:LINE1:SecondaryInDeX", and ":CURsor:DOT:SecondaryInDeX" are exactly the same operation, only the difference in the command string.

Command Syntax

:CURsor:SecondaryInDeX <index>

<index>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
0 to 1000	1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

Query Syntax

:CURsor:SecondaryInDeX?

Response message <index>

<index> is a number in <NR1 NUMERIC RESPONSE DATA> format.

2.5.11.3 :CURsor:FREE:LINE1:TYPE Command / Query

Sets / Queries the type of LINE1 cursor for FREE cursor measurement.

Command Syntax

:CURsor:FREE:LINE1:TYPE <type>

<type>

<CHARACTER PROGRAM DATA>	Description of settings
X	Vertical cursor moving on the X axis
Y	Horizontal cursor to move on the Y axis

Query Syntax

:CURsor:FREE:LINE1:TYPE?

Response message <type>

<type> is <CHARACTER RESPONSE DATA> format.

2.5.11.4 :CURsor:FREE:LINE1:SecondaryInDeX Command / Query

Sets / Queries the index of Secondary Sweep that indicates the waveform to be measured by the cursor.

Three command strings, ":CURsor:FREE:LINE1:SecondaryInDeX", ":CURsor:SecondaryInDeX", and ":CURsor:DOT:SecondaryInDeX" are exactly the same operation, only the difference in the command string.

Command Syntax

:CURsor:FREE:LINE1:SecondaryInDeX <index>

<index>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
0 to 1000	1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

Query Syntax

:CURsor:FREE:LINE1:SecondaryInDeX?

Response message <index>

<index> is a number in <NR1 NUMERIC RESPONSE DATA> format.

2.5.11.5 :CURsor:FREE:LINE1:POSitionX Command / Query

Sets / Queries the LINE1 cursor position on the X axis when the type of LINE1 cursor is X (vertical) cursor in FREE cursor measurement.

Command Syntax

:CURsor:FREE:LINE1:POSitionX <position>

<position>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution ^{Note}	Number of significant digits ^{Note}
-1.01E+12 to +1.01E+12	0.1E-12	4

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Query Syntax

:CURsor:FREE:LINE1:POSitionX?

Response message <position>

<position> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.6 :CURsor:FREE:LINE1:POSitionY Command / Query

Sets / Queries the LINE1 cursor position on the Y axis when the type of LINE1 cursor is Y (horizontal) cursor in FREE cursor measurement.

Command Syntax

:CURsor:FREE:LINE1:POSitionY <position>

<position>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution ^{Note}	Number of significant digits ^{Note}

-1.01E+12 to +1.01E+12	0.1E-12	4
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Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Query Syntax

:CURsor:FREE:LINE1:POSitionY?

Response message <position>

<position> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.7 :CURsor:FREE:LINE2:TYPE Command / Query

Sets / Queries the type of LINE2 cursor for FREE cursor measurement.

Command Syntax

:CURsor:FREE:LINE2:TYPE <type>

<type>

<CHARACTER PROGRAM DATA>	Description of settings
X	Vertical cursor moving on the X axis
Y	Horizontal cursor to move on the Y axis

Query Syntax

:CURsor:FREE:LINE2:TYPE?

Response message <type>

<type> is <CHARACTER RESPONSE DATA> format.

2.5.11.8 :CURsor:FREE:LINE2:POSitionX Command / Query

Sets / Queries the LINE2 cursor position on the X axis when the type of LINE2 cursor is X (vertical) cursor in FREE cursor measurement.

Command Syntax

:CURsor:FREE:LINE2:POSitionX <position>

<position>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution ^{Note}	Number of significant digits ^{Note}
-1.01E+12 to +1.01E+12	0.1E-12	4

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Query Syntax

:CURsor:FREE:LINE2:POSitionX?

Response message <position>

<position> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.9 :CURsor:FREE:LINE2:POSitionY Command / Query

Sets / Queries the LINE2 cursor position on the Y axis when the type of LINE2 cursor is Y (horizontal) cursor in FREE cursor measurement.

Command Syntax

:CURsor:FREE:LINE2:POSitionY <position>

<position>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution ^{Note}	Number of significant digits ^{Note}
-1.01E+12 to +1.01E+12	0.1E-12	4

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Query Syntax

:CURsor:FREE:LINE2:POSitionY?

Response message <position>

<position> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.10 :CURsor:FREE:LINE2:SecondaryENabled Command / Query

Sets / Queries the enable / disable of the index specification of Secondary Sweep indicating the waveform to be measured by the LINE2 cursor in FREE cursor measurement.

When OFF, the measurement target of the LINE2 cursor is the Secondary Sweep index common to the LINE1 cursor.

When ON, it is a Secondary Sweep index separate from the LINE1 cursor.

Command Syntax

:CURsor:FREE:LINE2:SecondaryENabled <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Query Syntax

:CURsor:FREE:LINE2:SecondaryENabled?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.11.11 :CURsor:FREE:LINE2:SecondaryInDeX Command / Query

Sets / Queries the index of Secondary Sweep that indicates the waveform to be measured by the LINE2 cursor in FREE cursor measurement.

Command Syntax

:CURsor:FREE:LINE2:SecondaryInDeX <index>

<index>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
0 to 1000	1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

Query Syntax

:CURsor:FREE:LINE2:SecondaryInDeX?

Response message <index>

<index> is a number in <NR1 NUMERIC RESPONSE DATA> format.

2.5.11.12 :CURsor:DOT:SecondaryInDeX Command / Query

Sets / Queries the index of Secondary Sweep that indicates the waveform to be measured by the cursor.

Three command strings, ":CURsor:DOT:SecondaryInDeX", ":CURsor:FREE:LINE1:SecondaryInDeX" and ":CURsor:SecondaryInDeX" are exactly the same operation, only the difference in the command string.

Command Syntax

:CURsor:DOT:SecondaryInDeX <index>

<index>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
0 to 1000	1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

Query Syntax

:CURsor:DOT:SecondaryInDeX?

Response message <index>

<index> is a number in <NR1 NUMERIC RESPONSE DATA> format.

2.5.11.13 :CURsor:DOT:PrimaryInDeX Command / Query

Sets / Queries the index of the Primary Sweep that is the measurement target of DOT cursor measurement.

Command Syntax

:CURsor:DOT:PrimaryInDeX <index>

<index>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
0 to 40001	1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

Query Syntax

:CURsor:DOT:PrimaryInDeX?

Response message <index>

<index> is a number in <NR1 NUMERIC RESPONSE DATA> format.

2.5.11.14 :CURsor:DOT:GRADient:VISible Command / Query

Sets / Queries ON / OFF of the tilt line display of DOT cursor measurement.

Command Syntax

:CURsor:DOT:GRADient:VISible <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If the X-axis or Y-axis of the XY display is set to ON when the LOG scale is set, an execution error occurs.

Query Syntax

:CURsor:DOT:GRADient:VISible?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

**2.5.11.15 :CURSor:DOT:GRADient:GRADient
:CURSor:DOT:GRADient:ANGLE Command / Query**

Sets / Queries the slope (dY / dX) of the slope line for DOT cursor measurement.

Command Syntax

:CURSor:DOT:GRADient:GRADient <value>

:CURSor:DOT:GRADient:ANGLE <value>

<value>

<DECIMAL NUMERIC PROGRAM DATA>	Number of significant digits ^{Note}
-10.0E+12 to +10.0E+12	7

Note: Rounded to the minimum digit determined from the number of significant digits.

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

Query Syntax

:CURSor:DOT:GRADient:GRADient?

:CURSor:DOT:GRADient:ANGLE?

Response message <value>

<value> is <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.16 :CURSor:RESult:X1 Query

Queries the X-axis value of the LINE1 cursor for cursor measurement.

Query Syntax

:CURSor:RESult:X1?

Remarks

Cursor measurement mode	Other conditions	Response content
OFF	—	NaN (9.91E+37)
FREE	LINE1 Cursor type is X (vertical)	LINE1 Cursor X-axis position (set value)
	LINE1 Cursor type is Y (horizontal)	LINE1 Intersection of cursor and target waveform
DOT	—	X-axis measurement of DOT cursor position

Response message <result>

Cursor measurement mode	Other conditions	<NUMERIC RESPONSE DATA>	Number of significant digits
OFF	—	—	—

FREE	LINE1 Cursor type is X (vertical)	-10.0E+12 to +10.0E+12	4
	LINE1 Cursor type is Y (horizontal)	-10.0E+12 to +10.0E+12	7
DOT	—	-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.17 :CURsor:RESult:Y1 Query

Queries the Y-axis value of the LINE1 cursor for cursor measurement.

Query Syntax

:CURsor:RESult:Y1?

Remarks

Cursor measurement mode	Other conditions	Response content
OFF	—	NaN (9.91E+37)
FREE	LINE1 Cursor Type is X (Vertical)	LINE1 Intersection of cursor and target waveform
	LINE1 Cursor type is Y (horizontal)	LINE1 Cursor Y-axis position (set value)
DOT	—	Y-axis measurement of DOT cursor position

Response message <result>

Cursor measurement mode	Other conditions	<NUMERIC RESPONSE DATA>	Number of significant digits
OFF	—	—	—
FREE	LINE1 Cursor type is X (vertical)	-10.0E+12 to +10.0E+12	7
	LINE1 Cursor type is Y (horizontal)	-10.0E+12 to +10.0E+12	4
DOT	—	-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.18 :CURsor:RESult:OUTput1 Query

Queries the Secondary Sweep output value of the cursor measurement target of LINE1.

Query Syntax

:CURsor:RESult:OUTput1?

Remarks

Cursor measurement mode	Response content
OFF	NaN (9.91E+37)
FREE	Secondary Sweep output value specified by Secondary Index
DOT	

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.19 :CURsor:RESult:X2 Query

Queries the X-axis value of the LINE2 cursor for cursor measurement.

Query Syntax

:CURsor:RESult:X2?

Remarks

Cursor measurement mode	Other conditions	Response content
OFF	—	NaN (9.91E+37)
FREE	LINE2 Cursor type is X (vertical)	LINE2 Cursor X-axis position (set value)
	LINE2 Cursor type is Y (horizontal)	LINE2 Intersection of cursor and target waveform
DOT	—	NaN (9.91E+37)

Response message <result>

Cursor measurement mode	Other conditions	<NUMERIC RESPONSE DATA>	Number of significant digits
OFF	—	—	—
FREE	LINE2 Cursor type is X (vertical)	-10.0E+12 to +10.0E+12	4
	LINE2 Cursor type is Y (horizontal)	-10.0E+12 to +10.0E+12	7
DOT	—	-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.20 :CURsor:RESult:Y2 Query

Queries the Y-axis value of the LINE2 cursor for cursor measurement.

Query Syntax

:CURsor:RESult:Y2?

Remarks

Cursor measurement mode	Other conditions	Response content
OFF	—	NaN (9.91E+37)
FREE	LINE2 Cursor type is X (vertical)	LINE2 Intersection of cursor and target waveform

	LINE2 Cursor type is Y (horizontal)	LINE2 Cursor Y-axis position (set value)
DOT	—	NaN (9.91E+37)

Response message <result>

Cursor measurement mode	Other conditions	<NUMERIC RESPONSE DATA>	Number of significant digits
OFF	—	—	—
FREE	LINE2 Cursor type is X (vertical)	-10.0E+12 to +10.0E+12	7
	LINE2 Cursor type is Y (horizontal)	-10.0E+12 to +10.0E+12	4
DOT	—	-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.21 :CURsor:RESult:OUTput2 Query

Queries the Secondary Sweep output value of the cursor measurement target of LINE2.

Query Syntax

:CURsor:RESult:OUTput2?

Remarks

Cursor measurement mode	Other conditions	Response content
OFF	—	NaN (9.91E+37)
FREE	LINE2 cursor Secondary Index disabled	Secondary Sweep output value specified by a common Secondary Index
	LINE2 Cursor Secondary Index Enabled	Secondary Sweep output value specified by LINE2's Secondary Index
DOT	—	NaN (9.91E+37)

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.22 :CURsor:RESult:DeLTaX Query

Queries the X-axis value difference (X2 - X1) between LINE2 and LINE1 in FREE cursor measurement. The X-axis values for LINE2 and LINE1 are the POSITION setting values when the cursor type is X (vertical), and the X-axis values at the intersection of the cursor and the target waveform when the cursor type is Y (horizontal).

Query Syntax

:CURsor:RESult:DeLTaX?

Remarks

Cursor measurement mode	Response content
OFF	NaN (9.91E+37)
FREE	Difference in X-axis value between LINE2 and LINE1
DOT	NaN (9.91E+37)

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits*
-10.0E+12 to +10.0E+12	7

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.23 :CURsor:RESult:DeLTaY Query

Queries the difference ($Y2 - Y1$) in Y-axis values between LINE2 and LINE1 in FREE cursor measurement. The Y-axis values for LINE2 and LINE1 are the Y-axis value of the intersection of the cursor and the target waveform when the cursor type is X (vertical), and the POSITION setting value when the cursor type is Y (horizontal).

Query Syntax

:CURsor:RESult:DeLTaY?

Remarks

Cursor measurement mode	Response content
OFF	NaN (9.91E+37)
FREE	Difference in Y-axis value between LINE2 and LINE1
DOT	NaN (9.91E+37)

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	7

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.24 :CURsor:RESult:DeLTaOut :CURsor:RESult:DELTAOUTPUT Query

Queries the difference ($OUT2 - OUT1$) in the Secondary Sweep output value between LINE2 and LINE1 in FREE cursor measurement.

Two command strings, “:CURsor:RESult:DeLTaOut” and “:CURsor:RESult:DELTAOUTPUT” are exactly the same behavior, only the difference in the command string.

Query Syntax

:CURsor:RESult:DeLTaOut?

:CURsor:RESult:DELTAOUTPUT?

Remarks

Cursor measurement mode	Response content
OFF	NaN (9.91E+37)
FREE	Difference in Secondary Sweep output value between LINE2 and LINE1
DOT	NaN (9.91E+37)

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.25 :CURsor:RESult:GRADient Query

When the cursor mode is FREE, returns the slope of a straight line connecting the intersection of LINE1 and the target waveform-the intersection of LINE2 and the target waveform. (DELTA Y / DELTA X)

It is invalid if the Secondary Sweep index to be measured by LINE2 is specified separately from LINE1 instead of being common.

When the cursor mode is DOT, returns the slope (dY/dX) of the gradient line. It is invalid if the gradient line is not set to display.

Query Syntax

:CURsor:RESult:GRADient?

Remarks

Cursor measurement mode	Response content
OFF	NaN (9.91E+37)
FREE	Difference in Y-axis value between LINE1 and LINE2 / Difference in X-axis value between LINE1 and LINE2
DOT	Slope (dY/dX) of the gradient line.

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	7

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.26 :CURsor:RESult:ReciprocalGRADient Query

Queries the reciprocal of the gradient cursor measurement.

See "2.5.11.25 :CURsor:RESult:GRADient Query"

Query Syntax

:CURsor:RESult:ReciprocalGRADient?

Remarks

Cursor measurement mode	Response content
OFF	NaN (9.91E+37)
FREE	Difference in X-axis value between LINE1 and LINE2 / Difference in Y-axis value between LINE1 and LINE2
DOT	1 / Slope of the gradient line

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	7

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

**2.5.11.27 :CURsor:RESult:GM
:CURsor:RESult:BETA Query**

When the cursor mode is FREE, returns the value obtained by dividing the Y-axis value difference (DELTA Y) between LINE2 and LINE1 by the Secondary Sweep output value difference (DELTA OUT) between LINE2 and LINE1.

It is invalid if the Secondary Sweep index measured by LINE2 is the same as that of LINE1.

When the cursor mode is DOT, returns the value obtained by dividing the Y-axis value by the Secondary Sweep output value.

Two command strings, ":CURsor:RESult:GM" and ":CURsor:RESult:BETA" are exactly the same operation, only the difference in the command string.

Query Syntax

:CURsor:RESult:GM?

:CURsor:RESult:BETA?

Remarks

Cursor measurement mode	Response content
OFF	NaN (9.91E+37)
FREE	Difference in Y-axis value between LINE1 and LINE2 / Difference in Secondary Sweep output value between LINE1 and LINE2
DOT	Y-axis value / Secondary Sweep output value

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	7

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.28 :CURsor:RESult:INTERcept Query

When the cursor mode is FREE, returns the X-intercept of a straight line connecting the intersection of LINE1 and the target waveform - the intersection of LINE2 and the target waveform.

It is invalid if the Secondary Sweep index to be measured by LINE2 is specified separately from LINE1 instead of being common.

When the cursor mode is DOT, returns the X-intercept of the gradient line. It is invalid if the gradient line is hidden.

Query Syntax

:CURsor:RESult:INTERcept?

Remarks

Cursor measurement mode	Response content
OFF	NaN (9.91E+37)
FREE	X-intercept of a straight line connecting the intersection of LINE1 and the target waveform - the intersection of LINE2 and the target waveform.
DOT	X intercept of gradient line

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	7

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.29 :CURsor:RESult:YT:DRAIN_V :CURsor:RESult:YT:COLLECTOR_V :CURsor:RESult:YT:VDS :CURsor:RESult:YT:VCE Query

Queries the value of the intersection of the time cursor on the YT screen and the Drain / Collector Supply voltage waveform.

Four command strings, “:CURsor:RESult:YT:DRAIN_V”, “:CURsor:RESult:YT:COLLECTOR_V”, “:CURsor:RESult:YT:VDS” and “:CURsor:RESult:YT:VCE” are exactly the same operation, only the difference in the command string.

Query Syntax

:CURsor:RESult:YT:DRAIN_V?

:CURsor:RESult:YT:COLLECTOR_V?

:CURsor:RESult:YT:VDS?

:CURsor:RESult:YT:VCE?

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.30 :CURsor:RESult:YT:DRAIN_I
:CURsor:RESult:YT:COLLECTOR_I
:CURsor:RESult:YT:ID
:CURsor:RESult:YT:IC Query

Queries the value of the intersection of the time cursor on the YT screen and the Drain / Collector Supply current waveform.

Four command strings, “:CURsor:RESult:YT:DRAIN_I”, “:CURsor:RESult:YT:COLLECTOR_I”, “:CURsor:RESult:YT:ID” and “:CURsor:RESult:YT:IC” are exactly the same operation, only the difference in the command string.

Query Syntax

:CURsor:RESult:YT:DRAIN_I?
:CURsor:RESult:YT:COLLECTOR_I?
:CURsor:RESult:YT:ID?
:CURsor:RESult:YT:IC?

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.31 :CURsor:RESult:YT:GATE_V
:CURsor:RESult:YT:BASE_V
:CURsor:RESult:YT:VGS
:CURsor:RESult:YT:VBE Query

Queries the value of the intersection of the time cursor on the YT screen and the Gate / Base Supply voltage waveform.

Four command strings, “:CURsor:RESult:YT:GATE_V”, “:CURsor:RESult:YT:BASE_V”, “:CURsor:RESult:YT:VGS” and “:CURsor:RESult:YT:VBE” are exactly the same operation, only the difference in the command string.

Query Syntax

:CURsor:RESult:YT:GATE_V?
:CURsor:RESult:YT:BASE_V?
:CURsor:RESult:YT:VGS?
:CURsor:RESult:YT:VBE?

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.32 :CURsor:RESult:YT:GATE_I
:CURsor:RESult:YT:BASE_I
:CURsor:RESult:YT:IG
:CURsor:RESult:YT:IB Query

Queries the value of the intersection of the time cursor on the YT screen and the Gate / Base Supply current waveform.

Four command strings, “:CURsor:RESult:YT:GATE_I”, “:CURsor:RESult:YT:BASE_I”, “:CURsor:RESult:YT:IG” and “:CURsor:RESult:YT:IB” are exactly the same operation, only the difference in the command string.

Query Syntax

:CURsor:RESult:YT:GATE_I
 :CURsor:RESult:YT:BASE_I
 :CURsor:RESult:YT:IG
 :CURsor:RESult:YT:IB

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.33 :CURsor:RESult:YT:SMU_V
:CURsor:RESult:YT:VSMU Query

Queries the value of the intersection of the time cursor on the YT screen and the SMU voltage waveform.

Two command strings, “:CURsor:RESult:YT:SMU_V” and “:CURsor:RESult:YT:VSMU” are exactly the same operation, only the difference in the command string.

Query Syntax

:CURsor:RESult:YT:SMU_V?
 :CURsor:RESult:YT:VSMU?

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.34 :CURsor:RESult:YT:SMU_I
:CURsor:RESult:YT:ISMU Query

Queries the value of the intersection of the time cursor on the YT screen and the SMU current waveform.

Two command strings, “:CURsor:RESult:YT:SMU_” and “:CURsor:RESult:YT:ISMU” are exactly the same operation, only the difference in the command string.

Query Syntax

:CURsor:RESult:YT:SMU_I?

:CURsor:RESult:YT:ISMU?

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.35 :CURsor:RESult:YT:SE_I
:CURsor:RESult:YT:ISE
:CURsor:RESult:YT:ISS Query

Queries the value of the intersection of the time cursor on the YT screen and the SEMU current waveform.

Three command strings, “:CURsor:RESult:YT:SE_I”, “:CURsor:RESult:YT:ISE” and “:CURsor:RESult:YT:ISS” are exactly the same operation, only the difference in the command string.

Query Syntax

:CURsor:RESult:YT:SE_I?

:CURsor:RESult:YT:ISE?

:CURsor:RESult:YT:ISS?

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.36 :CURsor:RESult:DOT:DRAIN_V
:CURsor:RESult:DOT:COLLECTOR_V
:CURsor:RESult:DOT:VDS
:CURsor:RESult:DOT:VCE Query

Queries the Drain / Collector Supply voltage measurement value at the DOT cursor position.

Four command strings, “:CURsor:RESult:DOT:DRAIN_V”, “:CURsor:RESult:DOT:COLLECTOR_V”, “:CURsor:RESult:DOT:VDS” and “:CURsor:RESult:DOT:VCE” are exactly the same operation, only the difference in the command string.

Query Syntax

:CURsor:RESult:DOT:DRAIN_V?
:CURsor:RESult:DOT:COLLECTOR_V?
:CURsor:RESult:DOT:VDS?
:CURsor:RESult:DOT:VCE?

Remarks

Cursor measurement mode	Response content
OFF	NaN (9.91E+37)
FREE	NaN (9.91E+37)
DOT	Drain / Collector Supply voltage measurement value at the DOT cursor position.

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.37 :CURsor:RESult:DOT:DRAIN_I :CURsor:RESult:DOT:COLLECTOR_I :CURsor:RESult:DOT:ID :CURsor:RESult:DOT:IC Query

Queries the Drain / Collector Supply current measurement value at the DOT cursor position.

Four command strings, “:CURsor:RESult:DOT:DRAIN_I”, “:CURsor:RESult:DOT:COLLECTOR_I”, “:CURsor:RESult:DOT:ID” and “:CURsor:RESult:DOT:IC” are exactly the same operation, only the difference in the command string.

Query Syntax

:CURsor:RESult:DOT:DRAIN_I?
:CURsor:RESult:DOT:COLLECTOR_I?
:CURsor:RESult:DOT:ID?
:CURsor:RESult:DOT:IC?

Remarks

Cursor measurement mode	Response content
OFF	NaN (9.91E+37)
FREE	NaN (9.91E+37)
DOT	Drain / Collector Supply current measurement value at the DOT cursor position.

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.38 :CURsor:RESult:DOT:GATE_V
:CURsor:RESult:DOT:BASE_V
:CURsor:RESult:DOT:VGS
:CURsor:RESult:DOT:VBE Query

Queries the Gate / Base Supply voltage measurement value at the DOT cursor position.

Four command strings, “:CURsor:RESult:DOT:GATE_V”, “:CURsor:RESult:DOT:BASE_V”, “:CURsor:RESult:DOT:VGS” and “:CURsor:RESult:DOT:VBE” are exactly the same operation, only the difference in the command string.

Query Syntax

:CURsor:RESult:DOT:GATE_V?
:CURsor:RESult:DOT:BASE_V?
:CURsor:RESult:DOT:VGS?
:CURsor:RESult:DOT:VBE?

Remarks

Cursor measurement mode	Response content
OFF	NaN (9.91E+37)
FREE	NaN (9.91E+37)
DOT	Gate / Base Supply voltage measurement value at the DOT cursor position.

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.39 :CURsor:RESult:DOT:GATE_I
:CURsor:RESult:DOT:BASE_I
:CURsor:RESult:DOT:IG
:CURsor:RESult:DOT:IB Query

Queries the Gate / Base Supply current measurement value at the DOT cursor position.

Four command strings, “:CURsor:RESult:DOT:GATE_I”, “:CURsor:RESult:DOT:BASE_I”, “:CURsor:RESult:DOT:IG” and “:CURsor:RESult:DOT:IB” are exactly the same operation, only the difference in the command string.

Query Syntax

:CURsor:RESult:DOT:GATE_I?
:CURsor:RESult:DOT:BASE_I?
:CURsor:RESult:DOT:IG?

:CURsor:RESult:DOT:IB?

Remarks

Cursor measurement mode	Response content
OFF	NaN (9.91E+37)
FREE	NaN (9.91E+37)
DOT	Gate / Base Supply current measurement value at the DOT cursor position.

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

**2.5.11.40 :CURsor:RESult:DOT:SMU_V
:CURsor:RESult:DOT:VSMU Query**

Queries the SMU voltage measurement value at the DOT cursor position.

Two command strings, “:CURsor:RESult:DOT:SMU_V” and “:CURsor:RESult:DOT:VSMU” are exactly the same operation, only the difference in the command string.

Query Syntax

:CURsor:RESult:DOT:SMU_V?

:CURsor:RESult:DOT:VSMU?

Remarks

Cursor measurement mode	Response content
OFF	NaN (9.91E+37)
FREE	NaN (9.91E+37)
DOT	SMU voltage measurement value at the DOT cursor position.

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

**2.5.11.41 :CURsor:RESult:DOT:SMU_I
:CURsor:RESult:DOT:ISMU Query**

Queries the SMU current measurement value at the DOT cursor position.

Two command strings, “:CURsor:RESult:DOT:SMU_I” and “:CURsor:RESult:DOT:ISMU” are exactly the same operation, only the difference in the command string.

Query Syntax

:CURsor:RESult:DOT:SMU_I?

:CURsor:RESult:DOT:ISMU?

Remarks

Cursor measurement mode	Response content
OFF	NaN (9.91E+37)
FREE	NaN (9.91E+37)
DOT	SMU current measurement value at the DOT cursor position.

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.42 :CURsor:RESult:DOT:SE_I :CURsor:RESult:DOT:ISE :CURsor:RESult:DOT:ISS Query

Queries the SEMU current measurement value at the DOT cursor position.

Three command strings, “:CURsor:RESult:DOT:SE_I”, “:CURsor:RESult:DOT:ISE” and “:CURsor:RESult:DOT:ISS” are exactly the same operation, only the difference in the command string.

Query Syntax

:CURsor:RESult:DOT:SE_I?

:CURsor:RESult:DOT:ISE?

:CURsor:RESult:DOT:ISS?

Remarks

Cursor measurement mode	Response content
OFF	NaN (9.91E+37)
FREE	NaN (9.91E+37)
DOT	SEMU current measurement value at the DOT cursor position.

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.43 :CURsor:RESult:DOT:PRImary :CURsor:RESult:DOT:PRImaryOUTput Query

Queries the output value of the supply unit assigned to the Primary Sweep at the DOT cursor position.

Two command strings, “:CURSor:RESult:DOT:PRImary” and “:CURSor:RESult:DOT:PrimaryOUTput” are exactly the same operation, only the difference in the command string.

Query Syntax

:CURSor:RESult:DOT:PRImary?
:CURSor:RESult:DOT:PrimaryOUTput?

Remarks

Cursor measurement mode	Response content
OFF	NaN (9.91E+37)
FREE	NaN (9.91E+37)
DOT	The output value of the supply unit assigned to the Primary Sweep at the DOT cursor position.

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.11.44 :CURSor:RESult:DOT:SECondary :CURSor:RESult:DOT:SecondaryOUTput Query

Queries the output value of the supply unit assigned to the Secondary Sweep at the DOT cursor position.

Two command strings, “:CURSor:RESult:DOT:SECondary” and “:CURSor:RESult:DOT:SecondaryOUTput” are exactly the same operation, only the difference in the command string.

Query Syntax

:CURSor:RESult:DOT:SECondary?
:CURSor:RESult:DOT:SecondaryOUTput?

Remarks

Cursor measurement mode	Response content
OFF	NaN (9.91E+37)
FREE	NaN (9.91E+37)
DOT	The output value of the supply unit assigned to the Secondary Sweep at the DOT cursor position.

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

**2.5.11.45 :CURsor:RESult:DOT:CONStant
:CURsor:RESult:DOT:ConstantOUTput Query**

Queries the output value of the supply unit used as the Constant Output at the DOT cursor position.

Two command strings, “:CURsor:RESult:DOT:CONStant” and “:CURsor:RESult:DOT:ConstantOUTput” are exactly the same operation, only the difference in the command string.

Query Syntax

:CURsor:RESult:DOT:CONStant?
:CURsor:RESult:DOT:ConstantOUTput?

Remarks

Cursor measurement mode	Response content
OFF	NaN (9.91E+37)
FREE	NaN (9.91E+37)
DOT	The output value of the supply unit assigned to the Secondary Sweep at the DOT cursor position.

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

**2.5.11.46 :CURsor:RESult:DOT:MATH
:CURsor:RESult:DOT:RON Query**

Queries the MATH calculation value at the DOT cursor position.

Query Syntax

:CURsor:RESult:DOT:MATH?
:CURsor:RESult:DOT:RON?

Remarks

Cursor measurement mode	Response content
OFF	NaN (9.91E+37)
FREE	NaN (9.91E+37)
DOT	MATH calculation value

Response message <result>

<NUMERIC RESPONSE DATA>	Number of significant digits
-10.0E+12 to +10.0E+12	5

<result> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.12 :ANALysis Sub-system (Analysis related)

2.5.12.1 :ANALysis:RESult Query

Queries the analysis result by the ANALYSIS function.

Query Syntax

:ANALysis:RESult?

Response message <ana_result>

<ana_result> is a numerical value in <NR1 NUMERIC RESPONSE DATA> format that indicates the analysis result.

The value is the weighting of each Bit in the <ana_result> Bit definition below by a power of 2.

<ana_result> Bit definition

Bit	Weighting	Description
7	128	Not used in the instrument (always 0)
6	64	Not used in the instrument (always 0)
5	32	Not used in the instrument (always 0)
4	16	Not used in the instrument (always 0)
3	8	Not used in the instrument (always 0)
2	4	Not used in the instrument (always 0)
1	2	Exceeding the low limit was detected in the COMPARISON
0	1	Exceeding the high limit was detected in the COMPARISON

2.5.12.2 :ANALysis:COMParison:ACTion Command / Query

Sets / Queries the action when the exceeding high/low limit is detected in the COMPARISON.

Command Syntax

:ANALysis:COMParison:ACTion <action>

<action>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
CONT	CONTINUE	Continue measurement.
SKIP	–	The PRIMARY SWEEP in progress is aborted, and the SECONDARY SWEEP is advanced one step to continue measurement from the beginning of the PRIMARY SWEEP.
STOP	–	Stop measurement.

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:ANALysis:COMParison:ACTion?

Response message <action>

<action> returns a standard name in <CHARACTER RESPONSE DATA> format.

2.5.12.3 :ANALysis:COMParison:HIGH:ENABled Command / Query

Sets / Queries ON/OFF of the higher limit judgement by the COMPARISON function.

Command Syntax

:ANALysis:COMParison:HIGH:ENABled <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If the XY screen is set to multi-trace display, setting it to ON will result in an execution error without doing anything.

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:ANALysis:COMParison:HIGH:ENABled?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.12.4 :ANALysis:COMParison:HIGH:STATus Query

Queries the status of the REFERENCE waveform used as higher limit criterion for the COMPARISON function.

Query Syntax

:ANALysis:COMParison:HIGH:STATus?

Response message <ref_status>

<CHARACTER PROGRAM DATA>	Description of status
EMPTY	REFERENCE Waveform data not set.
LOADED	REFERENCE Waveform data has the target data for X-axis and Y-axis.
INVALID	REFERENCE Waveform data has no target data for X-axis and Y-axis.

<ref_status> is the <CHARACTER RESPONSE DATA> format.

2.5.12.5 :ANALysis:COMParison:HIGH:TRANSfer Command

This command transfers the XY waveform data file (*.CSV) saved in the PC to the curve tracer and set as the higher limit criterion of the COMPARISON function.

This command cannot be used with multi-commands.

Command Syntax

:ANALysis:COMParison:HIGH:TRANSfer<delimiter><preamble><ref_file>

<delimiter>

LF or CR+LF

<preamble>

#9xxxxxxxx

xxxxxxxx : 9-digit ASCII character string representing the file size (number of bytes) of <ref_file>

If the number of bytes is less than 9 digits, insert 0 at the beginning to make it 9 digits.

If the file size of <ref_file> is 40,226 bytes, it will be "#9000040226".

<ref_file>

The XY waveform data that can be used are as follows.

- XY waveform data read by :WAVEform:XY:TRANSfer? Query
- XY waveform data (*.CSV) saved by :WAVEform:XY:SAVe command
- XY waveform data (*.CSV) saved by operating the curve tracer

Remarks

Send this command in the following two steps.

Step 1:

Send the ":ANALysis:COMParison:HIGH:TRANSfer" command with delimiters without any parameters. As a result, the main unit is ready to receive XY waveform data (including preambles).

Step 2:

Following the above <preamble>, send <ref_file>

If this command is executed during measurement, an execution error occurs without doing anything.

2.5.12.6 :ANALysis:COMParison:HIGH:LOAD Command

Load the XY waveform data file (*.CSV) saved in the external USB memory or internal memory of the curve tracer and set as the higher limit criterion of the COMPARISON function.

Command Syntax

:ANALysis:COMParison:HIGH:LOAD <storage>,<file_path>

<storage>

<CHARACTER PROGRAM DATA>	Description of settings
INTERNAL	Save to internal memory
USB	Save to external USB memory

<file_path>

<STRING PROGRAM DATA>	Description of settings
<ul style="list-style-type: none"> • Available characters Alphabet a-z, A-Z Numbers 0-9 Symbol -. ! @ # \$ % ^ & () +, [] { }; '~ ` = Blank SP Directory separator / • Enclose in double quotes (“ ”) • Extension (“.CSV”) can be omitted 	Specify the file name to be saved in the internal memory or external USB memory. The save destination directory can be described with a relative path from the root directory of the media specified by <storage>. The directory separator is “/” (slash).

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

2.5.127 :ANALysis:COMParison:HIGH:CLEar Command

Clears the REFERENCE data used as the higher limit criterion in the COMPARISON function.

Command Syntax

:ANALysis:COMParison:HIGH:CLEar

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

2.5.128 :ANALysis:COMParison:LOW:ENABled Command / Query

Sets / Queries ON/OFF of the lower limit judgement by the COMPARISON function.

Command Syntax

:ANALysis:COMParison:LOW:ENABled <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If the XY screen is set to multi-trace display, setting it to ON will result in an execution error without doing anything.

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:ANALysis:COMParison:LOW:ENABled?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.12.9 :ANALysis:COMParison:LOW:STATus Query

Queries the status of the REFERENCE waveform used as lower limit criterion for the COMPARISON function.

Query Syntax

:ANALysis:COMParison:LOW:STATus?

Response message <ref_status>

<CHARACTER PROGRAM DATA>	Description of status
EMPTY	REFERENCE Waveform data not set.
LOADED	REFERENCE Waveform data has the target data for X-axis and Y-axis.
INVALID	REFERENCE Waveform data has no target data for X-axis and Y-axis.

<ref_status> is the <CHARACTER RESPONSE DATA> format.

2.5.12.10 :ANALysis:COMParison:LOW:TRANSfer Command

This command transfers the XY waveform data file (*.CSV) saved in the PC to the curve tracer and set as the lower limit criterion of the COMPARISON function.

This command cannot be used with multi-commands.

Command Syntax

:ANALysis:COMParison:LOW:TRANSfer<delimiter><preamble><ref_file>

<delimiter>

LF or CR+LF

<preamble>

#9xxxxxxxx

xxxxxxxx : 9-digit ASCII character string representing the file size (number of bytes) of <ref_file>

If the number of bytes is less than 9 digits, insert 0 at the beginning to make it 9 digits.

If the file size of <ref_file> is 40,226 bytes, it will be "#9000040226".

<ref_file>

The XY waveform data that can be used are as follows.

- XY waveform data read by :WAVEform:XY:TRANSfer? query

- XY waveform data (*.CSV) saved by :WAVEform:XY:SAVe command
- XY waveform data (*.CSV) saved by operating the curve tracer

Remarks

Send this command in the following two steps.

Step 1:

Send the ":ANALysis:COMParison:LOW:TRANSfer" command with delimiters without any parameters. As a result, the main unit is ready to receive XY waveform data (including preambles).

Step 2:

Following the above <preamble>, send <ref_file>

If this command is executed during measurement, an execution error occurs without doing anything.

2.5.12.11 :ANALysis:COMParison:LOW:LOAD Command

Load the XY waveform data file (*.CSV) saved in the external USB memory or internal memory of the curve tracer and set as the lower limit criterion of the COMPARISON function.

Command Syntax

:ANALysis:COMParison:LOW:LOAD <storage>,<file_path>

<storage>

<CHARACTER PROGRAM DATA>	Description of settings
INTERNAL	Save to internal memory
USB	Save to external USB memory

<file_path>

<STRING PROGRAM DATA>	Description of settings
<ul style="list-style-type: none"> • Available characters Alphabet a-z, A-Z Numbers 0-9 Symbol -. ! @ # \$ % ^ & () +, [] { } ; ' ~ ` = Blank SP Directory separator / • Enclose in double quotes ("") • Extension (".CSV") can be omitted 	Specify the file name to be saved in the internal memory or external USB memory. The save destination directory can be described with a relative path from the root directory of the media specified by <storage>. The directory separator is "/" (slash).

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

2.5.12.12 :ANALysis:COMParison:LOW:CLEAr Command

Clears the REFERENCE data used as the lower limit criterion in the COMPARISON function.

Command Syntax

:ANALysis:COMParison:LOW:CLEar

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

2.5.12.13 :ANALysis:EXTRact:TARGet Command / Query

Sets / Queries the method of specifying the target value to be extracted for the EXTRACT CURVE function.

Command Syntax

:ANALysis:EXTRact:TARGet <target_type>

<target_type>

<CHARACTER PROGRAM DATA>	Description of settings
INDEX	Extract the measurement value specified by PRIMARY INDEX
VALUE	Extract specified voltage or current value as target value
SECONDARY	Extract the output setting value of the supply unit assigned to Secondary Sweep as the target value

Query Syntax

:ANALysis:EXTRact:TARGet?

Response message <target_type>

<target_type> is the <CHARACTER RESPONSE DATA> format.

2.5.12.14 :ANALysis:EXTRact:InDeX Command / Query

Sets / Queries the primary index used in the EXTRACT CURVE function when the method of specifying the target value to be extracted is INDEX.

Command Syntax

:ANALysis:EXTRact:InDeX <index>

<index>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
0 to 40001	1

Query Syntax

:ANALysis:EXTRact:InDeX?

Response message <index>

<index> is <NR1 NUMERIC RESPONSE DATA> format.

2.5.12.15 :ANALysis:EXTRact:MODE Command / Query

Sets / Queries the method of the extraction in the EXTRACT CURVE function when the method of specifying the target value to be extracted is VALUE.

Command Syntax

:ANALysis:EXTRact:MODE <mode>

<mode>

<CHARACTER PROGRAM DATA>	Description of settings
INTERPOLATE	Interpolate from measured values before and after crossing the target value and extract value
NEAREST	Extract closer value among the measured values before and after crossing the target value
UPPER	Extract the value that is greater than the target value among the measured values before and after crossing the target value.
LOWER	Extract the value that is less than the target value among the measured values before and after crossing the target value.

Query Syntax

:ANALysis:EXTRact:MODE?

Response message <mode>

<mode> is the <CHARACTER RESPONSE DATA> format.

2.5.12.16 :ANALysis:EXTRact:SOURce Command / Query

Sets / Queries the data type to be extracted in the EXTRACT CURVE function when the method of specifying the target value to be extracted is VALUE.

Command Syntax

:ANALysis:EXTRact:SOURce <source>

<source>

<CHARACTER PROGRAM DATA>	Description of settings
VOLTAGE	Extraction with voltage value specified as target
CURRENT	Extraction with current value specified as target

Query Syntax

:ANALysis:EXTRact:SOURce?

Response message <source>

<source> is the <CHARACTER RESPONSE DATA> format.

2.5.12.17 :ANALysis:EXTRact:VALue Command / Query

Sets / Queries the value to be extracted to be used in the EXTRACT CURVE function when the method of specifying the target value to be extracted is VALUE.

Command Syntax

:ANALysis:EXTRact:VALue <target_value>

<target_value>

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution ^{Note}	Number of significant digits ^{Note}
-1.01E+12 to +1.01E+12	0.1E-12	5

Note: The minimum resolution is compared with the minimum digit determined from the number of significant digits, and rounded to the coarser value.

Query Syntax

:ANALysis:EXTRact:VALue?

Response message <target_value>

<voltage> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.12.18 :ANALysis:EXTRact:EXECute Query

Execute the extraction by the EXTRACT CURVE function.

Query Syntax

:ANALysis:EXTRact:EXECute?

Response message <exec_result>

<exec_result> is <NR1 NUMERIC RESPONSE DATA> format.

This response indicates the result of the extraction run.

1 means success, -1 means failure.

2.5.13 :SYStem Sub-system (System setting related)

2.5.13.1 :SYStem:INITialize Command

Initializes the device settings to the specified values.

It also initializes items that are not subject to template recall.

However, remote related settings (IP address, etc.) are excluded. Also, OUTPUT ENABLE is OFF.

Command Syntax

:SYStem:INITialize

Remarks

If this command is executed during measurement, the measurement will be stopped.

2.5.13.2 :SYStem:DATEtime Command / Query

Sets / Queries the current time.

Command Syntax

:SYStem:DATEtime <year>,<month>,<day>,<hour>,<min>,<sec>

Parameters	Setting	<DECIMAL NUMERIC PROGRAM DATA>
<year>	Year	2000 to 2100
<month>	Month	1 to 12
<day>	Day	1 to 31 (The maximum value is according to the calendar)
<hour>	Hour	0 to 23
<min>	Minute	0 to 59
<sec>	Second	0 to 59

Remarks

Numerical values outside the range are rounded to the maximum or minimum values, resulting in an execution error.

Query Syntax

:SYStem:DATEtime?

Response message <year>,<month>,<day>,<hour>,<min>,<sec>

Each parameter is <NR1 NUMERIC RESPONSE DATA> format.

2.5.13.3 :SYStem:EXTernalUnit Query

Queries the status of the external unit that is actively set.

Query Syntax

:SYStem:EXTernalUnit? <unit_type>

<unit_type>

<CHARACTER PROGRAM DATA>	Description of settings
FIXTURE	Fixture
HC	HC Unit
SMU	SMU (optional external unit)
SEMU	SEMU (optional external unit)
CMU	CMU (optional external unit)
SELECTOR	SENSE SELECTOR (optional external unit)

Response message <model>,<serial_no>,<available>

<model> represents the model name in <CHARACTER RESPONSE DATA> format.

<serial_no> represents the serial number in <NR1 NUMERIC RESPONSE DATA> format.

<available> is <NR1 NUMERIC RESPONSE DATA> format and indicates whether the external unit is enabled / disabled. 0 means invalid and 1 means valid.

When the active set fixture is CS-320, the response message when FIXTURE is specified for <unit_type> is "CS-320, -1,1". Please note that the serial number will not be obtained and will be valid even if you are not actually connected.

If there is no external unit that is actively set in the specified <unit_type>, the Response message will be "NONE, -1,0".

2.5.13.4 :SYStem:FRONtpanel:SAVEkey Command / Query

Sets / Queries the behavior when the [SAVE] key on the front panel is pressed.

Command Syntax

:SYStem:FRONtpanel:SAVEkey <key_action>

<key_action>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
SHOW_MENU	MENU	Transition to SAVE menu
EXEC_SAVE	EXEC	Execution of waveform data storage
EXEC_SCREENCOPY	SCREENCOPY	Execution of screen copy

Query Syntax

:SYStem:FRONtpanel:SAVEkey?

Response message <key_action>

<key_action> returns a Standard Name in <CHARACTER RESPONSE DATA> format.

2.5.13.5 :SYStem:FRONtpanel:LOCKState Query

Queries the current locked state of the front panel.

The lock status changes depending on the operation of the panel lock icon or the "LOCK WHILE REMOTE CONTROL" setting in the SYSTEM menu / FRONT PANEL.

Query Syntax

:SYStem:FRONtpanel:LOCKState?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.13.6 :SYStem:FRONtpanel:LOCK Command / Query

Sets / Queries ON / OFF of the front panel lock.

The actual lock status of the front panel also changes depending on the "LOCK WHILE REMOTE CONTROL" setting in the SYSTEM menu / FRONT PANEL.

Use ":SYStem:FRONtpanel:LOCKState?" query to actually lock the front panel.

Command Syntax

:SYStem:FRONtpanel:LOCK <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Query Syntax

:SYStem:FRONtpanel:LOCK?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.13.7 :SYStem:FRONtpanel:LOCKatRemote Command / Query

Sets / Queries the front panel lock (SYSTEM menu / FRONT PANEL "LOCK WHILE REMOTE CONTROL") linked with the remote state.

The actual lock status of the front panel can also be changed by operating the panel lock icon.

Use ":SYStem:FRONtpanel:LOCKState?" query to actually lock the front panel.

Command Syntax

:SYStem:FRONtpanel:LOCKatRemote <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Query Syntax

:SYStem:FRONtpanel:LOCKatRemote?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.13.8 :SYStem:FRONtpanel:BACKlight Command / Query

Sets / Queries the brightness of the LCD backlight.

Command Syntax

:SYStem:FRONtpanel:BACKlight <backlight>

<backlight>

<CHARACTER PROGRAM DATA>	Description of settings
LOW	Dark

MID	Medium
HIGH	Bright

Query Syntax

:SYStem:FRONtpanel:BACKlight?

Response message <backlight>

<backlight> is <CHARACTER RESPONSE DATA> format.

2.5.13.9 :SYStem:FOOTer:COMMeNt:TEXT Command / Query

Sets / Queries the comment character string to be displayed in the footer area.

Command Syntax

:SYStem:FOOTer:COMMeNt:TEXT <comment>

<comment>

<STRING PROGRAM DATA>
<ul style="list-style-type: none"> • A string enclosed in double quotes or single quotes (128 characters or less). • Available characters 7bit ASCII characters (excluding control code) (If you use the same character as the enclosing character, you need to duplicate it (the same character must be repeated twice)).

Query Syntax

:SYStem:FOOTer:COMMeNt:TEXT?

Response message <comment>

<comment> is < CHARACTER RESPONSE DATA > format.

2.5.13.10 :SYStem:FOOTer:COMMeNt:VISIble Command / Query

Sets / Queries the comment display ON / OFF in the footer area.

Command Syntax

:SYStem:FOOTer:COMMeNt:VISIble <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Query Syntax

:SYStem:FOOTer:COMMeNt:VISIble?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.13.11 :SYStem:FOOTer:DATEtime:VISIble Command / Query

Sets / Queries the date / time display ON / OFF in the footer area.

Command Syntax

:SYStem:FOOTer:DATEtime:VISIble <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Query Syntax

:SYStem:FOOTer:DATEtime:VISIble?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.13.12 :SYStem:TriggerOUTput Command / Query

Sets / Queries ON / OFF of the rear panel trigger output terminal.

Command Syntax

:SYStem:TriggerOUTput <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:SYStem:TriggerOUTput?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.13.13 :SYStem:ReCaLIReSuLT Query

Queries the execution result of the last recall of a template file (*.CTT) or waveform data file (*.CTW).

Query Syntax

:SYStem:ReCaLIReSuLT?

Response message <recall_result>

<recall_result> is a numerical value in <NR1 NUMERIC RESPONSE DATA> format that indicates the result of the recall.

The value is the weighting of each Bit in the <recall_result> Bit definition below by a power of 2. If the measurement is completed normally, it will be "0".

<recall_result> Bit definition

Bit	Weighting	Description
4 – 7	-	Not used in the instrument (always 0)
3	8	The recall action stored in the template cannot be set.
2	4	Cannot be fully recalled due to differences in hardware configuration
1	2	Invalid data format
0	1	File not found

2.5.14 :AUX Sub-system (AUX output related)

2.5.14.1 :AUX:OUTPut:OUTPut Command / Query

Sets / Queries ON / OFF of AUX terminal output on the rear panel.

Command Syntax

:AUX:OUTPut:OUTPut <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:AUX:OUTPut:OUTPut?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.14.2 :AUX:OUTPut:VOLTage Command / Query

Sets / Queries the output voltage of AUX terminal on the rear panel.

Command Syntax

:AUX:OUTPut:VOLTag <voltage>

< voltage >

<DECIMAL NUMERIC PROGRAM DATA>	Minimum resolution
-40.0 to +40.0	0.1

Remarks

Numerical values outside the range are rounded to the maximum or minimum values within the range, resulting in an execution error.

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:AUX:OUTPut:VOLTag?

Response message <voltage>

<voltage> is a number in <NR3 NUMERIC RESPONSE DATA> format.

2.5.14.3 :AUX:OUTPut:COMMon Command / Query

Sets / Queries the reference voltage of AUX terminal output on the rear panel.

Command Syntax

:AUX:OUTPut:COMMon <common>

<common>

<CHARACTER PROGRAM DATA>	Description of settings
GND	GND Voltage
SENSE	Grounded SENSE voltage of the DUT (Device Under Test)

Remarks

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:AUX:OUTPut:COMMon?

Response message <common>

<common> is <CHARACTER RESPONSE DATA> format.

2.5.14.4 :AUX:FIXTure:AUX1 Command / Query

Sets / Queries ON / OFF of AUX1 terminal output of the fixture.

Command Syntax

:AUX:FIXTure:AUX1 <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If the fixture to be used is CS-320, or if it is set to ON when the fixture is not used, an execution error occurs without doing anything.

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:AUX:FIXTure:AUX1?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.14.5 :AUX:FIXTure:AUX2 Command / Query

Sets / Queries ON / OFF of AUX2 terminal output of the fixture.

Command Syntax

:AUX:FIXTure:AUX2 <off_on>

<off_on>

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

Remarks

If the fixture to be used is CS-320, or if it is set to ON when the fixture is not used, an execution error occurs without doing anything.

If this command is executed during measurement, an execution error occurs without doing anything.

Query Syntax

:AUX:FIXTure:AUX2?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means OFF and 1 means ON.

2.5.15 :TEMPlate Sub-system (Template save / read related)

2.5.15.1 :TEMPlate:TRANSfer Command / Query

This command transfers the template (*.CTT) saved in the PC to the curve tracer and changes the operation settings.

Query saves the current operation settings in a template and transfers them to the PC.

This command and query cannot be used with multi-commands.

Command Syntax

:TEMPlate:TRANSfer<delimiter><preamble><template_file>

<delimiter>

LF or CR+LF

<preamble>

#9xxxxxxxx

xxxxxxxx : 9-digit ASCII string representing the file size (number of bytes) of
<template_file>

If the number of bytes is less than 9 digits, insert 0 at the beginning to make it 9 digits.

If the file size of <template_file> is 478 bytes, it will be "#9000000478".

<template_file>

The templates that can be used are as follows.

- Template read by :TEMPlate:TRANSfer? query.
- Template file (*.CTT) saved by :TEMPlate:SAVe command or *SAV command
- Template file (*.CTT) saved by operating the curve tracer

Remarks

Template recalls may not be complete due to differences in hardware configurations. Details on the results of such recalls can be obtained by using the ":SYStem:ReCaLIReSuLT?" query.

Send this command in the following two steps.

Step 1:

Send ":TEMPlate:TRANSfer" command with delimiter without parameters. This will allow the curve tracer to receive templates (including preambles).

Step 2:

Following the above <preamble>, send <template_file>.

Query Syntax

:TEMPlate:TRANSfer?

Response message <preamble><template_file>
 Same format as sent in step 2 of command.

2.5.15.2 :TEMPlate:SAVe Command

Save the current operation settings as a template file (*.CTT) in the internal memory or external USB memory of the curve tracer.

This command has exactly the same operation as the common command “*SAV” command.

Command Syntax

:TEMPlate:SAVe <storage>,<file_path>,<recall_action>

<storage>

<CHARACTER PROGRAM DATA>	Description of settings
INTERNAL	Save to internal memory
USB	Save to external USB memory

<file_path>

<STRING PROGRAM DATA>	Description of settings
<ul style="list-style-type: none"> • Available characters Alphabet a-z, A-Z Numbers 0-9 Symbol -. ! @ # \$ % ^ & () +, [] { } ; ' ~ ` = Blank SP Directory separator / • Enclose in double quotes (“ • Extension (“.CTT”) can be omitted 	Specify the file name to be saved in the internal memory or external USB memory. The save destination directory can be described with a relative path from the root directory of the media specified by <storage>. The directory separator is “/” (slash).

<recall_action>

<CHARACTER PROGRAM DATA>	Description of settings
SINGLE	SINGLE measurement execution after recalling the save template
REPEAT	REPEAT measurement execution after recalling the save template
STOP	Measurement stopped after recalling the save template

<recall_action> is optional. If omitted, it will be STOP.

Example of use

Destination media: External USB memory
 Destination directory: \CS-8000\Template\
 Save file name: “MyTemplate.CTT”
 Measurement operation after recall :STOP

One example:

:TEMPlate:SAVe USB,"CS-8000/Template/MyTemplate.CTT",STOP

2.5.15.3 :TEMPlate:ReCaLI Command

Recall the internal memory of the curve tracer or the template saved to external USB memory to update the operation settings of the curve tracer.

This command has exactly the same operation as the common command “*RCL” command.

Command Syntax

:TEMPlate:ReCaLI <storage>,<file_path>

<storage>

<CHARACTER PROGRAM DATA>	Description of settings
INTERNAL	Save to internal memory
USB	Save to external USB memory

<file_path>

<STRING PROGRAM DATA>	Description of settings
<ul style="list-style-type: none"> • Available characters Alphabet a-z, A-Z Numbers 0-9 Symbol -. ! @ # \$ % ^ & () +, [] { }; '~ ` = Blank SP Directory separator / • Enclose in double quotes (“ • Extension (“.CTT”) can be omitted 	Specify the file name to be saved in the internal memory or external USB memory. The save destination directory can be described with a relative path from the root directory of the media specified by <storage>. The directory separator is “/” (slash).

Remarks

Template recalls may not be complete due to differences in hardware configurations. Details on the results of such recalls can be obtained by using the “:SYStem:ReCaLIReSuLT?” query.

2.5.16 :WAVEform Sub-system (Waveform data storage / reading related)

2.5.16.1 :WAVEform:AVAlIable Query

Queries for the existence of valid waveform data.

Query Syntax

:WAVEform:AVAlIable?

Response message <off_on>

<off_on> is <NR1 NUMERIC RESPONSE DATA> format.

0 means that the waveform data is empty, and 1 means that the waveform data exists.

2.5.16.2 :WAVEform:BINary:TRANsfer Command / Query

This command transfers the waveform data file (*.CTW) saved in the PC to the curve tracer and executes the waveform recall. Query transfers the currently displayed waveform data to the PC.

This command and query cannot be used with multi-commands.

Command Syntax

:WAVEform:BINary:TRANsfer<delimiter><preamble><wave_file>

<delimiter>
LF or CR+LF

<preamble>

#9xxxxxxxx

xxxxxxxx : 9-digit ASCII character string representing the file size (number of bytes) of
<wave_file>

If the number of bytes is less than 9 digits, insert 0 at the beginning to make it 9 digits.

If the file size of <wave_file> is 40,226 bytes, it will be "#9000040226".

<wave_file>

The waveform data that can be used are as follows.

- Waveform data read by :WAVEform:BINary:TRANSfer? query
- Waveform data (*.CTW) saved by :WAVEform:BINary:SAVE command
- Waveform data (*.CTW) saved by operating the curve tracer

Remarks

Waveform recalls may not be complete due to differences in hardware configurations. Details on the results of such recalls can be obtained by using the ":SYStem:ReCaLIReSuLT?" query.

Send this command in the following two steps.

Step 1:

Send the ":WAVEform:BINary:TRANSfer" command with delimiters without any parameters.

As a result, the main unit is ready to receive waveform data (including preambles).

Step 2:

Following the above <preamble>, send <wave_file>.

Query Syntax

:WAVEform:BINary:TRANSfer? <target_yt>, <yt1>, <yt2>, <yt3>, <yt4>, <yt5>

<target_yt>

<CHARACTER PROGRAM DATA>	Description of settings
NONE	Do not send YT waveform data
DISPLAYED	Sends the YT waveform data displayed on the YT display screen for only the measurement points specified by the marker.
ALL	YT waveform data is transmitted for all measurement points. The type of YT waveform data to be transmitted is specified by the subsequent parameters <yt1> to <yt5>.

<yt1> to <yt5>

These parameters are optional parameters that are valid only if <target_yt> is ALL.

Specify which of the seven types of Drain / Collector Supply Voltage / Current, Gate / Base Supply Voltage / Current, SMU Voltage / Current and SEMU Current to be transmitted.

The data type specified in <yt1> to <yt5> will be saved. If you do not specify any of them, all data being measured (up to 5 types) will be saved.

There are two ways to specify the data type: <CHARACTER PROGRAM DATA> and the TITLE character string attached to each data type.

Specified by <CHARACTER PROGRAM DATA>

<CHARACTER PROGRAM DATA>		Setting
Standard Name	Alias	
DRAIN_V	COLLECTOR_V VDS VCE	Drain / Collector Supply Voltage
DRAIN_I	COLLECTOR_I ID IC	Drain / Collector Supply Current
GATE_V	BASE_V VGS VBE	Gate / Base Supply Voltage
GATE_I	BASE_I IG IB	Gate / Base Supply Current
SMU_V	VSMU	SMU Voltage
SMU_I	ISMU	SMU Current
SE_I	ISE ISS	SEMU Current

Specified by TITLE string

<STRING PROGRAM DATA>
Title specification string enclosed in double quotes or single quotes

Response message <preamble><wave_file>

Same format as sent in step 2 of command.

Example of use

YT waveform data storage target: All measurement points

Drain / Collector Supply Voltage: Save

Drain / Collector Supply Current: Save

Gate / Base Supply Voltage: Do not save

Gate / Base Supply Current: Save

Specified by <CHARACTER PROGRAM DATA>

One example:

:WAVEform:BINary:TRANsfer? ALL, DRAIN_V, DRAIN_I, GATE_I

Specified by TITLE string

One example:

:WAVEform:BINary:TRANsfer? ALL, "Vds", "Id", "Ig"

2.5.16.3 :WAVEform:BINary:SAVe Command

Save the currently displayed waveform data as a waveform data file (*.CTW) in the internal memory or external USB memory of the curve tracer.

Command Syntax

:WAVEform:BINary:SAVe <storage>, <file_path>, <target_yt>, <yt1>, <yt2>, <yt3>, <yt4>, <yt5>

<storage>

<CHARACTER PROGRAM DATA>	Description of settings
INTERNAL	Save to internal memory
USB	Save to external USB memory

<file_path>

<STRING PROGRAM DATA>	Setting
<ul style="list-style-type: none"> • Available characters Alphabet a-z, A-Z Numbers 0-9 Symbol -. ! @ # \$ % ^ & () +, [] { }; ~ ` = Blank SP Directory separator / • Enclose in double quotes ("") • Extension (".CTW") can be omitted 	Specify the file name to be saved in the internal memory or external USB memory. The save destination directory can be described with a relative path from the root directory of the media specified by <storage>. The directory separator is "/" (slash).

<target_yt>

<CHARACTER PROGRAM DATA>	Setting
NONE	Do not save YT waveform data
DISPLAYED	Save the YT waveform data displayed on the YT display screen for only the measurement points specified by the marker.
ALL	Save YT waveform data for all measurement points. The type of YT waveform data to be saved is specified by the subsequent parameters <yt1> to <yt4>.

<yt1> to <yt5>

These parameters are optional parameters that are valid only if <target_yt> is ALL.

Specify which of the seven types of Drain / Collector Supply Voltage / Current, Gate / Base Supply Voltage / Current, SMU Voltage / Current and SEMU Current to be transmitted.

The data type specified in <yt1> to <yt5> will be saved. If you do not specify any of them, all data being measured (up to 5 types) will be saved.

There are two ways to specify the data type: <CHARACTER PROGRAM DATA> and the TITLE character string attached to each data type.

Specified by <CHARACTER PROGRAM DATA>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
DRAIN V	COLLECTOR V	Drain / Collector Supply Voltage

	VDS VCE	
DRAIN_I	COLLECTOR_I ID IC	Drain / Collector Supply Current
GATE_V	BASE_V VGS VBE	Gate / Base Supply Voltage
GATE_I	BASE_I IG IB	Gate / Base Supply Current
SMU_V	VSMU	SMU Voltage
SMU_I	ISMU	SMU Current
SE_I	ISE ISS	SEMU Current

Specified by TITLE string

<STRING PROGRAM DATA>
Title specification string enclosed in double quotes or single quotes

Example of use

Destination media: External USB memory
 Destination directory: \CS-8000\Waveform\
 Save file name: "MyWaveform.CTW"
 YT waveform data storage target: All measurement points
 Drain / Collector Supply Voltage: Save
 Drain / Collector Supply Current: Save
 Gate / Base Supply Voltage: Do not save
 Gate / Base Supply Current: Save

Specified by <CHARACTER PROGRAM DATA>

One example:

:WAVEform:BINary:SAVe USB, "CS-8000/Waveform/MyWaveform.CTW", ALL, DRAIN_V,
 DRAIN_I, GATE_I

Specified by TITLE string

One example:

:WAVE:BINary:SAVe USB, "CS-8000/Waveform/MyWaveform.CTW",ALL, "Vds", "Id", "Ig"

2.5.16.4 :WAVEform:BINary:ReCaLI Command

Recalls the waveform data file (*.CTW) saved to external USB memory or the internal memory of the curve tracer.

Command Syntax

:WAVEform:BINary:ReCaLI <storage>,<file_path>

<storage>

<CHARACTER PROGRAM DATA>	Description of settings
INTERNAL	Save to internal memory
USB	Save to external USB memory

<file_path>

<STRING PROGRAM DATA>	Description of settings
<ul style="list-style-type: none"> • Available characters Alphabet a-z, A-Z Numbers 0-9 Symbol -. _! @ # \$% ^ & () +, [] { } ; ' ~ ` = Blank SP Directory separator / • Enclose in double quotes (") • Extension (".CTW") can be omitted 	Specify the file name to be saved in the internal memory or external USB memory. The save destination directory can be described with a relative path from the root directory of the media specified by <storage>. The directory separator is "/" (slash).

Remarks

Waveform recalls may not be complete due to differences in hardware configurations. Details on the results of such recalls can be obtained by using the ":SYStem:ReCaLIReSuLT?" query.

2.5.16.5 :WAVEform:XY:TRANsfer Query

Converts the XY characteristic curve data to a text file with the same format as the XY-TEXT (*.CSV) output on the curve tracer, and transfers it to the PC.

Query Syntax

:WAVEform:XY:TRANsfer? <condition>, <secondary_index>, <ch1>, <ch2>, ... , <ch11>

<condition>

Sets the information header output ON / OFF of the main measurement conditions.

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

<secondary_index>

Specifies the Secondary Index of the characteristic curve to be saved.

<DECIMAL NUMERIC PROGRAM DATA>	Resolution
0 to 1000, -1	1

If -1 is specified, all Secondary Indexes are targeted. Instead of -1, "ALL" in <CHARACTER PROGRAM DATA> format can be specified.

<ch1> to <ch11>

Specify which of the 11 types of Drain / Collector Supply Voltage / Current, Gate / Base Supply Voltage / Current, SMU Voltage / Current, SEMU Current, primary output value, secondary output value, constant output value, MATH value to be transmitted.

The data type specified in <ch1> to <ch11> will be saved. If you do not specify any of them, all valid data (up to 11 types) will be saved.

There are two ways to specify the data type: <CHARACTER PROGRAM DATA> and the TITLE character string attached to each data type.

Specified by <CHARACTER PROGRAM DATA>

<CHARACTER PROGRAM DATA>		Setting
Standard Name	Alias	
DRAIN_V	COLLECTOR_V VDS VCE	Drain / Collector Supply Voltage
DRAIN_I	COLLECTOR_I ID IC	Drain / Collector Supply Current
GATE_V	BASE_V VGS VBE	Gate / Base Supply Voltage
GATE_I	BASE_I IG IB	Gate / Base Supply Current
SMU_V	VSMU	SMU Voltage
SMU_I	ISMU	SMU Current
SE_I	ISE ISS	SEMU Current
PRIMARY	PRI POUT PRIMARYOUTPUT	Output setting value of the supply unit assigned to primary sweep.
SECONDARY	SEC SOUT SECONDARYOUTPUT	Output setting value of the supply unit assigned to secondary sweep.
CONSTANT	COUT	Output setting value of the supply unit set to constant output..
MATH	RON	MATH calculation value

Specified by TITLE string

<STRING PROGRAM DATA>
Title specification string enclosed in double quotes or single quotes

Response message <preamble><text_file>

<preamble>

#9xxxxxxxx

xxxxxxxx : 9-digit ASCII character string representing the size (number of bytes) of the output text

If the number of bytes is less than 9 digits, insert 0 at the beginning to make it 9 digits.

<text_file>

XY text output data

2.5.16.6 :WAVEform:XY:SAVe Command

Executes XY-TEXT (*.CSV) output and saves it as a text file (*.CSV) in the internal memory or external USB memory of the curve tracer.

Command Syntax

:WAVEform:XY:SAVe <storage>,<file_path>,<condition>,<secondary_index>,<ch1>,<ch2>,...,<ch11>

<storage>

<CHARACTER PROGRAM DATA>	Description of settings
INTERNAL	Save to internal memory
USB	Save to external USB memory

<file_path>

<STRING PROGRAM DATA>	Description of settings
<ul style="list-style-type: none"> • Available characters Alphabet a-z, A-Z Numbers 0-9 Symbol -. ! @ # \$ % ^ & () +, [] { }; '~ ` = Blank SP Directory separator / • Enclose in double quotes (") • Extension (".CSV") can be omitted 	Specify the file name to be saved in the internal memory or external USB memory. The save destination directory can be described with a relative path from the root directory of the media specified by <storage>. The directory separator is "/" (slash).

<condition>

Set the information header output ON / OFF of the main measurement conditions.

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

<secondary_index>

Specifies the Secondary Index of the characteristic curve to be saved.

<DECIMAL NUMERIC PROGRAM DATA>	Resolution
0 to 1000, -1	1

If -1 is specified, all Secondary Indexes are targeted. Instead of -1, "ALL" in <CHARACTER PROGRAM DATA> format can be specified.

<ch1> to <ch11>

Specify which of the 11 types of Drain / Collector Supply Voltage / Current, Gate / Base Supply Voltage / Current, SMU Voltage / Current, SEMU Current, primary output value, secondary output value, constant output value, MATH value to be transmitted.

The data type specified in <ch1> to <ch11> will be saved. If you do not specify any of them, all valid data (up to 11 types) will be saved.

There are two ways to specify the data type: <CHARACTER PROGRAM DATA> and the TITLE character string attached to each data type.

Specified by <CHARACTER PROGRAM DATA>

<CHARACTER PROGRAM DATA>		Setting
Standard Name	Alias	
DRAIN_V	COLLECTOR_V VDS VCE	Drain / Collector Supply Voltage
DRAIN_I	COLLECTOR_I ID IC	Drain / Collector Supply Current
GATE_V	BASE_V VGS VBE	Gate / Base Supply Voltage
GATE_I	BASE_I IG IB	Gate / Base Supply Current
SMU_V	VSMU	SMU Voltage
SMU_I	ISMU	SMU Current
SE_I	ISE ISS	SEMU Current
PRIMARY	PRI POUT PRIMARYOUTPUT	Output setting value of the supply unit assigned to primary sweep.
SECONDARY	SEC SOUT SECONDARYOUTPUT	Output setting value of the supply unit assigned to secondary sweep.
CONSTANT	COUT	Output setting value of the supply unit set to constant output..
MATH	RON	MATH calculation value

Specified by TITLE string

<STRING PROGRAM DATA>
Title specification string enclosed in double quotes or single quotes

2.5.16.7 :WAVEform:XY:TEXT Query

Specify the secondary Index and data type, convert the data column to comma-separated text, and return it.

Unlike :WAVEform:XY:TRANSfer? query, it returns <ARBITRARY ASCII RESPONSE DATA> without preamble.

Query Syntax

:WAVEform:XY:TEXT? <secondary_index>,<target>

<secondary_index>

Specifies the Secondary Index of the characteristic curve to be output.

<DECIMAL NUMERIC PROGRAM DATA>	Resolution
0 to 1000	1

Not all Secondary Indexes can be specified.

<target>

Specify which of the seven types of Drain/Collector Supply Voltage / Current and Gate/Base Supply Voltage / Current, primary output value, secondary output value, MATH value is to be output.

When specifying Drain/Collector Supply Voltage / Current and Gate/Base Supply Voltage / Current, there are two ways to specify the data type: <CHARACTER PROGRAM DATA> and the TITLE character string attached to each data type.

Specified by <CHARACTER PROGRAM DATA>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
DRAIN_V	COLLECTOR_V VDS VCE	Drain / Collector Supply Voltage
DRAIN_I	COLLECTOR_I ID IC	Drain / Collector Supply Current
GATE_V	BASE_V VGS VBE	Gate / Base Supply Voltage
GATE_I	BASE_I IG IB	Gate / Base Supply Current
SMU_V	VSMU	SMU Voltage
SMU_I	ISMU	SMU Current
SE_I	ISE ISS	SEMU Current
PRIMARY	PRI POUT PRIMARYOUTPUT	Output setting value of the supply unit assigned to primary sweep.
SECONDARY	SEC SOUT SECONDARYOUTPUT	Output setting value of the supply unit assigned to secondary sweep.
CONSTANT	COUT	Output setting value of the supply unit set to constant output..
MATH	RON	MATH calculation value

Specified by TITLE string

<STRING PROGRAM DATA>
Title specification string enclosed in double quotes or single quotes

Response message <xy_text>

<xy_text> is the text of <NR3 NUMERIC RESPONSE DATA> format numeric character strings connected by commas separated by <ARBITRARY ASCII RESPONSE DATA> format.

The number of data is the number of valid Primary Indexes in the specified Secondary Index. Unless the sweep was interrupted for some reason, the number of data will be +1 to the number of Sweep Steps in the Primary Sweep.

2.5.16.8 :WAVEform:YT:TRANSfer Query

Converts YT waveform data to a text file with the same format as the YT-TEXT (*.CSV) output on the curve tracer, and transfers it to the PC.

Query Syntax

:WAVEform:YT:TRANSfer? <secondary_index>, <primary_index>, <time_index>, <yt1>, <yt2>, <yt3>, <yt4>, <yt5>

<secondary_index>

Specify the target Secondary Index.

<DECIMAL NUMERIC PROGRAM DATA>	Resolution
0 to 1000, -1	1

If -1 is specified, all Secondary Indexes will be targeted. You can also specify ALL with <CHARACTER PROGRAM DATA> instead of -1.

<primary_index>

Specify the target Primary Index. There are three types of specification methods.

1) All indexes specification

If -1 in <DECIMAL NUMERIC PROGRAM DATA> format is specified, all Primary Indexes are targeted. Instead of -1, "ALL" in <CHARACTER PROGRAM DATA> format can be specified.

(Example) Specify all primary indexes as targets

:WAVEform:YT:TRANSfer? 0,-1, TIMESTAMP

:WAVEform:YT:TRANSfer? 0,ALL, TIMESTAMP

2) Single index specification

Specify for one Primary Index in <DECIMAL NUMERIC PROGRAM DATA> format.

<DECIMAL NUMERIC PROGRAM DATA>	Resolution
0 to 40001	1

(Example) Specify primary index 1 as the target

:WAVEform:YT:TRANSfer? 0,1, TIMESTAMP

3) Index range specification

The range of indexes to be targeted is specified by two points, a start point and an end point. Each of the start and end points is <numeric program data>, connected by a '-' between them.

(Example) Specify the range of primary indexes 1 to 10 as targets.

:WAVEform:YT:TRANSfer? 0,1-10, TIMESTAMP

<time_index>

Specifies the time axis index output format.

<CHARACTER PROGRAM DATA>	Description of settings
INDEX	Numeric format (0-999 serial number)
TIMESTAMP	TIME STAMP FORMAT ^{Note}

Note: The timestamp format is a numeric value that is based on the time axis on the YT screen. It is not time.

<yt1> to <yt5>

Specify which of the seven types of Drain / Collector Supply Voltage / Current, Gate / Base Supply Voltage / Current, SMU Voltage / Current and SEMU Current to be output.

The data type specified in <yt1> to <yt5> will be output. If you do not specify any of them, all data being measured (up to 5 types) will be output.

There are two ways to specify the data type: <CHARACTER PROGRAM DATA> and the TITLE character string attached to each data type.

Specified by <CHARACTER PROGRAM DATA>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
DRAIN_V	COLLECTOR_V VDS VCE	Drain / Collector Supply Voltage
DRAIN_I	COLLECTOR_I ID IC	Drain / Collector Supply Current
GATE_V	BASE_V VGS VBE	Gate / Base Supply Voltage
GATE_I	BASE_I IG IB	Gate / Base Supply Current
SMU_V	VSMU	SMU Voltage
SMU_I	ISMU	SMU Current
SE_I	ISE ISS	SEMU Current

Remarks

Due to output file size restrictions, the number of measurement points targeted for text output of YT waveforms must be 10,000 or less. Please note that it may be exceeded depending on the combination of secondary and primary indexes specified. Use “:WAVEform:YT:COUNt?” query to find out the number of measurement points of targeted. If the number of measurement points exceeds 10,000, an execution error occurs and is returned no response.

Response message <preamble><text_file>

<preamble>

#9xxxxxxxx

xxxxxxxx : 9-digit ASCII character string representing the size (number of bytes) of the output text

If the number of bytes is less than 9 digits, insert 0 at the beginning to make it 9 digits.

<text_file>

YT text output data

2.5.16.9 :WAVEform:YT:SAVe Command

Executes YT-TEXT (*.CSV) output and saves it as a text file (*.CSV) in the internal memory or external USB memory of the curve tracer.

Command Syntax

:WAVEform:YT:SAVe <storage>,<file_path>,<secondary_index>,<primary_index>,<time_index>,<yt1>,<yt2>,<yt3>,<yt4>,<yt5>

<storage>

<CHARACTER PROGRAM DATA>	Description of settings
INTERNAL	Save to internal memory
USB	Save to external USB memory

<file_path>

<STRING PROGRAM DATA>	Description of settings
<ul style="list-style-type: none">Available characters Alphabet a-z, A-Z Numbers 0-9 Symbol -. ! @ # \$ % ^ & () +, [] { } ; ~ ` = Blank SP Directory separator /Enclose in double quotes (")Extension (".CSV") can be omitted	Specify the file name to be saved in the internal memory or external USB memory. The save destination directory can be described with a relative path from the root directory of the media specified by <storage>. The directory separator is "/" (slash).

<secondary_index>

Specify the target Secondary Index.

<DECIMAL NUMERIC PROGRAM DATA>	Resolution
0 to 1000, -1	1

If -1 is specified, all Secondary Indexes are targeted. Instead of -1, "ALL" in <CHARACTER PROGRAM DATA> format can be specified.

<primary_index>

Specify the target Primary Index. There are three types of specification methods.

- 1) All indexes specification

If -1 in <DECIMAL NUMERIC PROGRAM DATA> format is specified, all Primary Indexes are targeted. Instead of -1, "ALL" in <CHARACTER PROGRAM DATA> format can be specified.

(Example) Specify all primary indexes as targets

:WAVEform:YT:SAVe USB,"yt_all.csv",0,-1, TIMESTAMP

:WAVEform:YT:SAVe USB,"yt_all.csv",0,ALL, TIMESTAMP

2) Single index specification

Specify for one Primary Index in <DECIMAL NUMERIC PROGRAM DATA> format.

<DECIMAL NUMERIC PROGRAM DATA>	Resolution
0 to 40001	1

(Example) Specify primary index 1 as the target

:WAVEform:YT:SAVe USB,"yt_1.csv",0,1, TIMESTAMP

3) Index range specification

The range of indexes to be targeted is specified by two points, a start point and an end point. Each of the start and end points is <numeric program data>, connected by a '-' between them.

(Example) Specify the range of primary indexes 1 to 10 as targets.

:WAVEform:YT:SAVe USB,"yt_1to10.csv",0,1-10, TIMESTAMP

<time_index>

Specifies the time axis index output format.

<CHARACTER PROGRAM DATA>	Description of settings
INDEX	Numeric format (0-999 serial number)
TIMESTAMP	TIME STAMP FORMAT ^{Note}

Note: The timestamp format is a numeric value that is based on the time axis on the YT screen. It is not time.

<yt1> to <yt5>

Specify which of the seven types of Drain / Collector Supply Voltage / Current, Gate / Base Supply Voltage / Current, SMU Voltage / Current and SEMU Current to be output.

The data type specified in <yt1> to <yt5> will be output. If you do not specify any of them, all data being measured (up to 5 types) will be output.

There are two ways to specify the data type: < CHARACTER PROGRAM DATA > and the TITLE character string attached to each data type.

Specified by <CHARACTER PROGRAM DATA>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	

DRAIN_V	COLLECTOR_V VDS VCE	Drain / Collector Supply Voltage
DRAIN_I	COLLECTOR_I ID IC	Drain / Collector Supply Current
GATE_V	BASE_V VGS VBE	Gate / Base Supply Voltage
GATE_I	BASE_I IG IB	Gate / Base Supply Current
SMU_V	VSMU	SMU Voltage
SMU_I	ISMU	SMU Current
SE_I	ISE ISS	SEMU Current

Remarks

Due to output file size restrictions, the number of measurement points for YT waveform text output must be 10,000 or less. Please note that it may be exceeded depending on the combination of secondary and primary indexes specified. Use “:WAVEform:YT:COUNT?” query to find out the number of measurement points of targeted. If the number of measurement points exceeds 10,000, an execution error occurs and the file will not be output.

2.5.16.10 :WAVEform:YT:TEXT Query

Converts YT waveform data of the specified data type at the measurement points specified by Secondary Index and Primary Index into comma-separated text and returns it.

Unlike “:WAVEform:YT:TRANSfer?” query, it returns <ARBITRARY ASCII RESPONSE DATA> without preamble.

Query Syntax

:WAVEform:YT:TEXT? <secondary_index>, <primary_index>, <target>

<secondary_index>

Specifies the Secondary Index of the characteristic curve to be output.

<DECIMAL NUMERIC PROGRAM DATA>	Resolution
0 to 1000	1

It is not possible to target all Secondary Indexes.

<primary_index>

Specify the target Primary Index.

<DECIMAL NUMERIC PROGRAM DATA>	Resolution
0 to 40001	1

It is not possible to target all Primary Indexes.

<target>

Specify which of the seven types of Drain / Collector Supply Voltage / Current and Gate / Base Supply Voltage / Current, SMU Voltage / Current and SEMU Current is to be output.

There are two ways to specify the data type: < CHARACTER PROGRAM DATA > and the TITLE character string attached to each data type.

Specified by <CHARACTER PROGRAM DATA>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
DRAIN_V	COLLECTOR_V VDS VCE	Drain / Collector Supply Voltage
DRAIN_I	COLLECTOR_I ID IC	Drain / Collector Supply Current
GATE_V	BASE_V VGS VBE	Gate / Base Supply Voltage
GATE_I	BASE_I IG IB	Gate / Base Supply Current
SMU_V	VSMU	SMU Voltage
SMU_I	ISMU	SMU Current
SE_I	ISE ISS	SEMU Current

Specified by TITLE string

<STRING PROGRAM DATA>
Title specification string enclosed in double quotes or single quotes

Response message <yt_text>

<yt_text> is the text of <NR3 NUMERIC RESPONSE DATA> format numeric character strings connected by commas separated by <ARBITRARY ASCII RESPONSE DATA> format.

The number of data is 1,000.

2.5.16.11 :WAVEform:YT:COUNT Query

Queries the number of YT waveform data corresponding to the specified index.

Query Syntax

:WAVEform:YT:COUNT? <secondary_index>, <primary_index>

<secondary_index>

Specify the target Secondary Index.

<DECIMAL NUMERIC PROGRAM DATA>	Resolution
0 to 1000, -1	1

If -1 is specified, all Secondary Indexes are targeted. Instead of -1, "ALL" in <CHARACTER PROGRAM DATA> format can be specified.

<primary_index>

Specify the target Primary Index. There are three types of specification methods.

1) All indexes specification

If -1 in <DECIMAL NUMERIC PROGRAM DATA> format is specified, all Primary Indexes are targeted. Instead of -1, "ALL" in <CHARACTER PROGRAM DATA> format can be specified.

(Example) Specify all primary indexes as targets

:WAVEform:YT:COUNT? 0,-1

:WAVEform:YT:COUNT? 0,ALL

2) Single index specification

Specify for one Primary Index in <DECIMAL NUMERIC PROGRAM DATA> format.

<DECIMAL NUMERIC PROGRAM DATA>	Resolution
0 to 40001	1

(Example) Specify primary index 1 as the target

:WAVEform:YT:COUNT? 0,1

3) Index range specification

The range of indexes to be targeted is specified by two points, a start point and an end point. Each of the start and end points is <numeric program data>, connected by a '-' between them.

(Example) Specify the range of primary indexes 1 to 10 as targets.

:WAVEform:YT:COUNT? 0,1-10

Response message <yt_count>

<yt_count> is <NR1 NUMERIC RESPONSE DATA> format.

2.5.17 :ScreenCOpy Sub-system (Screen copy related)

2.5.17.1 :ScreenCOpy:TRANsfer Query

Execute screen copy and transfer the image data to the PC.

This query cannot be used with multi-command.

Query Syntax

:ScreenCOpy:TRANsfer? <format>, <back_color>, <color_mode>

<format>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	

PNG	–	Portable Network Graphic (*.png)
JPG	JPEG	JPEG (*.jpg)
BMP	BITMAP	Bitmap (*.bmp)

<back_color>

<CHARACTER PROGRAM DATA>	Description of settings
BLACK	Background color black
WHITE	Background color white

<color_mode>

<CHARACTER PROGRAM DATA>	Description of settings
COLOR	Color
GRAY	Grayscale

Response message <preamble><image_file>

<preamble>

#9xxxxxxxx

xxxxxxxx : 9-digit ASCII character string representing the size (number of bytes) of screen-copied image data.

If the number of bytes is less than 9 digits, insert 0 at the beginning to make it 9 digits.

<image_file>

Image data binary

2.5.17.2 :ScreenCOPy:SAVe Command

Execute screen copy and save the image data in the internal memory or external USB memory of the curve tracer. This command cannot be used with multi-commands.

Command Syntax

:ScreenCOPy:SAVe <storage>, <file_path>, <format>, <back_color>, <color_mode>

<storage>

<CHARACTER PROGRAM DATA>	Description of settings
INTERNAL	Save to internal memory
USB	Save to external USB memory

<file_path>

<STRING PROGRAM DATA>	Description of settings
<ul style="list-style-type: none"> • Available characters Alphabet a-z, A-Z Numbers 0-9 Symbol -. ! @ # \$ % ^ & () +, [] { } ; ~ ` = Blank SP Directory separator / • Enclose in double quotes (“) • Extension can be omitted 	Specify the file name to be saved in the internal memory or external USB memory. The save destination directory can be described with a relative path from the root directory of the media specified by <storage>. The directory separator is “/” (slash).

<format>

<CHARACTER PROGRAM DATA>		Description of settings
Standard Name	Alias	
PNG	—	Portable Network Graphic (*.PNG)
JPG	JPEG	JPEG (*.JPG)
BMP	BITMAP	Bitmap (*.BMP)

<back_color>

<CHARACTER PROGRAM DATA>	Description of settings
BLACK	Background color black
WHITE	Background color white

<color_mode>

<CHARACTER PROGRAM DATA>	Description of settings
COLOR	Color
GRAY	Grayscale

Example of use

Destination media: Internal memory

Destination directory: \CS-8000\ScreenCopy\

Save file name: "MyImage.PNG"

Image format: Portable Network Graphic (*.PNG)

Background color: black

Color: Color

One example:

:ScreenCOpy:SAVe INTERNAL,"CS-8000/ScreenCopy/MyImage",PNG,BLACK,COLOR

2.5.18 :FILE Sub-system (Arbitrary file operation related)

2.5.18.1 :FILE:TRANsfer Command / Query

This command transfers any file saved on the PC to the curve tracer and saves it in the internal memory or external USB memory.

Query transfers any file stored on the internal memory or external USB memory to the PC.

This command and query cannot be used with multi-commands.

Command Syntax

:FILE:TRANsfer <storage>,<file_path>,<overwrite><delimiter><preamble><send_file>

<storage>

<CHARACTER PROGRAM DATA>	Description of settings
INTERNAL	Save to internal memory
USB	Save to external USB memory

<file_path>

<STRING PROGRAM DATA>	Description of settings
<ul style="list-style-type: none"> • Available characters Alphabet a-z, A-Z Numbers 0-9 Symbol -_!@#\$%^&()+,[]{};~`= Blank SP Directory separator / • Enclose in double quotes (") 	Specify the file name to be saved in the internal memory or external USB memory. The save destination directory can be described with a relative path from the root directory of the media specified by <storage>. The directory separator is "/" (slash).

<overwrite>

Specifies whether to overwrite a file with the same file name if it already exists. If set to ON, it will be overwritten. If it is OFF, an execution error occurs. If the <overwrite> specification is omitted, it will be OFF.

<CHARACTER PROGRAM DATA>	<DECIMAL NUMERIC PROGRAM DATA>
OFF	0
ON	1 (Non-zero)

<delimiter>

LF or CR+LF

<preamble>

#9xxxxxxxx

xxxxxxxx : 9-digit ASCII string representing the file size (number of bytes) of <send_file>

If the number of bytes is less than 9 digits, insert 0 at the beginning to make it 9 digits.

<send_file>

Arbitrary file

Remarks

Send this command in the following two steps.

Step 1 :

Send ":FILE:TRANSfer" command with delimiter with <storage> and <file_path> parameters.

This will allow the console to receive files (including preambles).

Step 2 :

Following the <preamble> above, send the <send_file>.

The maximum file size that can be sent with this command is 650MB. If you send a file larger than this, the maximum size and beyond will be truncated.

Query Syntax

:FILE:TRANSfer? <storage>, <file_path>

Response message <preamble><receive_file>

Same format as sent in step 2.

CS-8000 Series