

**MS2690A/MS2691A/MS2692A  
and MS2830A  
Signal Analyzer  
Operation Manual  
Mainframe  
Remote Control**

**32nd Edition**




- For safety and warning information, please read this manual before attempting to use the equipment.
- Additional safety and warning information is provided within the MS2690A/MS2691A/MS2692A Signal Analyzer Operation Manual (Mainframe Operation) or MS2830A Signal Analyzer Operation Manual (Main Frame Operation). Please also refer to this document before using the equipment.
- Keep this manual with the equipment.

**ANRITSU CORPORATION**

# Safety Symbols







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## Symbols used in manual

-  **DANGER** This indicates a very dangerous procedure that could result in serious injury or death if not performed properly.
-  **WARNING** This indicates a hazardous procedure that could result in serious injury or death if not performed properly.
-  **CAUTION** This indicates a hazardous procedure or danger that could result in light-to-severe injury, or loss related to equipment malfunction, if proper precautions are not taken.

## Safety Symbols Used on Equipment and in Manual

The following safety symbols are used inside or on the equipment near operation locations to provide information about safety items and operation precautions. Ensure that you clearly understand the meanings of the symbols and take the necessary precautions BEFORE using the equipment.

-  This indicates a prohibited operation. The prohibited operation is indicated symbolically in or near the barred circle.
-  This indicates an obligatory safety precaution. The obligatory operation is indicated symbolically in or near the circle.
-  This indicates a warning or caution. The contents are indicated symbolically in or near the triangle.
-  This indicates a note. The contents are described in the box.
-   These indicate that the marked part should be recycled.

MS2690A/MS2691A/MS2692A and MS2830A  
Signal Analyzer  
Operation Manual Mainframe Remote Control

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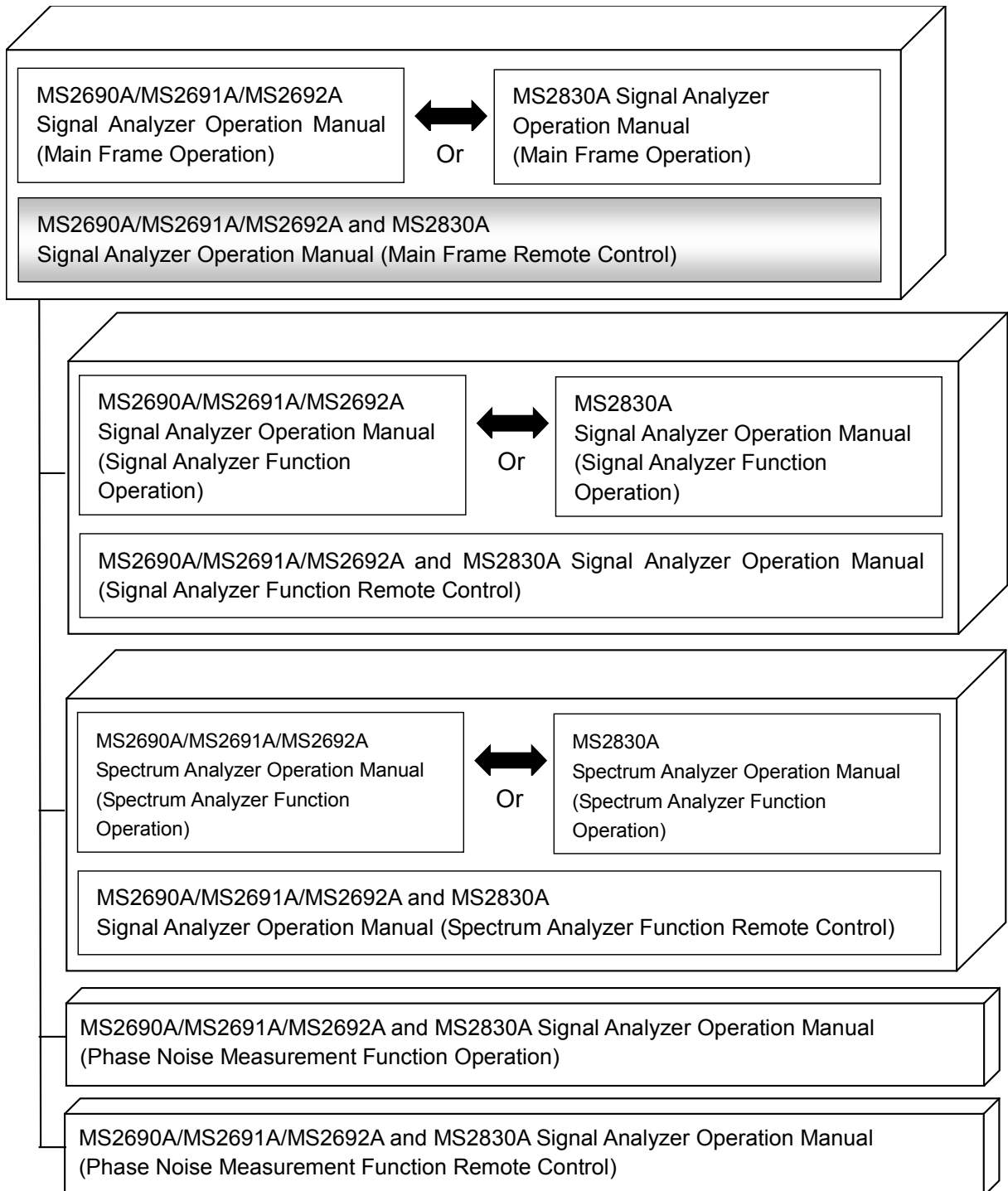
When you dispose of export-controlled items, the products/manuals need to be broken/shredded so as not to be unlawfully used for military purpose.



# About This Manual

## ■ Associated Documents

The operation manual configuration of the MS2690A/MS2691A/MS2692A or MS2830A Signal Analyzer is shown below.



- Signal Analyzer Operation Manual (Mainframe Operation)
- Signal Analyzer Operation Manual (Mainframe Remote Control)  
<This document>

Description of basic operations, maintenance procedures, common functions and common remote functions of the mainframe

- Signal Analyzer Operation Manual (Signal Analyzer Function Operation)
- Signal Analyzer Operation Manual (Signal Analyzer Function Remote Control)

Description of basic operations, functions and remote functions of the signal analyzer

- Signal Analyzer Operation Manual (Spectrum Analyzer Function Operation)
- Signal Analyzer Operation Manual (Spectrum Analyzer Function Remote Control)

Description of basic operations, functions and remote functions of the spectrum analyzer

## **Convention Used in This Manual**

Throughout this document, the use of MS269x Series is assumed unless otherwise specified. If using MS2830A, change MS269xA to read MS2830A.

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# Chapter 1 Basics of Remote Control

This chapter provides an overview of the remote control of the MS2690A/MS2691A/MS2692A or MS2830A Signal Analyzer (hereinafter, referred to as “equipment”).

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## 1.1 Overview

Automatic measurement can be performed in combination with an external controller (PC). The MS2690A/MS2691A/MS2692A or MS2830A is equipped with GPIB, Ethernet and USB interfaces as standard. The following functions are supported via these interfaces:

- Control of all functions, except for the power switch
- Reading of all the status and settings
- Interrupts and serial polls

An overview of each interface is shown below:

### (1) GPIB

The GPIB interface of the MS2690A/MS2691A/MS2692A or MS2830A conforms to the IEEE488.1/IEEE488.2 standard. The interface functions shown below are supported:

- SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT0, C0, E2

### (2) Ethernet (1000BASE-T)

The Ethernet interface of the MS2690A/MS2691A/MS2692A or MS2830A can be used as a remote control interface conforming to the VXI-11 protocol using TCP/IP. Control programs can be described using VISA software supporting the VXI-11 protocol. The interface functions shown below are supported:

- SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT0, C0

In addition, the Ethernet interface can be controlled by a Raw Socket connection using TCP/IP. Control programs can be described by using the VISA software or a Telnet client supporting Raw Socket connections. Interrupt functions and serial port operation are not supported at Raw Socket connection.

### (3) USB

The USB interface of the MS2690A/MS2691A/MS2692A or MS2830A can be used as a remote control interface conforming to the USBTMC-USB488 protocol. Control programs can be described using VISA software supporting the USBTMC-USB488 protocol. The interface functions shown below are supported:

- SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT0, C0

## 1.2 Connection

Connect the MS2690A/MS2691A/MS2692A or MS2830A and an external controller (PC) to be used for remote control using the dedicated connector for the applicable interface on the rear panel. Connection cables are provided as additional parts with the MS2690A/MS2691A/MS2692A or MS2830A.

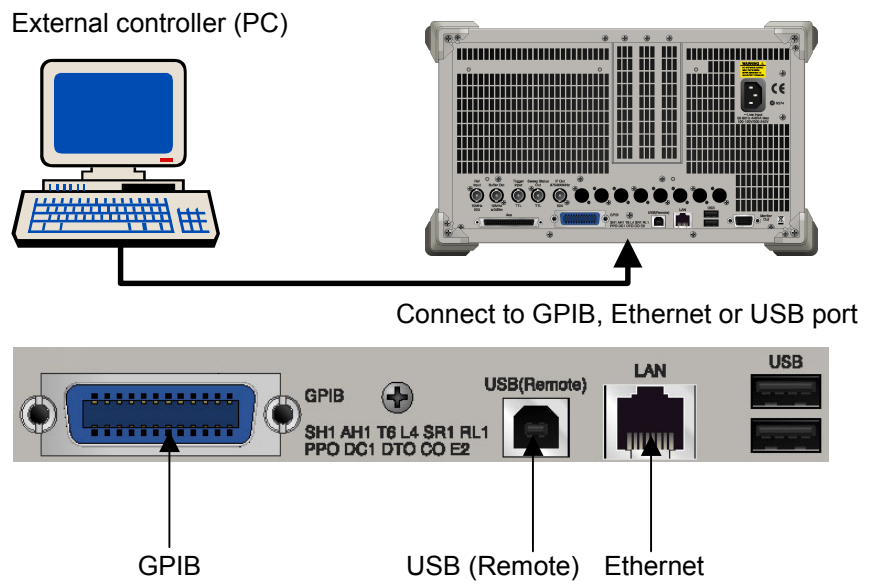


Figure 1.2-1 Connection port connecting to external controller (PC)

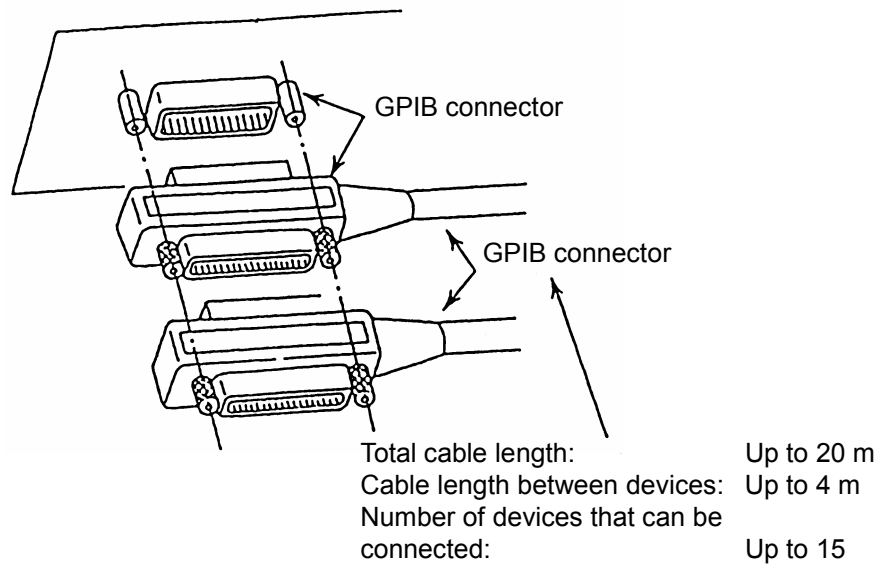
### 1.2.1 GPIB connection

Connect the GPIB connector on the rear panel of the MS2690A/MS2691A /MS2692A and an external device using a GPIB cable.

**Note:**

Be sure to connect the GPIB cable before turning power on to the MS2690A/MS2691A/MS2692A or MS2830A. Connecting it while the power is on may damage internal circuits.

Up to 15 devices, including the external controller (PC), can be connected into one unit. Be sure to abide by the conditions shown below when connecting devices.



**Figure 1.2.1-1 GPIB cable connection**

## 1.2.2 Ethernet connection

Connect the Ethernet connector on the rear panel and external devices using LAN cables.

**Note:**

Check the network settings before LAN connection. The destination LAN may be affected depending on settings.

Use a LAN crossover cable to connect the MS2690A/MS2691A/MS2692A or MS2830A and an external device. Use a network hub when connecting to multiple external devices.

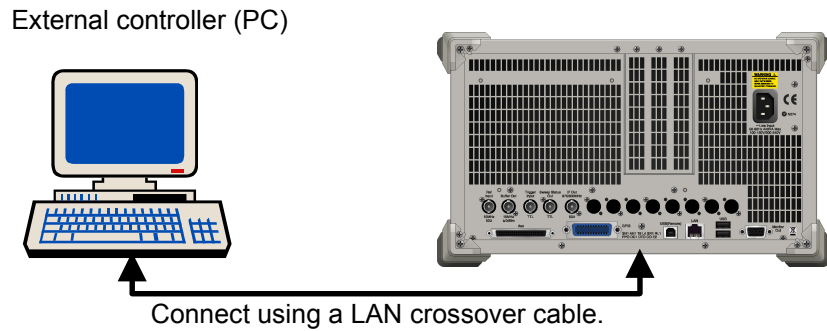


Figure 1.2.2-1 Sample connection with one external device

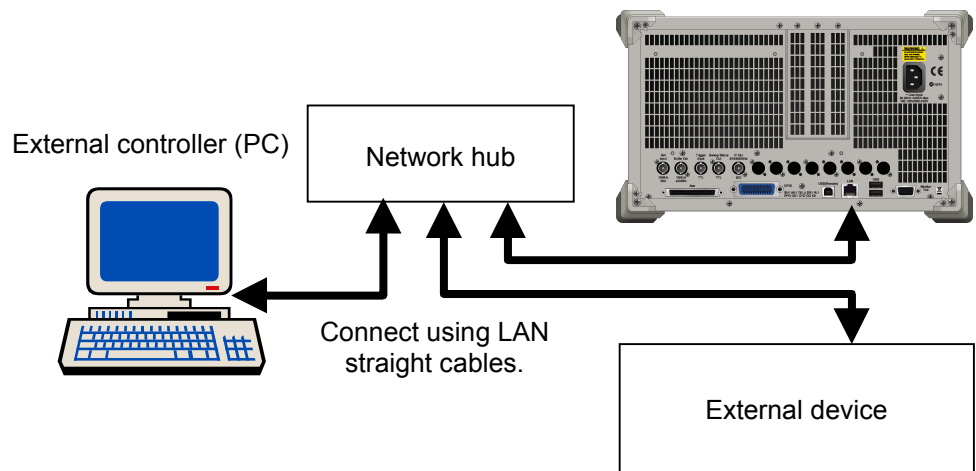


Figure 1.2.2-2 Sample connection with multiple external devices

**Note:**

External devices may experience difficulty in communicating with the MS2690A/MS2691A/MS2692A or MS2830A, depending on the status of communications between them. A LAN crossover-cable connection is recommended to ensure communication stability.

### 1.2.3 USB connection

Connect the USB (Remote) connector on the rear panel and external devices using USB cables. The external controller (PC) can be connected to multiple devices via a USB hub, etc.

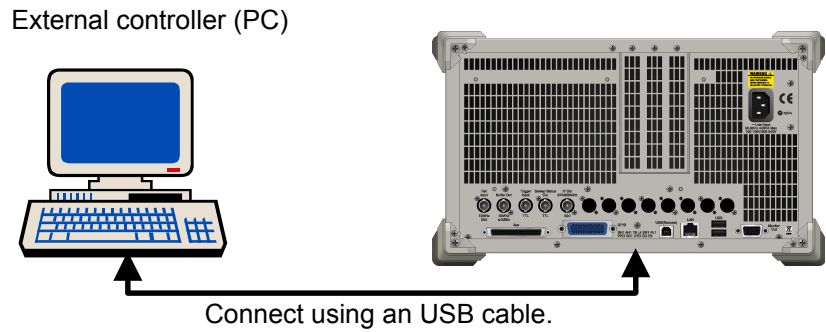


Figure 1.2.3-1 Sample connection with one external device

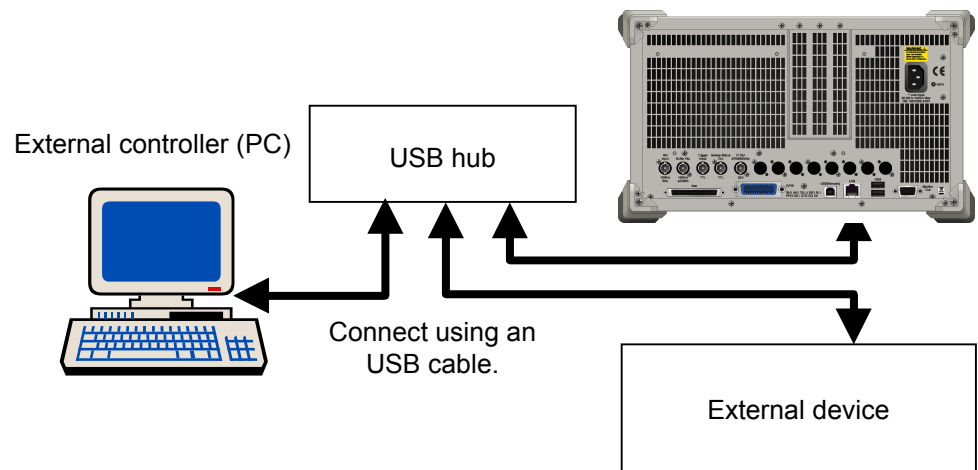




Figure 1.2.3-2 Sample connection with multiple external devices

## 1.3 Interface Settings

This section describes setting methods for the MS2690A/MS2691A/MS2692A or MS2830A and the external controller (PC) for remote control. Connecting a mouse or keyboard may be required to perform settings.

### 1.3.1 GPIB interface settings

<Procedure>

1. Press  to display the Configuration screen. Then press  (Interface Settings) to display the Interface Settings tab window.
2. Change the GPIB primary address of the MS2690A/MS2691A/MS2692A or MS2830A.

Set a value in the range from 0 to 30 for Address in the GPIB Settings field.

The Resource Name used during control program description by VISA is as shown below:

When the GPIB primary address is 1:

GPIB0::1::INSTR

3. Change the delimiter setting.  
Select “CR/LF,” “LF,” or “None (EOI only)” for Terminator in the Terminator Settings field.



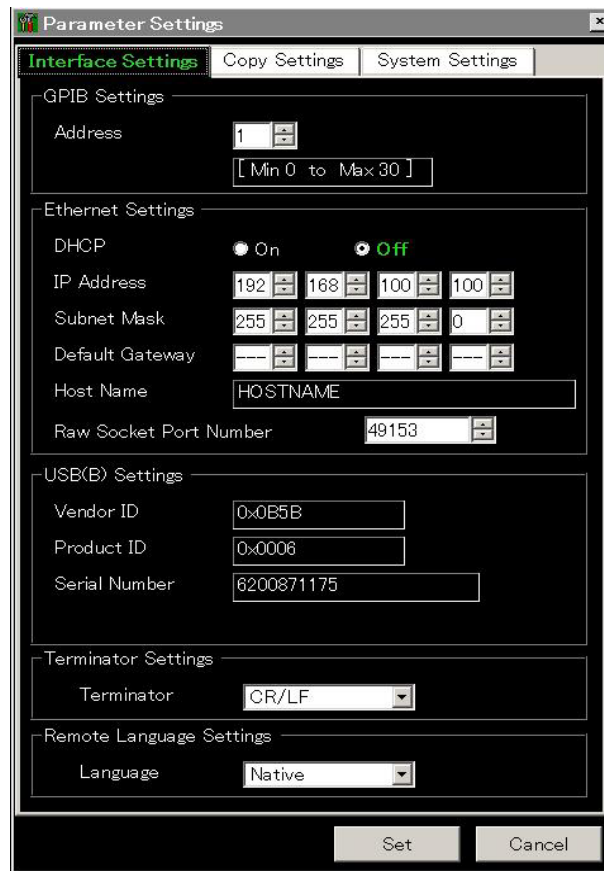




Figure 1.3.1-1 Interface Settings tab window

### 1.3.2 Ethernet interface settings

<Procedure>

1. Press  to display the Configuration screen. Then press  (Interface Settings) to display the Interface Settings tab window.
2. The equipment network settings can be checked and set.

Check IP Address, Subnet Mask, and Host Name in the Ethernet Settings field. When changing the settings in Windows, follow the “How to change IP Address and Subnet Mask on Windows” procedure described on the next page. To set the IP Address, Subnet Mask, and Default Gateway at the Configuration screen, proceed after setting DHCP to Off.

The Resource Name used during control program description by VISA is as shown below:

When IP Address = 192.168.0.1:  
TCPIP::192.168.0.1::INSTR

3. Change the delimiter setting.  
Select “CR/LF,” “LF,” or “None (EOI only)” for Terminator in the Terminator Settings field.
4. Set the Raw Socket Port Number.

At Raw Socket connection, set the Raw Socket Port Number of the Ethernet Settings.

Setting range	1 to 65535
Default	49153
Resolution	1

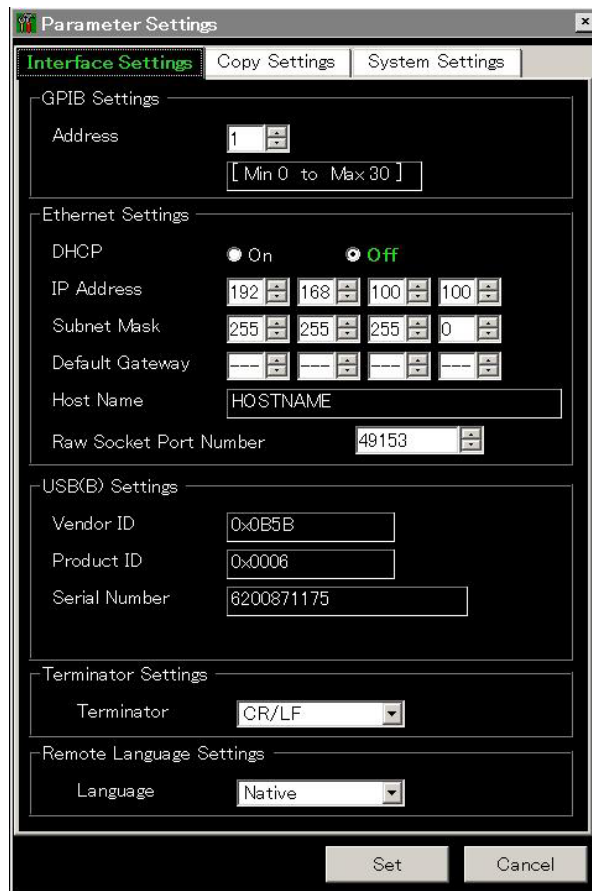
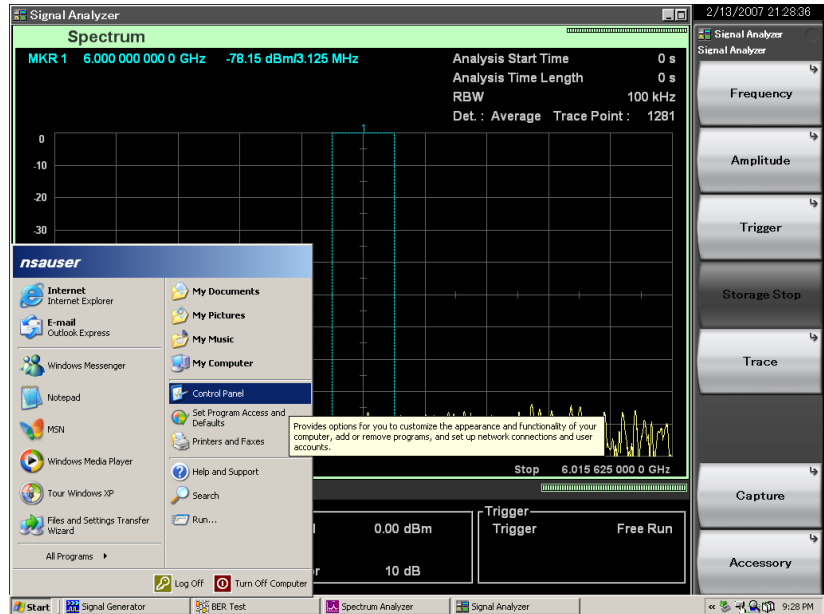


Figure 1.3.2-1 Interface Settings tab window

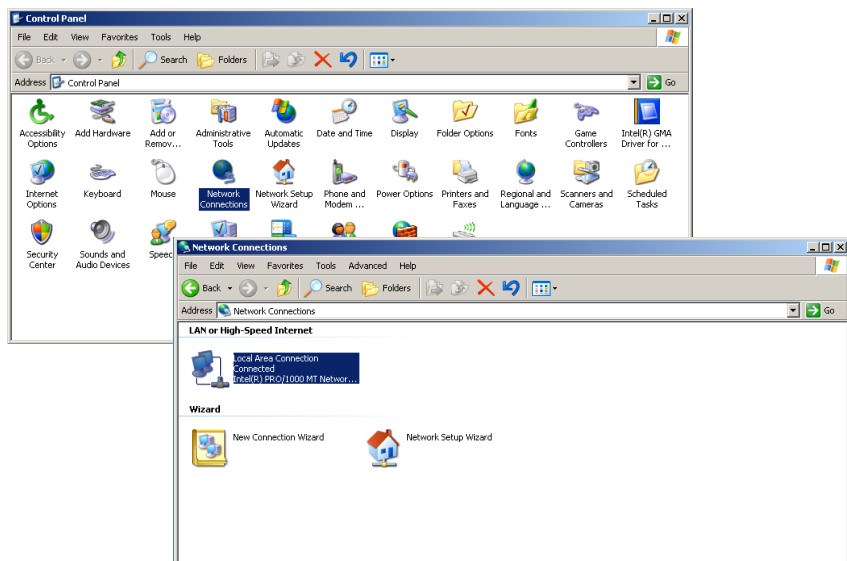
<How to change IP Address and Subnet Mask on Windows>

When the OS on MS2690A/MS2691A/MS2692A/MS2830A is Windows XP

1. Connect a keyboard. Press the Windows key to open the Start menu and then click Control Panel. (Or connect a mouse and move the pointer to the bottom of the screen by using it to open the Start menu.) The Control Panel window is displayed.

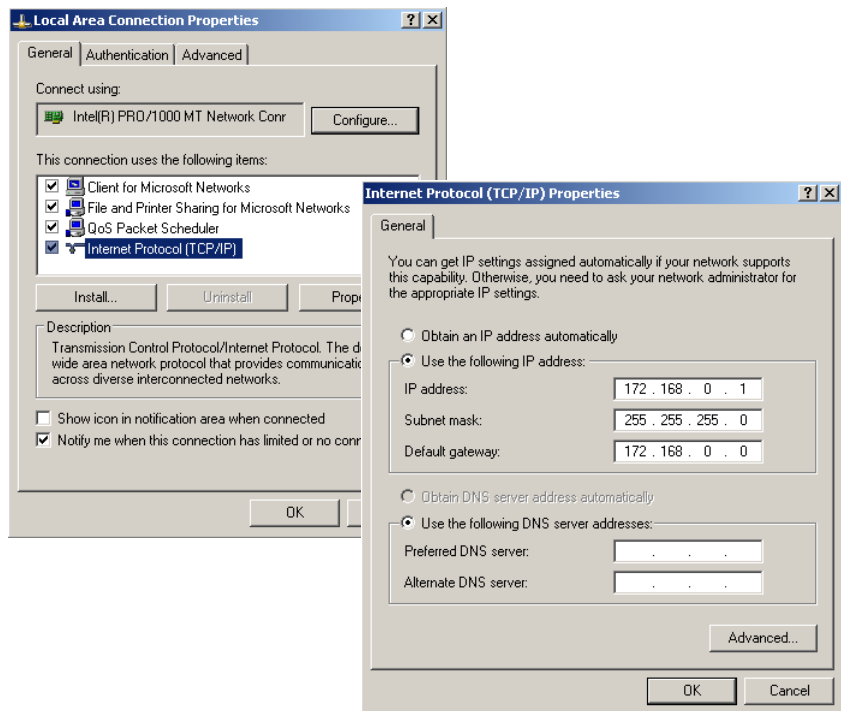


2. On the Control Panel window, click Network Connections to display the Network Connections window. Then click Local Area Connection on the Network Connections window to display the Local Area Connection Properties window.



3. On the Local Area Connection Properties window, click Internet Protocol (TCP/IP) to display the Internet Protocol (TCP/IP) Properties window.

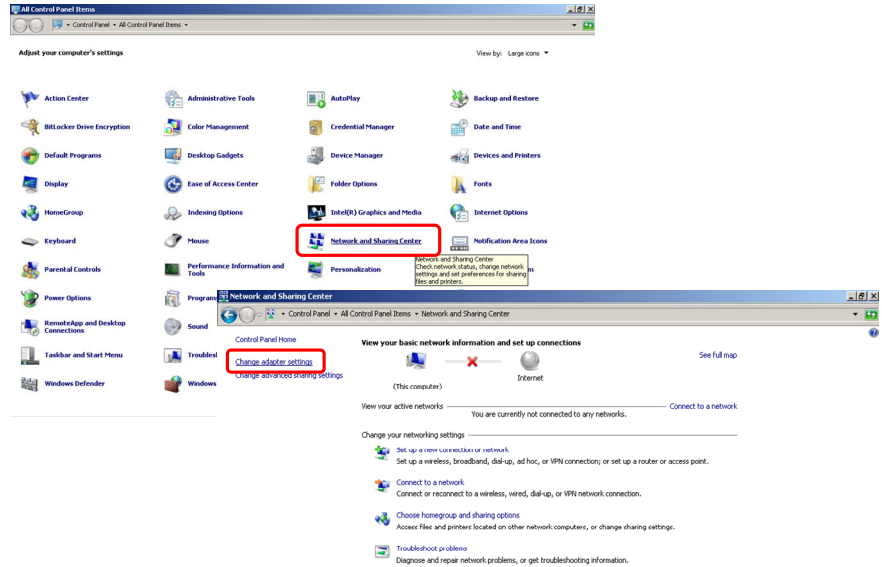
Change the settings according to the connection conditions.



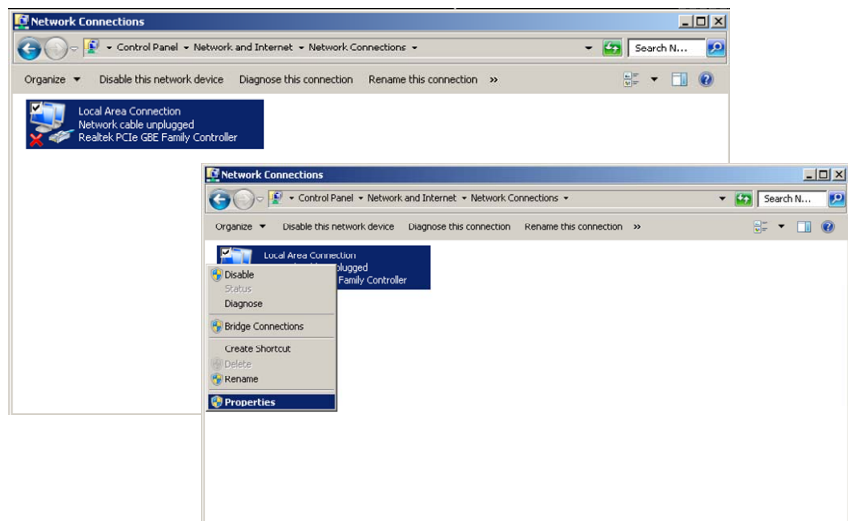
4. Check the changed settings on the Configuration screen.

When the OS on MS2690A/MS2691A/MS2692A/MS2830A is Windows Embedded Standard 7

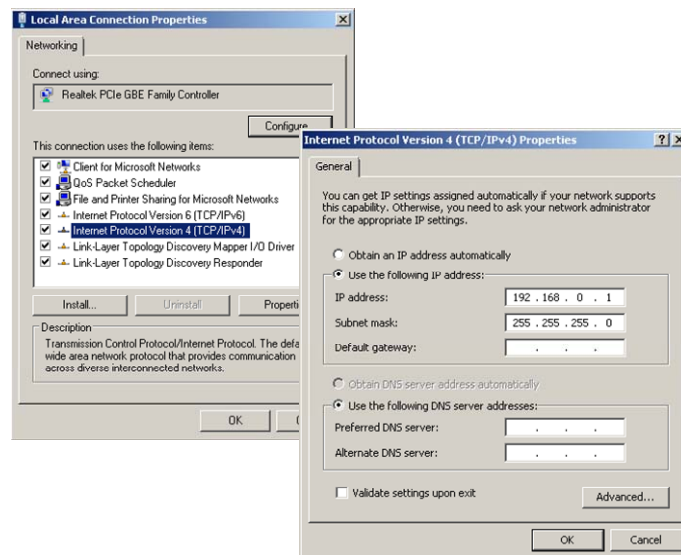
1. On the keyboard, press the Windows logo key, and then the **Start** button, and click **Control Panel**. In Control Panel, click **Network and Sharing Center**, and then click **Change adapter settings**.



2. Right-click **Local Area Connection**, and then click **Properties**.



3. In the **Local Area Connection Properties** dialog box, click **Internet Protocol Version 4 (TCP/IP)**, and then click **Properties**. In the **Internet Protocol Version 4 (TCP/IP) Properties** dialog box, change the settings according to the connection conditions.



4. In the Configuration screen, check that the settings have changed.

### 1.3.3 USB interface settings

<Procedure>

1. Press **System Config** to display the Configuration screen. Then press **F1** (Interface Settings) to display the Interface Settings tab window.
2. Check Vendor ID, Product ID, and Serial Number displayed in the USB(B) Settings field.

The Resource Name used during control program description by VISA is as shown below:

When Vendor ID = 0x0B5B, Product ID = 0x0006, Serial Number = 123456789:

USB0::0x0B5B::0x0006::123456789::INSTR

3. Change the delimiter setting.  
Select “CR/LF,” “LF,” or “None (EOI only)” for Terminator in the Terminator Settings field.

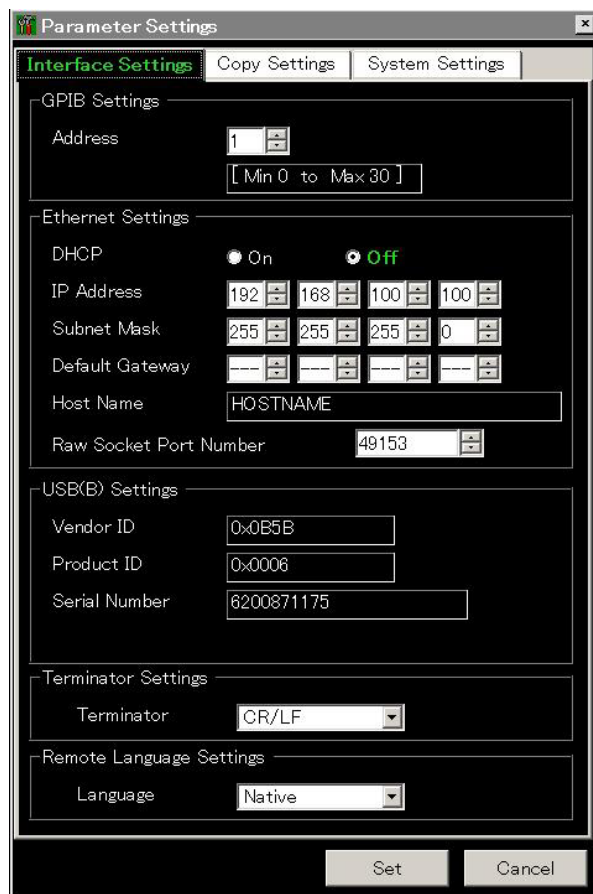



Figure 1.3.3-1 Interface Settings tab window



## 1.4 Interface Selection/Changing

The MS2690A/MS2691A/MS2692A or MS2830A supports GPIB, Ethernet and USB as remote control interfaces. Only one of these can be used at once.

The interface to be used is determined automatically according to the communication start command received from the external controller (PC) while in Local status. It enters Remote status when the interface is determined.  on the front panel goes off in Local status and lights up in Remote status.

To change the interface, the MS2690A/MS2691A/MS2692A or MS2830A must enter Local status again. Press  on the front panel to enter Local status, then send a command via the desired interface.

## 1.5 Initialization

Initialization types and targets for the MS2690A/MS2691A/MS2692A or MS2830A are shown in the table below.

**Table 1.5-1 Initialization level**

Item	IFC	DCL/SDC	Power On	*RST	*CLS
Interface bus initialization	√	–	√	–	–
Message exchange initialization • Input buffer and output queue • Message processing and status	–	√	√	–	–
OPC status initialization	–	√	√	√	√
Event status initialization	–	–	–	–	√
Protected settings initialization (Calibration values, Correction values, OS settings, application load/execution status, etc.)	–	–	–	–	–
Initialization of settings saved at power-off	–	–	*	√	–
Initialization of settings not saved at power-off (window status, measurement results, etc.)	–	–	√	√	–

\*: Restores the settings from the last power-off.

(1) IFC (Interface Clear)

- Reception of control command IFC from external controller (PC) (GPIB)
- create\_link request from external controller (PC) (Ethernet)
- Establishment of USB2.0 link (USB)
- Pressing of [Local] key

(2) DCL (Device Clear)/SDC (Selectable Device Clear)

- Reception of control command, DCL or SDC, from external controller (PC) (GPIB)
- device\_clear request from external controller (PC) (Ethernet)
- Reception of INITIATE\_CLEAR from external controller (PC) (USB)

(3) Power On

- Power-on of the MS2690A/MS2691A/MS2692A or MS2830A

(4) \*RST

- Reception of \*RST command (GPIB/Ethernet/USB)

(5) \*CLS

- Reception of \*CLS command (GPIB/Ethernet/USB)

## 1.6 Language Mode

You can select a remote control command from *SCPI mode*, which is the command format defined by the Standard Commands for Programmable Instrumentation (SCPI) Consortium, and *Native mode*, which is our unique format.

- **SCPI Mode**  
This is a command format defined by the SCPI Consortium and enables control of instruments offered by various manufacturers following a common rule.
- **Native Mode**  
This is one of our unique command formats. The SCPI mode command is not compatible with some applications of this instrument. The Native mode enables remote control of the applications.



Follow the procedure shown below to initialize the language mode to the Native mode.

- Execute System Reset.
- Execute the system recovery function.

### 1.6.1 Language mode switching

The language mode can be switched by the configuration tab window or a remote command. Follow the procedure below in order to switch the mode on the Configuration screen.

<Procedure>

1. Press  to display the Configuration display. Next, press  (Interface Settings) to display the Interface Settings screen.
2. Select Language of Remote Language Settings from either SCPI or Native.

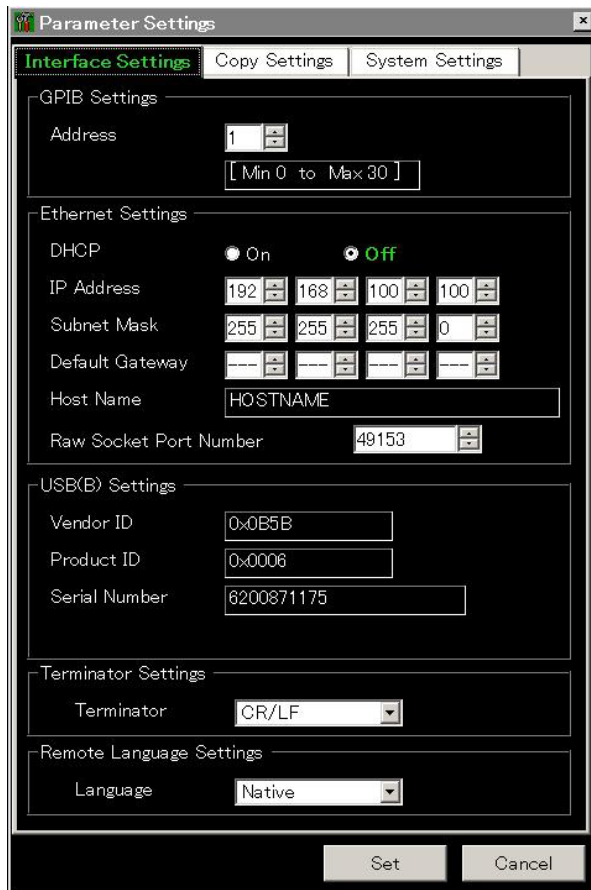


Figure 1.6.1-1 Interface Settings tab window

The following command is used for changing into the SCPI mode, by using the remote command.

```
SYST:LANG SCPI
```

The following command is used for changing into the Native mode, by using the remote command.

```
:SYSTem:LANGuage NATive
```

## 1.6.2 How to use SCPI command by Native mode

Some functions of the applications of this instrument only support the SCPI commands. In order to enable remote control of the functions, convert the corresponding SCPI commands into the Native commands. The conversion rule is shown below.

### Conversion rule

- (1) Delete the numeric parameter in the program header of an SCPI command, and describe the argument corresponding to the numeric parameter as the first argument. If the argument can have only one numeric value and the argument can be omitted, omit it. Describe the argument if it cannot be omitted.
- (2) Use the first one if multiple nodes can be selected.
- (3) Delete those layers which can be deleted.
- (4) Alter all long forms into short forms.
- (5) Delete the colon mark (":") at the head.

### Example 1

Convert `:CALCulate:MARKer[1]|2[:SET]:CENTer` into a Native command.

- (1) Put a numeric parameter of the program header at the head of the argument.

```
:CALCulate:MARKer[1]|2[:SET]:CENTer <freq>
↓
:CALCulate:MARKer[:SET]:CENTer <integer>,<freq>
(1 or 2 can be entered into <integer>.)
```

- (2) Delete the layers that can be deleted.

```
:CALCulate:MARKer[:SET]:CENTer <integer>_<freq>
↓
:CALCulate:MARKer:CENTer <integer>_<freq>
```

- (3) Alter all long forms into short forms.

```
:CALCulate:MARKer:CENTer <integer>_<freq>
↓
:CALC:MARK:CENT <integer>_<freq>
```

- (4) Delete the colon mark (":") at the head.

```
_CALC:MARK:CENT <integer>_<freq>
↓
```

CALC:MARK:CENT <integer>\_<freq>

**Example 2**

Convert “:DISPlay:WINDow[1]:TRACe]Y[:SCALe]:PDIVision <percent>” into a Native command.

- (1) Put a numeric parameter of the program header at the head of the argument.

In this example, the numeric parameter should be deleted, since there is only one numeric parameter.

```
:DISPlay:WINDow[1]:TRACe:Y[:SCALe]:PDIVision <percent>  
↓  
:DISPlay:WINDow:TRACe:Y[:SCALe]:PDIVision <percent>
```

- (2) Delete the layers that can be deleted

```
:DISPlay:WINDow:TRACe:Y[:SCALe]:PDIVision <percent>  
↓  
:DISPlay:WINDow:TRACe:Y:PDIVision <percent>
```

- (3) Alter all long forms into short forms.

```
:DISPlay:WINDow:TRACe:Y:PDIVision <percent>  
↓  
:DISP:WIND:TRAC:Y:PDIV <percent>
```

- (4) Delete the colon mark (“:”) at the head.

```
:DISP:WIND:TRAC:Y:PDIV <percent>  
↓  
DISP:WIND:TRAC:Y:PDIV <percent>
```

**Example 3**

Convert [:SENSe]:BPOWer|:TXPower[:STATe]?  
into a Native command.

- (1) Use the leading one if multiple nodes can be selected.

[:SENSe]:BPOWer|:TXPower[:STATe]?

↓

[:SENSe]:BPOWer[:STATe]?

- (2) Delete the layers that can be deleted.

[:SENSe]:BPOWer[:STATe]?

↓

:BPOWer?

- (3) Alter all long forms into short forms.

:BPOWer?

↓

:BPOW?

- (4) Delete the colon mark (":") at the head.

:BPOW?

↓

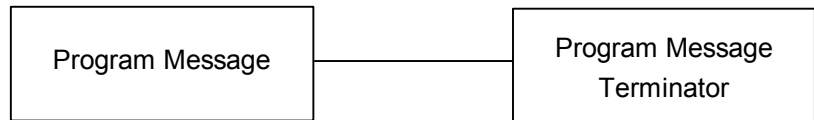
BPOW?

## 1.7 SCPI Device Message Details

### 1.7.1 SCPI Program message formats

Among all device messages, those that are transmitted from the external controller (PC) to the MS2690A/MS2691A/MS2692A or MS2830A are called “program messages”. Program messages fall into two groups: program commands, which set or specify instrument parameters, and program queries, which request parameters and measurement results.

An example of transmitting a program message from the external controller (PC) program to the MS2690A/MS2691A/MS2692A or MS2830A with a PRINT or any other statement is shown below.

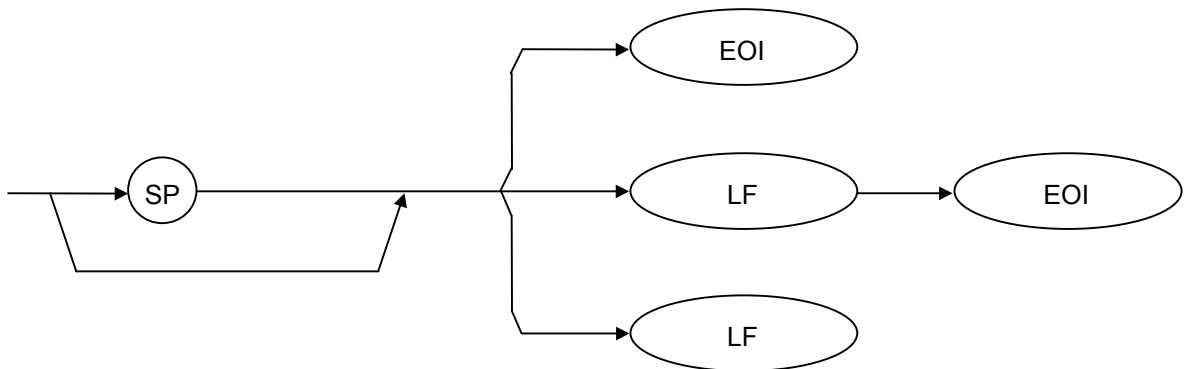


PRINT @1;“MEAS:ACP?”

↑ Program message

A program message, when transmitted from the external controller (PC) to this unit, is terminated by a specified terminator.

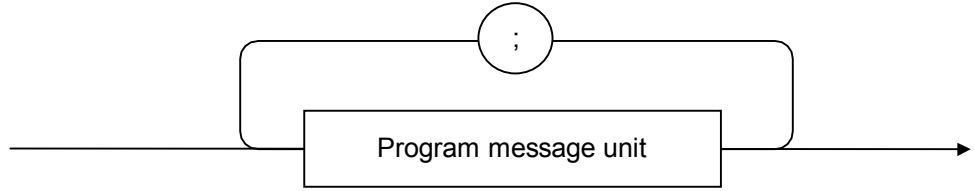
Program Message Terminator



CR (Carriage Return) is ignored without being processed as a terminator.



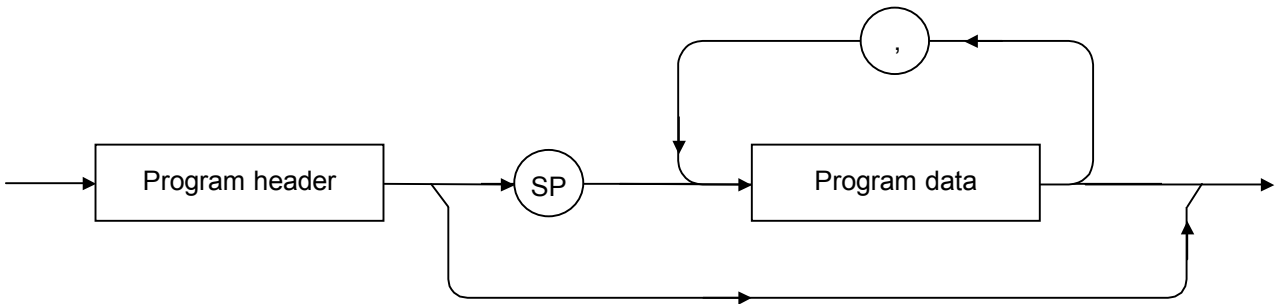
Program message



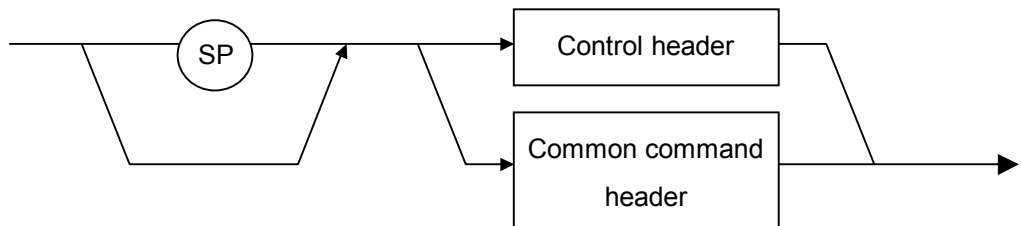
<Example>  
PRINT @1; "CONF:ACP;READ:ACP?"

Multiple commands can be transmitted separately by separating them with semicolons (";").

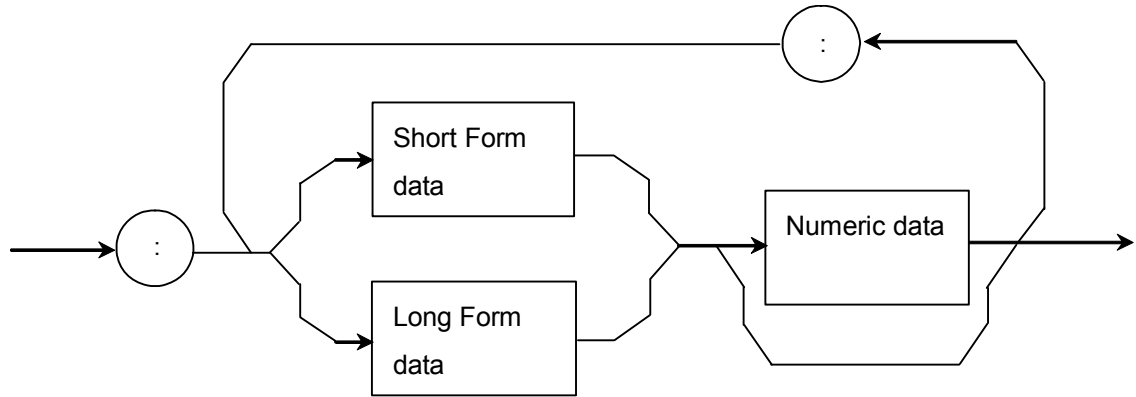
Program message unit



Program header

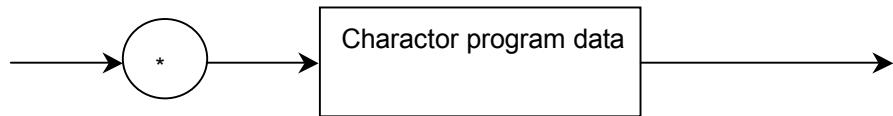


Control header



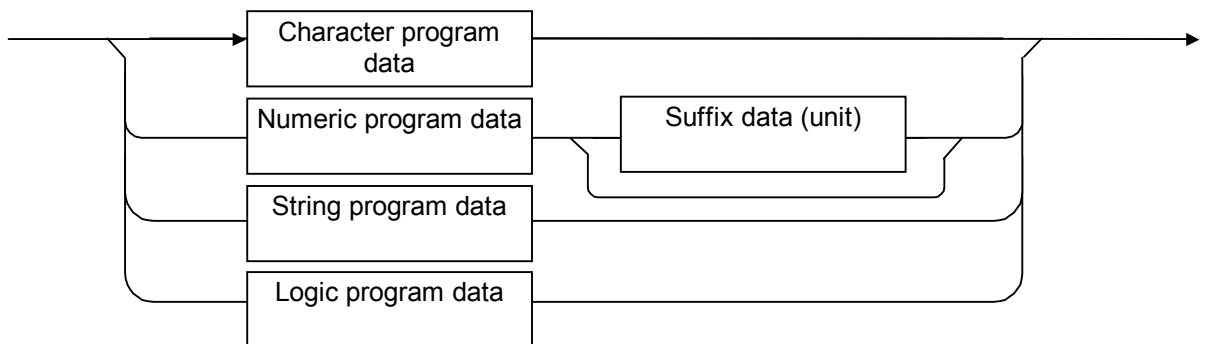
Short Form data corresponds to the short form of SCPI. Long Form data corresponds to the long form of SCPI. Refer to the character program data for each specification. The numeric data is specified as a single ASCII code byte indicating any value within the range of numeric data, from 0 to 9.0.

Common command header



The common command header is denoted by an asterisk (\*) before the character program data.

Program data



## Character program data

Defined strings of data are composed of any of the lowercase and uppercase alphanumeric characters A to Z and 0 to 9, and the underscore (“\_”).

## &lt;Examples&gt;

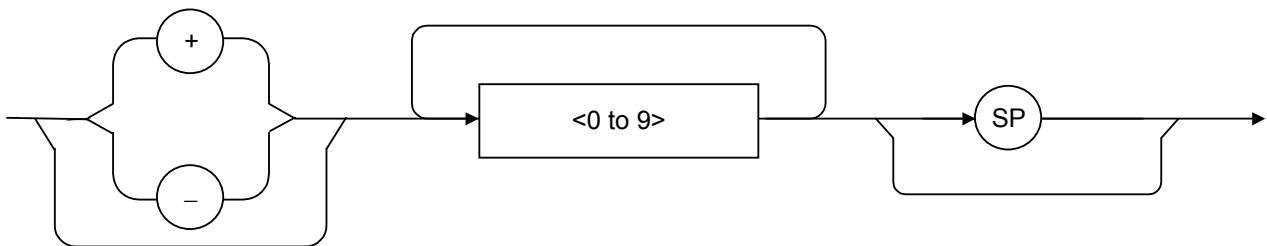
LOAD SIGANA..... Loads the Signal Analyzer.

SOUND OFF ..... Sets sound to off.

## Numeric program data

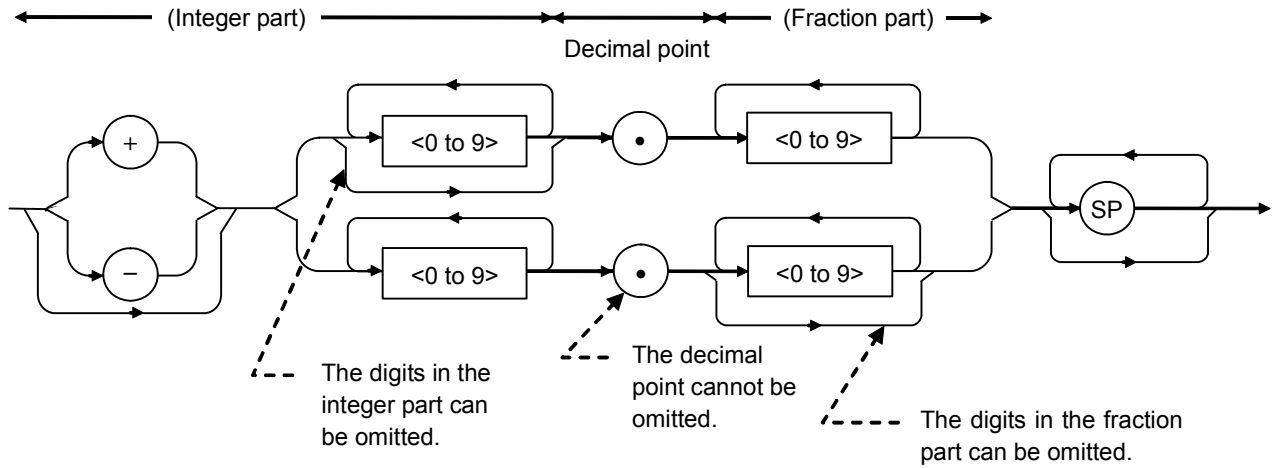
Numeric program data is grouped into four types: integral (NR1), fixed-point decimal (NR2), floating-point decimal (NR3), and hexadecimal formats.

## Integral (NR1)



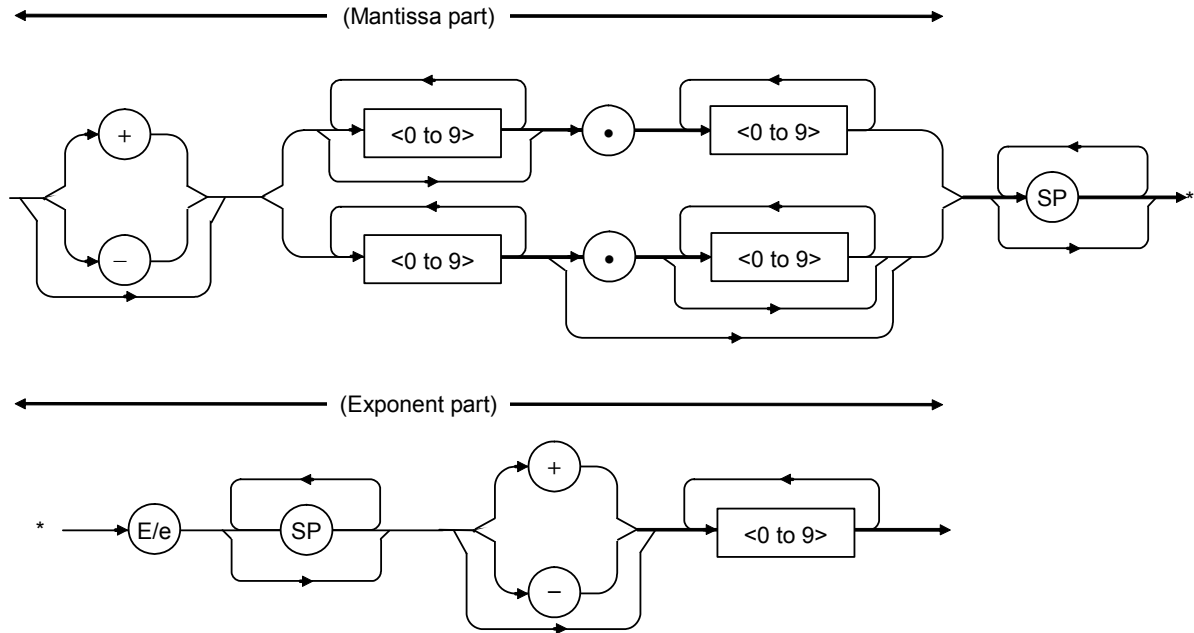
- Integral data can have leading zeroes (e.g., 005, +005, -20).
- No space is allowed between a sign (+ or -) and the numeric value that follows it.
- The plus (“+”) sign can be omitted (e.g., 005, +005, -20).

Fixed-point decimal (NR2)



- An integer is represented in the integral part.
- No space is allowed between a digit and the decimal point that follows it.
- The plus (“+”) sign can be omitted.
- The digit 0 in the integral part may be omitted.
- Any number of zeroes, including none, may precede the numeric value in the integral part (e.g., -0.5, +00204, -5).

## Floating-point decimal (NR3)



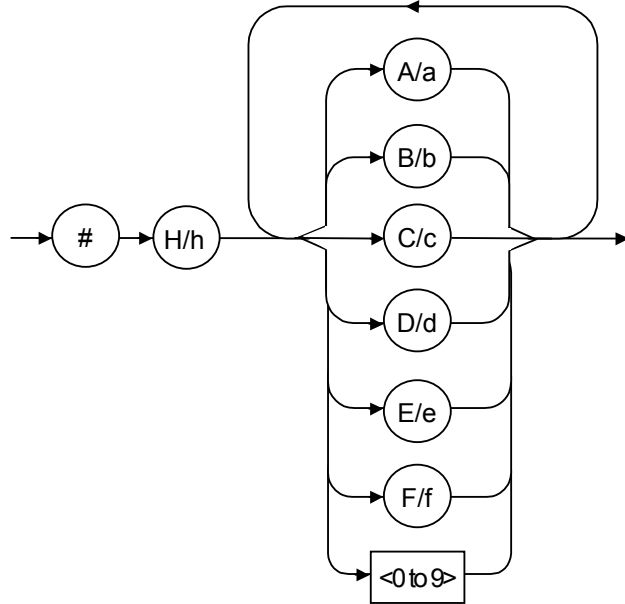
- E denotes the power of 10, or the exponent.
- Spaces are allowed both before and after, only before or only after E/e.
- A numeric value is required in the mantissa.
- Alternatively selectable numeric values (ex. 1|2) and character strings are unavailable.
- The plus (“+”) sign can be omitted (from both the mantissa and the exponent).

<Examples>

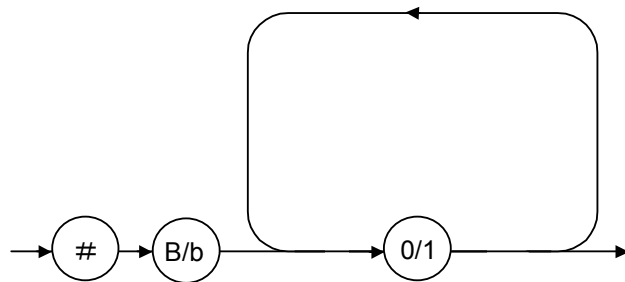
$$-22.34E+6 \rightarrow -22.34 \times 10^6 (= -22,340,000)$$

$$5.3e-4 \rightarrow 5.3 \times 10^{-4} (= 0.00053)$$

Hexadecimal data



Binary data



## Suffix data

The table below lists the suffix data that is used in the MS2690A/MS2691A/MS2692A or MS2830A.

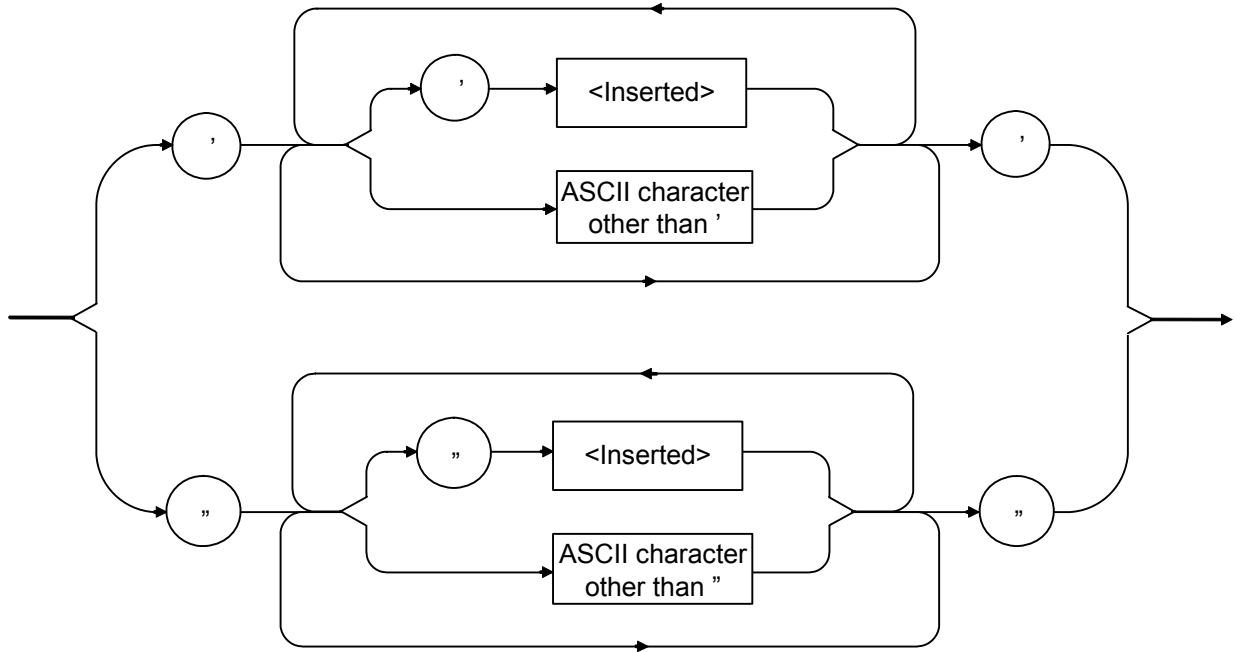
The suffix codes available vary depending on the function.

Table 1.7.1-1. Suffix codes

Category	Suffix Code	Unit
Frequency	GHZ or GZ	GHz
	MHZ or MZ	MHz
	KHZ or KZ	kHz
	HZ	Hz
Level	DB	dB
	DBM or DM	dBm
	DBMV	dBmV
	DBUV or DBU	dB $\mu$ V
	DBUVE	dB $\mu$ V (emf)
	DBUVM	dB $\mu$ V/m
	W	W
	MW	mW
	UW	$\mu$ W
	NW	nW
	PW	pW
	FW	fW
	V	V
MV	mV	
UV	$\mu$ V	
Time	S	s
	MS	ms
	US	$\mu$ s
	NS	ns
Bit count	GBIT	Gbit
	MBIT	Mbit
	KBIT	kbit
	BIT	bit
Angle	RAD	radian
	DEG	degree

String program data

An arbitrary character string is enclosed by one pair of double quotation marks (“ ”) or single quotation marks (‘ ’). The characters that can be used vary depending on their function.



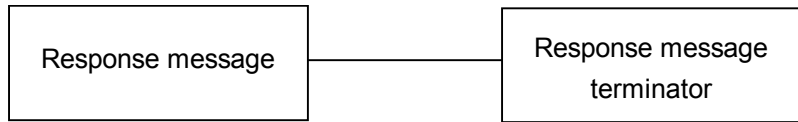
Logic program data

Logical program data indicates a logical value by the program data specified in SCPI. On/off of character program data and 1/0 of numeric program data are defined as values corresponding to true/false.

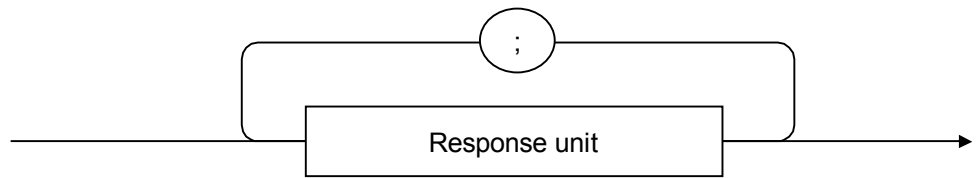


### 1.7.2 SCPI Response message formats

The formats in which the external controller (PC) transmits response messages from the MS2690A/MS2691A/MS2692A or MS2830A by way of INPUT and other statements are described below.

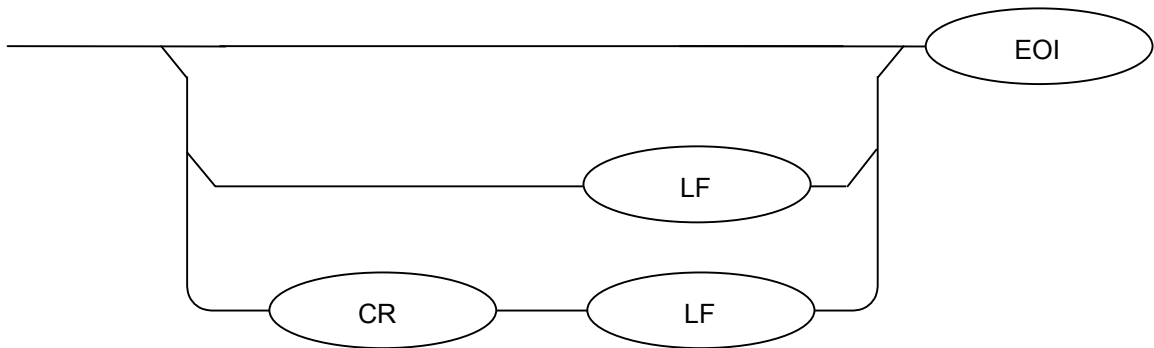


Response message



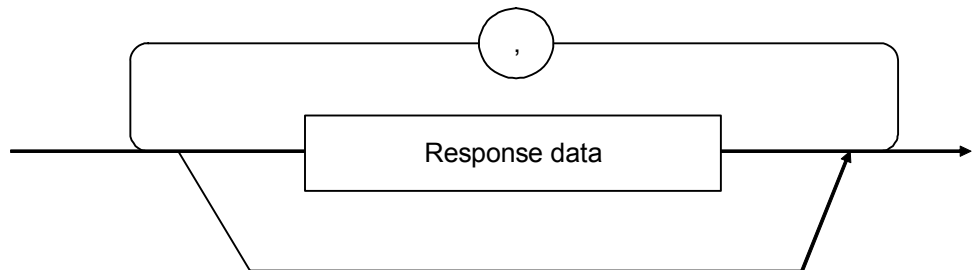
A response message is composed of one or more response message units to one or more program queries issued with one PRINT statement.

Response Message Terminator



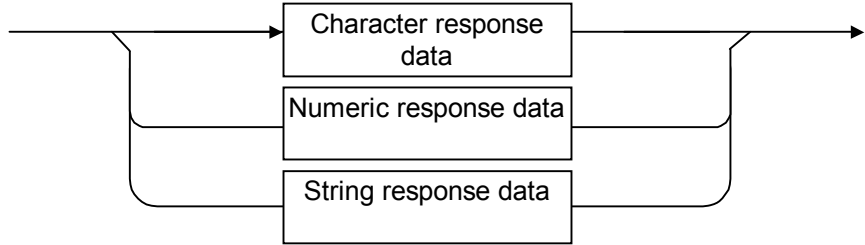
Use a  
 ‘:SYSTem:COMMunicate:GPIB[1][:SELF]:DELimiter’  
 command to specify the terminator format.

Response Unit



Response unit has no header and only returns the data of the measurement data.

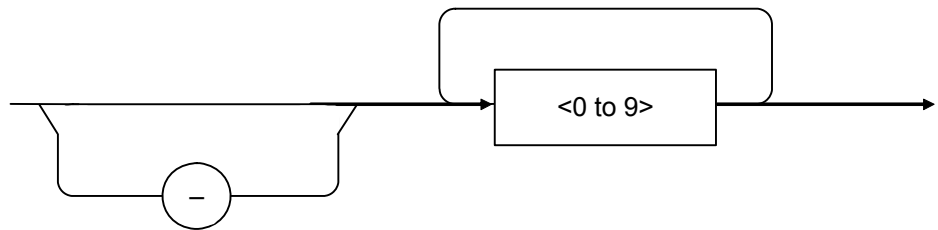
Response data



Character response data

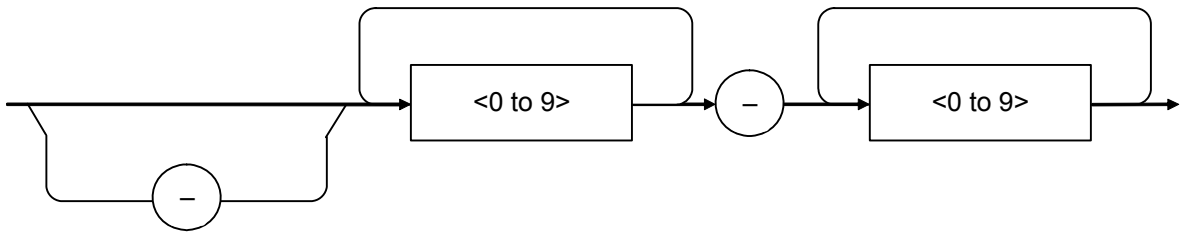
Defined strings of data are composed of any of the lowercase and uppercase alphanumeric characters A to Z and the digits 0 to 9, and the underscore (“\_”).

Numeric response data  
Integer (NR1)



- The leading digit must be non-zero.  
<Examples>  
123, -1234

Fixed-point decimal (NR2)

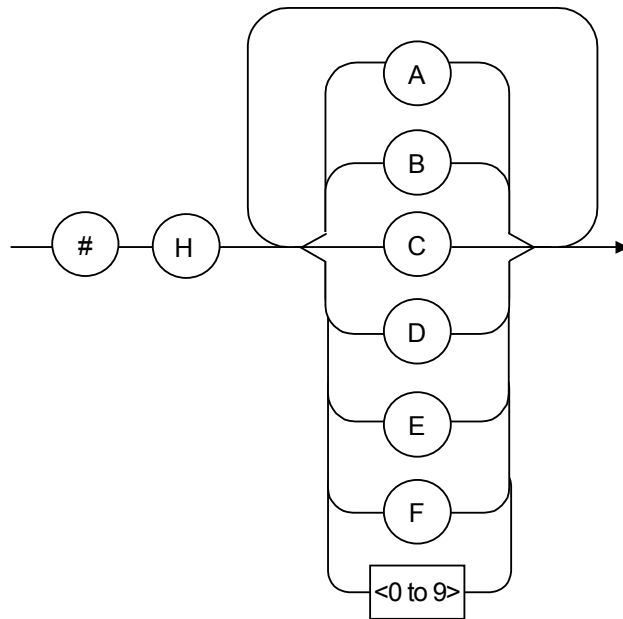


- The leading digit must be non-zero.
- A fixed-point decimal number having a value of 0 in its decimal place is output as an integer.

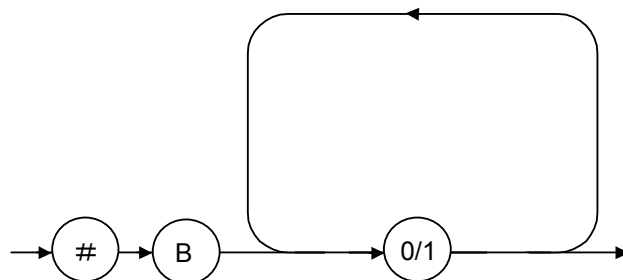
<Examples>

12.34, -12.345

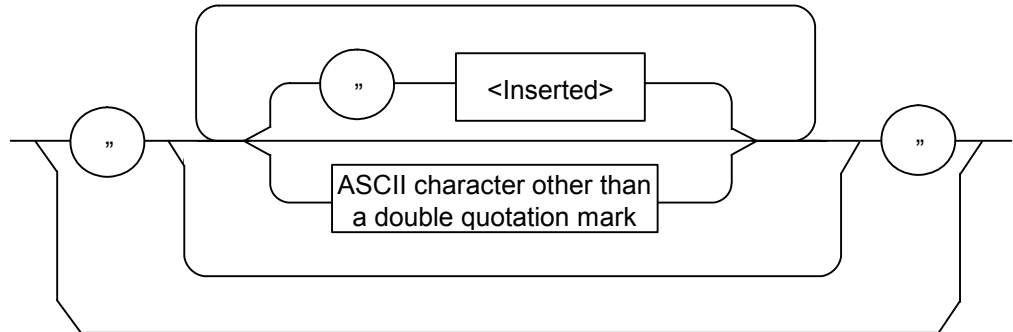
Hexadecimal data



Binary data

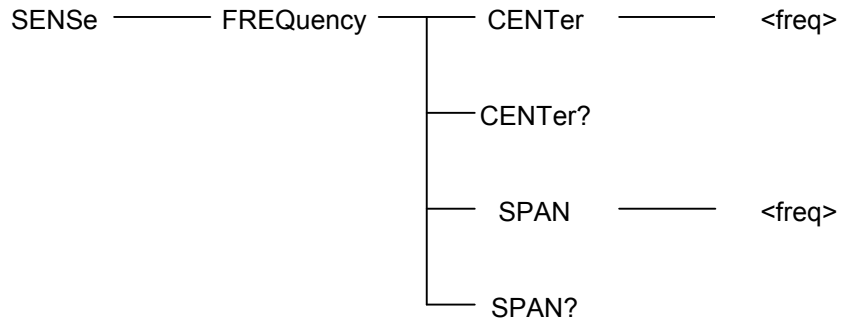


String response data



### 1.7.3 Structure of SCPI command

The SCPI commands are based on a layered structure. The commands are grouped according to their related functions, and each of them has a layer structure called a “sub-system”.



Example of SCPI command tree

Although the same header may be in the commands, it corresponds to each function, according to the position of the header. Therefore, the commands need to be described with all the headers available on the full path.

### 1.7.4 Command definition method

```
:SENSe:FREQUency:CENTer <freq>  
:SENSe:FREQUency:CENTer?  
:SENSe:FREQUency:SPAN <freq>  
:SENSe:FREQUency:SPAN?
```

Example of SCPI command

The command tree in the previous page comprises the SCPI commands listed above. Overviews of the SCPI command definitions are shown below.

#### <Command Format>

The command starts with a colon (“:”), and the commands are configured by consolidating a header with a header by a colon (“:”).

#### <Omission format of header>

The headers have both a short and a long form, the short form being an abbreviated version of the long form. The commands are interpreted as being the same, regardless of whether the short or long form is used (both can be used at the same time). Uppercase and lower case alphabetic characters are used in this manual to distinguish between the short and long forms. (Uppercase letters denote the short form.) It should be noted that the headers are not case sensitive.

Example:

```
long form           > :SENSe:FREQUency:CENTer 1000000  
short form          > :SENS:FREQ:CENT 1000000  
long + short form  > :SENSe:FREQ:CENTer 1000000
```

#### <Option Node>

[ ] indicates an Option Node.

A header enclosed by square brackets (“[ ]”) may be omitted, and is treated as the same command whether omitted or not.

Example:

```
:STATus:OPERation:[EVENT]?  
When the header is not omitted > :STATus:OPERation:EVENT?  
When the header is omitted     > :STATus:OPERation?
```

<Header Separator>

There must be at least one space between a command and a parameter. Furthermore, if there is more than one parameter, they need to be separated by commas.

### 1.7.5 Composition of commands

As in the following examples, commands can be combined by a semi-colon (“;”). The second command is referred to as the same level as the bottom layer of the first command. Thus, the second command can be described as in Example 1, or can be described without the upper header over FREQUENCY, as in Example 2.

Example 1:    >:SENSe:FREQuency:CENTer 1000000  
              :SENSe:FREQuency:SPAN 500000

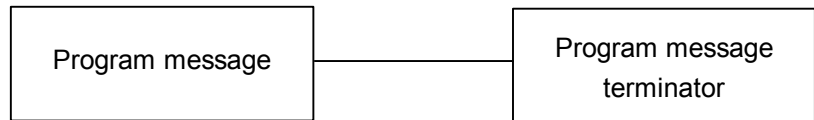
Example 2:    >:SENSe:FREQuency:CENTer 1000000;SPAN 500000

## 1.8 Native Device Message Details

### 1.8.1 Native Program message formats

Among all device messages, those that are transmitted from the external controller (PC) to the MS2690A/MS2691A/MS2692A or MS2830A are called “program messages”. Program messages fall into two groups: program commands, which set or specify instrument parameters, and program queries, which request parameters and measurement results.

An example of transmitting a program message from the external controller (PC) program to the MS2690A/MS2691A/MS2692A or MS2830A with a PRINT or any other statement is shown below.

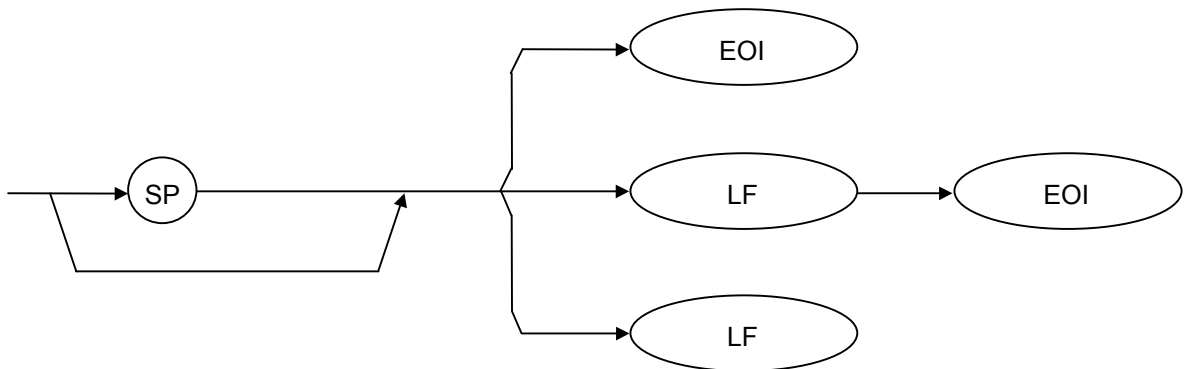


PRINT @1;"CNF 1GHZ"

↑  
Program message

A program message, when transmitted from the external controller (PC) to this unit, is terminated by a specified terminator.

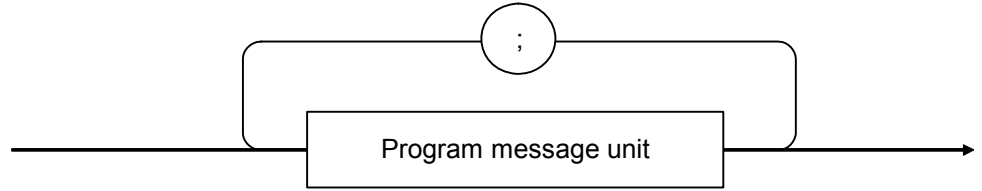
Program message terminator



CR (Carriage Return) is ignored without being processed as a terminator.



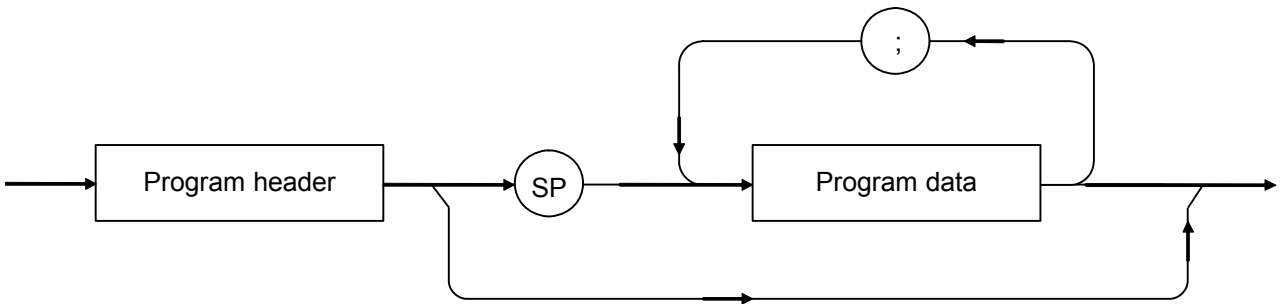
Program message



<Example>  
 PRINT @1;"CNF 1GHZ;RLV 0DBM"

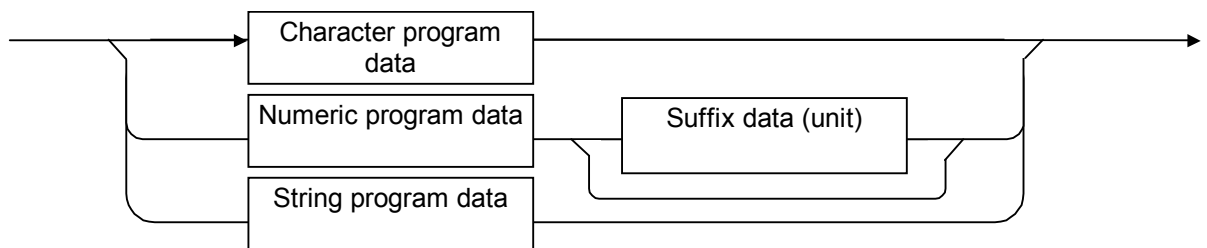
Multiple commands can be transmitted separately by separating them with semicolons (;).

Program message unit



The program header of each IEEE488.2 common command begins with an asterisk (\*). The program header of each program query (query) generally ends with a question mark (?).

Program data



Character program data

Defined strings of data are composed of any of the alphabetical lower-case and upper-case characters A to Z, the digits 0 through 9, and the underscore (\_).

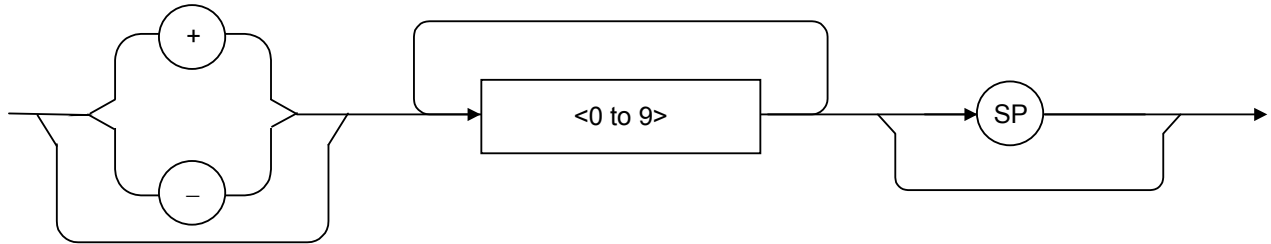
<Examples>

LOAD SIGANA..... Loads the Signal Analyzer.  
 SOUND OFF ..... Sets sound to Off.

Numeric program data

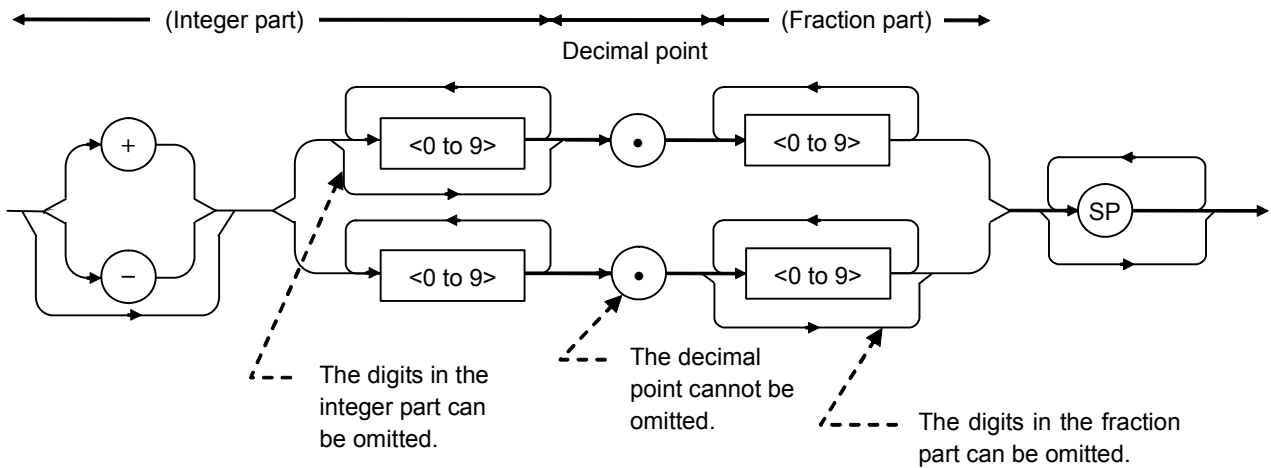
Numeric program data is grouped into four types: integral (NR1), fixed-point decimal (NR2), floating-point decimal (NR3), and hexadecimal.

Integral (NR1)



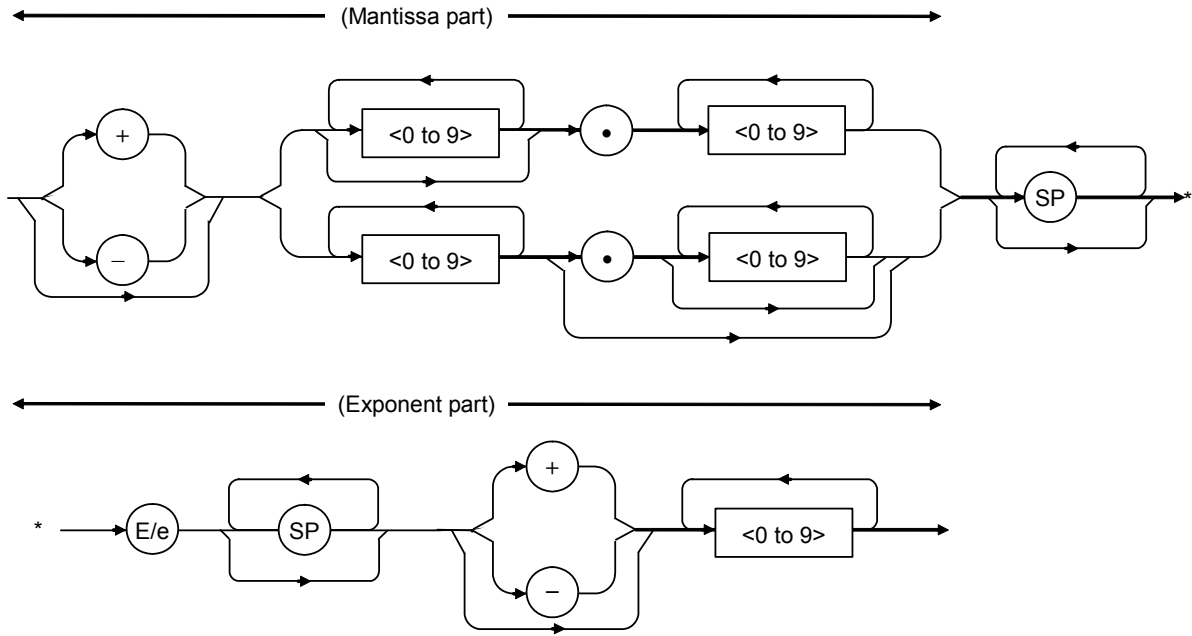
- Integral data can have leading zeroes (e.g., 005, +005).
- No space is allowed between a sign (+ or -) and the numeric value that follows it.
- The “+” sign can be omitted (e.g., 005, +005).

Fixed-point decimal (NR2)



- An integer is represented in the integral part.
- No space is allowed between a digit and the decimal point that follows it.
- The “+” sign can be omitted.
- The digit 0 in the integral part may be omitted.
- Any number of zeroes may precede the numeric value in the integral part (e.g., -0.5, +00204, -5).

Floating-point decimal (NR3)



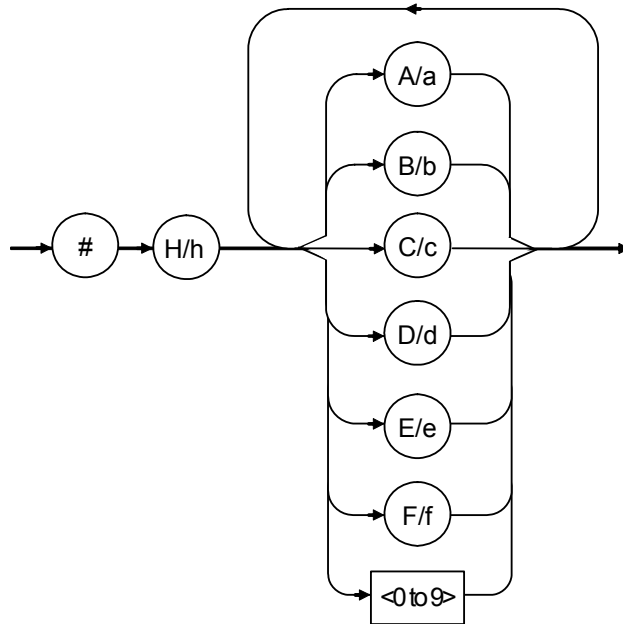
- E denotes the power of 10, or the exponent.
- Spaces are allowed both before and after, only before or only after E/e.
- A numeric value is required in the mantissa.
- Alternatively selectable numeric values (ex. 1|2) and character strings are unavailable.
- The “+” sign can be omitted (from both the mantissa and exponent).

<Examples>

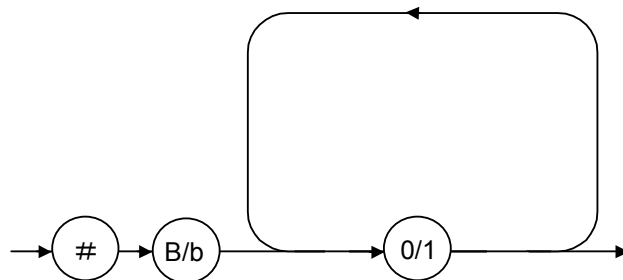
$$-22.34E+6 \rightarrow -22.34 \times 10^6 (= -22,340,000)$$

$$5.3e-4 \rightarrow 5.3 \times 10^{-4} (= 0.00053)$$

Hexadecimal data



Binary data



Suffix data

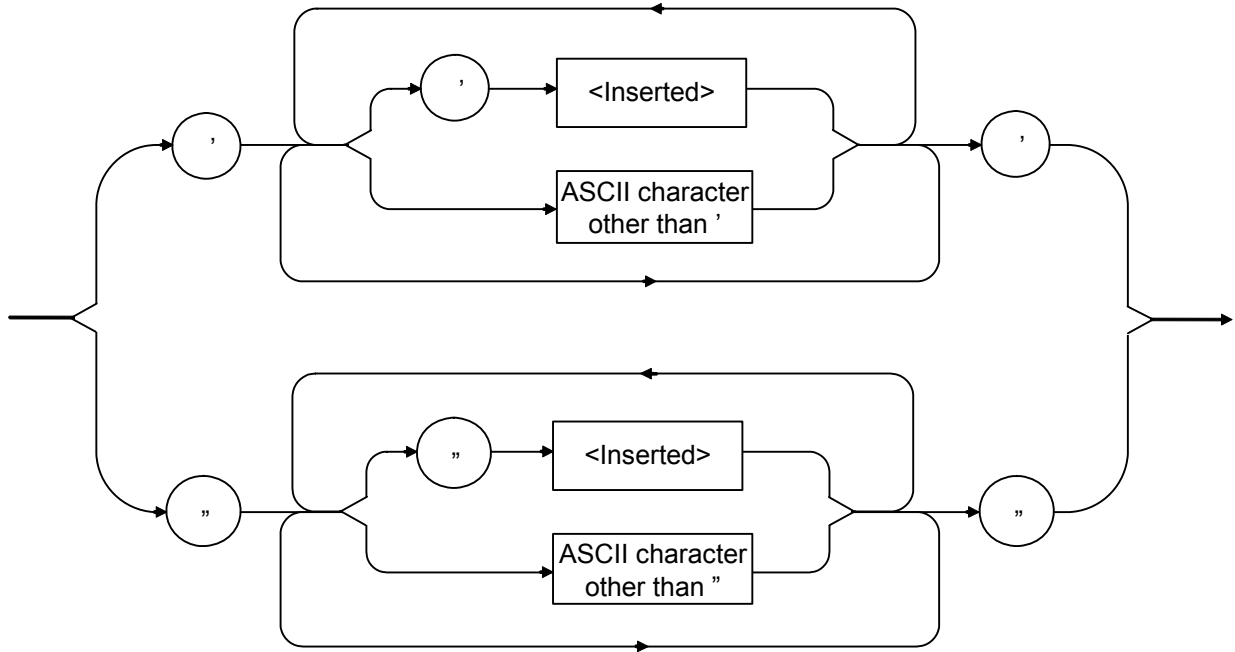
The table below lists the suffix data that is used.  
The suffix codes available vary depending on the function.

**Table 1.8.1-1 Suffix codes**

Category	Suffix Code	Unit
Frequency	GHZ or GZ	GHz
	MHZ or MZ	MHz
	KHZ or KZ	kHz
	HZ	Hz
Level	DB	dB
	DBM or DM	dBm
	DBMV	dBmV
	DBUV or DBU	dB $\mu$ V
	DBUVE	dB $\mu$ V (emf)
	DBUVM	dB $\mu$ V/m
	W	W
	MW	mW
	UW	$\mu$ W
	NW	nW
	PW	pW
	FW	fW
	V	V
MV	mV	
UV	$\mu$ V	
Time	S	s
	MS	ms
	US	$\mu$ s
	NS	ns
Bit count	GBIT	Gbit
	MBIT	Mbit
	KBIT	kbit
	BIT	bit
Angle	RAD	radian
	DEG	degree

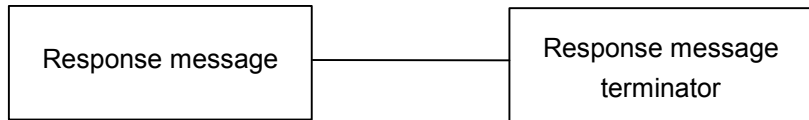
String program data

Arbitrary character string enclosed by one pair of “” (double quotation marks) or ‘ ’ (single quotation marks). The characters that can be used vary depending on the function.

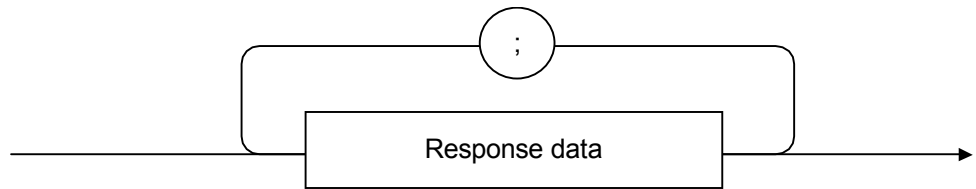


### 1.8.2 Native Response message formats

The formats in which the external controller (PC) transmits response messages from the MS2690A/MS2691A/MS2692A or MS2830A by way of INPUT and other statements are described below.

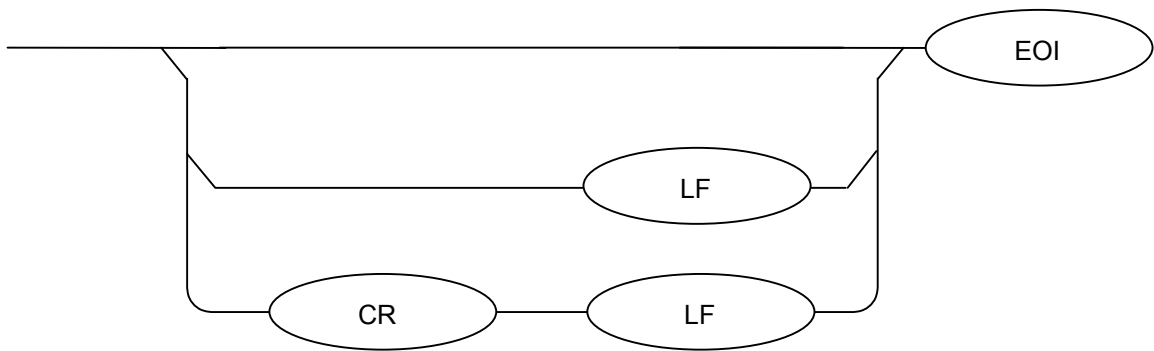


Response message



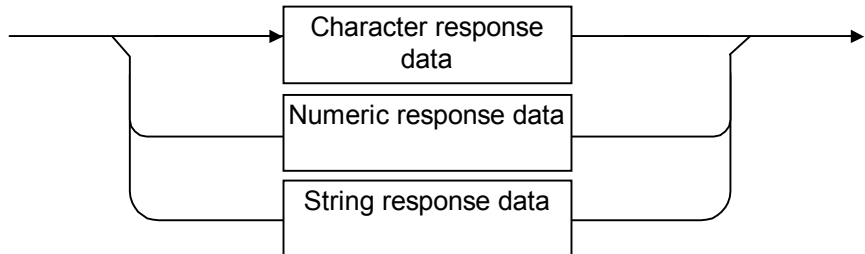
A response message is composed of one or more response message units to one or more program queries issued with one PRINT statement.

Response message terminator



Use a TRM command to specify the terminator format.

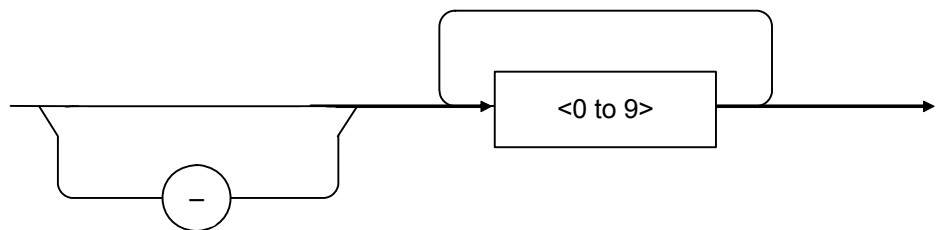
Response data



Character response data

Defined strings of data are composed of any of the alphabetical lower case and upper case characters A to Z, the digits 0 through 9, and the underscore (\_).

Numeric response data  
Integer (NR1)



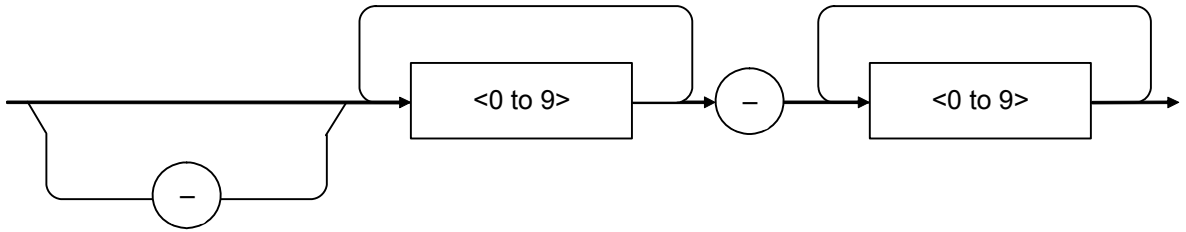
- The leading digit must be non-zero.

<Examples>

123, -1234



Fixed-point decimal (NR2)

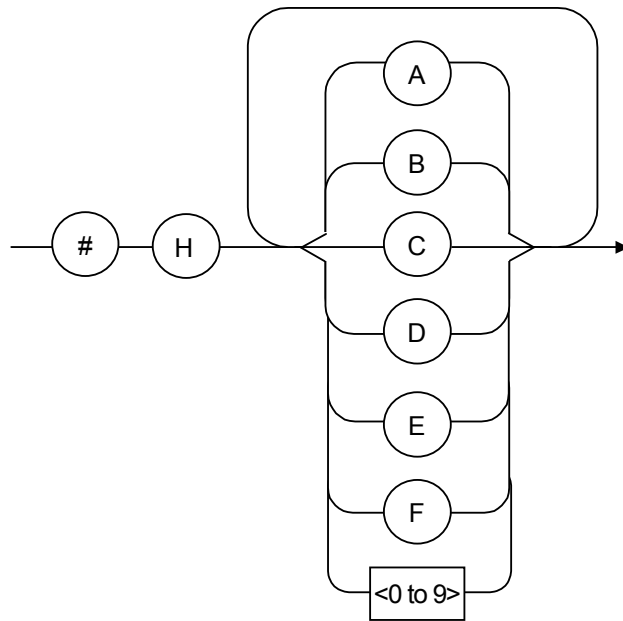


- The leading digit must be non-zero.
- A fixed-point decimal number having a value of 0 in its decimal place is output as an integer.

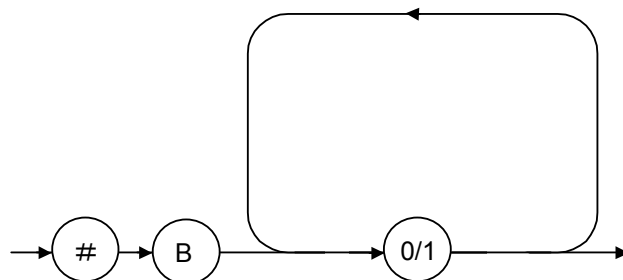
<Examples>

12.34, -12.345

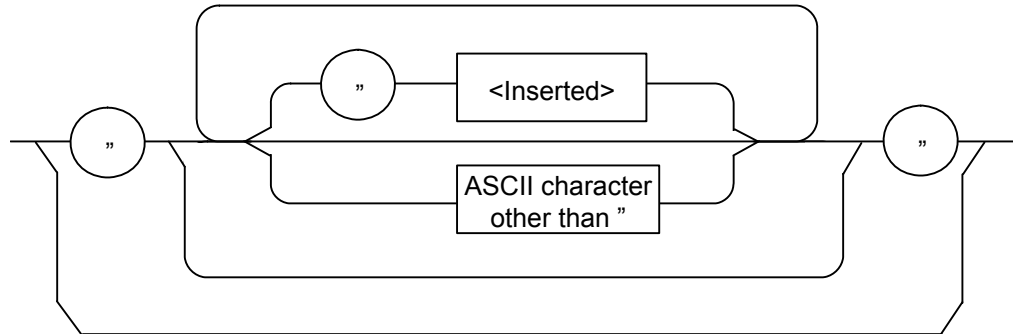
Hexadecimal data



Binary data



String response data



## 1.9 Status Structure

The Status Byte (STB) that is transmitted to the external controller (PC) complies with the IEEE488.1 standard. Its bit string, called a “status summary message,” provides summary information about the current data placed in a register or queue.

### 1.9.1 IEEE488.2 standard status model

The standard model of the status structure defined by IEEE488.2 is shown below.

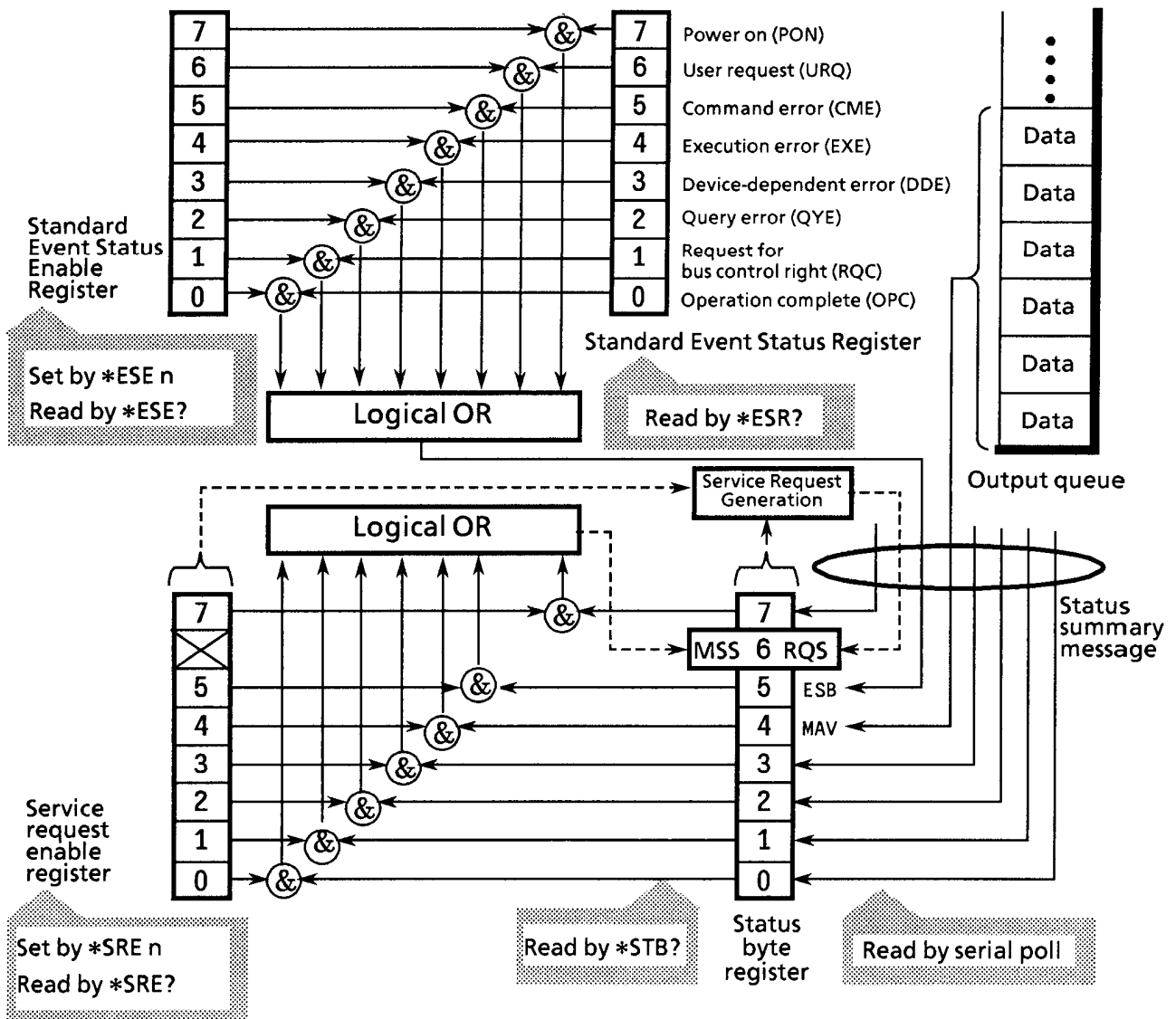


Figure 1.9.1-1 IEEE488.2 standard status model

In the status model, an IEEE488.1 status byte is used as the lowest-level status, which consists of seven summary message bits that are supplied from an upper status structure. The status data structure is organized into a register model and a queue model to generate these summary message bits.

**Table 1.9.1-1 Register model and queue model**

Register model	Queue model
A set of registers used to keep a record of the events and conditions that have been encountered in the device. Its structure is built of an Event Status register and an Event Status Enable register. If their AND operation results in non-zero, the corresponding bit of the status byte is set to 1; otherwise, it is set to 0. If their OR operation results in 1, the corresponding summary bit is set to 1; otherwise, it is set to 0.	A queue used to keep a sequential record of status or information. In the queue structure, a bit is set to 1 only if data exists at the corresponding position in the queue; otherwise, a bit is 0.

On the basis of the register model and the queue model thus described, the standard model in the IEEE488.2 status data structure is assembled of two kinds of register models and one queue model.

- <1> Standard Event Status register and Event Status Enable register
- <2> Status Byte register and Standard Event Enable register
- <3> Output queue

**Table 1.9.1-2 Register models and queue model of IEEE488.2 standard status**

Standard Event Status Register	Status Byte Register	Output Queue
The Standard Event Status register is structured in the register model described above. Among all the events that the device may encounter, this register holds bits that represent eight kinds of standard events: <1> power-on, <2> user request, <3> command error, <4> execution error, <5> device-dependent error, <6> query error, <7> bus control request, and <8> operation complete. Bit6 (DIO6) of the Status Byte Register works as an OR output bit to report an Event Summary Bit (ESB) summary message.	The Status Byte register holds an RQS bit seven summary message bits from the status data structure. Bit6 (DIO7) of the Service Request Enable register is system-reserved as an RQS bit to report a service request to the external controller. The mechanism of this SRQ conforms to the specifications of IEEE488.1.	The Output Queue is structured in the queue model described above. Bit4 (DIO5) of the Status Byte Register works as a Message Available (MAV) summary message to report the availability of data in the output buffer.

## 1.9.2 Status Byte (STB) register

The STB register consists of an STB device and an RQS (or MSS) message.

### (1) ESB and MAV summary messages

The ESB and MAV summary messages are described below.

#### ESB summary message

The ESB (Event Summary Bit) summary message is a message defined by IEEE488.2. It is reported by STB register bit5. The ESB summary message is set to 1 when any one of the bits registered in the Standard Event Status register is set to 1 where event occurrence is enabled. The ESB summary bit is, in turn, set to 0 when none of the events registered in the Status Event Status register occur where event occurrence is enabled.

#### MAV summary message

The MAV (Message Available) summary message is a message defined by IEEE488.2. It is reported by STB register bit4. This bit indicates whether the output queue is empty. It is used by the device to synchronize message exchanges with the external controller (PC). For example, the external controller (PC) might transmit a query command to the device and wait for MAV to be set to 1. If reading from the output queue is begun without first checking MAV, all system bus actions are deferred until the device responds.

### 1.9.3 SCPI Device-dependent summary messages

The structure of the status byte register is as shown below when the SCPI mode is selected.

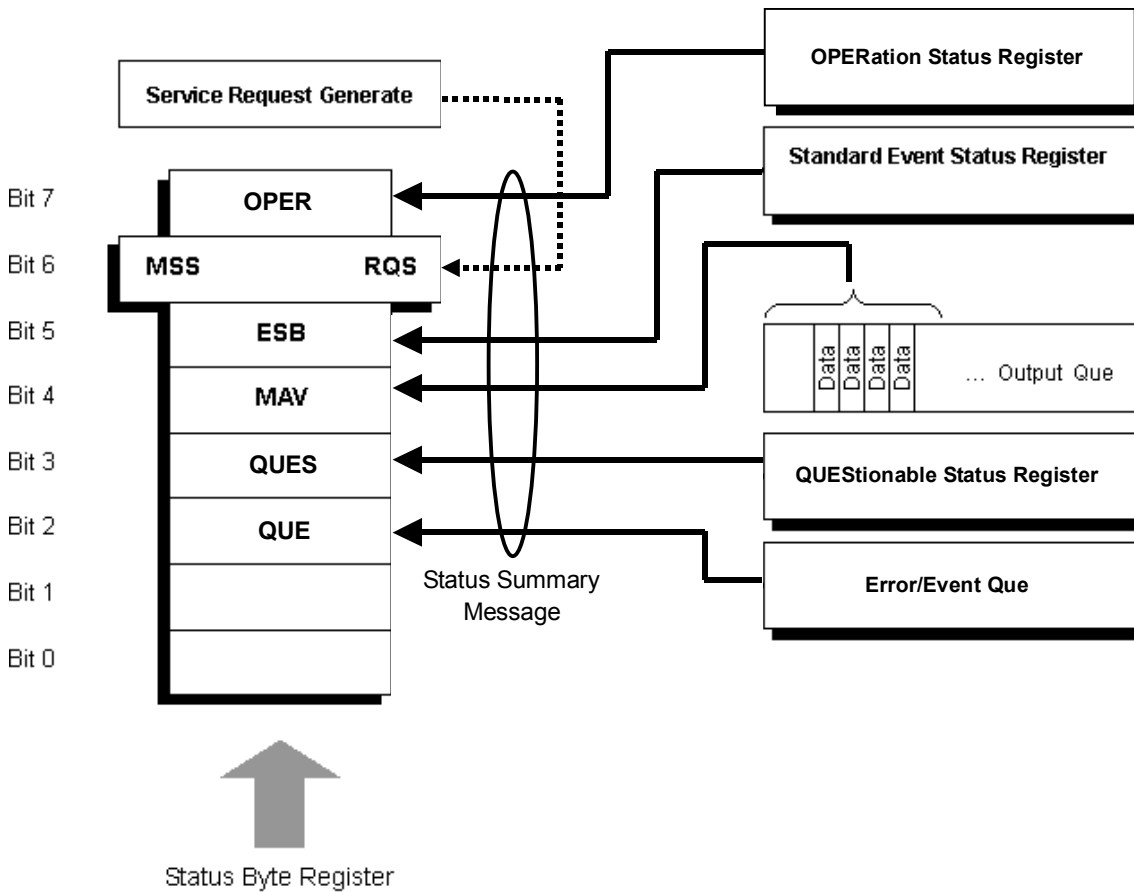


Figure 1.9.3-1 Status byte register in SCPI mode

#### 1.9.4 Native Device-dependent summary messages

When language mode is Native, in addition to the Status Bite Register defined by IEEE488.2, Extended Event Status Bits (EESB) are defined individually. EESB 0 to 3 are used as summary bits for application-specific Extended Event Status registers.

EESB 3 and EESB 2 correspond to the extended event status of the main applications of the MS2690A/MS2691A/MS2692A (Signal Analyzer, Spectrum Analyzer, etc.) while EESB 1 and EESB 0 correspond to the extended event status of other sub applications (Signal Generator, etc.).

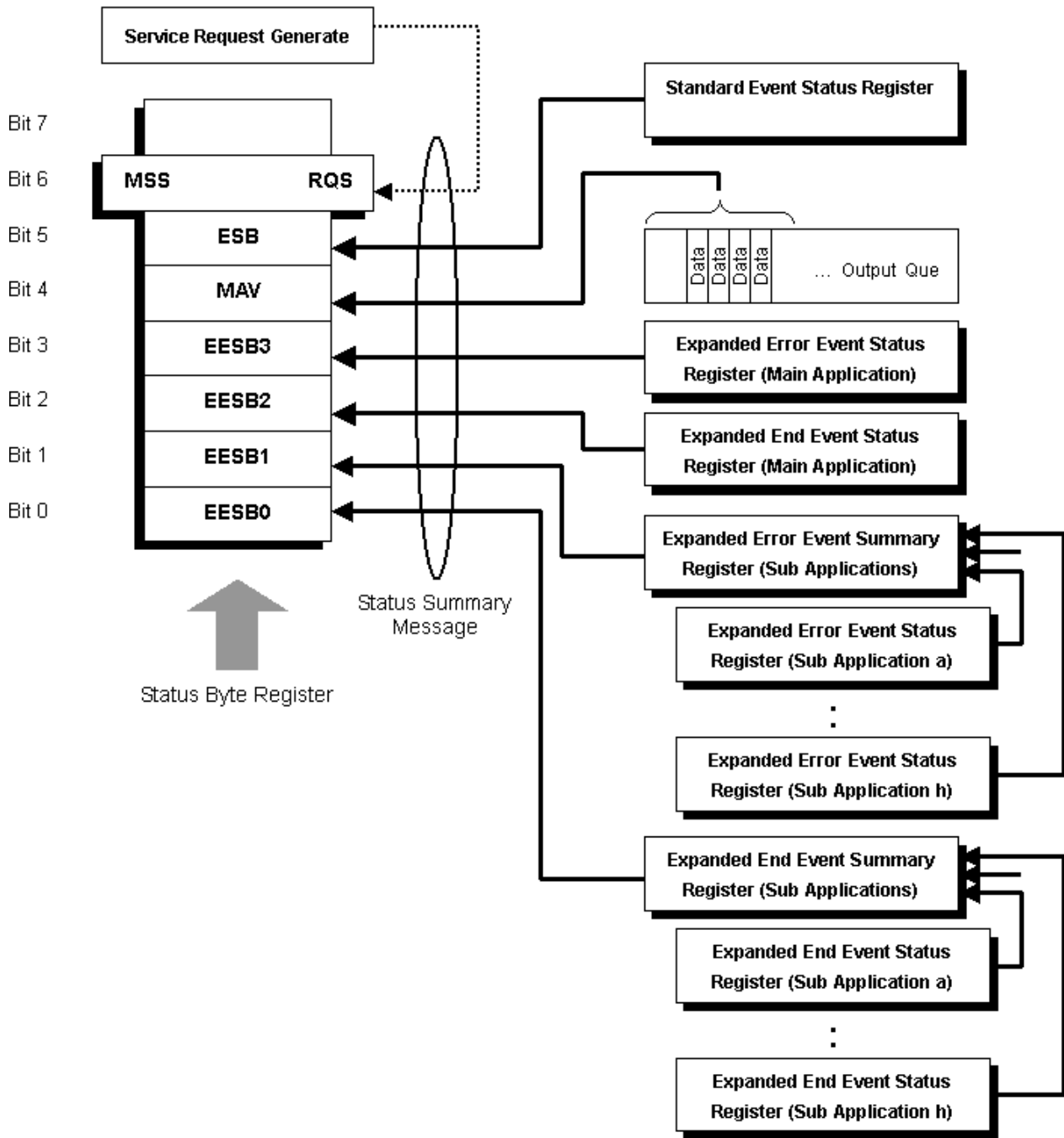


Figure 1.9.4-1 Status byte register in Native mode



### 1.9.5 Reading and clearing STB register

The STB register is read by serial polling or by using an \*STB? query. Either way, an STB message as defined by IEEE488.1 is read, but the value that is transmitted to bit6 (position) varies with each method used. The STB register can be cleared using the \*CLS command.

#### Use Serial Polling to read STB register

If serial polling is implemented under IEEE488.1, a 7-bit status byte and an RQS message bit based on IEEE488.1 are returned. Serial polling does not alter the value of the status byte. The device will set the RQS message bit to 0 immediately on polling.

#### Use an \*STB Common Query to read STB register

Issuing an \*STB common query causes the device to transmit a response message, in the integer format, comprising the MSS (Master Summary Status) message in the STB register. Hence, a response to \*STB? matches one to serial polling, except that an MSS summary message appears at the bit6 position, instead of an RQS message.

#### Define \*MSS (Master Summary Status)

The MSS message indicates that the device has at least one service request condition. The MSS message appears at the bit6 position as a device response to an \*STB query, but not as a response to serial polling. It must not be viewed as part of the IEEE488.1 status byte. MSS consists of total OR which is the combination of the bits of the STB register and the SRQ Enable (SRE) register with one another.

#### Use the \*CLS Common Command to clear STB register

The \*CLS common command clears the entire status structure and also summary messages responding to it. The execution of \*CLS does not affect the settings of the enable registers.

### 1.9.6 Service Request (SRQ) enable operation

Bits 0 to 7 of the Service Request Enable (SRE) register control whether the corresponding bits of the STB register will generate an SRQ. The SRB register bits are associated with the STB register bits. If the STB register bit associated with a SRE register bit that is 1 is set to 1, the device sets the RQS bit to 1, issuing a service request to the external controller (PC).

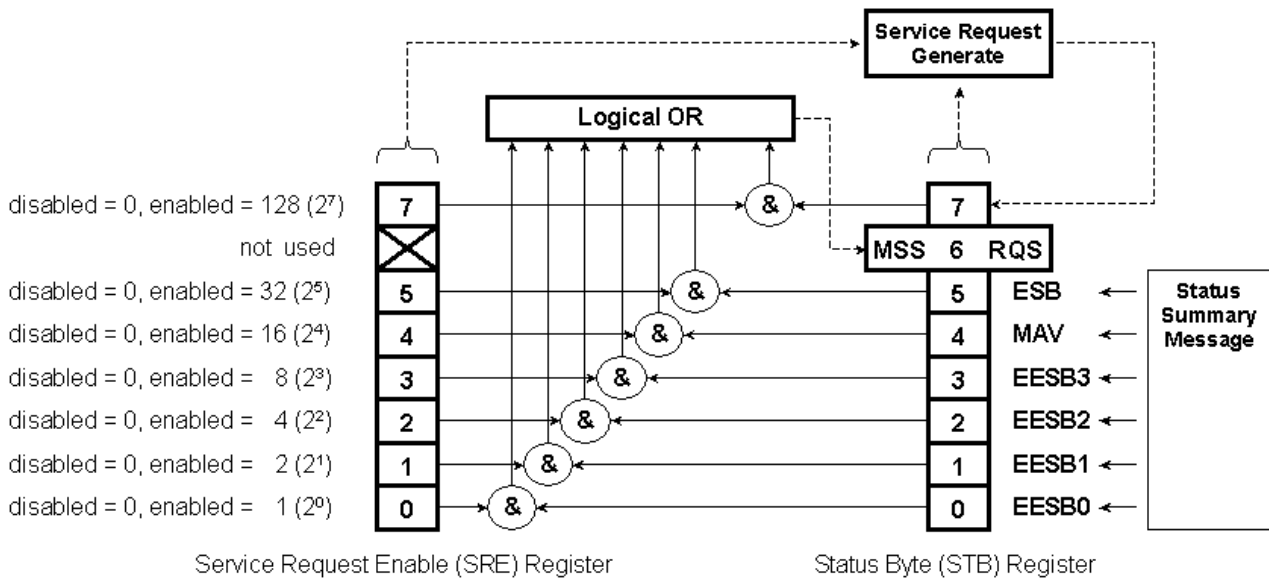


Table 1.9.6-1 Service Request (SRQ) enable operation

#### Read from SRE register

The SRE register is read using an \*SRE? common query. A response message to this query is given as an integer between 0 and 255, equaling the sum of the values of the SRE register bits.

#### Update SRE register

The SRE register is written to using an \*SRE common command with an integer between 0 and 255 as a parameter and with the SRE register bits being set to 0 or 1. The value of bit6 is ignored.

## 1.9.7 Standard Event Status register model

Bit definitions of Standard Event Status register

The operations of the Standard Event Status register are shown below.

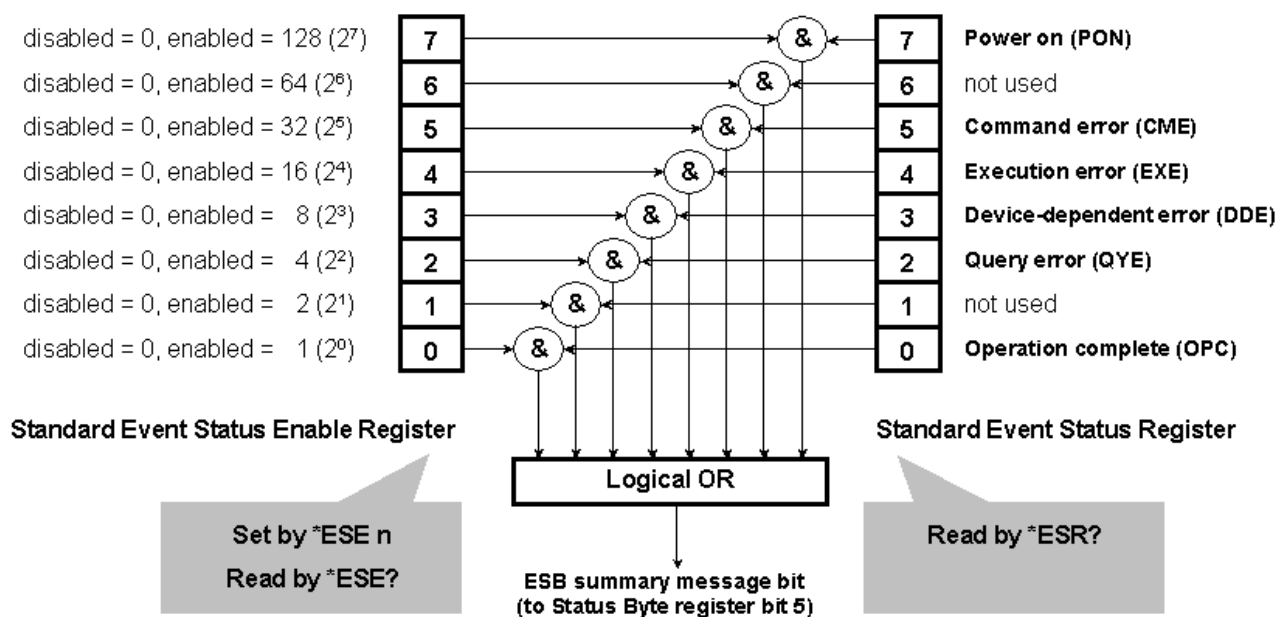


Figure 1.9.7-1 Standard event status register

The Standard Event Status Enable (ESE) register specifies which bit of the Event Status register will cause a summary message to become true when it is set.

Table 1.9.7-1 Bit events

bit	Event name	Description
7	Power on (PON)	Power transition from Off to On
6	Not used	—
5	Command error (CME)	Device message with illegal header received
4	Execution error (EXE)	Device message with illegal parameter received or the executed function has not completed normally
3	Device-dependent error (DDE)	Error caused by a condition other than CME, EXE, and QYE
2	Query error (QYE)	Attempt to read data from the output queue when it is empty or queued data lost before it is read
1	Not used	—
0	Operation complete (OPC)	Set to 1 when the MS2690A/MS2691A/MS2692A or MS2830A has processed the *OPC command.

### 1.9.8 Standard Event Status register operation

The operation methods for the Standard Event Status registers and Standard Event Status Enable registers are shown in the table below.

**Table 1.9.8-1 Standard Event Status register operation**

Register	Operation	
Standard Event Status register	Read	This register is read using an *ESR? common query.
	Write	This register cannot be written externally.
	Clear	This register is cleared when: <1> The *CLS command is received. <2> The power is turned on (bit7 is turned on, with all other bits being cleared to 0). <3> An event is read in response to an *ESR? query command.
Standard Event Status Enable register	Read	This register is read using an *ESE? common query.
	Write	This register is written to using an *ESE common command.
	Clear	This register is cleared when: <1> An *ESE command with a data value of 0 is received. <2> The power is turned on.

### 1.9.9 SCPI Specification Status register

The following registers are available, in addition to the status register specified in IEEE488.2 by the specification of SCPI in the SCPI mode.

**Table 1.9.9-1 SCPI Specification Status registers**

Register·Filter	Operation
QUEStionable Status register	Reports the status of signals such as measurement results. It is used to require service to external controller when an error occurs. It is not used in this instrument.
OPERation Status register	Reports some of the statuses of this instrument.

The SCPI specification status register has the following configuration.

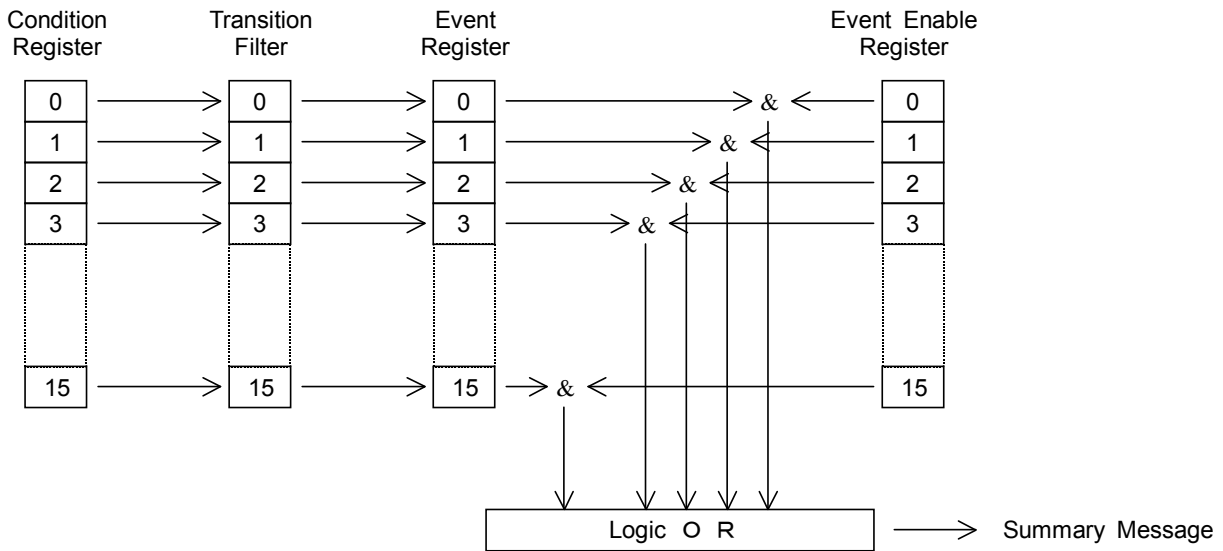


Figure 1.9.9-1 Configuration of SCPI Specification Status Register

Table 1.9.9-2 SCPI Specification Status register configurations

Register-Filter	Operation
Condition Register	Monitors device status and changes depending on the device status. Therefore, this register does not store the status.
Transition Filter	Sets the contents of the condition register to the event register. The transition filter has the three types shown below, according to what change of the condition register is measured. <ol style="list-style-type: none"> <li>(1) Positive direction change The event becomes true only when the corresponding condition changes false into true.</li> <li>(2) Negative direction change The event becomes true only when the corresponding condition changes from true into false.</li> <li>(3) Both direction change The event becomes true when a change in either the positive or negative direction is present.</li> </ol>
Event Register	Stores the output of transition filter.
Event Enable Register	Selects which bit of the corresponding event register is used to set the summary message to true when set to 1.

### 1.9.10 SCPI specification status register operation

How to operate the SCPI specification status register and error/event queue is shown below.

**Table 1.9.10-1 SCPI Status register operation**

Register	Operation	
SCPI event register (Main Application)	Read	:STATus:...:EVENT? This register is read using a query.*
	Write	This register cannot be written externally.
	Clear	This register is cleared when: (1) *CLS command is received. (2) The power is On. (3) An event is read in response to :STATus:...:EVENT? Query command.* (4) A language mode is switched.
SCPI enable register (Main Application)	Read	:STATus:...:ENABLE? This register is read by using an query.*
	Write	:STATus:...:ENABLE This register is written by using a command.*
	Clear	This register is cleared when: (1) :STATus:PRESet command is received. (2) The power is On. (3) :STATus:...:ENABLE 0 command is received.* (4) A language mode is switched.

\*: The target applications need to be specified by Application Switch as the control targets.

Table 1.9.10-2 SCPI Status register operation (Cont'd)

Register	Operation	
SCPI Transition Filter (Main Application)	Read	:STATus:...:PTRansition? :STATus:...:NTRansition? This register is read using a query.*
	Write	:STATus:...:PTRansition :STATus:...:NTRansition This register is written using a command.*
	Clear	This register is cleared when. (1) :STATus:PRESet command is received. (2) The power is on. (3) :STATus:...:PTRansition 0 command is received.* (4) A language mode is switched.
Error/Event Queue (Main Application)	Read	:SYSTem:ERRor? This register is read using a query.*
	Write	This register cannot be written externally.
	Clear	This register is cleared when: (1) *CLS command is received. (2) The power is on. (3) An event is read in response to :SYSTem:ERRor? Query command. (4) A language mode is switched.

\*: The target applications need to be specified by Application Switch as the control targets.

The values after the register and filter influenced by :STATus:PRESet have been reset are shown in the following table.

Table 1.9.10-3 Values after the register and filter influenced by :STATus:PRESet have been reset.

Register	Enable Filter	Reset Value
OPERational Status Register	Enable Register	All 0
QUEStionable Status Register	PTRansition Filter	All 1
	NTRansition Filter	All 0

### **1.9.11 Extended Event Status register**

When language mode is Native, each application operating on the MS2690A/MS2691A/MS2692A or MS2830A has a unique Extended Event Status register and Extended Event Status Enable register. Only the statuses specified to be controllable in the Application Switch menu can be read.

The Extended Event Status register of each application transmits summary messages to EESB 0 to EESB 3 of the Status Byte register. Events that occur simultaneously in up to nine applications can be detected by service requests.

Applications are roughly classified into main applications (Signal Analyzer, Spectrum Analyzer, etc.) mainly for RF signal analysis, and other Sub Applications (Signal Generator, etc.).

The Extended Event Status register of the Main Application specified as the control target in the Application Switch menu can be read. The summary messages are transmitted to EESB 3 and EESB 2 of the Status Byte register.

Of the eight Extended Event Status registers of the Sub Applications, only those specified as control targets in the Application Switch menu can be read. The summary messages are transmitted to the summary register, and its logical sum is then transmitted to EESB 1 and EESB 0 of the Status Byte register.



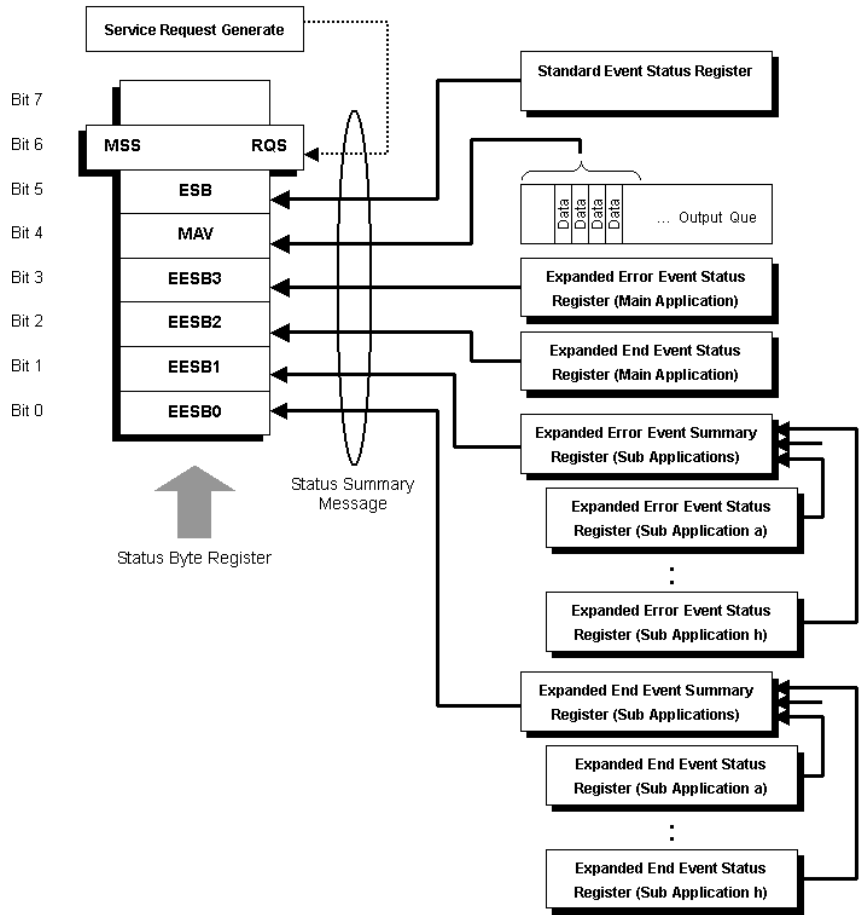


Figure 1.9.11-1 Extended event status register model

### 1.9.12 Extended Error Event Status register (Main Application)

The operation model of the Extended Error Event Status registers for the Main Applications is shown below.

Main Application indicates an application mainly with RF signal analysis functionality (Signal Analyzer, Spectrum Analyzer, etc.). Only the Extended Error Event Status register and the Extended Error Event Status Enable register of the applications specified as control targets in the Application Switch menu can be read.

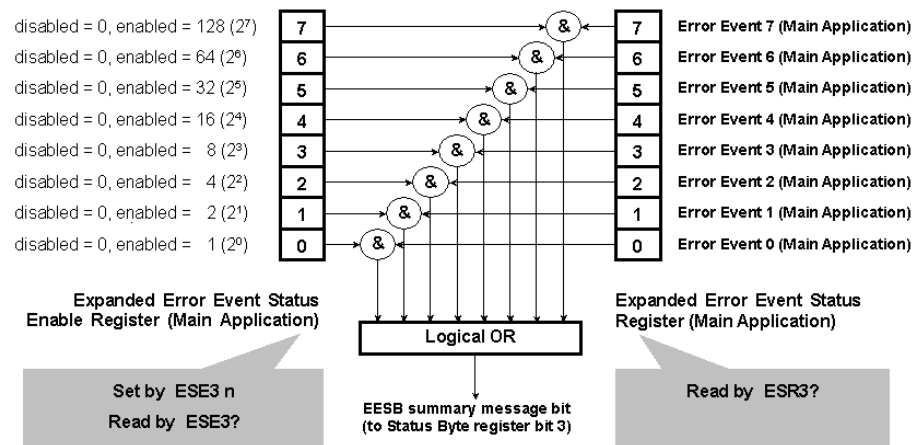


Figure 1.9.12-1 Extended Error Event Status register (Main Application)

The Extended Error Event Status Enable register (on the left of the figure above) specifies which bit of the Event Status register will cause a summary message to become true when it is set.

The specifications of the Extended Error Event Status register (on the right in the figure above) vary depending on the application. Refer to the Operation Manual (Remote Control) of each application for details.

The summary message of this register is transmitted to EESB 3 of the Status Byte register.

<Program example>

To create a service request when error event 0 of the Spectrum Analyzer function occurs:

```

SYS SPECT      ; Specifies the Spectrum Analyzer as the
                ; control target.
*SRE 8         ; Enables bit3 of the Service Request
                ; Enable register.
ESE3 1         ; Enables bit0 of the Extended Error Event
                ; Status Enable register of the main
                ; application.
    
```

### 1.9.13 Extended End Event Status register (Main Application)

The operation model of the Extended End Event Status registers of Main Applications is shown below.

Main application indicates an application mainly with RF signal analysis functionality (Signal Analyzer, Spectrum Analyzer, etc.). Only the Extended End Event Status register and the Extended End Event Status Enable register of the applications specified as control targets in the Application Switch menu can be read.

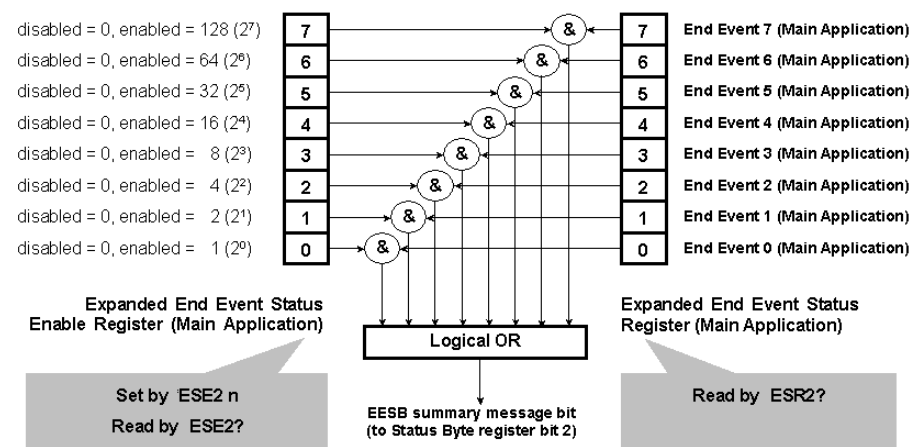


Figure 1.9.13-1 Extended End Event Status register (Main Application)

The Extended End Event Status Enable register (on the left of the figure above) specifies which bit of the Event Status register will cause a summary message to become true when it is set.

The specifications of the Extended End Event Status register (on the right in the figure above) vary depending on the application. Refer to the Operation Manual (Remote Control) of each application for details.

The summary message of this register is transmitted to EESB 2 of the Status Byte register.

<Program example>

To create a service request when end event 0 of the Spectrum Analyzer function occurs:

```

SYS SPECT      ; Specifies the Spectrum Analyzer as the
                ; control target.
*SRE 4         ; Enables bit2 of the Service Request
                ; Enable register.
ESE2 1         ; Enables bit0 of the Extended End Event
                ; Status Enable register of the main
                ; application.
    
```

### 1.9.14 Extended Error Event Status register (Sub Applications)

The operation model of the Extended Error Event Status registers for Sub Applications (an example with Application a) is shown below.

Sub Application indicates an application other than the Main Applications (Signal Generator, etc.). Only the Extended Error Event Status register and the Extended Error Event Status Enable register of the applications specified as control targets in the Application Switch menu can be read. The summary register that sums up the logical OR of Sub Application event registers can be read regardless of whether the application is specified as a control target or not.

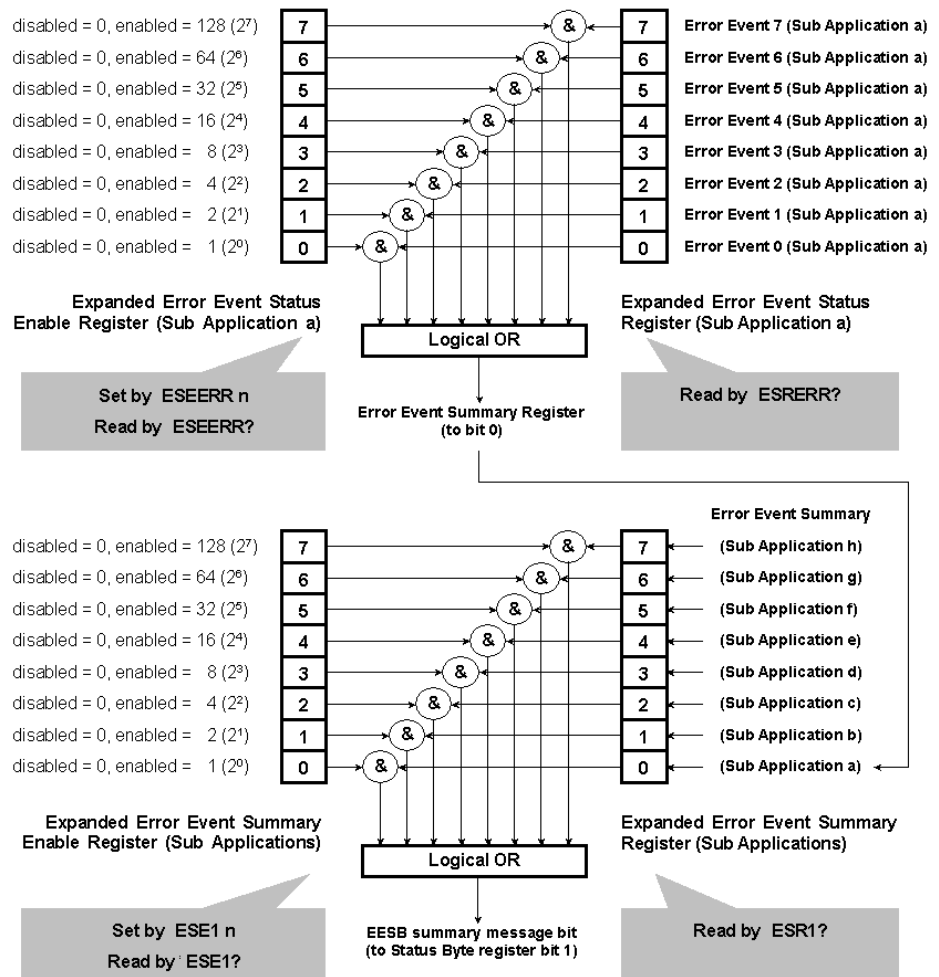


Fig 1.9.14-1 Extended Error Event Status register (Sub Application a)

The Extended Error Event Status Enable register (on the left of the figure above) specifies which bit of the Event Status register will cause a summary message to become true when it is set.

The specifications of the Extended Error Event Status register (on the right in the figure above) vary depending on the application. Refer to the Operation Manual (Remote Control) of each application for details.

The summary message of this register is transmitted to EESB 1 of the Status Byte register.

<Program example>

To create a service request when error event 0 of the Signal Generator function (Application a) occurs:

SYS SG	; Specifies the Signal Generator as the control target.
*SRE 2	; Enables bit1 of the Service Request Enable register.
ESE1 1	; Enables bit0 of the Extended Error Event Status Summary register of the sub application.
ESEERR 1	; Enables bit0 of the Extended Error Event Status Enable register of the sub application.

### 1.9.15 Extended End Event Status register (Sub Applications)

The operation model of the Extended End Event Status registers of Sub Applications (an example with Application a) is shown below.

Sub Application indicates an application other than the main applications (Signal Generator, etc.). Only the Extended End Event Status register and the Extended End Event Status Enable register of the applications specified as control targets in the Application Switch menu can be read. The summary register that sums up the logical OR of Sub Application event registers can be read regardless of whether the application is specified as a control target or not.

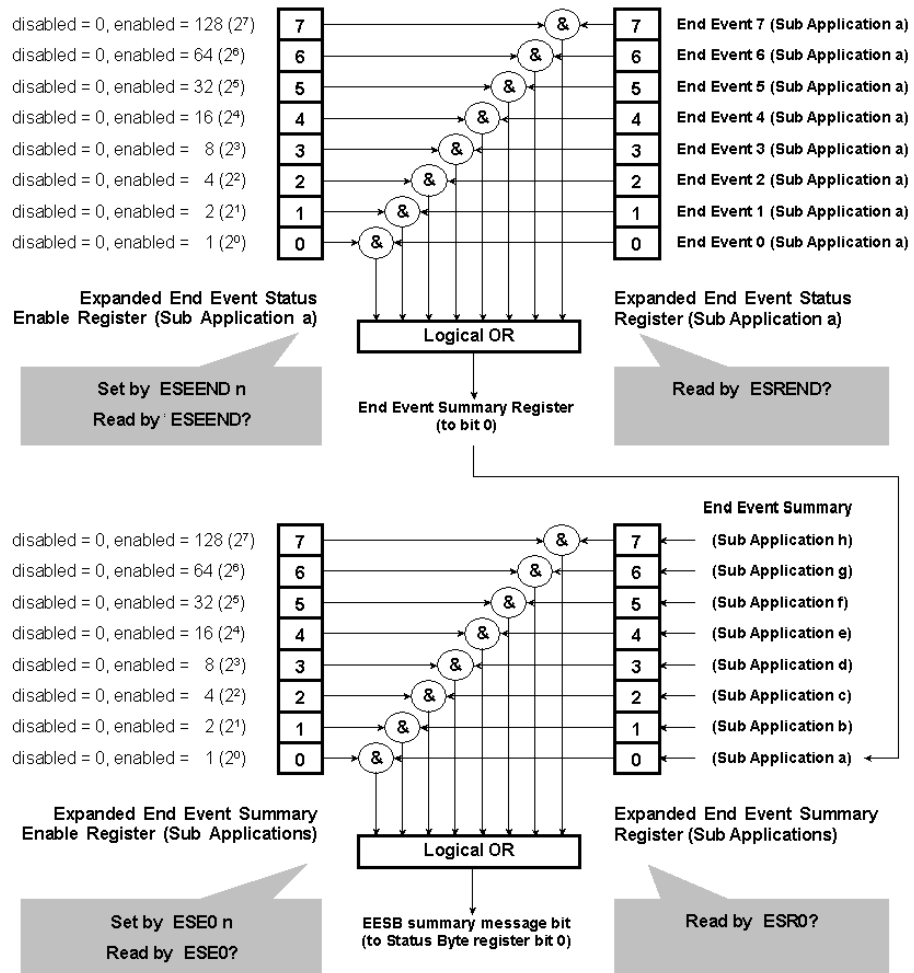


Figure 1.9.15-1 Extended End Event Status register (Sub Application a)

The Extended End Event Status Enable register (on the left of the figure above) specifies which bit of the Event Status register will cause a summary message to become true when it is set.

The specifications of the Extended End Event Status register (on the right in the figure above) vary depending on the application. Refer to the Operation Manual (Remote Control) of each application for details.

The summary message of this register is transmitted to EESB 0 of the Status Byte register.

<Program example>

To create a service request when end event 0 of the Signal Generator function (Application a) occurs:

SYS SG	; Specifies the Signal Generator as the control target.
*SRE 1	; Enables bit0 of the Service Request Enable register.
ESE0 1	; Enables bit0 of the Extended End Event Status Summary register of the sub application.
ESEEND 1	; Enables bit0 of the Extended End Event Status Enable register of the sub application.

### 1.9.16 Extended Event Status register operation

The operation methods for the Extended Event Status registers and Extended Event Status Enable registers are shown in the table below.

**Table 1.9.16-1 Extended Event Status register operation**

Register	Operation	
Extended Error Event Status Register (Main Application)	Read	This register is read using an ESR3? query.*
	Write	This register cannot be written externally.
	Clear	This register is cleared when: <1> The *CLS command is received. <2> The power is turned on. <3> An event is read in response to an ESR3? query command.* <4> When the language mode has been switched.
Extended Error Event Status Enable Register (Main Application)	Read	This register is read using an ESE3? query.*
	Write	This register is written to using an ESE3 command.*
	Clear	This register is cleared when: <1> An ESE3 command with a data value of 0 (i.e., ESE3 0) is received.* <2> The power is turned on. <4> When the language mode has been switched.
Extended End Event Status Register (Main Application)	Read	This register is read using an ESR2? query.*
	Write	This register cannot be written externally.
	Clear	This register is cleared when: <1> The *CLS command is received. <2> The power is turned on. <3> An event is read in response to an ESR2? query command.* <4> When the language mode has been switched.
Extended End Event Status Enable Register (Main Application)	Read	This register is read using an ESE2? query.*
	Write	This register is written to using an ESE2 command.*
	Clear	This register is cleared when: <1> An ESE2 command with a data value of 0 (i.e., ESE2 0) is received.* <2> The power is turned on. <3> When the language mode has been switched.

\*: The application must be specified as a control target in the Application Switch menu.



Table 1.9.16-1 Extended Event Status register operation (Cont'd)

Register	Operation	
Extended Error Event Status Summary Register (Sub Application)	Read	This register is read using an ESR1? query.
	Write	This register cannot be written externally.
	Clear	This register is cleared when: <1> The *CLS command is received. <2> The power is turned on. <3> An event is read in response to an ESR1? query command. <4> When the language mode has been switched.
Extended Error Event Status Enable Summary Register (Sub Application)	Read	This register is read using an ESE1? query.
	Write	This register is written to using an ESE1 command.
	Clear	This register is cleared when: <1> An ESE1 command with a data value of 0 (i.e., ESE1 0) is received. <2> The power is turned on. <3> When the language mode has been switched.
Extended End Event Status Summary Register (Sub Application)	Read	This register is read using an ESR0? query.
	Write	This register cannot be written externally.
	Clear	This register is cleared when: <1> The *CLS command is received. <2> The power is turned on. <3> An event is read in response to an ESR0? query command. <4> When the language mode has been switched.
Extended End Event Status Enable Summary Register (Sub Application)	Read	This register is read using an ESE0? query.
	Write	This register is written to using an ESE0 command.
	Clear	This register is cleared when: <1> An ESE0 command with a data value of 0 (i.e., ESE0 0) is received. <2> The power is turned on. <3> When the language mode has been switched.

**Table 1.9.16-1 Extended Event Status register operation (Cont'd)**

Register	Operation	
Extended Error Event Status Register (Sub Application)	Read	This register is read using an ESRERR? query.*
	Write	This register cannot be written externally.
	Clear	This register is cleared when: <1> The *CLS command is received. <2> The power is turned on. <3> An event is read in response to an ESRERR? query command.* <4> When the language mode has been switched.
Extended Error Event Status Enable Register (Sub Application)	Read	This register is read using an ESEERR? query.*
	Write	This register is written to using an ESEERR command.*
	Clear	This register is cleared when: <1> An ESEERR command with a data value of 0 (i.e., ESEERR 0) is received.* <2> The power is turned on. <3> When the language mode has been switched.
Extended End Event Status Register (Sub Application)	Read	This register is read using an ESREND? query.*
	Write	This register cannot be written externally.
	Clear	This register is cleared when: <1> The *CLS command is received. <2> The power is turned on. <3> An event is read in response to an ESREND? query command.* <4> When the language mode has been switched.
Extended End Event Status Enable Register (Sub Application)	Read	This register is read using an ESEEND? query.*
	Write	This register is written to using an ESEEND command.*
	Clear	This register is cleared when: <1> An ESEEND command with a data value of 0 (i.e., ESEEND 0) is received.* <2> The power is turned on. <3> When the language mode has been switched.

\*: The application must be specified as a control target in the Application Switch menu.

## 1.10 Synchronization

This section describes synchronized control of the MS2690A/MS2691A/MS2692A or MS2830A (completing processing of a command message before proceeding to the next one).

Synchronized control methods are shown below:

- (1) Using sequential commands
- (2) Using the \*WAI command
- (3) Using the \*OPC command
- (4) Using the \*OPC? query
- (5) Using the status query
- (6) Monitoring extended end event statuses

- (1) Using sequential commands

Commands that are not processed until the currently executing command function completes are called sequential commands.

<Program example>

To query the marker level after measurement using the Spectrum Analyzer function completes:

(The sequential command SWP is used in this example.)

```
SYS SPECT ; Specifies the Spectrum Analyzer as the control
           ; target.
SWP        ; Executes measurement.
MKL?      ; Queries the marker level.
           ; This command is not executed until SWP
           ; command processing completes.
>1.234    ; Reads the marker level.
```

- (2) Using the \*WAI command

The \*WAI (Wait to Continue) command pauses processing until the preceding command processing completes. It is useful when using overlapping commands ( $\Leftrightarrow$  sequential commands).

<Program example>

To query the marker level after measurement using the Spectrum Analyzer function completes:

(The overlapping command SNGLS is used in this example.)

```
SYS SPECT ; Specifies the Spectrum Analyzer as the control
           ; target.
SNGLS     ; Executes measurement.
*WAI      ; Waits until the SNGLS command processing
           ; completes.
MKL?      ; Queries the marker level.
>1.234    ; Reads the marker level.
```

(3) Using the \*OPC command

Transmitting the common IEEE488.2 command \*OPC (Operation Complete) is a method for waiting until bit0 (OPC) of the Standard Event Status register indicating that the processing being executed completes is enabled. To wait for the event, read the Standard Event Status register directly or use a service request.

<Program example>

To query the marker level after measurement using the Spectrum Analyzer function completes:

(In this example, the Standard Event Status register is read directly and the overlapping command SNGLS is used.)

```
SYS SPECT ; Specifies the Spectrum Analyzer as the control
           ; target.
*CLS      ; Clears the OPC status.
SNGLS     ; Executes measurement.
*OPC      ; Enters the processing completion wait status.
*ESR?     ; Directly reads the Standard Event Status register.
>0        ; No event occurs.
*ESR?     ; Directly reads the Standard Event Status register.
>1        ; An event occurs.
MKL?      ; Queries the marker level.
>1.234    ; Reads the marker level.
```

(4) Using the \*OPC? query

Reads the response of the common IEEE488.2 command \*OPC? (Operation Complete Query).

<Program example>

To query the marker level after measurement using the Spectrum Analyzer function completes:

(The overlapping command SNGLS is used in this example.)

```
SYS SPECT ; Specifies the Spectrum Analyzer as the control
           ; target.
SNGLS     ; Executes measurement.
*OPC?     ; Enters the processing completion wait status.
>1        ; Returns 1 when SNGLS completes.
MKL?      ; Queries the marker level.
>1.234    ; Reads the marker level.
```

## (5) Using the status query

Queries the processing status and waits until the response indicating completion is returned.

<Program example>

To query the marker level after measurement using the Spectrum Analyzer function completes:

(The measurement status query SWP? is used in this example.)

```

SYS SPECT      ; Specifies the Spectrum Analyzer as the control
                ; target.
SNGLS          ; Executes measurement.
SWP?           ; Queries the measurement status.
>1             ; Reads the measurement status (1: Measuring)
SWP?           ; Queries the measurement status.
>0             ; Reads the measurement status (0: Measurement
                ; completed)
MKL?           ; Queries the marker level.
>1.234        ; Reads the marker level.

```

## (6) Monitoring extended end event status

Each application has a unique Extended End Event Status register and can be synchronized by monitoring it. To monitor the event, read the Extended End Event Status register directly or use a service request.

<Program example>

To query the marker level after measurement using the Spectrum Analyzer function completes:

(The Extended End Event Status register is read directly and the overlapping command SNGLS is used in this example.)

```

SYS SPECT      ; Specifies the Spectrum Analyzer as the control
                ; target.
*CLS           ; Clears the register.
SNGLS          ; Executes measurement.
ESR2?         ; Directly reads the Extended End Event Status
                ; register.
>0             ; No event occurs.
ESR2?         ; Directly reads the Extended End Event Status
                ; register.
>1             ; An event occurs.
MKL?           ; Queries the marker level.
>1.234        ; Reads the marker level.

```



# *Chapter 2 IEEE488.2 Common Device Message List*

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This chapter describes IEEE488.2 Common Device Message for executing MS2690A/MS2691A/MS2692A or MS2830A functions (hereinafter, referred to as “this application”) using a list organized by function. Refer to Chapter 3 “IEEE488.2 Common Device Message Details” for detailed specifications for each command.

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## 2.1 IEEE488.2 Common Device Messages

IEEE488.2 common device messages available in this application are shown in Table 2.1-1.

**Table 2.1-1 IEEE488.2 Common Device messages**

Function	Command	Query	Response	Remarks
Identification Query	---	*IDN?	ANRITSU,model,serial number,firmware	model: Main unit model name serial: Main unit serial number version: Software package version
Self Test Query	---	*TST?	result	result: Self test result = 0   1
Operation Complete	*OPC	*OPC?	1	
Preset All	*RST	---	---	
Wait to Continue Command	*WAI	---	---	
Clear Status Command	*CLS	---	---	
Standard Event Status Enable Register Command/Query	*ESE n	*ESE?	n	n = bit7: Power on bit6: User request bit5: Command error bit4: Execution error bit3: Device error bit2: Query error bit1: Not used bit0: Operation complete
Standard Event Status Register Query	---	*ESR?	n	



Table 2.1-1 IEEE488.2 Common Device messages (Cont'd)

Function	Command	Query	Response	Remarks
Service Request Enable Register Command/Query	*SRE n	*SRE?	n	n = bit7: EESB7 bit6: Not used bit5: ESB bit4: MAV bit3: EESB3 bit2: EESB2 (END Event) bit1: EESB1 bit0: EESB0
Read Status Byte Query	---	*STB?	n	n = bit7: EESB7 bit6: MSS/RQS bit5: ESB bit4: MAV bit3: EESB3 bit2: EESB2 (END Event) bit1: EESB1 bit0: EESB0



## *Chapter 3 IEEE488.2 Common Device Message Details*

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This chapter describes detailed specifications on IEEE488.2 common device message remote control commands for executing MS2690A/MS2691A/MS2692A or MS2830A functions in alphabetical order.

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*RST .....	3-7
*SRE/*SRE? .....	3-8
*STB? .....	3-9
*TST? .....	3-10
*WAI .....	3-11

**\*CLS**

Clear Status Command

Function

Clears the status byte register, standard event status register, extended event status register and output queue data, and disables the wait for operation completion set by \*OPC/\*OPC?. This is a common IEEE488.2 command.

Command

\*CLS

Example of Use

To clear status:  
\*CLS

**\*ESE/\*ESE?**

Standard Event Status Enable Command/Query

Function

Sets the standard event status enable register. The standard event status enable register value is returned for the query. This is a common IEEE488.2 command/query.

Command

\*ESE n

Query

\*ESE?

Response

n

Parameter

n	Standard event status enable register
Value	= bit0 + bit1 + bit2 + bit3 + bit4 + bit5 + bit6 + bit7
	bit0: 2 <sup>0</sup> = 1                      Operation completion
	bit1: 2 <sup>1</sup> = 2                      Request control (not used)
	bit2: 2 <sup>2</sup> = 4                      Query error
	bit3: 2 <sup>3</sup> = 8                      Device error
	bit4: 2 <sup>4</sup> = 16                     Execution error
	bit5: 2 <sup>5</sup> = 32                     Command error
	bit6: 2 <sup>6</sup> = 64                     User request
	bit7: 2 <sup>7</sup> = 128                   Power ON
Range	0 to 255

Example of Use

To enable execution error and command error:  
 \*ESE 48  
 \*ESE?  
 >48

**\*ESR?**

Standard Event Status Register Query

Function

Returns the standard event status register value. The standard event status register value is cleared after readout. This is a common IEEE488.2 query.

Query

\*ESR?

Response

n

Parameter

n

Standard event status register

Value	= bit0 + bit1 + bit2 + bit3 + bit4 + bit5 + bit6 + bit7
bit0: $2^0 = 1$	Operation completion
bit1: $2^1 = 2$	Request control (not used)
bit2: $2^2 = 4$	Query error
bit3: $2^3 = 8$	Device error
bit4: $2^4 = 16$	Execution error
bit5: $2^5 = 32$	Command error
bit6: $2^6 = 64$	User request
bit7: $2^7 = 128$	Power ON

Range 0 to 255

Example of Use

To query the standard event status register value (when an execution error and command error have occurred):

\*ESR?

>48

## \*IDN?

Identification Query

Function

Queries device information. This is a common IEEE488.2 query.

Query

```
*IDN?
```

Response

```
ANRITSU,model,serialnumber,firmware
```

Parameter

model	Product model (7-character alphanumeric)
serialnumber	Serial number (10-digit number)
firmware	Firmware and software versions

Example of Use

To query device information:

```
*IDN?
```

```
>ANRISTU,MS2690A,6000000000,1.00.00
```

## \*OPC/\*OPC?

Operation Complete Command/Query

### Function

\*OPC/\*OPC? is a command/query to synchronize between the device and the external controller (PC). This is a common IEEE488.2 command/query.

If a \*OPC command is received, the operation completion bit (bit 0) is set to 1 once all active processes are complete.

If a \*OPC? query is received, 1 is returned once all active processes are complete.

### Command

\*OPC

### Query

\*OPC?

### Response

1

### Details

The wait for operation completion set by \*OPC/\*OPC? is disabled after the following events:

- Power ON
- Reception of DCL or SCL on the IEEE488.1 interface
- Reception of the \*CLS command
- Reception of the \*RST command
- Completion of all active processing

### Example of Use

To wait for completion of measurement:

*CLS	Clears the event status.
*SRE 32	Enables the ESB service request.
*ESE 1	Enables the operation completion bit.
SNGLS;*OPC	Waits for the start of measurement and completion of operation.
POWER?	Queries the measurement results.



**\*RST**

Reset Command

Function

Initializes the device. This is a common IEEE488.2 command.

Command

\*RST

Details

Initializes the settings and status of all loaded applications.

Example of Use

To initialize the device:

\*RST

**\*SRE/\*SRE?**

Service Request Enable Command/Query

Function

Sets the service request enable register. The service request enable register value is returned for the query. This is a common IEEE488.2 command/query.

Command

\*SRE n

Query

\*SRE?

Response

n

Parameter

n	Service request enable register
Value	= bit0 + bit1 + bit2 + bit3 + bit4 + bit5 + bit6 + bit7
	bit0: 2 <sup>0</sup> = 1      Extended event status (EESB0)
	bit1: 2 <sup>1</sup> = 2      Extended event status (EESB1)
	bit2: 2 <sup>2</sup> = 4      Extended event status (EESB2)
	bit3: 2 <sup>3</sup> = 8      Extended event status (EESB3)
	bit4: 2 <sup>4</sup> = 16     MAV
	bit5: 2 <sup>5</sup> = 32     ESB
	bit6: 2 <sup>6</sup> = 64     Not used
	bit7: 2 <sup>7</sup> = 128    Extended event status (EESB7)
Range	0 to 255

Example of Use

To enable the ESB service request:  
 \*SRE 32  
 \*SRE?  
 >32

**\*STB?**

Status Byte Register Query

Function

Returns the status byte register value. This is a common IEEE488.2 query.

Query

\*STB?

Response

n

Parameter

n

	Status byte register
Value	= bit0 + bit1 + bit2 + bit3 + bit4 + bit5 + bit6 + bit7
	bit0: 2 <sup>0</sup> = 1      Extended event status (EESB0)
	bit1: 2 <sup>1</sup> = 2      Extended event status (EESB1)
	bit2: 2 <sup>2</sup> = 4      Extended event status (EESB2)
	bit3: 2 <sup>3</sup> = 8      Extended event status (EESB3)
	bit4: 2 <sup>4</sup> = 16     MAV
	bit5: 2 <sup>5</sup> = 32     ESB
	bit6: 2 <sup>6</sup> = 64     MSS/RQS
	bit7: 2 <sup>7</sup> = 128    Extended event status (EESB7)
Range	0 to 255

Example of Use

To query the status byte register value (when the ESB bit is 1):

\*STB?

>32

**\*TST?**

Self-Test Query

Function

Returns the result of the self test executed at system activation. This is a common IEEE488.2 query.

Query

\*TST?

Response

result

Parameter

result	Self test result
0	Normal termination
1	Error occurred

Example of Use

To query the self test result:  
\*TST?  
>0

## \*WAI

Wait-to-Continue Command

Function

Waits until all active processes are complete before executing the next command. This is a common IEEE488.2 command.

Command

\*WAI

Example of Use

To wait for completion of measurement:

```
SNGLS; *WAI
```

```
POWER?
```



# Chapter 4 SCPI Device Message Details

This chapter describes the detailed specifications of SCPI remote control commands for executing the functions of this equipment. The device messages are listed according to function.

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	:INSTrument[:SElect] SIGANA SPECT PNOISE CONFIG SG BER WIMAX WCDMADL  WCDMAUL  GSM ETC_DSRC TDSCDMA XGPHS VMA AMA 3GLTE_DL  3GLTE_UL  LTETDDL LTETDDUL CDMA2KFW EVDOFWD WDEVICE  WLAN  WCDMA_BS RNC MEDIAFLO ISDBTMM UMTS BBIF EXTDIG PA  TRXSC  PMETer.....	4-10
	:INSTrument[:SElect]?.....	4-12
	:INSTrument:SYSTem SIGANA SPECT PNOISE CONFIG PMETer BER [ACTive]  INACTive MINimum.....	4-13
	:INSTrument:SYSTem?.....	4-14
	:SYSTem:REBoot.....	4-15
	:INSTrument:DEFault.....	4-15
	:SYSTem:PRESet.....	4-16
	:DISPlay:ENABle ON OFF 1 0.....	4-16
	:DISPlay:ENABle?.....	4-17
	:DISPlay:SCReen ON OFF 1 0.....	4-17
	:DISPlay:SCReen?.....	4-18
	:MMEMory:STORe:SCReen [<filename> [,<device>]].....	4-18
	:MMEMory:STORe:SCReen:MODE BMP PNG.....	4-19
	:MMEMory:STORe:SCReen:MODE?.....	4-19
	:MMEMory:STORe:STATe [<filename>[,<device>]].....	4-20
	:MMEMory:LOAD:STATe [<filename>[,<device>[,<mode>]].....	4-21
	:DISPlay:ERRor:MODE NORMAl REMAin LAST.....	4-22
	:DISPlay:ERRor:MODE?.....	4-23
	:CALibration:ALL.....	4-23
	:CALibration:TIME:ALL?.....	4-24
	:CALibration:TEMPerature:ALL?.....	4-25
	:CALibration:LEVel.....	4-26
	:CALibration:TIME:LEVel?.....	4-26
	:CALibration:TEMPerature:LEVel?.....	4-27
	:CALibration:LOLeak.....	4-27
	:CALibration:TIME:LOLeak?.....	4-28
	:CALibration:TEMPerature:LOLeak?.....	4-29
	:CALibration:BAND.....	4-30
	:CALibration:TIME:BAND?.....	4-30
	:CALibration:TEMPerature:BAND?.....	4-31
	:CALibration:BAND:EXTRa.....	4-32
	:CALibration:BAND:EXTRa:CLEar.....	4-32

:CALibration:FREQuency:BAND:EXTRa?	4-33
:CALibration:TIME:BAND:EXTRa?	4-34
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:SYSTem:RESult:MODE?	4-36
:SYSTem:ERRor?	4-37
:SYSTem:LANGUage SCPI NATive	4-39
:SYSTem:LANGUage?	4-40
[:SENSe]:ROSCillator:STATus?	4-41
[:SENSe]:ROSCillator:SOURce?	4-42
[:SENSe]:POWer[:RF]:ATTenuation:MODE COMBined MECHANical	4-43
[:SENSe]:POWer[:RF]:ATTenuation:MODE?	4-44
[:SENSe]:CORRection[:STATE] ON OFF 1 0	4-45
[:SENSe]:CORRection[:STATE]?	4-45
[:SENSe]:CORRection:MAKE <freq>,<real>	4-46
[:SENSe]:CORRection:MAKE:CLEar	4-46
:MMEMory:STORe:CORRection [<filename>[,<device>]]	4-47
:MMEMory:LOAD:CORRection <filename>[,<device>]	4-48
[:SENSe]:CORRection:DATA?	4-49
[:SENSe]:FREQuency:SYNThesis:LPHase ON OFF 1 0	4-50
[:SENSe]:FREQuency:SYNThesis:LPHase?	4-51
:DISPlay:WINDow[1]:ANNotation[:ALL] ON OFF 1 0	4-52
:DISPlay:WINDow[1]:ANNotation[:ALL]?	4-53
:CALibration:ALERT:STATe?	4-53
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:STATus:QUEStionable:CONDition?	4-56
:STATus:QUEStionable:ENABle <integer>	4-57
:STATus:QUEStionable:ENABle?	4-57
:STATus:QUEStionable:NTRansition <integer>	4-58
:STATus:QUEStionable:NTRansition?	4-58
:STATus:QUEStionable:PTRansition <integer>	4-59
:STATus:QUEStionable:PTRansition?	4-59
:STATus:QUEStionable:CALibration[:EVENT]?	4-60
:STATus:QUEStionable:CALibration:CONDition?	4-60
:STATus:QUEStionable:CALibration:ENABle <integer>	4-61
:STATus:QUEStionable:CALibration:ENABle?	4-61
:STATus:QUEStionable:CALibration:NTRansition <integer>	4-62
:STATus:QUEStionable:CALibration:NTRansition?	4-62
:STATus:QUEStionable:CALibration:PTRansition <integer>	4-63
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:SYSTem:BEEPPer ON OFF 0 1.....	4-71
:SYSTem:BEEPPer? .....	4-71
:MMEMory:STORe:SCReen:THEMe NORMAl REVerse MONOchrome MREVerse .....	4-72
:MMEMory:STORe:SCReen:THEMe? .....	4-72
[:SENSe]:ROSCillator:SOURce:AUTO ON OFF 1 0 .....	4-73
[:SENSe]:ROSCillator:SOURce:AUTO?.....	4-73
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:MMEMory:DELeTe:STATe <filename>,<device> .....	4-76
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:INPut:BERT[:BASeband]:CGATe[:STATe]?.....	4-161
:INPut:BERT[:BASeband]:CLOCK:POLarity POSitive NEGative.....	4-162
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[SENSe]:BERT[:BASEband]:STOP:CRITeria:EBIT <bit> .....	4-178
[SENSe]:BERT[:BASEband]:STOP:CRITeria:EBIT? .....	4-179
[SENSe]:BERT[:BASEband]:STOP:CRITeria[:SElect] EBIT NONE .....	4-180
[SENSe]:BERT[:BASEband]:STOP:CRITeria[:SElect]? .....	4-181
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[SENSe]:BERT[:BASEband]:TBITs? .....	4-183
[SENSe]:BERT[:BASEband]:MODE SINGLE CONTInuous ENDLess .....	4-184
[SENSe]:BERT[:BASEband]:MODE? .....	4-185
[SENSe]:BERT[:BASEband]:PRBS:PNFix:LENGth <bit> .....	4-186
[SENSe]:BERT[:BASEband]:PRBS:PNFix:LENGth? .....	4-187
[SENSe]:BERT[:BASEband]:PRBS:PNFix:INITial <n> .....	4-188
[SENSe]:BERT[:BASEband]:PRBS:PNFix:INITial? .....	4-189
[SENSe]:BERT[:BASEband]:PRBS:USER:SYNC:LENGth <bit> .....	4-190
[SENSe]:BERT[:BASEband]:PRBS:USER:SYNC:LENGth? .....	4-191
[SENSe]:BERT[:BASEband]:SYNLoss:COUNT? .....	4-192
[SENSe]:BERT[:BASEband]:RSYNc:COUNT:ACTIon CLear KEEP .....	4-193
[SENSe]:BERT[:BASEband]:RSYNc:COUNT:ACTIon? .....	4-194
[SENSe]:BERT[:BASEband]:PRBS:USER:SYNC:STARt <bit> .....	4-195
[SENSe]:BERT[:BASEband]:PRBS:USER:SYNC:STARt? .....	4-196
[SENSe]:BERT[:BASEband]:PRBS:USER:PATTern? .....	4-197
[SENSe]:BERT[:BASEband]:PRBS:USER:LENGth? .....	4-198
:INITiate[:IMMediate] .....	4-199
:ABORt .....	4-200

## 4.1 Application Common Device Messages

Application common device messages available in this application are shown in Table 4.1-1.

**Table 4.1-1 Application Common Device Messages**

Function	Device Messages
Application Switch	:INSTRUMENT[:SElect] SIGANA SPECT PNOISE CONFIG SG BER WIMAX WCDMADL WCDMAUL  GSM ETC_DSRC TDSCDMA XGPHS VMA AMA 3GLTE_DL 3GLTE_UL  LTETDDDL LTETDDUL CDMA2KFWD EVDOFWD WDEVICE WLAN WCDMA_BS  RNC MEDIAFLO ISDBTMM UMTS BBIF EXTDIG PA TRXSC PMETer
	:INSTRUMENT[:SElect]?
Application Status	:INSTRUMENT:SYSTEM SIGANA SPECT PNOISE CONFIG PMETer BER,[ACTive] INACTive MINimum
	:INSTRUMENT:SYSTEM?
System Re-boot	:SYSTEM:REBoot
Preset Current Application	:INSTRUMENT:DEFAULT
	:SYSTEM:PRESet
LCD Power	:DISPlay:ENABle ON OFF 1 0
	:DISPlay:ENABle?
	:DISPlay:SCReen ON OFF 1 0
	:DISPlay:SCReen?
Hard Copy	:MMEMemory:STORe:SCReen [<filename>[,<device>]]
Hard Copy Mode	:MMEMemory:STORe:SCReen:MODE BMP PNG
	:MMEMemory:STORe:SCReen:MODE?
Save Parameter Setting as file	:MMEMemory:STORe:STATe [<filename>[,<device>]]
Recall Parameter Setting as file	:MMEMemory:LOAD:STATe <filename>[,<device>[,<mode>]]
Error Message Display Mode	:DISPlay:ERRor:MODE NORMAL REMain LAST
	:DISPlay:ERRor:MODE?
All Calibration	:CALibration:ALL
All Calibration Time Query	:CALibration:TIME:ALL?
All Calibration Temperature Query	:CALibration:TEMPerature:ALL?
Level Calibration	:CALibration:LEVel
Level Calibration Time Query	:CALibration:TIME:LEVel?
Level Calibration Temperature Query	:CALibration:TEMPerature:LEVel?
Local Leak Calibration	:CALibration:LOLeak

**Table 4.1-1 Application Common Device Messages (Cont'd)**

Function	Device Messages
Local Leak Calibration Time Query	:CALibration:TIME:LOLeak?
Local Leak Calibration Temperature Query	:CALibration:TEMPerature:LOLeak?
Bandwidth Calibration	:CALibration:BAND
Bandwidth Calibration Time Query	:CALibration:TIME:BAND?
Bandwidth Calibration Temperature Query	:CALibration:TEMPerature:BAND?
Extra Bandwidth Calibration	:CALibration:BAND:EXTRa
Extra Bandwidth Calibration Clear	:CALibration:BAND:EXTRa:CLEar
Extra Bandwidth Calibration Frequency Query	:CALibration:FREQuency:BAND:EXTRa?
Extra Bandwidth Calibration Time Query	:CALibration:TIME:BAND:EXTRa?
Result Mode	:SYSTem:RESult:MODE A B
	:SYSTem:RESult:MODE?
System Error Query	:SYSTem:ERRor?
Language mode switching	:SYSTem:LANGUage SCPI NATive
	:SYSTem:LANGUage?
Reference Clock Status Query	[ :SENSe]:ROSCillator:STATus?
Reference Signal Query	[ :SENSe]:ROSCillator:SOURce?
Attenuation Mode	[ :SENSe]:POWer[:RF]:ATTenuation:MODE COMBined MECHANical
	[ :SENSe]:POWer[:RF]:ATTenuation:MODE?
Correction (On/Off)	[ :SENSe]:CORRection[:STATe] ON OFF 1 0
	[ :SENSe]:CORRection[:STATe]?
Correction Make Up	[ :SENSe]:CORRection:MAKE <freq>,<real>
Correction Make Up All Clear	[ :SENSe]:CORRection:MAKE:CLEar
Correction File Save	:MMEMory:STORe:CORRection [<filename>[,<device>]]

Table 4.1-1 Application Common Device Messages (Cont'd)

Function	Device Messages
Correction File Recall	:MMEMory:LOAD:CORRection <filename>[,<device>]
Correction Data Read	[:SENSe]:CORRection:DATA?
Low Phase Noise	[:SENSe]:FREQuency:SYNThesis:LPHase ON OFF 1 0
	[:SENSe]:FREQuency:SYNThesis:LPHase?
Display Annotation	:DISPlay:WINDow[1]:ANNotation[:ALL] ON OFF 1 0
	:DISPlay:WINDow[1]:ANNotation[:ALL]?
Status of Calibration Alert	:CALibration:ALERt:STATe?

:INSTrument[:SElect]

SIGANA|SPECT|PNOISE|CONFIG|SG|BER|WIMAX|WCDMADL|WCDMAUL  
 |GSM|ETC\_DSRC|TDSCDMA|XGPHS|VMA|AMA|3GLTE\_DL|3GLTE\_UL|  
 LTETDDDL|LTETDDUL|CDMA2KFWD|EVDOFWD|WDEVICE|WLAN|  
 WCDMA\_BS|RNC|MEDIAFLO|ISDBTMM|UMTS|BBIF|EXTDIG|PA|TRXSC|  
 PMETer

Application Switch

Function

This command switches the target application for control.

Command

:INSTrument[:SElect] <apl\_name>

Parameter

<apl_name>	Target application name
SIGANA	Signal Analyzer
SPECT	Spectrum Analyzer
PNOISE	Phase Noise
CONFIG	Config
SG	Signal Generator
BER	BER Test
WIMAX	WiMAX
WCDMADL	W-CDMA/HSPA Downlink
WCDMAUL	W-CDMA/HSPA Uplink
GSM	GSM
ETC_DSRC	ETC/DSRC
TDSCDMA	TD-SCDMA
XGPHS	XG-PHS
VMA	Vector Modulation Analysis
AMA	Analog Modulation Analysis
3GLTE_DL	3GLTE Downlink
3GLTE_UL	3GLTE Uplink
LTETDDDL	LTE-TDD Downlink
LTETDDUL	LTE-TDD Uplink
CDMA2KFWD	CDMA2000
EVDOFWD	EVDO
WDEVICE	Wireless Network Device Test
WLAN	WLAN (802.11)
WCDMA_BS	W-CDMA BS
RNC	W-CDMA RNC Simulator Control
MEDIAFLO	MediaFLO
ISDBTMM	ISDB-Tmm



UMTS	UMTS Measurement Software
BBIF	Digital I/F Control Software
EXTDIG	Extended Digitizing
PA	PA Measurement
TRXSC	TRX Sweep Calibration
PMETer	Power Meter

Details

This function is used to switch the operation/control target application. An application that has not been loaded cannot be switched to. Before using this command, load the application by using the `SYSTEM:APPLICATION:LOAD` command.

The software version V6.00.00 or later does not support the commands of the UMTS Measurement Software and Digital I/F Control Software.

Example of Use

To switch the control target to Signal Analyzer  
`INST SIGANA`

## :INSTrument[:SElect]?

Application Switch Query

Function

This command queries the controlled application.

Query

:INSTrument[:SElect]?

Response

<apl\_name>

Parameter

<apl_name>	Target application name
SIGANA	Signal Analyzer
SPECT	Spectrum Analyzer
PNOISE	Phase Noise
CONFIG	Config
SG	Signal Generator
BER	BER Test
WIMAX	WiMAX
WCDMADL	W-CDMA/HSPA Downlink
WCDMAUL	W-CDMA/HSPA Uplink
GSM	GSM
ETC_DSRC	ETC/DSRC
TDSCDMA	TD-SCDMA
XGPHS	XG-PHS
VMA	Vector Modulation Analysis
AMA	Analog Modulation Analysis
3GLTE_DL	3GLTE Downlink
3GLTE_UL	3GLTE Uplink
LTETDDDL	LTE-TDD Downlink
LTETDDUL	LTE-TDD Uplink
CDMA2KFWD	CDMA2000
EVDOFWD	EVDO
WDEVICE	Wireless Network Device Test
WLAN	WLAN (802.11)
WCDMA_BS	W-CDMA BS
RNC	W-CDMA RNC Simulator Control
MEDIAFLO	MediaFLO
ISDBTMM	ISDB-Tmm
UMTS	UMTS Measurement Software
BBIF	Digital I/F Control Software
EXTDIG	Extended Digitizing
PA	PA Measurement
TRXSC	TRX Sweep Calibration

PMETer Power Meter

Details

This function is used to switch the operation/control target application. The software version V6.00.00 or later does not support the commands of the UMTS Measurement Software and Digital I/F Control Software.

Example of Use

```
To query the control target
INST?
> SIGANA
```

:INSTrument:SYSTem

SIGANA|SPECT|PNOISE|CONFIG|PMETer|BER,[ACTive]||INACTive|MINimu  
m

Application Status

Function

This command sets the status of the specified application.

Command

```
:INSTrument:SYSTem <apl_name>,<window>
```

Parameter

<apl_name>	Target application name
SIGANA	Signal Analyzer
SPECT	Spectrum Analyzer
PNOISE	Phase Noise
CONFIG	Config
PMETer	Power Meter
BER	BER Test
<window>	Application window status
ACTive	Operation enabled (displayed on top screen)
INACTive	Inactive
MINimum	Minimized
When omitted.	Active

Details

This function is used to switch the operation/control target application. Applications that have not been loaded are not switched to. Using the SYSTem:APPLication:LOAD command, load the applications before using this command.

Example of Use

```
To switch the window status of Spectrum Analyzer to Active
INST:SYST SPECT,ACT
```

## :INSTrument:SYSTem?

Application Status Query

Function

This command queries the status of the specified application.

Query

```
:INSTrument:SYSTem? <apl_name>
```

Response

```
<status>,<window>
```

Parameter

<apl_name>	Target application name
SIGANA	Signal Analyzer
SPECT	Spectrum Analyzer
PNOISE	Phase Noise
CONFIG	Config
PMETer	Power Meter
BER	BER Test
<status>	Application status
CURR	Executed and targeted for operation
RUN	Executed but not targeted for operation
IDLE	Loaded but not executed
UNL	Not loaded
<window>	Application window status
ACT	Operation enabled (displayed on top screen)
INAC	Inactive
MIN	Minimized
NON	Window not displayed

Details

This function is used to switch the operation/control target application.

Example of Use

```
To query the status of the Spectrum Analyzer
INST:SYST? SPECT
> CURR,ACT
```

## :SYSTem:REBoot

System Re-boot

Function

This command reboots the system.

Command

```
:SYSTem:REBoot
```

Details

If this command is received, remote control communication is disabled until all applications are rebooted.

Example of Use

To reboot the system.

```
SYST:REB
```

## :INSTrument:DEFault

Preset Current Application

Function

This command initializes the settings and status of the currently selected application.

Command

```
:INSTrument:DEFault
```

Example of Use

To initialize the settings and status of the currently selected application

```
INST:DEF
```

## :SYSTem:PRESet

Preset Current Application

### Function

This command initializes the settings and status of the currently selected application.

### Command

```
:SYSTem:PRESet
```

### Example of Use

To initialize the settings and status of the currently selected application  
SYST:PRES

## :DISPlay:ENABle ON|OFF|1|0

LCD Power

### Function

This command turns the LCD backlight ON/OFF.

### Command

```
:DISPlay:ENABle <switch>
```

### Parameter

<switch>	LCD backlight status
ON 1	On (Default)
OFF 0	Off

### Details

When the **Local** key is pressed, the LCD backlight automatically turns ON.

### Example of Use

To turn the LCD backlight OFF  
DISP:ENAB OFF

### Related Commands

The below command is for the same parameter.  
:DISPlay:SCReen <switch>

**:DISPlay:ENABle?**

LCD Power Query

## Function

This command queries the ON/OFF status of the LCD backlight.

## Query

```
:DISPlay:ENABle?
```

## Response

```
<switch>
```

## Parameter

<switch>	LCD backlight status
1	On (Default)
0	Off

## Details

When the **Local** key is pressed, the LCD backlight automatically turns ON.

## Example of Use

```
To query the ON/OFF status of the LCD backlight
DISP:ENAB?
> 0
```

## Related Commands

The below command is for the same parameter.  
:DISPlay:SCReen?

**:DISPlay:SCReen ON|OFF|1|0**

LCD Power

## Function

This command turns the LCD backlight ON/OFF.

Refer to

```
:DISPlay:ENABle <switch>
```

## Related Commands

The below command is for the same parameter.  
:DISPlay:ENABle <switch>

## :DISPlay:SCREen?

LCD Power Query

### Function

This command queries the ON/OFF status of the LCD backlight.  
Refer to  
:DISPlay:ENABle?

### Related Commands

The below command is for the same parameter.  
:DISPlay:ENABle?

## :MMEMory:STORe:SCREen [<filename> [,<device>]]

Hard Copy

### Function

This command saves a screen hardcopy into a file. The name of the file to be saved and save destination drive name can be specified.

### Command

:MMEMory:STORe:SCREen [<filename> [,<device>]]

### Parameter

<filename>	Target file name Character string within 32 characters enclosed by double quotes (“ ”) or single quotes ( ‘ ’ ) (excluding extension) The following characters cannot be used: \ / : * ? \ " \ ' < >   Automatically named as “Copy date sequential number.bmp” when omitted.
<device>	Drive name A, B, D, E, F, ... Set to Drive D when omitted.

### Details

A sequential number from 00 to 999 will be added to the file name.  
When a file is saved following a file with file number 999, 00 is added to the newly saved file.  
Files are saved to the following directory in the specified drive.  
\  
Anritsu Corporation\  
Signal Analyzer\  
User Data\  
Copy Files  
When file name is omitted, up to 1000 files can be saved in a folder.  
When file name is specified, it is possible to save more than 1000 files.

### Example of Use

To save a screen hardcopy into a file, after naming the file “TEST,” in the internal hard disk  
MMEM:STOR:SCR "TEST",D



**:MMEMory:STORe:SCReEn:MODE BMP|PNG**

Hard Copy Mode

Function

This command sets the screen hardcopy file format.

Command

`:MMEMory:STORe:SCReEn:MODE <mode>`

Parameter

<mode>	File format
BMP	BMP format (Default)
PNG	PNG format

Example of Use

To save hardcopies in the PNG format

`MMEM:STOR:SCR:MODE PNG`**:MMEMory:STORe:SCReEn:MODE?**

Hard Copy Mode Query

Function

This command queries the screen hardcopy file format.

Query

`:MMEMory:STORe:SCReEn:MODE?`

Response

&lt;mode&gt;

Parameter

<mode>	File format
BMP	BMP format (Default)
PNG	PNG format

Example of Use

To query the screen hardcopy file format

`MMEM:STOR:SCR:MODE?``> PNG`

**:MMEMory:STORe:STATe [<filename>[,<device>]]**

Save Parameter Setting as file

Function

Saves the application settings and status into a parameter setting file.

Command

:MMEMory:STORe:STATe [<filename>[,<device>]]

Parameter

<filename>                   Target filename  
Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension)  
The following characters cannot be used:  
\\ / : \* ? “ ” ` ' < > |  
When omitted, the file is automatically named in the following format: “Param date\_sequential number.xml”

<device>                    Drive name  
A, B, D, E, F, . . .  
Set to Drive D when omitted.

Details

A sequential number from 00 to 999 will be added to the file name.  
When a file is saved following a file with file number 999, 00 is added to the newly saved file.  
Files are saved to the following directory in the specified drive.  
\\Anritsu Corporation\\Signal Analyzer\\User Data\\Parameter Setting  
When file name is omitted, up to 1000 files can be saved in a folder.  
When file name is specified, it is possible to save more than 1000 files.

Example of Use

To save the parameter setting file “TEST” in the internal hard disk  
MMEM:STOR:STAT "TEST",D

**:MMEMory:LOAD:STATe <filename>[,<device>[,<mode>]]**

Recall Parameter Setting file

**Function**

This command recalls the application settings and status into a parameter setting file.

**Command**

```
:MMEMory:LOAD:STATe <filename>[,<device>[,<mode>]]
```

**Parameter**

<b>&lt;filename&gt;</b>	<p><b>Target filename</b> Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension)</p> <p>The following characters cannot be used:  \ / : * ? “ ” \ ‘ &lt; &gt;  </p>
<b>&lt;device&gt;</b>	<p><b>Drive name</b> A, B, D, E, F, . . .</p>
<b>&lt;mode&gt;</b>	<p><b>Target application</b></p> <p>ALL All applications</p> <p>CURR Only the currently operated application</p> <p>When omitted. All applications</p>

**Example of Use**

To restore settings of all applications to the contents of the parameter setting file “TEST” saved in the internal hard disk

```
MMEM:LOAD:STAT "TEST",D
```

## :DISPlay:ERRor:MODE NORMAl|REMain|LAST

Error Message Display Mode

### Function

Selects the error message display mode when an error occurs during remote control.

### Command

:DISPlay:ERRor:MODE <mode>

### Parameter

<mode>	Error message display mode
NORMAl	Deletes the error message display once the next command is received. (Default)
REMain	Keeps the first error message displayed.
LAST	Keeps the last error message displayed.

### Details

The setting of the error message display mode cannot be initialized.

### Example of Use

To keep the first error message displayed  
DISP:ERR:MODE REM

## :DISPlay:ERRor:MODE?

Error Message Display Mode Query

### Function

This command queries the error message display mode when an error occurs during remote control.

### Query

:DISPlay:ERRor:MODE?

### Response

<mode>

### Parameter

<mode>	Error message display mode
NORM	Deletes the error message display once the next command is received. (Default)
REM	Keeps the first error message displayed.
LAST	Keeps the last error message displayed.

### Details

The setting of the error message display mode cannot be initialized.

### Example of Use

To query the error message display mode when an error occurs during remote control

```
DISP:ERR:MODE?
> REM
```

## :CALibration:ALL

All Calibration

### Function

Executes all calibrations except Extra Bandwidth Calibration, SG I/Q Cal, SG I/Q External Cal.

### Command

:CALibration:ALL

### Details

For SG I/Q Cal and SG I/Q External Cal, refer to Section 2.8 “CAL Setting” in MS2690A/MS2691A/MS2692A Signal Analyzer Option 020 Vector Signal Generator Operation Manual (Remote Control).

### Example of Use

To execute all calibrations  
CAL:ALL

## :CALibration:TIME:ALL?

All Calibration Time Query

### Function

This command queries the time elapsed since the last All Calibration Time Command.

### Query

:CALibration:TIME:ALL?

### Response

<time>

### Parameter

<time>                      Time elapsed since calibration was performed  
No suffix code. Value is returned in s units.

### Details

This can be used as a criterion for whether to execute calibration.

### Example of Use

To query the time elapsed since the last time all the calibrations were performed

```
CAL:TIME:ALL?
```

```
> 100
```

**:CALibration:TEMPerature:ALL?**

All Calibration Temperature Query

## Function

This command queries the temperature when the last time all the calibrations were performed.

## Query

```
:CALibration:TEMPerature:ALL?
```

## Response

```
<temperature>
```

## Parameter

<code>&lt;temperature&gt;</code>	Temperature of the RF unit at the time of the calibration
Resolution	0.01°C
	Returns a value in Celsius (°C) units.

## Details

This can be used as a criterion for whether to execute calibration. The standard temperature of the RF unit is about 50°C during operation at normal temperature.

## Example of Use

```
To query the temperature when the last time all the calibrations were
performed
CAL:TEMP:ALL?
> 50.00
```

## :CALibration:LEVel

Level Calibration

Function

This command executes Level Calibration.

Command

```
:CALibration:LEVel
```

Example of Use

To executes Level Calibration  
CAL:LEV

## :CALibration:TIME:LEVel?

Level Calibration Time Query

Function

This command queries the time elapsed since the last Level Calibration.

Query

```
:CALibration:TIME:LEVel?
```

Response

```
<time>
```

Parameter

```
<time>
```

Time elapsed since calibration was performed.  
No suffix code. Value is returned in s units.

Details

This command is available only for MS2830A.

This can be used as a criterion for whether to execute calibration.

Example of Use

To query the time elapsed since the last Level Calibration  
CAL:TIME:LEV?  
> 100



**:CALibration:TEMPerature:LEVel?**

Level Calibration Temperature Query

## Function

This command queries the temperature at the last Level Calibration.

## Query

```
:CALibration:TEMPerature:LEVel?
```

## Response

```
<temperature>
```

## Parameter

```
<temperature>
```

Temperature of the RF unit at the time of the calibration

Resolution 0.01°C

Returns a value in Celsius (°C) units.

## Details

This command is available only for MS2830A.

This can be used as a criterion for whether to execute calibration.

The standard temperature of the RF unit is about 50°C during operation at normal temperature.

## Example of Use

To query the temperature at the time of the last Level Calibration

```
CAL:TEMP:LEV?
```

```
> 50.00
```

**:CALibration:LOLeak**

Local Leak Calibration

## Function

This command executes Local Leak Calibration.

## Command

```
:CALibration:LOLeak
```

## Example of Use

To execute Local Leak Calibration

```
CAL:LOL
```

## :CALibration:TIME:LOLeak?

Local Leak Calibration Time Query

### Function

This command queries the time elapsed since the last Local Leak calibration.

### Query

:CALibration:TIME:LOLeak?

### Response

<time>

### Parameter

<time>

Time elapsed since calibration was performed  
Returns the time in minutes, without a suffix code.

### Details

This command is available only for MS2830A.

This can be used as a criterion for whether to execute calibration.

### Example of Use

To query the time elapsed since the last Local Leak Calibration  
CAL:TIME:LOL?  
> 100

**:CALibration:TEMPerature:LOLeak?**

Local Leak Calibration Temperature Query

## Function

This command queries the temperature at the last Local Leak Calibration.

## Query

```
:CALibration:TEMPerature:LOLeak?
```

## Response

```
<temperature>
```

## Parameter

<code>&lt;temperature&gt;</code>	Temperature of the RF unit at the time of the calibration
Resolution	0.01°C
	Returns a value in Celsius (°C) units.

## Details

This command is available only for MS2830A.  
 This can be used as a criterion for whether to execute calibration.  
 The standard temperature of the RF unit is about 50°C during operation at normal temperature

## Example of Use

```
To query the temperature at the last Local Leak Calibration
CAL:TEMP:LOL?
> 50.00
```

## :CALibration:BAND

Bandwidth Calibration

Function

This command executes Bandwidth Calibration.

Command

```
:CALibration:BAND
```

Example of Use

To execute Bandwidth Calibration  
CAL:BAND

## :CALibration:TIME:BAND?

Bandwidth Calibration Time Query

Function

This command queries the time elapsed since the last Bandwidth Calibration.

Query

```
:CALibration:TIME:BAND?
```

Response

```
<time>
```

Parameter

```
<time>
```

Time elapsed since calibration was performed  
No suffix code. Value is returned in s units.

Details

This command is available only for MS2830A.

This can be used as a criterion for whether to execute calibration.

Example of Use

To query the time elapsed since the last Bandwidth Calibration  
CAL:TIME:BAND?  
> 100

**:CALibration:TEMPerature:BAND?**

Bandwidth Calibration Temperature Query

## Function

This command queries the temperature at the last Bandwidth Calibration.

## Query

```
:CALibration:TEMPerature:BAND?
```

## Response

```
<temperature>
```

## Parameter

<code>&lt;temperature&gt;</code>	Temperature of the RF unit at the time of the calibration
Resolution	0.01°C
	Returns a value in Celsius (°C) units.

## Details

This command is available only for MS2830A.  
 This can be used as a criterion for whether to execute calibration.  
 The standard temperature of the RF unit is about 50°C during operation at normal temperature.

## Example of Use

```
To query the temperature at the last Bandwidth Calibration
CAL:TEMP:BAND?
> 50.00
```

## :CALibration:BAND:EXTRa

Extra Bandwidth Calibration

### Function

This command executes band calibration within the current central frequency.

### Command

```
:CALibration:BAND:EXTRa
```

### Details

#### MS269xA

If this command is executed when MS269xA holds 100 values obtained by calibration, the oldest value is discarded and replaced by the newly obtained one.

#### MS2830A

If this command is executed, the value obtained by the previous calibration is discarded and replaced by the newly obtained one.

### Example of Use

Executes band calibration within the current center frequency.

```
CAL:BAND:EXTR
```

## :CALibration:BAND:EXTRa:CLEar

Extra Bandwidth Calibration Clear

### Function

This command clears all the values obtained by Extra Band Cal and held by MS269xA/MS2830A.

### Command

```
:CALibration:BAND:EXTRa:CLEar
```

### Example of Use

To clear all the values obtained by Extra Band Cal and held by MS269xA/MS2830A.

```
CAL:BAND:EXTR:CLE
```

**:CALibration:FREQuency:BAND:EXTRa?**

Extra Bandwidth Calibration Frequency Query

## Function

This command queries a list of center frequencies of values that are obtained by Extra Band Cal and held by MS269xA/MS2830A.

## Query

```
:CALibration:FREQuency:BAND:EXTRa?
```

## Response

```
<freq>,<freq>,...
```

## Parameter

<freq>	Center frequency of value obtained by Extra Band Cal
Range	30 MHz to 6 GHz
Resolution	1 Hz
Suffix Code	None. Value is returned in Hz units.

## Details

This command is available only for MS269xA.

The values are output in date and time order of calibration from the most recent first.

The values are output as many as the number of values held by MS269xA.

“-999.0” is returned when there exist no values obtained by Extra Band Cal.

## Example of Use

To query a list of center frequencies of values that are obtained by Extra Band Cal and held by MS269xA.

```
CAL:FREQ:BAND:EXTR?
```

```
> 1000000000,2000000000,3000000000
```

## :CALibration:TIME:BAND:EXTRa?

Extra Bandwidth Calibration Time Query

### Function

This command queries a list of the elapsed time of each Extra Band Cal.

### Query

:CALibration:TIME:BAND:EXTRa?

### Response

<time>,<time>,...

### Parameter

<time> Elapsed time of Extra Band Cal  
No suffix code.  
Value is returned in s units.

### Details

This command is available only for MS269xA.

The values are output in date and time order of calibration from the most recent first.

The values are output as many as the number of values held by MS269xA.

“-999.0” is returned when there exist no values obtained by Extra Band Cal.

### Example of Use

To query a list of the elapsed time of each Extra Band Cal.

```
CAL:TIME:BAND:EXTR?
```

```
> 1187,12872,21897
```



**:SYSTem:RESult:MODE A|B**

Result Mode

Function

This command sets the output mode of the measured result.

Command

```
:SYSTem:RESult:MODE <mode>
```

Parameter

<mode>	Output mode
A	Mode A (Default)
B	Mode B

Details

The Result Mode is initialized to Mode A through the following operation.

- Execute System Reset.
- Execute the system recovery function.

Example of Use

To set the response mode to Mode A  
SYST:RES:MODE A

## :SYSTem:RESult:MODE?

Result Mode Query

Function

This command queries the output mode of the measured result.

Query

```
:SYSTem:RESult:MODE?
```

Response

```
<mode>
```

Parameter

<mode>	Output mode
A	Mode A (Default)
B	Mode B

Details

The Result Mode is initialized to Mode A through the following operation.

- Execute System Reset.
- Execute the system recovery function.

Example of Use

```
To query the response mode
SYST:RES:MODE?
> A
```

**:SYSTem:ERRor?**

System Error Query

## Function

This command queries the error messages that exist in errors and the event queue.

A description consisting of numbers and characters related to the error or event is saved to the error or event queue.

## Query

```
:SYSTem:ERRor?
```

## Response

```
<Error/event_number>, "<Error/event_description>"
```

## Parameter

```
<Error/event_number>
```

This is an integer in the range of  $-32768$  to  $+32767$ . The value zero indicates that there is no error or that no event has occurred.

A negative number indicates the occurrence of a standard error reserved by SCPI. A positive number indicates the occurrence of an error defined by MS269xA.

```
<Error/event_description>
```

Each error message corresponds to an <Error/event number>. This character string can be up to 255 characters long.

Table 4.1-2 Error Messages List

Error/event_number	Error/event_description	Description
-100	Command error	Indicates that the command is incorrect or invalid.
-108	Parameter not allowed	Indicates that the number of parameters does not match.
-109	Missing parameter	Indicates that the number of parameters does not match. This is used if the number is not either too large or too small.
-113	Undefined header	This is an undefined command.
-120	Numeric data error	An invalid value is included.
-140	Character data error	This indicates that characters that cannot be used were input.
-150	String data error	This indicates that an incorrect character string is included in the command.
-160	Block data error	This is an error in the binary data format.
-200	Execution error	This indicates that this is an execution error other than parameter settings.
-220	Parameter error	This indicates that a set parameter is incorrect or invalid.
-221	Setting conflict	This indicates that this is setting disabled state.
-222	Data out of range	This indicates that the settable range has been exceeded.
-250	Mass storage error	This is a file manipulation related error.
-252	Missing media	This indicates that the specified drive does not exist.
-253	Corrupt media	This is a format error.
-256	File name not found	This indicates that the file does not exist.
-350	Queue overflow	This indicates that the error event queue has overflowed.

Details

For commands that requires synchronization by \*WAI commands when querying marker value:

Make sure to perform synchronization by \*WAI and \*OPC commands before querying the error messages by SYST: ERR?

Example of Use

```
To query an error message
SYST:ERR?
> -100,Command error
```

## :SYSTem:LANGUage SCPI|NATive

Language mode switching

Function

This command switches the language mode.

Command

:SYSTem:LANGUage <mode>

Parameter

<mode>	Language mode
SCPI	SCPI mode
NATive	Native mode (Default)

Details

The language mode is initialized to the Native mode through the following operation.

- Execute System Reset.
- Execute system recovery function.

Example of Use

To switch the language mode to the Native mode  
 SYST:LANG NAT

## :SYSTem:LANGuage?

Language mode switching Query

Function

This command queries the language mode.

Query

:SYSTem:LANGuage?

Response

<mode>

Parameter

<mode>	Language mode
SCPI	SCPI mode
NAT	Native mode (Default)

Details

The language mode is initialized to the Native mode through the following operation.

- Execute System Reset.
- Execute system recovery function.

Example of Use

```
To query the language mode
SYST:LANG?
> NAT
```

**[:SENSe]:ROSCillator:STATus?**

Reference Clock Status Query

## Function

This command queries the status of the frequency reference signal source.

## Query

```
[:SENSe]:ROSCillator:STATus?
```

## Response

```
<status>
```

## Parameter

```
<status>
```

Status of frequency reference signal source

```
0
```

Frequency reference signal source is in the locked status.

```
1
```

Frequency reference signal source is in the unlocked status.

## Example of Use

To query the internal frequency reference signal source

```
ROSC:STAT?
```

```
> 0
```

## [:SENSe]:ROSCillator:SOURce?

Reference Signal Query

### Function

This command queries the frequency reference signal source.

### Query

```
[ :SENSe ] :ROSCillator :SOURce?
```

### Response

```
<source>
```

### Parameter

<source>	Language mode
INT	Internal reference signal source
INTU	Internal reference signal source (Unlock state)
EXT	External reference signal source
EXTU	External reference signal source (Unlock state)

### Details

During frequency reference stabilization, \*\*\* is returned.

### Example of Use

```
To query the external reference signal source
ROSC:SOUR?
> EXT
```



**[[:SENSe]:POWer[:RF]:ATTenuation:MODE COMBined|MECHanical|**

Attenuation Mode

Function

This command sets Attenuation Mode.

Command

`[[:SENSe]:POWer[:RF]:ATTenuation:MODE <mode>`

Parameter

<mode> Attenuator mode

For MS2690A/MS2691A/MS2692A:

This command is not available.

For MS2830A:

MECHanical

Uses mechanical attenuator.

COMBined

Switches between electronic and mechanical attenuator according to frequencies.

Default

MECHanical

Details

This sets the attenuator operation mode to be used.

Example of Use

To set attenuation mode to mechanical attenuator mode

`POW:ATT:MODE MECH`



## [[:SENSE]:POWER[:RF]:ATTenuation:MODE?

Attenuation Mode Query

Function

This command queries Attenuation Mode.

Query

```
[[:SENSE]:POWER[:RF]:ATTenuation:MODE?
```

Response

```
<mode>
```

Parameter

```
<mode> Attenuator mode
```

For MS2690A/MS2691A/MS2692A:

This command is not available.

For MS2830A:

```
MECH
```

Uses mechanical attenuator.

```
COMB
```

Switches between electronic and mechanical attenuator according to frequencies.

Details

This sets the attenuator operation mode to be used.

Example of Use

To query Attenuation Mode

```
POW:ATT:MODE?
```

```
> MECH
```

**[[:SENSE]:CORRection[:STATe] ON|OFF|1|0**

Correction (On/Off)

## Function

This command switches on/off the level frequency correction of the signal analyzer.

## Command

```
[[:SENSe]:CORRection[:STATe] <switch>
```

## Parameter

<switch>	Correction processing On/Off
ON 1	Sets Correction processing On.
OFF 0	Sets Correction processing Off. (Default)

## Example of Use

To switch on the level frequency correction of the signal analyzer  
CORR ON

**[[:SENSE]:CORRection[:STATe]?**

Correction On/Off Query

## Function

This command queries on/off of the level frequency correction processing of the signal analyzer.

## Query

```
CORR?
```

## Response

```
<switch>
```

## Parameter

<switch>	Correction processing On/Off
1	Correction processing On
0	Correction processing Off

## Example of Use

To query the setting of the level frequency correction processing of the signal analyzer

```
CORR?  
> 1
```

## `[[:SENSE]:CORREction:MAKE <freq>,<real>`

Correction Make Up

### Function

This command adds data to the level frequency correction table of the signal analyzer.

### Command

```
[[:SENSE]:CORREction:MAKE <freq>,<real>
```

### Parameter

<code>&lt;freq&gt;</code>	Frequency to be corrected
Range	-1 to 400 GHz
Resolution	1 Hz
Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ
Default	0 Hz
<code>&lt;real&gt;</code>	Correction level
Range	-100 to 100 dB
Resolution	0.001 dB
Suffix code	DB
Default	0 dB

### Details

Up to 4096 data can be set. The data is not initialized by sending the command.

If you add the data continuously, set Correction to Off. You can then perform the setting smoothly.

### Example of Use

To add data to the level frequency correction table of the signal analyzer  
`CORR:MAKE 100MHZ,3DB`

## `[[:SENSE]:CORREction:MAKE:CLEAR`

Correction Make Up All Clear

### Function

This command initializes the level frequency correction table of the signal analyzer.

### Command

```
[[:SENSE]:CORREction:MAKE:CLEAR
```

### Example of Use

To initialize the level frequency correction table of the signal analyzer  
`CORR:MAKE:CLEAR`

**:MMEMory:STORe:CORRection [<filename>[,<device>]]**

Correction File Save

## Function

This command saves the level frequency correction table of the signal analyzer.

## Command

```
:MMEMory:STORe:CORRection [<filename>[,<device>]]
```

## Parameter

<code>&lt;filename&gt;</code>	<p>Target file name</p> <p>Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension)</p> <p>The following characters cannot be used:  \ / : * ? “ ” \ ‘ &lt; &gt;  </p> <p>Automatically named as “Corr date sequential number.” when omitted.</p>
<code>&lt;device&gt;</code>	<p>Drive name</p> <p>A, B, D, E, F, . . .</p> <p>D drive is used when omitted.</p>

## Example of Use

To save the level frequency correction table of the signal analyzer in drive D under the file name "TEST"

```
MMEM:STOR:CORR "TEST",D
```

**:MMEMory:LOAD:CORRection <filename>[,<device>]**

Correction File Recall

Function

This command queries the level frequency correction table of the signal analyzer.

Command

:MMEMory:LOAD:CORRection <filename>[,<device>]

Parameter

<filename>	<b>Target file name</b> Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \\ / : * ? “ ” \ ' < >
<device>	<b>Drive name</b> A, B, D, E, F, . . . D drive is used when omitted.

Example of Use

To load the level frequency table named “TEST” in drive D  
MMEM:LOAD:CORR “TEST”,D

**[[:SENSE]:CORRection:DATA?**

Correction Data Read

## Function

This command queries the level frequency correction table data of the signal analyzer.

## Query

```
[[:SENSE]:CORRection:DATA?
```

## Response

```
<number>,<freq_1>,<real_1>,<freq_2>,<real_2>,...
```

## Parameter

<number>	Number of data
Range	0 to 4096
<freq>	Frequency to be corrected
Range	-1 to 400 GHz
Resolution	1 Hz
Suffix code	None. Value is returned in Hz units.
<real>	Correction level
Range	-100 to 100 dB
Resolution	0.001 dB
Suffix code	None. Value is returned in dB units.

## Example of Use

To query the level frequency correction table data of the signal analyzer.

```
CORR:DATA?
> 1,1000000,10.000
```

## [[:SENSe]:FREQuency:SYNTHeSis:LPHase ON|OFF|1|0

Low Phase Noise

### Function

This command enables/disables Low Phase Noise function.

### Command

```
[[:SENSe]:FREQuency:SYNTHeSis:LPHase[:STATE] <switch_n>
```

### Parameter

<switch_n>	Low Phase Noise switch
ON 1	Enables Low Phase Noise switch.
OFF 0	Disables Low Phase Noise switch.
Default	On

### Details

This command is available only for MS2830A.

This function is available only when Option 062/066 is installed.

When setting is enabled, the phase noise characteristics can be improved by using the Low Phase Noise function to perform measurement at all applications.

Moreover, if a signal outside the DUT frequency range is input while this function is enabled, it may be possible to measure spurious noise generated within the unit.

Refer to the mainframe Operation Manual (Operation) for details about spurious noise generation conditions.

### Example of Use

To enable Low Phase Noise switch.

```
FREQ:SYNT:LPH ON
```



**[[:SENSe]:FREQuency:SYNTHeSis:LPHase?**

Low Phase Noise Query

## Function

This command queries the On/Off status of Low Phase Noise function.

## Query

```
[[:SENSe]:FREQuency:SYNTHeSis:LPHase[:STATe]?
```

## Response

```
<switch_n>
```

## Parameter

<switch_n>	Low Phase Noise switch
1	Low Phase Noise switch enabled.
0	Low Phase Noise switch disabled.

## Details

This command is available only for MS2830A.

This function is available only when Option 062/066 is installed.

## Example of Use

To query the On/Off status of Low Phase Noise function.

```
FREQ:SYNT:LPH?
> 1
```

## :DISPlay:WINDow[1]:ANNotation[:ALL] ON|OFF|1|0

Display Annotation

### Function

This command turns On/Off Display Annotation. When set to Off, the frequency and level of the measurement target are hidden from the screen.

### Command

```
:DISPlay:WINDow[1]:ANNotation[:ALL] <switch_n>
```

### Parameter

<switch_n>	Display Annotation
ON 1	Display
OFF 0	Hide
Default	ON

### Details

Displays or hides the frequency and level of the measurement target by switching Display Annotation.

### Example of Use

To set Display Annotation to Off.

```
DISP:WIND:ANN OFF
```

**:DISPlay:WINDow[1]:ANNotation[:ALL]?**

Display Annotation Query

## Function

This command queries On/Off Display Annotation. When set to Off, the frequency and level of the measurement target are hidden from the screen.

## Query

```
:DISPlay:WINDow[1]:ANNotation[:ALL]?
```

## Response

```
<switch_n>
```

## Parameter

<switch_n>	Display Annotation
1	Display
0	Hide

## Details

Queries whether the frequency and level of the measurement target are displayed on or hidden from the screen by Display Annotation.

## Example of Use

```
To query whether Display Annotation is On or Off.
DISP:WIND:ANN?
> 0
```

**:CALibration:ALERT:STATe?**

Status of Calibration Alert

## Function

Queries the Calibration Alert status.

## Query

```
:CALibration:ALERT:STATe?
```

## Response

```
<state>
```

## Parameter

<state>	Alert status
1	Alert
0	No Alert

## Example of Use

```
To query Alert status
CAL:ALER:STAT?
> 1
```

### 4.1.1 QUESTIONable Status Register

The figure below shows the layer structure of the QUESTIONable status register.

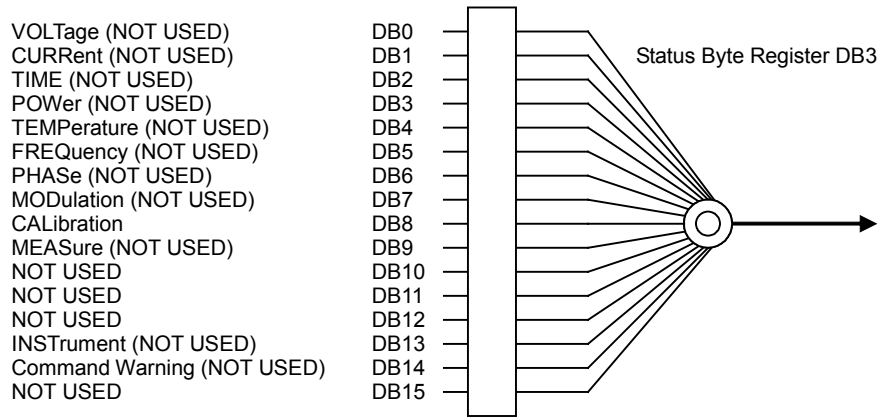


Figure 4.1.1-1 QUESTIONable Status Register

Table 4.1.1-1 QUESTIONable Status Register

Byte definition of QUESTIONable Status Register	
DB8	QUESTIONable Calibration Register summary

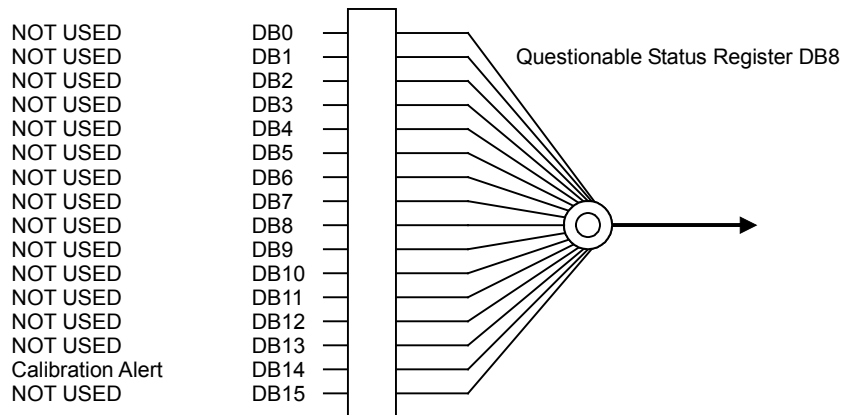


Figure 4.1.1-2 QUESTIONable Calibration Register

Table 4.1.1-2 QUESTIONable Calibration Register

Byte definition of QUESTIONable Calibration Register	
DB14	Indicates the occurrence of Calibration Alert

Table 4.1.1-3 Device messages for QUEStionable Status Register

Function	Device Messages
Questionable Status Register Event	:STATus:QUEStionable[:EVENT]?
Questionable Status Register Condition	:STATus:QUEStionable:CONDition?
Questionable Status Register Enable	:STATus:QUEStionable:ENABle <integer>
	:STATus:QUEStionable:ENABle?
Questionable Status Register Negative Transition	:STATus:QUEStionable:NTRansition <integer>
	:STATus:QUEStionable:NTRansition?
Questionable Status Register Positive Transition	:STATus:QUEStionable:PTRansition <integer>
	:STATus:QUEStionable:PTRansition?
Questionable Calibration Register Event	:STATus:QUEStionable:CALibration[:EVENT]?
Questionable Calibration Register Condition	:STATus:QUEStionable:CALibration:CONDition?
Questionable Calibration Register Enable	:STATus:QUEStionable:CALibration:ENABle <integer>
	:STATus:QUEStionable:CALibration:ENABle?
Questionable Calibration Register Negative Transition	:STATus:QUEStionable:CALibration:NTRansition <integer>
	:STATus:QUEStionable:CALibration:NTRansition?
Questionable Calibration Register Positive Transition	:STATus:QUEStionable:CALibration:PTRansition <integer>
	:STATus:QUEStionable:CALibration:PTRansition?

## :STATus:QUEStionable[:EVENT]?

Questionable Status Register Event

Function

This command queries the event register of the QUEStionable status register.

Query

:STATus:QUEStionable[:EVENT]?

Response

<integer>

Parameter

<integer>	Total bytes of event register
Range	1
Resolution	0 to 65535

Details

This command is available only in the SCPI mode.

Example of Use

To query the contents of the event register of the QUEStionable status register.  
STAT:QUES?  
> 256

## :STATus:QUEStionable:CONDition?

Questionable Status Register Condition

Function

This command queries the condition register of the QUEStionable status register.

Query

:STATus:QUEStionable:CONDition?

Response

<integer>

Parameter

<integer>	Total bytes of condition register
Range	1
Resolution	0 to 65535

Example of Use

To query the contents of the condition register of the QUEStionable status register.  
STAT:QUES:COND?  
> 256

**:STATus:QUEStionable:ENABle <integer>**

Questionable Status Register Enable

## Function

This command sets the event enable register of the QUEStionable status register.

## Command

```
:STATus:QUEStionable:ENABle <integer>
```

## Parameter

<integer>	Total bytes of event enable register
Range	1
Resolution	0 to 65535

## Details

This command is available only in the SCPI mode.

## Example of Use

To set the event enable register of the QUEStionable status register to 256.

```
STAT:QUES:ENAB 256
```

**:STATus:QUEStionable:ENABle?**

Questionable Status Register Enable Query

## Function

This command queries the event enable register of the QUEStionable status register.

## Query

```
:STATus:QUEStionable:ENABle?
```

## Response

```
<integer>
```

## Parameter

<integer>	Total bytes of the event enable register
Range	1
Resolution	0 to 65535

## Example of Use

To query the event enable register of the QUEStionable status register.

```
STAT:QUES:ENAB?
```

```
> 256
```

## :STATus:QUEStionable:NTRansition <integer>

Questionable Status Register Negative Transition

Function

This command sets the transition filter (negative direction change) of the QUEStionable status register.

Command

```
:STATus:QUEStionable:NTRansition <integer>
```

Parameter

<integer>	Total bytes of transition filter (negative direction change)
Range	1
Resolution	0 to 65535

Details

This command is available only in the SCPI mode.

Example of Use

To set the transition filter (negative direction change) of the QUEStionable status register to 256.

```
STAT:QUES:NTR 256
```

## :STATus:QUEStionable:NTRansition?

Questionable Status Register Negative Transition Query

Function

This command queries the transition filter (negative direction change) of the QUEStionable status register.

Query

```
:STATus:QUEStionable:NTRansition?
```

Response

```
<integer>
```

Parameter

<integer>	Total bytes of transition filter (negative direction change)
Range	1
Resolution	0 to 65535

Example of Use

To query the transition filter (negative direction change) of the QUEStionable status register.

```
STAT:QUES:NTR?  
> 256
```



**:STATus:QUEStionable:PTRansition <integer>**

Questionable Status Register Positive Transition

## Function

This command sets the transition filter (positive direction change) of the QUEStionable status register.

## Command

```
:STATus:QUEStionable:PTRansition <integer>
```

## Parameter

<integer>	Total bytes of transition filter (positive direction change)
Range	1
Resolution	0 to 65535

## Details

This command is available only in the SCPI mode.

## Example of Use

To set the transition filter (positive direction change) of the QUEStionable status register to 256.

```
STAT:QUES:PTR 256
```

**:STATus:QUEStionable:PTRansition?**

Questionable Status Register Positive Transition Query

## Function

This command queries the transition filter (positive direction change) of the QUEStionable status register.

## Query

```
:STATus:QUEStionable:PTRansition?
```

## Response

```
<integer>
```

## Parameter

<integer>	Total bytes of transition filter (positive direction change)
Range	1
Resolution	0 to 65535

## Example of Use

To query the transition filter (positive direction change) of the QUEStionable status register.

```
STAT:QUES:PTR?
> 256
```

## :STATus:QUESTionable:CALibration[:EVENT]?

Questionable Calibration Register Event

Function

This command queries the event register of the QUESTionable Calibration register.

Query

```
STATus:QUESTionable:CALibration[:EVENT]?
```

Response

```
<integer>
```

Parameter

<integer>	Total bytes of event register
Range	1
Resolution	0 to 65535

Example of Use

To query the contents of the event register of the QUESTionable Calibration register.

```
STAT:QUES:CAL?  
> 16384
```

## :STATus:QUESTionable:CALibration:CONDition?

Questionable Calibration Register Condition

Function

This command queries the condition register of the QUESTionable Calibration register.

Query

```
:STATus:QUESTionable:CALibration:CONDition?
```

Response

```
<integer>
```

Parameter

<integer>	Total bytes of condition register
Range	1
Resolution	0 to 65535

Example of Use

To query the contents of the condition register of the QUESTionable Calibration register.

```
STAT:QUES:CAL:COND?  
> 16384
```

**:STATus:QUEStionable:CALibration:ENABle <integer>**

Questionable Calibration Register Enable

## Function

This command sets the event enable register of the QUEStionable Calibration register.

## Command

```
:STATus:QUEStionable:CALibration:ENABle <integer>
```

## Parameter

<integer>	Total bytes of event enable register
Range	1
Resolution	0 to 65535

## Details

This command is available only in the SCPI mode.

## Example of Use

To set the event enable register of the QUEStionable Calibration register to 16384.

```
STAT:QUES:CAL:ENAB 16384
```

**:STATus:QUEStionable:CALibration:ENABle?**

Questionable Calibration Register Enable Query

## Function

This command queries the event enable register of the QUEStionable Calibration register.

## Query

```
:STATus:QUEStionable:CALibration:ENABle?
```

## Response

```
<integer>
```

## Parameter

<integer>	Total bytes of event enable register
Range	1
Resolution	0 to 65535

## Example of Use

To query the event enable register of the QUEStionable Calibration register.

```
STAT:QUES:CAL:ENAB?
```

```
> 16384
```

## :STATus:QUEStionable:CALibration:NTRansition <integer>

Questionable Calibration Register Negative Transition

### Function

This command sets the transition filter (negative direction change) of the QUEStionable Calibration register.

### Command

```
:STATus:QUEStionable:CALibration:NTRansition <integer>
```

### Parameter

<integer>	Total bytes of transition filter (negative direction change)
Range	1
Resolution	0 to 65535

### Details

This command is available only in the SCPI mode.

### Example of Use

To set the transition filter (negative direction change) of the QUEStionable Calibration register to 16384.

```
STAT:QUES:CAL:NTR 16384
```

## :STATus:QUEStionable:CALibration:NTRansition?

Questionable Calibration Register Negative Transition Query

### Function

This command queries the transition filter (negative direction change) of the QUEStionable Calibration register.

### Query

```
:STATus:QUEStionable:CALibration:NTRansition?
```

### Response

```
<integer>
```

### Parameter

<integer>	Total bytes of transition filter (negative direction change)
Range	1
Resolution	0 to 65535

### Example of Use

To query the transition filter (negative direction change) of the QUEStionable Calibration register.

```
STAT:QUES:CAL:NTR?  
> 16384
```

**:STATus:QUEStionable:CALibration:PTRansition <integer>**

Questionable Calibration Register Positive Transition

## Function

This command sets the transition filter (positive direction change) of the QUEStionable Calibration register.

## Command

```
:STATus:QUEStionable:CALibration:PTRansition <integer>
```

## Parameter

<integer>	Total bytes of transition filter (positive direction change)
Range	1
Resolution	0 to 65535

## Details

This command is available only in the SCPI mode.

## Example of Use

To set the transition filter (positive direction change) of the QUEStionable Calibration register to 16384.

```
STAT:QUES:CAL:PTR 16384
```

**:STATus:QUEStionable:CALibration:PTRansition?**

Questionable Calibration Register Positive Transition Query

## Function

This command queries the transition filter (positive direction change) of the QUEStionable Calibration register.

## Query

```
:STATus:QUEStionable:CALibration:PTRansition?
```

## Response

```
<integer>
```

## Parameter

<integer>	Total bytes of transition filter (positive direction change)
Range	1
Resolution	0 to 65535

## Example of Use

To query the transition filter (positive direction change) of the QUEStionable Calibration register.

```
STAT:QUES:CAL:PTR?
> 16384
```

## 4.2 Config Function Device Messages

Config Function device messages available in this application are shown in Table 4.2-1.

**Table 4.2-1 Config Function Device Messages**

Function	Device Messages
Load Application	:SYSTem:APPLication:LOAD <apl_name>
Unload Application	:SYSTem:APPLication:UNLoad <apl_name>
Delimiter (Terminator)	:SYSTem:COMMunicate:GPIB[1][:SELF]:DELimiter LF CRLF NONE
	:SYSTem:COMMunicate:GPIB[1][:SELF]:DELimiter?
Sound On/Off	:SYSTem:BEEPer ON OFF 0 1
	:SYSTem:BEEPer?
Screen Hard Copy Color	:MMEMory:STORe:SCReen:THEME NORMal REVerse MONOchrome MREVerse
	:MMEMory:STORe:SCReen:THEME?
Frequency Reference	[:SENSe]:ROSCillator:SOURce:AUTO ON OFF 1 0
	[:SENSe]:ROSCillator:SOURce:AUTO?
Move Parameter File (HDD to Device)	:MMEMory:MOVE:STATe <filename>,<device>
Copy Parameter File (Device to HDD)	:MMEMory:COpy:STATe <filename>,<device>
Delete Parameter File	:MMEMory:DELeTe:STATe <filename>,<device>
Protect Parameter File	:MMEMory:PROTection:STATe[:STATe] <filename>,ON OFF 0 1,<device>
	:MMEMory:PROTection:STATe[:STATe]? <filename>,<device>
Parameter File List Query	:MMEMory:CATalog:STATe? <device>
Move Hard Copy File (HDD to Device)	:MMEMory:MOVE:SCReen <filename>,<device>
Copy Hard Copy File (Device to HDD)	:MMEMory:COpy:SCReen <filename>,<device>
Delete Hard Copy File	:MMEMory:DELeTe:SCReen <filename>,<device>
Protect Hard Copy File	:MMEMory:PROTection:SCReen[:STATe] <filename>,ON OFF 0 1,<device>
	:MMEMory:PROTection:SCReen[:STATe]? <filename>,<device>

Table 4.2-1 Config Function Device Messages (Cont'd)

Function	Device Messages
Hard Copy File List Query	:MMEMory:CATALog:SCREen? <device>
Move Trace File (HDD to Device)	:MMEMory:MOVE:TRACe <filename>,<apl_name>,<device>
Copy Trace File (Device to HDD)	:MMEMory:COpy:TRACe <filename>,<apl_name>,<device>
Delete Trace File	:MMEMory:DELEte:TRACe <filename>,<apl_name>,<device>
Protect Trace File	:MMEMory:PROTEction:TRACe[:STATE] <filename>,ON OFF 0 1,<apl_name>,<device>
	:MMEMory:PROTEction:TRACe[:STATE]? <filename>,<apl_name>,<device>
Trace File List Query	:MMEMory:CATALog:TRACe? <apl_name>,<device>
Move Digitize File (HDD to Device)	:MMEMory:MOVE:DIzitize <filename>,<apl_name>,<device>
Copy Digitize File (Device to HDD)	:MMEMory:COpy:DIgitize <filename>,<apl_name>,<device>
Delete Digitize File	:MMEMory:DELEte:DIgitize <filename>,<apl_name>,<device>
Protect Digitize File	:MMEMory:PROTEction:DIgitize[:STATE] <filename>,ON OFF 0 1,<apl_name>,<device>
	:MMEMory:PROTEction:DIgitize[:STATE]? <filename>,<apl_name>,<device>
Digitize File List Query	:MMEMory:CATALog:DIgitize? <apl_name>,<device>
Move System Information File (HDD to Device)	:MMEMory:MOVE:SYSinfo <filename>,<device>
Copy System Information File (Device to HDD)	:MMEMory:COpy:SYSinfo <filename>,<device>
Delete System Information File	:MMEMory:DELEte:SYSinfo <filename>,<device>
Protect System Information File	:MMEMory:PROTEction:SYSinfo[:STATE] <filename>,ON OFF 0 1,<device>
	:MMEMory:PROTEction:SYSinfo[:STATE]? <filename>,<device>
System Information File List Query	:MMEMory:CATALog:SYSinfo? <device>
System Information Query	:SYSTem:INFormAtion:CATALog?
Product Model Query	:SYSTem:INFormAtion:MODEl?
Product Type Query	:SYSTem:INFormAtion:TYPE?
Serial Number Query	:SYSTem:INFormAtion:SERIAL?
Running Time Query	:SYSTem:INFormAtion:RTIME?

**Table 4.2-1 Config Function Device Messages (Cont'd)**

Function	Device Messages
Attenuator Switching Times	:SYSTem:INFormation:SWITCh?
Option Information Query	:SYSTem:HARDware:OPTion:CATalog?
Software License Information Query	:SYSTem:SOFTware:CATalog?
Software License and Option Information Query	:SYSTem:SOFTware:CATalog:ALL?
Software Version Query	:SYSTem:APPLication:VERsion? <apl_name>
FPGA, PLD, DSP Version Query	:SYSTem:FPGA:VERsion? <hardware>
All FPGA, PLD, DSP Version Query	:SYSTem:FPGA:VERsion:CATalog?
Hardware Revision Query	:SYSTem:HARDware:REVision? <hardware>
All Hardware Revision Query	:SYSTem:HARDware:REVision:CATalog?
RF Temperature Query	:SYSTem:TEMPerature:RF?
External Reference Frequency	[[:SENSe]:ROSCillator:EXTernal:FREQuency <freq>
	[[:SENSe]:ROSCillator:EXTernal:FREQuency?
Calibration Alert Mode	:CALibration:ALERT:MODE NONE TEMPerature TIME BOTH
	:CALibration:ALERT:MODE?
Calibration Alert Temperature	:CALibration:ALERT:TEMPerature
	:CALibration:ALERT:TEMPerature?
Calibration Alert Time	:CALibration:ALERT:TIME
	:CALibration:ALERT:TIME?



**:SYSTem:APPLication:LOAD <apl\_name>**

Load Application

Function

Activates an application.

Command

`:SYSTem:APPLication:LOAD <apl_name>`

Parameter

<code>&lt;apl_name&gt;</code>	Target application name
SIGANA	Signal Analyzer
SPECT	Spectrum Analyzer
PNOISE	Phase Noise
PMETER	Power Meter
BER	BER Test

Details

This function activates an installed application and registers it to the Application Switch menu.

In order to use the [SIGANA] argument with MS2830A, the analysis bandwidth option (either MS2830A005/105, 006/106, 007, 009/109, 077/177 or 078/178) is required.

In order to use the [PNOISE] argument with MS2830A, the phase noise measurement option (MS2830A-010/110) is required.

For parameters to specify an application other than the standard ones, refer to the operation manual (remote control) for each application.

Example of Use

To activate the Signal Analyzer application  
`SYST:APPL:LOAD SIGANA`

## :SYSTem:APPLication:UNLoad <apl\_name>

Unload Application

### Function

Exits an application.

### Command

```
:SYSTem:APPLication:UNLoad <apl_name>
```

### Parameter

<apl_name>	Target application name
SIGANA	Signal Analyzer
SPECT	Spectrum Analyzer
PNOISE	Phase Noise
PMETER	Power Meter
BER	BER Test

### Details

This function exits an activated application and deletes it from the Application Switch menu.

In order to use the [SIGANA] argument with MS2830A, the analysis bandwidth option (either MS2830A005/105, 006/106, 007, 009/109, 077/177 or 078/178 ) is required.

In order to use the [PNOISE] argument with MS2830A, the phase noise measurement option (MS2830A-010/110) is required.

For parameters to specify an application other than the standard ones, refer to the operation manual (remote control) for each application.

### Example of Use

To exit the Signal Analyzer application  
SYST:APPL:UNL SIGANA

**:SYSTem:COMMunicate:GPIB[1][:SELF]:DELimiter LF|CRLF|NONE**

Delimiter (Terminator)

Function

Sets a delimiter (termination code) for remote control.

Command

`:SYSTem:COMMunicate:GPIB[1][:SELF]:DELimiter <mode>`

Parameter

<mode>	Delimiter type
LF	LF
CRLF	CR/LF (Default)
NONE	None (EOI only)

Example of Use

To set the delimiter to CR/LF  
`SYST:COMM:GPIB:DEL CRLF`

## :SYSTem:COMMunicate:GPIB[1][:SELF]:DELimiter?

Delimiter (Terminator) Query

Function

This command queries a delimiter (termination code) for remote control.

Query

```
:SYSTem:COMMunicate:GPIB[1][:SELF]:DELimiter?
```

Response

```
<mode>
```

Parameter

<mode>	Delimiter type
LF	LF
CRLF	CR/LF (Default)
NONE	None (EOI only)

Example of Use

```
To query a delimiter (termination code) for remote control
SYST:COMM:GPIB:DEL?
> CRLF
```

**:SYSTem:BEEPer ON|OFF|0|1**

Sound On/Off

Function

This command turns the sound ON/OFF.

Command

`:SYSTem:BEEPer <switch>`

Parameter

<switch>	Sound ON/OFF
ON 1	On (Default)
OFF 0	Off

Example of Use

To set sound to ON  
`SYST:BEEP ON`

**:SYSTem:BEEPer?**

Sound On/Off Query

Function

This command queries the sound ON/OFF status.

Query

`:SYSTem:BEEPer?`

Response

`<switch>`

Parameter

<switch>	Sound ON/OFF
ON 1	On (Default)
OFF 0	Off

Example of Use

To query the sound ON/OFF status  
`SYST:BEEP?`  
`> 1`

**:MMEMory:STORe:SCReen:THEMe**  
**NORMal|REVerse|MONOchrome|MREVerse**  
Screen Hard Copy Color

**Function**  
Sets the screen hardcopy color image.

**Command**  
:MMEMory:STORe:SCReen:THEMe <mode>

**Parameter**

<mode>	Color image setting
NORMal	Displays color image (Default)
REVerse	Reverse displays color image.
MONOchrome	Displays monochrome image.
MREVerse	Reverse displays monochrome image.

**Example of Use**  
To reverse the screen hardcopy color image  
MMEM:STOR:SCR:THEM REV

**:MMEMory:STORe:SCReen:THEMe?**  
Screen Hard Copy Color Query

**Function**  
This command queries the screen hardcopy color image settings.

**Query**  
:MMEMory:STORe:SCReen:THEMe?

**Response**  
<mode>

**Parameter**

<mode>	Color image setting
NORM	Displays color image (Default)
REV	Reverse displays color image.
MON	Displays monochrome image.
MREV	Reverse displays monochrome image.

**Example of Use**  
To query the screen hardcopy color image settings  
MMEM:STOR:SCR:THEM?  
> REV

**[[:SENSE]:ROSCillator:SOURce:AUTO ON|OFF|1|0**

Frequency Reference

Function

This command selects the frequency reference signal source.

Command

`[[:SENSE]:ROSCillator:SOURce:AUTO <switch>`

Parameter

<code>&lt;switch&gt;</code>	Frequency reference signal source
<code>OFF 0</code>	Uses internal reference signal source.
<code>ON 1</code>	Synchronizes with the external reference signal source if an external reference signal is input. Synchronizes with the internal reference signal source if no input is detected. (Default)

Example of Use

To use the internal frequency reference signal source

```
ROSC:SOUR:AUTO OFF
```

**[[:SENSE]:ROSCillator:SOURce:AUTO?**

Frequency Reference Query

Function

This command queries the frequency reference signal source.

Query

`[[:SENSE]:ROSCillator:SOURce:AUTO?`

Response

`<switch>`

Parameter

<code>&lt;switch&gt;</code>	Frequency reference signal source
<code>OFF 0</code>	Uses internal reference signal source.
<code>ON 1</code>	Synchronizes with the external reference signal source if an external reference signal is input. Synchronizes with the internal reference signal source if no input is detected. (Default)

Example of Use

To query the internal frequency reference signal source

```
ROSC:SOUR:AUTO?
> 0
```

**:MMEMory:MOVE:STATE <filename>,<device>**

Move Parameter File (HDD to Device)

Function

Moves a parameter file saved in the internal hard disk to the specified device.

Command

:MMEMory:MOVE:STATE <filename>,<device>

Parameter

<filename>	<b>Target filename</b> Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? \ " \ ' < > 
<device>	<b>Drive name</b> A,B,E,F,...

Details

If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

Example of Use

To move the "parameter" parameter file to drive E  
MMEM:MOVE:STAT "parameter",e



**:MMEMory:COPIY:STATe <filename>,<device>**

Copy Parameter File (Device to HDD)

## Function

Copies a parameter file from the specified storage device to the internal hard disk.

## Command

```
:MMEMory:COPIY:STATe <filename>,<device>
```

## Parameter

<code>&lt;filename&gt;</code>	<b>Target filename</b> Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? “ ” \ ‘ < >
<code>&lt;device&gt;</code>	<b>Drive name</b> A,B,E,F,...

## Details

If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

## Example of Use

To copy the "parameter" parameter file in drive E to the internal hard disk

```
MMEM:COPIY:STAT "parameter",e
```

**:MMEMory:DELeTe:STATe <filename>,<device>**

Delete Parameter File

Function

Deletes a parameter file saved in the specified device.

Command

:MMEMory:DELeTe:STATe <filename>,<device>

Parameter

<filename>

Target filename

Character string within 32 characters enclosed by double quotes ( " ") or single quotes ( ' ') (excluding extension)

The following characters cannot be used:

\ / : \* ? " ' \ ' < > |

<device>

Drive name

A, B, D, E, F, ...

Example of Use

To delete the parameter file "Parameter" saved in drive E

MMEM:DEL:STAT "Parameter",e

**:MMEMory:PROTection:STATe[:STATe] <filename>,ON|OFF|0|1,<device>**

Protect Parameter File

Function

Protects a parameter file saved in the specified drive. Protected files cannot be deleted.

Command

```
:MMEMory:PROTection:STATe[:STATe]
<filename>,<switch>,<device>
```

Parameter

<filename>	<p><b>Target filename</b> Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? \ " \ ' &lt; &gt;  </p>
<switch>	<p><b>Protection ON/OFF</b> ON 1 Protects the file. OFF 0 Does not protect the file.</p>
<device>	<p><b>Drive name</b> A, B, D, E, F, . . .</p>

Example of Use

To protect the parameter file “Parameter” saved in drive E

```
MMEM:PROT:STAT "Parameter",ON,e
```

**:MMEMory:PROTection:STATe[:STATe]? <filename>,<device>**

Protect Parameter File Query

Function

This command queries the protection of parameter files saved in the specified drive. Protected files cannot be deleted.

Query

:MMEMory:PROTection:STATe[:STATe]? <filename>,<device>

Response

<switch>

Parameter

<filename>

Target filename

Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension)

The following characters cannot be used:

\ / : \* ? " ' < > |

<switch>

Protection ON/OFF

1

Protects the file.

0

Does not protect the file.

<device>

Drive name

A, B, D, E, F, ...

Example of Use

To query the protection of a parameter file saved in the specified drive

```
MMEM:PROT:STAT? "Parameter",e
```

```
> 1
```

**:MMEMory:CATalog:STATe? <device>**

Parameter File List Query

## Function

Queries a list of parameter files saved in the specified device.

## Query

:MMEMory:CATalog:STATe? &lt;device&gt;

## Response

&lt;number&gt;,&lt;filename\_1&gt;,&lt;filename\_2&gt;...

## Parameter

&lt;device&gt;

Drive name

A, B, D, E, F, ...

&lt;number&gt;

Number of files

Range

0 to 1000

&lt;filename&gt;

File Name

If the number of files exceeds 1000, the first 1000 files are returned, sorted by filename.

## Example of Use

To query the parameter filenames saved in drive E

MMEM:CAT:STAT? e

&gt;3,Param\_00,Param\_01,Param\_02

**:MMEMory:MOVE:SCREen <filename>,<device>**

Move Hard Copy File (HDD to Device)

Function

Moves a screen hardcopy file saved in the internal hard disk to the specified device.

Command

:MMEMory:MOVE:SCREen <filename>,<device>

Parameter

<filename>	<b>Target filename</b> Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \\ / : * ? “ ” \\ ‘ < >
<device>	<b>Drive name</b> A,B,E,F,...

Details

- The format of the target file is switched according to the File Type Setting.
- If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

Example of Use

To move the "bitmap" screen hard copy file to drive E  
MMEM:MOVE:SCR "bitmap",e

**:MMEMory:COPIY:SCReen <filename>,<device>**

Copy Hard Copy file (Device to HDD)

## Function

Copies a screen hardcopy file from the specified storage device to the internal hard disk.

## Command

```
:MMEMory:COPIY:SCReen <filename>,<device>
```

## Parameter

<code>&lt;filename&gt;</code>	<b>Target filename</b> Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? “ ” \ ‘ < >
<code>&lt;device&gt;</code>	<b>Drive name</b> A, B, E, F, ...

## Details

- The format of the target file is switched according to the File Type Setting.
- If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

## Example of Use

To copy the "bitmap" screen hard copy file on drive E to the internal hard disk

```
MMEM:COPIY:SCR "bitmap",e
```

**:MMEMory:DELEte:SCReen <filename>,<device>**

Delete Hard Copy File

Function

This command deletes a screen hardcopy file saved in the specified drive.

Command

:MMEMory:DELEte:SCReen <filename>,<device>

Parameter

<filename>	<b>Target filename</b> Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? \ " \ ' < > 
<device>	<b>Drive name</b> A, B, D, E, F, ...

Details

The format of the target file is switched according to the File Type Setting.

Example of Use

To delete the screen hardcopy file “Copy” saved in drive E  
MMEM:DEL:SCR “Copy”,e



**:MMEMory:PROTection:SCReen[:STATe] <filename>,ON|OFF|0|1,<device>**

Protect Hard Copy File

**Function**

This command protects a screen hardcopy file saved in the specified drive. Protected files cannot be deleted.

**Command**

```
:MMEMory:PROTection:SCReen[:STATe]
<filename>,<switch>,<device>
```

**Parameter**

<code>&lt;filename&gt;</code>	<p><b>Target filename</b> Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? \ " \ ' &lt; &gt;  </p>
<code>&lt;switch&gt;</code>	<p><b>Protection ON/OFF</b> ON 1 Protects the file. OFF 0 Does not protect the file.</p>
<code>&lt;device&gt;</code>	<p><b>Drive name</b> A, B, D, E, F, . . .</p>

**Details**

The format of the target file is switched according to the File Type Setting.

**Example of Use**

To protect the screen hardcopy file “Copy” saved in drive E  
MMEM:PROT:SCR “Copy”,ON,e

**:MMEMory:PROTection:SCReen[:STATe]? <filename>,<device>**

Protect Hard Copy File Query

Function

This command queries the protection status of a screen hardcopy file saved in the specified drive. Protected files cannot be deleted.

Query

:MMEMory:PROTection:SCReen[:STATe]? <filename>,<device>

Response

<switch>

Parameter

<filename>	Target filename Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? \ " \ ' < > 
<switch>	Protection ON/OFF
1	Protects the file.
0	Does not protect the file.
<device>	Drive name A, B, D, E, F, ...

Details

The format of the target file is switched according to the File Type Setting.

Example of Use

To protect the screen hardcopy file “Copy” saved in drive E  
MMEM:PROT:SCR? “Copy”,e  
> 1

**:MMEMory:CATalog:SCReen? <device>**

Hard Copy File List Query

## Function

Queries a list of screen hardcopy files saved in the specified device.

## Query

:MMEMory:CATalog:SCReen? &lt;device&gt;

## Response

&lt;number&gt;,&lt;filename\_1&gt;,&lt;filename\_2&gt;...

## Parameter

&lt;device&gt;

Drive name

A, B, D, E, F, ...

&lt;number&gt;

Number of files

Range

0 to 1000

&lt;filename&gt;

File Name

If the number of files exceeds 1000, the first 1000 files are returned, sorted by filename.

## Example of Use

To query the screen hardcopy filenames saved in drive E

MMEM:CAT:SCR? e

&gt;3,Copy\_00,Copy\_01,Copy\_02

**:MMEMory:MOVE:TRACe <filename>,<apl\_name>,<device>**

Move Trace File (HDD to Device)

Function

Moves a trace file saved in the internal hard disk to the specified device.

Command

:MMEMory:MOVE:TRACe <filename>,<apl\_name>,<device>

Parameter

<filename>	Target filename Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? " " \ ' < > 
<apl_name>	Target application name
SPECT	Spectrum Analyzer
SIGANA	Signal Analyzer
PNOISE	Phase Noise
<device>	Drive name A, B, E, F, . . .

Details

If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

Example of Use

To copy the "trace" trace file of the Spectrum Analyzer from the internal hard disk to drive E  
MMEM:MOVE:TRAC "trace",SPECT,e

**:MMEMory:COPIY:TRACe <filename>,<apl\_name>,<device>**

Copy Trace Data (Device to HDD)

## Function

Copies a trace file from the specified storage device to the internal hard disk.

## Command

```
:MMEMory:COPIY:TRACe <filename>,<apl_name>,<device>
```

## Parameter

<b>&lt;filename&gt;</b>	<b>Target filename</b> Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? “ ” \ ‘ < >
<b>&lt;apl_name&gt;</b>	<b>Target application name</b> SPECT Spectrum Analyzer SIGANA Signal Analyzer PNOISE Phase Noise
<b>&lt;device&gt;</b>	<b>Drive name</b> A, B, E, F, . . .

## Details

If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

## Example of Use

To copy the "trace" trace file from drive E to the internal hard disk  
 MMEM:COPIY:TRAC "trace",SPECT,e

**:MMEMory:DELeTe:TRACe <filename>,<apl\_name>,<device>**

Delete Trace File

Function

This command deletes the trace file saved in the specified drive.

Command

:MMEMory:DELeTe:TRACe <filename>,<apl\_name>,<device>

Parameter

<filename>	Target filename Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? \ " \ ' < > 
<apl_name>	Target application name
SPECT	Spectrum Analyzer
SIGANA	Signal Analyzer
PNOISE	Phase Noise
<device>	Drive name A, B, D, E, F, ...

Example of Use

To delete the trace file “Trace” saved in drive E  
MMEM:DEL:TRAC “Trace”,SPECT,e

:MMEMory:PROTection:TRACe[:STATe]

<filename>,ON|OFF|0|1,<apl\_name>,<device>

Protect Trace File

Function

This command saves a trace file saved in the specified drive. Protected files cannot be deleted.

Command

```
:MMEMory:PROTection:TRACe[:STATe]
<filename>,<switch>,<apl_name>,<device>
```

Parameter

<filename>	Target filename Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? " " \ ' < > 
<switch>	Protection ON/OFF
ON 1	Protects the file.
OFF 0	Does not protect the file.
<apl_name>	Target application name
SPECT	Spectrum Analyzer
SIGANA	Signal Analyzer
PNOISE	Phase Noise
<device>	Drive name A, B, D, E, F, ...

Example of Use

To protect the trace file “Trace” saved in drive E  
MMEM:PROT:TRAC “Trace”,ON,SPECT,e

:MMEMory:PROTection:TRACe[:STATe]? <filename>, <apl\_name>, <device>

Protect Trace File Query

Function

This command queries the protection of a trace file saved in the specified drive. Protected files cannot be deleted.

Query

:MMEMory:PROTection:TRACe[:STATe]? <filename>, <apl\_name>, <device>

Response

<switch>

Parameter

<filename>	Target filename Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? \ " \ ' < > 
<switch>	Protection ON/OFF
1	Protects the file.
0	Does not protect the file.
<apl_name>	Target application name
SPECT	Spectrum Analyzer
SIGANA	Signal Analyzer
PNOISE	Phase Noise
<device>	Drive name A, B, D, E, F, . . .

Example of Use

To query the protection of the "Trace" trace file saved in drive E  
MMEM:PROT:TRAC? "Trace", SPECT, e  
> 1



**:MMEMory:CATalog:TRACe? <apl\_name>,<device>**

Trace File List Query

## Function

Queries a list of trace files saved in the specified device.

## Query

:MMEMory:CATalog:TRACe? &lt;apl\_name&gt;,&lt;device&gt;

## Response

&lt;number&gt;,&lt;filename\_1&gt;,&lt;filename\_2&gt;,...

## Parameter

<device>	Drive name A, B, D, E, F, ...
<number>	Number of files
Range	0 to 1000
<filename>	File Name Character string within 32 characters (excluding extension) If the number of files exceeds 1000, the first 1000 files are returned, sorted by filename.
<apl_name>	Target application name
SPECT	Spectrum Analyzer
SIGANA	Signal Analyzer
PNOISE	Phase Noise

## Example of Use

To query the trace filenames saved in drive E

```
MMEM:CAT:TRAC? SPECT,e
>3,Trace_00,Trace_01,Trace_02
```

**:MMEMory:MOVE:DIGitize <filename>,<apl\_name>,<device>**

Move Digitize file (HDD to Device)

Function

Moves a digitized file saved in the internal hard disk to the specified device.

Command

:MMEMory:MOVE:DIGitize <filename>,<apl\_name>,<device>

Parameter

<filename>	Target filename Character string within 128 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? \ " \ ' < > 
<apl_name> SIGANA	Target application name Signal Analyzer
<device>	Drive name A,B,E,F,...

Details

If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

Example of Use

To move the "digitize" digitize file of the Signal Analyzer function to drive E  
MMEM:MOVE:DIG "digitize",SIGANA,e

**:MMEMemory:COPY:DIGitize <filename>,<apl\_name>,<device>**

Copy Digitize File (Device to HDD)

**Function**

Copies a digitized file from the specified storage device to the internal hard disk.

**Command**

`:MMEMemory:COPY:DIGitize <filename>,<apl_name>,<device>`

**Parameter**

<code>&lt;filename&gt;</code>	<p><b>Target filename</b> Character string within 128 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? \ " \ ' &lt; &gt;  </p>
<code>&lt;apl_name&gt;</code>	<p><b>Target application name</b> SIGANA Signal Analyzer</p>
<code>&lt;device&gt;</code>	<p><b>Drive name</b> A, B, E, F, . . .</p>

**Details**

If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

**Example of Use**

To copy the "digitize" digitize file in drive E to the Signal Analyzer folder on the internal hard disk  
`MMEM:COPY:DIG "digitize",SIGANA,e`

**:MMEMory:DELeTe:DIgitize <filename>, <apl\_name>, <device>**

Delete Digitize File

Function

Deletes a digitized file saved in the specified device.

Command

:MMEMory:DELeTe:DIgitize <filename>, <apl\_name>, <device>

Parameter

<filename>	<b>Target filename</b> Character string within 128 characters enclosed by double quotes ( " ") or single quotes ( ' ') (excluding extension) The following characters cannot be used: \\ / : * ? " ' \ < >
<apl_name> SIGANA	<b>Target application name</b> Signal Analyzer
<device>	<b>Drive name</b> A, B, D, E, F, ...

Example of Use

To delete the digitized file "Digitize" saved in drive E  
MMEM:DEL:DIG "Digitize", SIGANA, e

```
:MMEMory:PROTection:DIGitize[:STATe]
<filename>,ON|OFF|0|1,<apl_name>,<device>
```

Protect Digitize File

#### Function

This command saves a digitize file saved to the specified drive. Protected files cannot be deleted.

#### Command

```
:MMEMory:PROTection:DIGitize[:STATe]
<filename>,<switch>,<apl_name>,<device>
```

#### Parameter

<filename>	<p>Target filename</p> <p>Character string within 128 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension)</p> <p>The following characters cannot be used:  \ / : * ? “ ” \ ‘ &lt; &gt;  </p>
<switch>	<p>Protection ON/OFF</p>
ON 1	Protects the file.
OFF 0	Does not protect the file.
<apl_name>	<p>Target application name</p>
SIGANA	Signal Analyzer
<device>	<p>Drive name</p> <p>A, B, D, E, F, . . .</p>

#### Example of Use

To protect the digitized file “Digitize” saved in drive E

```
MMEM:PROT:DIG "Digitize",ON,SIGANA,e
```

**:MMEMory:PROTection:DIGitize[:STATe]? <filename>,<apl\_name>,<device>**

Protect Digitize File Query

Function

This command queries the protection of a digitize file saved to the specified drive. Protected files cannot be deleted.

Query

```
:MMEMory:PROTection:DIGitize[:STATe]?  
<filename>,<apl_name>,<device>
```

Response

```
<switch>
```

Parameter

<filename>	<b>Target filename</b> Character string within 128 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? \ " \ ' < > 
<switch>	<b>Protection ON/OFF</b>
1	Protects the file.
0	Does not protect the file.
<apl_name>	<b>Target application name</b>
SIGANA	Signal Analyzer
<Device>	<b>Drive name</b> A, B, D, E, F, . . .

Example of Use

```
To query the protection of the "Digitize" digitize file saved in drive E  
MMEM:PROT:DIG? "Digitize",SIGANA,e  
> 1
```

**:MMEMory:CATalog:DIGitize? <apl\_name>,<device>**

Digitize File List Query

## Function

Queries a list of digitized files saved in the specified device.

## Query

:MMEMory:CATalog:DIGitize? &lt;apl\_name&gt;,&lt;device&gt;

## Response

&lt;number&gt;,&lt;filename\_1&gt;,&lt;filename\_2&gt;,...

## Parameter

<device>	Drive name A, B, D, E, F, ...
<number>	Number of files 0 to 1000
Range	0 to 1000
<filename>	File Name If the number of files exceeds 1000, the first 1000 files are returned, sorted by filename.
<apl_name>	Target application name SIGANA Signal Analyzer

## Example of Use

To query the digitized filenames saved in drive E  
MMEM:CAT:DIG? SIGANA,E  
>3,Digitize\_00,Digitize\_01,Digitize\_02

**:MMEMory:MOVE:SYSinfo <filename>,<device>**

Move System Information File (HDD to Device)

Function

Moves a system information file saved in the internal hard disk to the specified device.

Command

:MMEMory:MOVE:SYSinfo <filename>,<device>

Parameter

<filename>           **Target filename**  
Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension)  
The following characters cannot be used:  
  \ / : \* ? “ ” \ ‘ < > |

<device>           **Drive name**  
A,B,E,F,...

Details

If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

Example of Use

To move the "SystemInfo" system information file to drive E  
MMEM:MOVE:SYS "SystemInfo",e



**:MMEMory:COPY:SYSInfo <filename>,<device>**

Copy System Information File (Device to HDD)

## Function

Copies a system information file from the specified storage device to the internal hard disk.

## Command

```
:MMEMory:COPY:SYSInfo <filename>,<device>
```

## Parameter

<b>&lt;filename&gt;</b>	<b>Target filename</b> Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? “ ” \ ‘ < >
<b>&lt;device&gt;</b>	<b>Drive name</b> A, B, E, F, . . .

## Details

If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

## Example of Use

To copy the "SystemInfo" system information file to the internal hard disk

```
MMEM:COPY:SYS "SystemInfo",e
```

**:MMEMory:DELeTe:SYSInfo <filename>,<device>**

Delete System Information File

**Function**

Deletes a system information file saved in the specified device.

**Command**

:MMEMory:DELeTe:SYSInfo <filename>,<device>

**Parameter**

<filename>	<b>Target filename</b> Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? " " \ ' < > 
<device>	<b>Drive name</b> A, B, D, E, F, ...

**Example of Use**

To delete the system information file “SystemInfo” saved in drive E  
MMEM:DEL:SYS “SystemInfo”,e

**:MMEMory:PROTection:SYSInfo[:STATe] <filename>,ON|OFF|0|1,<device>**

Protect System Information File

**Function**

This command protects a system information file saved to the specified drive. Protected files cannot be deleted.

**Command**

```
:MMEMory:PROTection:SYSInfo[:STATe] <filename>, <switch>,
<device>
```

**Parameter**

<code>&lt;filename&gt;</code>	<p><b>Target filename</b> Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? \ " \ ' &lt; &gt;  </p>
<code>&lt;switch&gt;</code>	<p><b>Protection ON/OFF</b> ON 1 Protects the file. OFF 0 Does not protect the file.</p>
<code>&lt;device&gt;</code>	<p><b>Drive name</b> A, B, D, E, F, . . .</p>

**Example of Use**

To protect the system information file “SystemInfo” saved in drive E  
MMEM:PROT:SYS “SystemInfo”,ON,e

**:MMEMory:PROTection:SYSInfo[:STATe]? <filename>,<device>**

Protect System Information File Query

Function

This command queries the protection of the system information file saved in the specified drive. Protected files cannot be deleted.

Query

:MMEMory:PROTection:SYSInfo[:STATe]? <filename>,<device>

Response

<switch>

Parameter

<filename>

Target filename

Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension)

The following characters cannot be used:

\ / : \* ? " ' < > |

<switch>

Protection ON/OFF

1

Protects the file.

0

Does not protect the file.

<device>

Drive name

A, B, D, E, F, ...

Example of Use

To protect the system information file “SystemInfo” saved in drive E

```
MMEM:PROT:SYS? "SystemInfo",e
```

```
> 1
```

**:MMEMory:CATalog:SYSinfo? <device>**

System Information File List Query

## Function

Queries a list of system information files saved in the specified device.

## Query

:MMEMory:CATalog:SYSinfo? &lt;device&gt;

## Response

&lt;number&gt;,&lt;filename\_1&gt;,&lt;filename\_2&gt;,...

## Parameter

&lt;device&gt;

Drive name

A, B, D, E, F, ...

&lt;number&gt;

Number of files

Range

0 to 1000

&lt;filename&gt;

File Name

If the number of files exceeds 1000, the first 1000 files are returned, sorted by filename.

## Example of Use

To query the system information filenames saved in drive E

MMEM:CAT:SYS? E

&gt;3, SystemInfo\_00, SystemInfo\_01, SystemInfo\_02

**:SYSTEM:INformation:CATalog?**

System Information Query

## Function

Queries system information.

## Query

:SYSTEM:INformation:CATalog?

## Response

&lt;type&gt;,&lt;model&gt;,&lt;serial&gt;,&lt;time&gt;

## Parameter

&lt;type&gt;

Model

&lt;model&gt;

Name

&lt;serial&gt;

Serial number

&lt;time&gt;

Running time

Returns the time in minutes, without a suffix code.

## Example of Use

To query all system information

SYST:INF:CAT?

&gt;Signal Analyzer,MS2690A,610000000,100

## :SYSTem:INFormation:MODEl?

Product Model Query

Function

This command queries the product model name.

Query

```
:SYSTem:INFormation:MODEl?
```

Response

```
<model>
```

Parameter

```
<model>          Name
```

Example of Use

```
To query the product model name
SYST:INF:MOD?
>MS2690A
```

## :SYSTem:INFormation:TYPE?

Product Type Query

Function

This command queries the product type name.

Query

```
:SYSTem:INFormation:TYPE?
```

Response

```
<type>
```

Parameter

```
<type>          Product Type
```

Example of Use

```
To query the product type
SYST:INF:TYPE?
>Signal Analyzer
```

### :SYSTem:INFormation:SERial?

Serial Number Query

Function

This command queries the serial number.

Query

```
:SYSTem:INFormation:SERial?
```

Response

```
<serial>
```

Parameter

```
<serial>          Serial number
```

Example of Use

```
To query the serial number
SYST:INF:SER?
>610000000
```

### :SYSTem:INFormation:RTIME?

Running Time Query

Function

This command queries the running time.

Query

```
:SYSTem:INFormation:RTIME?
```

Response

```
<time>
```

Parameter

```
<time>          Running time
                  Returns the time in minutes, without a suffix
                  code
```

Example of Use

```
To query the running time:
SYST:INF:RTIM?
> 100
```

## :SYSTem:INFormation:SWITCh?

### Attenuator Switching Times

#### Function

This command queries the number of switch times of the attenuators.

#### Query

```
:SYSTem:INFormation:SWITCh?
```

#### Response

```
<number>,<switch_times1>,<switch_times2>,...
```

#### Parameter

<number>	Number of attenuators
<switch_times>	Number of switch times
	Queries the number of switch times of all the attenuators that are mounted.

#### Example of Use

```
To query the number of switch times of the attenuators
SYST:INF:SWIT?
>6,616,534,551,83,488,482
```

## :SYSTem:HARDware:OPTion:CATalog?

### Option Information Query

#### Function

Queries option information.

#### Query

```
:SYSTem:HARDware:OPTion:CATalog?
```

#### Response

```
<total>,<number>,<switch>,<name>,...
  <total>      Total number of selectable options
  <number>     Option number
  <switch>     With or without option
  <name>       Option name
```

#### Example of Use

```
To query option information
SYST:HARD:OPT:CAT?
> 0
```



**:SYSTem:SOFTware:CATalog?**

Software License Information Query

## Function

Queries licensed software information.

## Query

:SYSTem:SOFTware:CATalog?

## Response

&lt;total&gt;,&lt;license\_name&gt;,&lt;name&gt;,&lt;license\_name2&gt;,...

## Parameter

<total>	Total number of licensed software
<license_name>	Software license name (Model Name)
<name>	Software name

## Details

Queries the license information of installed software.

When sending this command to the MS2830A, the licensed software information for which license expiry date is specified is not returned.

## Example of Use

To query the licensed software Information:

SYST:SOFT:CAT?

&gt; 3,MX269000A,STANDARD SOFTWARE,MX269010A,Mobile WiMAX...

## :SYSTem:SOFTware:CATalog:ALL?

Software License and Option Information Query

Function

Queries licensed software information including options.

Query

:SYSTem:SOFTware:CATalog:ALL?

Response

<total>,<license\_name>,<option\_num>,<switch>,<name>,<license\_name2>,...

Parameter

<total>	Total number of licensed software including options
<license_name>	Software license name (Model name)
<option_num>	Option number
<switch>	Option On/Off
ON	Enables the Option
OFF	Disables the Option
<name>	Software name

Details

Queries the license information of the installed software including options.

If the software is not the option, the response of <option\_num> and <switch> are “-”.

When sending this command to the MS2830A, the licensed software information for which license expiry date is specified is not returned.

Example of Use

To query the licensed software information including options:

```
SYST:SOFT:CAT:ALL?
```

```
> 3,MX269000A,-,-,STANDARD SOFTWARE,MX269000A-001,001,ON,  
Mobile WiMAX Measurement Software...
```

**:SYSTem:APPLication:VERSion? <apl\_name>**

Software Version Query

## Function

Queries the application version.

## Query

`:SYSTem:APPLication:VERSion? <apl_name>`

## Response

version

## Parameter

<apl_name>	Target application name
SIGANA	Signal Analyzer
SPECT	Spectrum Analyzer
PNOISE	Phase Noise
PMETER	Power Meter
BER	BER Test

## Details

For parameters to specify an application other than the standard ones, refer to the operation manual (remote control) for each application.

## Example of Use

To query the version of the Signal Analyzer application

```
SYST:APPL:VERS? SIGANA
> 4.0.0
```

**:SYSTem:FPGA:VERSion? <hardware>**

FPGA, PLD, DSP Version Query

Function

This command queries the version number of the FPGA, PLD, and DSP

Query

:SYSTem:FPGA:VERSion? <hardware>

Response

<version>

Parameter

<hardware>

Type of FPGA, PLD, DSP

For MS2690A/MS2691A/MS2692A:

HWC	Hardware Controller FPGA
CNTR_KEY	Control PLD And Panel
LOCAL	IF/Local FPGA
MICRO	RF/Micro FPGA
MEAS_PCI	PCI FPGA on Measure Unit
MEAS_CORE	Core FPGA on Measure Unit
MEAS_COM	COM DSP on Measure Option Unit
MEAS_HS_CORE	Core FPGA on Measure Option Unit
SGBB	Baseband FPGA on SG Unit
SGRF	RF FPGA on SG Unit
BBIFIF	BBIF Interface FPGA
BBIFMAIN	BBIF Main FPGA

For MS2830A:

HWC	Hardware Controller FPGA on Main Unit
CNTR_KEY	Control PLD And Panel on Main Unit
MEAS_PCI	Measure PCI FPGA on Main Unit
MEAS_HS_CORE	Measure HSCore FPGA on Main Unit
MEAS_CORE	Measure Core FPGA on Main Unit
MEAS_COM	Measure COM DSP on Main Unit
SA_RF	RF FPGA on SA RF Unit
SA_13G_RF	RF FPGA on SA 13GHz RF Unit
SG_BB	Baseband FPGA on VSG Unit
SG_RF	RF FPGA on VSG Unit
CONV_DOWN	Down Conv FPGA on Down Converter Unit
CONV_2ND	2nd Conv FPGA on 2nd Converter Unit
CONV_2ND_POW	Power Controller on 2nd Converter Unit
ATT_DRIVER	ATT Driver FPGA on ATT Driver Unit

<version>

Version number of FPGA, PLD, and DSP

Details

Queries the version number of the specified FPGA, PLD, or DSP.  
“–” is returned when reading a version number of hardware not installed.  
To acquire in batch the version numbers of all the FPGAs, use  
:SYSTem:FPGA:VERSion:CATalog?.

Example of Use

To query the version number of HWC PFGA  
SYST:FPGA:VERS? HWC  
>5

## :SYSTem:FPGA:VERSion:CATalog?

All FPGA, PLD, DSP Version Query

Function

This command queries the version numbers of all the FPGA, PLD, and DSPs.

Query

:SYSTem:FPGA:VERSion:CATalog?

Response

<hardware1>,<version1>,<hardware2>,...

Parameter

<hardware>                   Type of FPGA, PLD, DSP

For MS2690A/MS2691A/MS2692A:

HWC	Hardware Controller FPGA
CNTR_KEY	Control PLD And Panel
LOCAL	IF/Local FPGA
MICRO	RF/Micro FPGA
MEAS_PCI	PCI FPGA on Measure Unit
MEAS_CORE	Core FPGA on Measure Unit
MEAS_COM	COM DSP on Measure Unit
MEAS_HS_CORE	Core FPGA on Measure Option Unit
SGBB	Baseband FPGA on SG Unit
SGRF	RF FPGA on SG Unit
BBIFIF	BBIF Interface FPGA
BBIFMAIN	BBIF Main FPGA

For MS2830A:

HWC	Hardware Controller FPGA on Main Unit
CNTR_KEY	Control PLD And Panel on Main Unit
MEAS_PCI	Measure PCI FPGA on Main Unit
MEAS_HS_CORE	Measure HSCore FPGA on Main Unit
MEAS_CORE	Measure Core FPGA on Main Unit
MEAS_COM	Measure COM DSP on Main Unit
SA_RF	RF FPGA on SA RF Unit
SA_13G_RF	RF FPGA on SA 13GHz RF Unit
SG_BB	Baseband FPGA on VSG Unit
SG_RF	RF FPGA on VSG Unit
CONV_DOWN	Down Conv FPGA on Down Converter Unit
CONV_2ND	2nd Conv FPGA on 2nd Converter Unit
CONV_2ND_POW	Power Controller on 2nd Converter Unit
ATT_DRIVER	ATT Driver FPGA on ATT Driver Unit

<version>                   Version number of FPGA, PLD, and DSP

Details

Queries the version number of the specified FPGA, PLD, or DSP.  
“–” is returned when reading a version number of hardware not installed.

Example of Use

To query the version number of FPGA

```
SYST:FPGA:VERS:CAT?
```

```
>HWC, 5, CNTR_KEY, 5, LOCAL, 3, MICRO, 3, MEAS_PCI, 12, MEAS_CORE,  
68, MEAS_COM , 68, MEAS_HS_CORE, -, SGBB, 2,  
SGRF, 5, BBIFIF, -, BBIFMAIN, -
```

**:SYSTem:HARDware:REVision? <hardware>**

Hardware Revision Query

Function

Queries the hardware revision number.

Query

:SYSTem:HARDware:REVision? <hardware>

Response

<revision>

Parameter

<hardware>	Hardware type
For MS2690A/MS2691A/MS2692A:	
IF	IF Unit
LOCAL	IF/Local Unit
MICRO	RF/Micro Unit
MEAS	Measure Unit
WBAND	Measure Option Unit
SG	SG Unit
CPU	CPU Unit
BBIF	Baseband Interface Unit
CARRIER	Carrier Unit
For MS2830A:	
MAIN	Main Unit
SARF	SA RF Unit
SA13GRF	SA 13GHz RF Unit
SG1	VSG1 Unit
CONV_DOWN	Down Converter Unit
CONV_2ND	2nd Converter Unit
ATT_DRIVER	ATT_Driver Unit
WBAND	Main Option Unit
AUDIO	Sub Supply/Audio Unit
<revision>	Revision number

Details

This command queries the revision number of the specified hardware. “\_” is returned when reading a revision number of hardware not installed.

To acquire in batch the hardware names and revision numbers, use :SYSTem:HARDware:REVision:CATalog?.



## Example of Use

```
To query the revision number of the IF unit
SYST:HARD:REV? IF
>1
```

## :SYSTem:HARDware:REVision:CATalog?

All Hardware Revision Query

## Function

This command queries the revision number of all the hardware.

## Query

```
:SYSTem:HARDware:REVision:CATalog?
```

## Response

```
<hardware1>,<revision1>,<hardware2>,...
```

## Parameter

<hardware>	Hardware type
<b>For MS2690A/MS2691A/MS2692A:</b>	
IF	IF Unit
LOCAL	IF/Local Unit
MICRO	RF/Micro Unit
MEAS	Measure Unit
WBAND	Measure Option Unit
SG	SG Unit
CPU	CPU Unit
BBIF	Baseband Interface Unit
CARRIER	Carrier Unit
<b>For MS2830A:</b>	
MAIN	Main Unit
SARF	SPA RF Unit
SA13GRF	SA 13GHz RF Unit
SG1	VSG1 Unit
CONV_DOWN	Down Converter Unit
CONV_2ND	2nd Converter Unit
ATT_DRIVER	ATT_Driver Unit
WBAND	Main Option Unit
<revision>	Revision number

## Details

This command queries the revision number of all the hardware. “\_” is returned when reading a revision number of hardware not installed.

Example of Use

```
To query all the revision numbers
SYST:HARD:REV:CAT?
>IF,1,LOCAL,1,MICRO,1,MEAS,1,WBAND,1,SG,1,CPU,1,BBIF,-
```

## :SYSTem:TEMPerature:RF?

### RF Temperature Query

Function

This command returns the reading for the temperature of the RF unit in the signal analyzer.

Query

```
:SYSTem:TEMPerature:RF?
```

Response

```
<temperature>
```

Parameter

```
<temperature>      Temperature of RF unit of current signal
                    analyzer
                    Resolution      0.01 °C
                    Returns a value in Celsius (°C) units.
```

Details

This can be used as a criterion for whether to execute calibration. The standard temperature of the RF unit is about 50°C during operation at normal temperature.

Example of Use

```
To return the reading for the temperature of the RF unit in the signal
analyzer
SYST:TEMP:RF?
> 50.78
```

**[:SENSe]:ROSCillator:EXTernal:FREQuency <freq>**

External Reference Frequency

## Function

This command sets the frequency of the reference frequency signal.

## Command

[:SENSe]:ROSCillator:EXTernal:FREQuency &lt;freq&gt;

## Parameter

<freq>	Frequency of reference frequency signal
For MS2690A/MS2691A/MS2692A:	
Range	Either value of 10 MHz or 13 MHz
For MS2830A:	
Range	Either value of 5 MHz, 10 MHz, or 13 MHz
Default	10 MHz
Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ

## Details

Sets signal frequency, when using external reference signal as the signal source for reference frequency.

If the Reference Signal is Fixed to Internal, this function cannot be set.

## Example of Use

To set the frequency of the reference frequency signal to 10 MHz  
 ROSC:EXT:FREQ 10MHZ

## [[:SENSE]:ROSCillator:EXTernal:FREQuency?

External Reference Frequency Query

Function

This command queries the frequency of the reference frequency signal.

Query

```
[[:SENSE]:ROSCillator:EXTernal:FREQuency?
```

Response

```
<freq>
```

Parameter

<freq>	Frequency of reference frequency signal
Resolution	1 Hz
	No suffix code. Value is returned in Hz units.

Details

Queries signal frequency, when using external reference signal as the signal source for reference frequency.

Example of Use

```
To query the frequency of the reference frequency signal  
ROSC:EXT:FREQ?  
> 10000000
```

**:CALibration:ALERt:MODE NONE|TEMPerature|TIME|BOTH**

Calibration Alert Mode

Function

This command sets the alert mode of Calibration Alert.

Command

`:CALibration:ALERt:MODE <mode>`

Parameter

<mode>	Alert mode
NONE	No alert occurs. (Default)
TEMPerature	An alert occurs according to the MS269xA/MS2830A's internal temperature change from the last automatic calibration (SIGANA All).
TIME	An alert occurs according to the elapsed time since the last automatic calibration (SIGANA All).
BOTH	An alert occurs when either of temperature change or elapsed time meets the specified trigger conditions.

Example of Use

To set the alert mode so that an alert occurs when either of temperature change or elapsed time meets the specified trigger conditions..

```
CAL:ALER:MODE BOTH
```

## :CALibration:ALERt:MODE?

Calibration Alert Mode Query

Function

This command queries the alert mode of Calibration Alert.

Query

:CALibration:ALERt:MODE?

Response

<mode>

Parameter

<mode>

Alert mode

NONE

No alert occurs. (Default)

TEMP

An alert occurs according to the MS269xA/MS2830A's internal temperature change from the last automatic calibration (SIGANA All).

TIME

An alert occurs according to the elapsed time since the last automatic calibration (SIGANA All)..

BOTH

An alert occurs when either of temperature change or elapsed time meets the specified conditions.

Example of Use

To query the alert mode.

```
CAL:ALER:MODE?
```

```
> BOTH
```

**:CALibration:ALERt:TEMPerature**

Calibration Alert Temperature

## Function

This command sets the temperature thresholds to trigger an alert of Calibration Alert.

## Command

```
:CALibration:ALERt:TEMPerature <temperature>
```

## Parameter

<temperature>	Temperature thresholds
Range	0.5 to 50.0°C
Resolution	0.5°C
Suffix code	None, set a value in °C.
Default	2.0°C

## Example of Use

To set the temperature thresholds to trigger an alert to 3°C.  
 CAL:ALER:TEMP 3

**:CALibration:ALERt:TEMPerature?**

Calibration Alert Temperature Query

## Function

This command queries the temperature thresholds to trigger an alert of Calibration Alert.

## Query

```
:CALibration:ALERt:TEMPerature?
```

## Response

```
<temperature>
```

## Parameter

<temperature>	Temperature thresholds
Range	0.5 to 50.0°C
Resolution	0.5°C
Suffix code	A value is returned in °C.
Default	2.0°C

## Example of Use

To query the temperature thresholds to trigger an alert.  
 CAL:ALER:TEMP?  
 > 3.0

## :CALibration:ALERt:TIME

Calibration Alert Time

### Function

This command sets the elapsed time conditions to trigger an alert of Calibration Alert.

### Command

```
:CALibration:ALERt:TIME <time>
```

### Parameter

<time>	Elapsed time conditions
Resolution	1 to 200 h (hours)
Resolution	1 h (hour)
Suffix code	None, set a value in hours.
Default	1 h (hour)

### Example of Use

To set the elapsed time to trigger an alert to 3 hours.  
CAL:ALER:TIME 3

## :CALibration:ALERt:TIME?

Calibration Alert Time Query

### Function

This command queries the elapsed time conditions to trigger an alert of Calibration Alert.

### Query

```
:CALibration:ALERt:TIME?
```

### Response

```
<time>
```

### Parameter

<time>	Elapsed time conditions
Range	1 to 200 h (hours)
Resolution	1 h (hour)
Suffix code	A value is returned in hours.
Default	1 h (hour)

### Example of Use

To query the elapsed time conditions to trigger an alert.  
CAL:ALER:TIME?  
> 3



## 4.3 Power Meter Device Messages

### 4.3.1 Application Common Device Messages

Application common device messages available in the power meter application are shown below.

**Table 4.3.1-1 Power Meter Device Messages**

Function	Device Messages
Current Measurement Query	:CONFigure?
Power Meter Configure	:CONFigure:PMETer:POWer
Display Title	:DISPlay:ANNotation:TITLe[:STATe] ON OFF 1 0
	:DISPlay:ANNotation:TITLe[:STATe]?
Title Entry	:DISPlay:ANNotation:TITLe:DATA <string>
	:DISPlay:ANNotation:TITLe:DATA?
Measurement Status	:STATus:ERRor?

## :CONFigure?

Current Measurement Query

Function

This command queries the current measurement function.

Query

:CONFigure?

Response

<mode>

Parameter

<mode>	Measurement function
ACP	ACP measurement
BPOW	Burst Average Power measurement
OBW	OBW measurement
CHP	Channel Power measurement
SEM	Spectrum Emission Mask measurement
SPUR	Spurious Emission measurement
SAN	OFF
PMET	Power Meter measurement

Example of Use

To query the current measurement function.

```
CONF?  
> ACP
```

## :CONFigure:PMETer:POWER

Power Meter Configure

Function

This command switches the control target from the synchronizing application software to the Power Meter application.

Command

:CONFigure:PMETer:POWER

Example of Use

To switch the control target to the Power Meter Application.

```
CONF:PMET:POW
```

**:DISPlay:ANNotation:TITLe[:STATe] ON|OFF|1|0**

Display Title

Function

This command enables/disables the title display.

Command

`:DISPlay:ANNotation:TITLe[:STATe] <switch>`

Parameter

<code>&lt;switch&gt;</code>	Title display On/Off
ON 1	Enables the title display.
OFF 0	Disables the title display.
Default	ON

Example of Use

To display the title.  
`DISP:ANN:TITL ON`

**:DISPlay:ANNotation:TITLe[:STATe]?**

Display Title Query

Function

This command turns the title on/off.

Query

`:DISPlay:ANNotation:TITLe[:STATe]?`

Response

`<switch>`

Parameter

<code>&lt;switch&gt;</code>	Title display ON/OFF
1	Title display is enabled.
0	Title display is displayed.

Example of Use

To query the title display On/Off state.  
`DISP:ANN:TITL?`  
`> 1`

## :DISPlay:ANNotation:TITLe:DATA <string>

Title Entry

Function

This command registers the title character string.

Command

```
:DISPlay:ANNotation:TITLe:DATA <string>
```

Parameter

<string> Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’)

Example of Use

To set the title character string.

```
DISP:ANN:TITL:DATA 'SPECTRUM ANALYZER'
```

Remarks

This command has the same function as the following command.

```
:DISPlay:ACPower:ANNotation:TITLe:DATA
```

## :DISPlay:ANNotation:TITLe:DATA?

Title Entry Query

Function

This command queries the title character string.

Query

```
:DISPlay:ANNotation:TITLe:DATA?
```

Response

```
<string>
```

Parameter

<string> Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’)

Example of Use

To query the title character string.

```
DISP:ANN:TITL:DATA?
```

```
> SPECTRUM ANALYZER
```

Remarks

This command has the same function as the following command.

```
:DISPlay:ACPower:ANNotation:TITLe:DATA
```

**:STATus:ERRor?**

Measurement Status Query

Function

This command queries the measurement status.

Query

`:STATus:ERRor?`

Response

`<status>`

Parameter

`<status>`

Measurement status

Value

= bit0 + bit1 + bit2 + bit3 + bit4 + bit5 + bit6  
 + bit7 + bit8 + bit9 + bit10 + bit11 + bit12  
 + bit13 + bit14 + bit15

- When the target application is not SG or BER, the bit assignments are as follows:

bit0 :  $2^0 = 1$  (Not used)bit1 :  $2^1 = 2$  (Not used)bit2 :  $2^2 = 4$  (Not used)bit3 :  $2^3 = 8$  (Not used)bit4 :  $2^4 = 16$  (Not used)bit5 :  $2^5 = 32$  (Not used)bit6 :  $2^6 = 64$  (Not used)bit7 :  $2^7 = 128$  (Not used)bit8 :  $2^8 = 256$  (Not used)bit9 :  $2^9 = 512$  (Not used)bit10 :  $2^{10} = 1024$  (Not used)bit11 :  $2^{11} = 2048$  (Not used)bit12 :  $2^{12} = 4096$  (Not used)bit13 :  $2^{13} = 8192$  (Not used)bit14 :  $2^{14} = 16384$  (Not used)bit15 :  $2^{15} = 32768$  (Not used)

- When the target application is SG, the bit assignments are as follows:

bit0 :  $2^0 = 1$  Lock abnormal status during  
 using the external reference  
 signal source

bit1 :  $2^1 = 2$  ALC circuit is abnormal

bit2 :  $2^2 = 4$  Outside level accuracy  
 assurance

bit3 :  $2^3 = 8$  (Not used)bit4 :  $2^4 = 16$  (Not used)bit5 :  $2^5 = 32$  (Not used)

bit6 :  $2^6 = 64$  (Not used)  
 bit7 :  $2^7 = 128$  (Not used)  
 bit8 :  $2^8 = 256$  (Not used)  
 bit9 :  $2^9 = 512$  (Not used)  
 bit10 :  $2^{10} = 1024$  (Not used)  
 bit11 :  $2^{11} = 2048$  (Not used)  
 bit12 :  $2^{12} = 4096$  (Not used)  
 bit13 :  $2^{13} = 8192$  (Not used)  
 bit14 :  $2^{14} = 16384$ (Not used)  
 bit15 :  $2^{15} = 32768$ (Not used)

- When the target application is BER, the bit assignments are as follows:

bit0 :  $2^0 = 1$  Sync Loss occurred  
 bit1 :  $2^1 = 2$  Clock signal error  
 bit2 :  $2^2 = 4$  Enable signal error  
 bit3 :  $2^3 = 8$  (Not used)  
 bit4 :  $2^4 = 16$  (Not used)  
 bit5 :  $2^5 = 32$  (Not used)  
 bit6 :  $2^6 = 64$  (Not used)  
 bit7 :  $2^7 = 128$  (Not used)  
 bit8 :  $2^8 = 256$  (Not used)  
 bit9 :  $2^9 = 512$  (Not used)  
 bit10 :  $2^{10} = 1024$  (Not used)  
 bit11 :  $2^{11} = 2048$  (Not used)  
 bit12 :  $2^{12} = 4096$  (Not used)  
 bit13 :  $2^{13} = 8192$  (Not used)  
 bit14 :  $2^{14} = 16384$ (Not used)  
 bit15 :  $2^{15} = 32768$ (Not used)

Range 0 to 65535

Details

Always, 0 is returned.

Example of Use

To query the measurement status.  
 STAT:ERR?  
 > 0

### 4.3.2 Power Meter

Power meter device messages available in the power meter application are shown below.

**Table 4.3.2-1 Power Meter Device Messages**

Function	Device Messages
Average Power Query	:SYSTem:PMETer:MEASure? [DBM WATT DB
Zeroing	:SYSTem:PMETer:ZERoset
Sensor Connected Query	:SYSTem:PMETer:CONNectioN?
Current Com Port Number Query	:SYSTem:PMETer:COMMunicate:USB:PORT?
Current Sensor Model Query	:SYSTem:PMETer:SENSE:MODEL?
Frequency	:SYSTem:PMETer:SENSE:FREQuency[:CW :FIXed] <freq>
	:SYSTem:PMETer:SENSE:FREQuency[:CW :FIXed]?
	[:SENSE]:FREQuency:CENTer <freq>
	[:SENSE]:FREQuency:CENTer?
Level Offset State	:SYSTem:PMETer:SENSE:CORRection:GAIN2:STATe <boolean>
	:SYSTem:PMETer:SENSE:CORRection:GAIN2:STATe?
Level Offset Value	:SYSTem:PMETer:SENSE:CORRection:GAIN2[:INPut][:MAGNitude] <rel_ampl>
	:SYSTem:PMETer:SENSE:CORRection:GAIN2[:INPut][:MAGNitude]?
Average State	:SYSTem:PMETer:SENSE:AVERAge[:STATe] <boolean>
	:SYSTem:PMETer:SENSE:AVERAge[:STATe]?
Average Count	:SYSTem:PMETer:SENSE:AVERAge:COUNT <ext_integer>
	:SYSTem:PMETer:SENSE:AVERAge:COUNT?
Reference Level Set	:SYSTem:PMETer:SENSE:RELativeset
Range	:SYSTem:PMETer:SENSE:RANGe AUTO LOW HIGH
	:SYSTem:PMETer:SENSE:RANGe?
Device Status Error	:SYSTem:PMETer:DEVIce:ERRor?
Aperture Time	:SYSTem:PMETer:APERture:TIME <aper_time>
	:SYSTem:PMETer:APERture:TIME?
Aperture Mode	:SYSTem:PMETer:APERture:MODE LAT HAT
	:SYSTem:PMETer:APERture:MODE?

## :SYSTem:PMETer:MEASure? [DBM]|WATT|DB

Average Power Query

Function

This command queries the measurement power in specified units.

Query

:SYSTem:PMETer:MEASure? [<unit>]

Response

<real>

Parameter

<unit>	Unit
DBM	Query the measurement power value in dBm units.
WATT	Query the measurement power value in W units.
DB	Query the relative power value in dB units.
When omitted	DBM
<real>	Measurement power
Resolution	When unit is DBM, DB: 0.01 When unit is W: Three significant figures (floating point type)
Not connected	-999.999

Details

The measurement power includes the offset value and averaging result.

Example of Use

To query the measurement power value in W units.

```
SYST:PMET:MEAS? WATT
```

```
> 0.002
```



**:SYSTem:PMETer:ZERoset**

## Zeroing

## Function

Executes the zeroing for the power sensor.

## Command

```
:SYSTem:PMETer:ZERoset
```

## Details

Do not execute calibration during the zeroing. Failure to do so will not guarantee the response to the following query command:

```
STATus:OPERation:CONDition?
```

## Example of Use

To execute the zeroing for the power sensor.

```
SYST:PMET:ZER
```

**:SYSTem:PMETer:CONNection?**

## Sensor Connected Query

## Function

Query the power sensor connection status.

## Query

```
:SYSTem:PMETer:CONNection?
```

## Response

```
<connect>
```

## Parameter

<connect>	USB power sensor connection
1	Connected
0	Not connected

## Example of Use

To query whether the power sensor is connected.

```
SYST:PMET:CONN?
```

```
> 1
```

## :SYSTem:PMETer:COMMUnicate:USB:PORT?

Current Com Port Number Query

### Function

Query the number of the COM Port to which the USB Power Sensor is connected.

### Query

```
:SYSTem:PMETer:COMMUnicate:USB:PORT?
```

### Response

```
<integer>
```

### Parameter

<integer>	COM Port number
Resolution	1
	When not connected.: -999

### Example of Use

To query the number of the COM Port to which the USB Power Sensor is connected.

```
SYST:PMET:COMM:USB:PORT?  
> 10
```

## :SYSTem:PMETer:SENSE:MODEl?

Current Sensor Model Query

### Function

Query the model of the connected USB power sensor.

### Query

```
:SYSTem:PMETer:SENSE:MODEl?
```

### Response

```
<model>
```

### Parameter

<model>	USB Power Sensor model
NOSENSOR	Unknown
MA24104A	MA24104A
MA24105A	MA24105A
MA24106A	MA24106A
MA24108A	MA24108A
MA24118A	MA24118A
MA24126A	MA24126A

### Example of Use

To query the model of the connected USB power sensor.

```
SYST:PMET:SENS:MOD?  
> MA24104A
```

**:SYSTem:PMETer:SENSe:FREQuency[:CW|:FIXed] <freq>**

Frequency

Function

The setting range is determined by that of USB power sensors.

Command

**:SYSTem:PMETer:SENSe:FREQuency[:CW|:FIXed] <freq>**

Parameter

<freq>	The center frequency of the signal
Range	USB Power Sensor.
Resolution	USB Power Sensor.
Default	1 GHz
Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ HZ when omitted.

Example of Use

To set the center frequency of the signal to be measured to 2.5 GHz.  
**SYST:PMET:SENS:FREQ 2.5GHZ**

**:SYSTem:PMETer:SENSe:FREQuency[:CW|:FIXed]?**

Frequency Query

Function

This command queries the center frequency setting.

Query

**:SYSTem:PMETer:SENSe:FREQuency[:CW|:FIXed]?**

Response

<freq>

Parameter

<freq>	The center frequency of the signal
Range	USB Power Sensor.
Resolution	USB Power Sensor.
Suffix code	None. Value is returned in Hz units.

Example of Use

To query the center frequency setting.  
**SYST:PMET:SENS:FREQ?**  
 > 2500000000

## [[:SENSE]:FREQUENCY:CENTER <freq>

Frequency

Function

This command sets the center frequency of the signal to be measured. The setting range is determined by that of USB power sensors.

Command

```
[[:SENSE]:FREQUENCY:CENTER <freq>
```

Parameter

<freq>	The center frequency of the signal
Range	USB Power Sensor.
Resolution	USB Power Sensor.
Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ HZ when omitted.

Details

When the display is other than Power Meter, refer to the “Spectrum Analyzer Function Remote Control” or “Signal Analyzer Function Remote Control.”

Example of Use

To set the center frequency of the signal to be measured to 2.5 GHz.  
FREQ:CENT 2.5GHZ

## [[:SENSE]:FREQUENCY:CENTER?

Frequency Query

Function

This commands queries the center frequency setting.

Query

```
[[:SENSE]:FREQUENCY:CENTER?
```

Response

```
<freq>
```

Parameter

<freq>	The center frequency of the signal
Range	USB Power Sensor.
Resolution	USB Power Sensor.
Suffix code	HZ when omitted.

Details

When the display is other than Power Meter, refer to the “Spectrum Analyzer Function Remote Control” or “Signal Analyzer Function Remote Control.”

Example of Use

To query the center frequency setting .  
 FREQ:CENT?  
 > 2500000000

:SYSTem:PMETer:SENSE:CORRection:GAIN2:STATe <boolean>

Level Offset State

Function

This commands enables and disables the addition of the level offset value.

Command

:SYSTem:PMETer:SENSE:CORRection:GAIN2:STATe <boolean>

Parameter

<boolean>	Enables and disables the addition of the level offset value.
ON 1	the addition of the offset level.
OFF 0	the offset level.
Default	OFF

Example of Use

To enable the level offset value.  
 SYST:PMET:SENS:CORR:GAIN2:STAT ON

:SYSTem:PMETer:SENSE:CORRection:GAIN2:STATe?

Level Offset State Query

Function

This commands queries whether the addition of the level offset value is enabled or disabled.

Query

:SYSTem:PMETer:SENSE:CORRection:GAIN2:STATe?

Response

<boolean>

Parameter

<boolean>	Enables and disables the addition of the level offset value.
1	the addition of the offset level.
0	the offset level.

Example of Use

To query whether the addition of the level offset value is enabled or disabled.

```
SYST:PMET:SENS:CORR:GAIN2:STAT?  
> 1
```

**:SYSTEM:PMETER:SENSE:CORRECTION:GAIN2[:INPUT][:MAGNITUDE]**

**<rel\_ampl>**

Level Offset Value

Function

This command sets the level offset value in dB units.

Command

```
:SYSTEM:PMETER:SENSE:CORRECTION:GAIN2[:INPUT]  
[:MAGNITUDE] <rel_ampl>
```

Parameter

<rel_ampl>	Offset value
Range	-100.00 to +100.00
Resolution	0.01
Default	0.00
Suffix code	DB
	DB when omitted.

Example of Use

To set the level offset value to 10 dB.

```
SYST:PMET:SENS:CORR:GAIN2 10
```

**:SYSTEM:PMETER:SENSE:CORRECTION:GAIN2[:INPUT][:MAGNITUDE]?**

Level Offset Query

Function

This command queries the level offset value setting.

Query

```
:SYSTEM:PMETER:SENSE:CORRECTION:GAIN2[:INPUT][:MAGNITUDE]  
]?
```

Response

```
<rel_ampl>
```

Parameter

<rel_ampl>	Offset value
Range	-100.00 to +100.00
Resolution	0.01
Suffix code	None. Value is returned in dB units.

## Example of Use

To query the level offset value setting.  
 SYST:PMET:SENS:CORR:GAIN2?  
 > 10.00

**:SYSTem:PMETer:SENSe:AVERage[:STATe] <boolean>**

## Average State

## Function

This command enables or disables averaging of the measurement power.

## Command

:SYSTem:PMETer:SENSe:AVERage[:STATe] <boolean>

## Parameter

<boolean>	Averaging status
ON 1	Enables averaging.
OFF 0	Disables averaging.
Default	OFF

## Example of Use

To execute averaging.  
 SYST:PMET:SENS:AVER ON

**:SYSTem:PMETer:SENSe:AVERage[:STATe]?**

## Average State Query

## Function

This command queries whether the averaging of the measurement power is enabled or disabled.

## Query

:SYSTem:PMETer:SENSe:AVERage[:STATe]?

## Response

<boolean>

## Parameter

<boolean>	Averaging status
1	Enables averaging.
0	Disables averaging.

## Example of Use

To execute averaging.  
 SYST:PMET:SENS:AVER?  
 > 1

### :SYSTem:PMETer:SENSE:AVERage:COUNT <ext\_integer>

Average Count

Function

This command sets the number of times the measurement power is averaged.

Command

```
:SYSTem:PMETer:SENSE:AVERage:COUNT <ext_integer>
```

Parameter

<ext_integer>	Number of averaging times
Range	2 to 1000
Resolution	1
Default	10
Suffix code	None

Example of Use

To set the number of averaging times to 100.  
SYST:PMET:SENS:AVER:COUN 100

### :SYSTem:PMETer:SENSE:AVERage:COUNT?

Average Count Query

Function

This command queries the specified number of times to average the measurement power.

Query

```
:SYSTem:PMETer:SENSE:AVERage:COUNT?
```

Response

```
<ext_integer>
```

Parameter

<ext_integer>	Averaging times
Range	2 to 1000
Resolution	1
Suffix code	None

Example of Use

To query the specified number of averaging times.  
SYST:PMET:SENS:AVER:COUN?  
> 100



**:SYSTem:PMETer:SENSE:RELativeset**

Reference Level Set

Function

This command sets the displayed average power as the reference relative value.

Command

```
:SYSTem:PMETer:SENSE:RELativeset
```

Example of Use

To set the average power as the reference.  
 SYST:PMET:SENS:REL

**:SYSTem:PMETer:SENSE:RANGe AUTO|LOW|HIGH**

Range

Function

This command sets the measurement range of the power sensor.

Command

```
:SYSTem:PMETer:SENSE:RANGe <range>
```

Parameter

<range>	Measurement range
AUTO	Automatic setting
LOW	When the model is MA24108A, MA24118A, or MA24126A: Input range: -40 dBm to -7 dBm When the model is MA24105A: Input range: +3 dBm to +38 dBm
HIGH	When the model is MA24108A, MA24118A, or MA24126A: Input range: -7 dBm to +20 dBm When the model is MA24105A: Input range: +38 dBm to +51.76 dBm

Details

When the model is MA24104A/MA24106A, Range is always set to Auto.

Example of Use

To set the Measurement range to High.  
 SYST:PMET:SENS:RANG HIGH

## :SYSTem:PMETer:SENSE:RANGe?

Range Query

Function

This command queries the setting measurement range of the power sensor.

Query

```
:SYSTem:PMETer:SENSE:RANGe?
```

Response

```
<range>
```

Parameter

<range>	Measurement range
AUTO	Automatic setting
LOW	When the model is MA24108A, MA24118A, or MA24126A: Input range: -40 dBm to -7 dBm When the model is MA24105A: Input range: +3 dBm to +38 dBm
HIGH	When the model is MA24108A, MA24118A, or MA24126A: Input range: -7 dBm to +20 dBm When the model is MA24105A: Input range: +38 dBm to +51.76 dBm

Details

When the model is MA24104A/MA24106A, Range is always set to Auto.

Example of Use

```
To query the setting operating power range.  
SYST:PMET:SENS:RANG?  
> HIGH
```

**:SYSTem:PMETer:DEVIce:ERRor?**

Device Status Error Query

## Function

This command queries Device Status Error.

## Query

`:SYSTem:PMETer:DEVIce:ERRor?`

## Response

&lt;integer&gt;

## Parameter

<integer>	Bit sum of Device Status Error
Range	0 to 65535
	0 Normal (Success)
	-999 Not connected
Resolution	1

## Details

For the response value, refer to Chapter 13-3 “STATUS?” in *the User Guide, Anritsu Power Xpert and USB Power Sensors*.

## Example of Use

To query Device Status Error.  
`SYST:PMET:DEV:ERR?`  
 > 0

## :SYSTem:PMETer:APERture:TIME <aper\_time>

Aperture Time

Function

This command sets Aperture Time for MA24108A, MA24118A, and MA24126A.

Command

```
:SYSTem:PMETer:APERture:TIME <aper_time>
```

Parameter

<aper_time>	Aperture Time
Range	0.01 to 300.00 ms
Resolution	0.01 ms
Default	20.00 ms
Unit	ms
Suffix code	None

Example of Use

To set Aperture Time to 20 ms.  
SYST:PMET:APER:TIME 20

## :SYSTem:PMETer:APERture:TIME?

Aperture Time Query

Function

This command queries the Aperture Time set for MA24108A, MA24118A, and MA24126A.

Query

```
:SYSTem:PMETer:APERture:TIME?
```

Response

```
<aper_time>
```

Parameter

<aper_time>	Aperture Time
Range	0.01 to 300.00 ms
Resolution	0.01 ms
Default	20.0 ms
Suffix code	None, Value is returned in ms units.

Example of Use

To query the set Aperture Time.  
SYST:PMET:APER:TIME?  
> 20.00

**:SYSTem:PMETer:APERture:MODE LAT|HAT**

## Aperture Mode

## Function

This command sets Aperture Mode for MA24104A and MA24106A.

## Command

```
:SYSTem:PMETer:APERture:MODE <mode>
```

## Parameter

<mode>	Aperture Mode
LAT	Low Aperture Time mode
HAT	High Aperture Time mode
Default	LAT

## Example of Use

To set Aperture Mode to LAT.  
 SYST:PMET:APER:MODE LAT

**:SYSTem:PMETer:APERture:MODE?**

## Aperture Mode Query

## Function

This command queries the Aperture Mode set for MA24104A and MA24106A.

## Query

```
:SYSTem:PMETer:APERture:MODE?
```

## Response

```
<mode>
```

## Parameter

<mode>	Aperture Mode
LAT	Low Aperture Time mode
HAT	High Aperture Time mode

## Example of Use

To query the set Aperture Mode.  
 SYST:PMET:APER:MODE?  
 > LAT

### 4.3.3 OPERation Status Register

The figure below shows the layer structure of the OPERation Status Register.

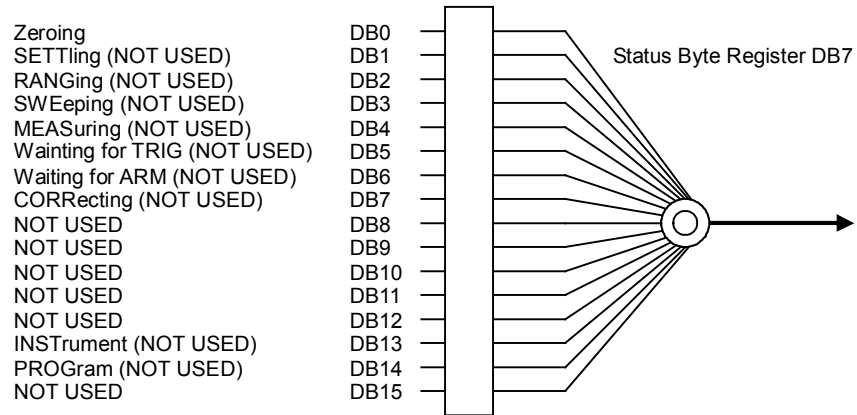


Figure 4.3.3-1 OPERation Status Register

Table 4.3.3-1 OPERation Status Register

Byte definition of OPERation Status Register	
DB0	Zero being executed

The table below shows device messages for the OPERation status register.

Table 4.3.3-2 Device messages for OPERation status register

Function	Device message
Operation Status Register Event	:STATus:OPERation[:EVENT]?
Operation Status Register Condition	:STATus:OPERation:CONDition?
Operation Status Register Enable	:STATus:OPERation:ENABle <integer>
	:STATus:OPERation:ENABle?
Operation Status Register Negative Transition	:STATus:OPERation:NTRansition <integer>
	:STATus:OPERation:NTRansition?
Operation Status Register Positive Transition	:STATus:OPERation:PTRansition <integer>
	:STATus:OPERation:PTRansition?

## :STATus:OPERation[:EVENT]?

Operation Status Register Event

### Function

This command queries the event register of the OPERATION Status Register.

### Query

:STATus:OPERation[:EVENT]?

### Response

<integer>

### Parameter

<integer>	Total bytes of event register
Resolution	1
Range	0 to 65535

### Details

This command is available only in the SCPI mode.

### Example of Use

To query the event register of the OPERATION Status Register.

```
STAT:OPER?  
> 0
```

## :STATus:OPERation:CONDition?

Operation Status Register Condition

### Function

This command queries the condition register of the OPERATION Status Register.

### Query

:STATus:OPERation:CONDition?

### Response

<integer>

### Parameter

<integer>	Total bytes of condition register
Resolution	1
Range	0 to 65535

### Example of Use

To query the contents of the condition register of the OPERATION Status Register.

```
STAT:OPER:COND?  
> 0
```



**:STATus:OPERation:ENABLE <integer>**

Operation Status Register Enable

## Function

This command sets the event enable register of the OPERation status register.

## Command

```
:STATus:OPERation:ENABLE <integer>
```

## Parameter

<integer>	Total bytes of event enable register
Resolution	1
Range	0 to 65535

## Details

This command is available only in the SCPI mode.

## Example of Use

To set the event enable register of the OPERation status register to 16.  
 STAT:OPER:ENAB 16

**:STATus:OPERation:ENABLE?**

Operation Status Register Enable Query

## Function

This command queries the event enable register of the OPERation status register.

## Query

```
:STATus:OPERation:ENABLE?
```

## Response

```
<integer>
```

## Parameter

<integer>	Total bytes of event enable register
Resolution	1
Range	0 to 65535

## Example of Use

To query the event enable register of the OPERation status register.  
 STAT:OPER:ENAB?  
 > 16

## :STATus:OPERation:NTRansition <integer>

Operation Status Register Negative Transition

Function

This command sets the transition filter (negative direction change) of the OPERation status register.

Command

:STATus:OPERation:NTRansition <integer>

Parameter

<integer>	Total bytes of transition filter(negative direction change)
Resolution	1
Range	0 to 65535

Details

This command is available only in the SCPI mode.

Example of Use

To set the transition filter (negative direction change) of the OPERation status register to 16.  
STAT:OPER:NTR 16

## :STATus:OPERation:NTRansition?

Operation Status Register Negative Transition Query

Function

This command queries the transition filter (negative direction change) of the OPERation status register.

Query

:STATus:OPERation:NTRansition?

Response

<integer>

Parameter

<integer>	Total bytes of transition filter (negative direction change)
Resolution	1
Range	0 to 65535

Example of Use

To query the transition filter (negative direction change) of the OPERation status register.  
STAT:OPER:NTR?  
> 16

**:STATus:OPERation:PTRansition <integer>**

Operation Status Register Positive Transition

## Function

This command sets the transition filter (positive direction change) of the OPERation status register.

## Command

```
:STATus:OPERation:PTRansition <integer>
```

## Parameter

<integer>	Total bytes of transition filter (positive direction change)
Resolution	1
Range	0 to 65535

## Details

This command is available only in the SCPI mode.

## Example of Use

To set the transition filter (positive direction change) of the OPERation status register to 16.

```
STAT:OPER:PTR 16
```

**:STATus:OPERation:PTRansition?**

Operation Status Register Positive Transition Query

## Function

This command queries the transition filter (positive direction change) of the OPERation status register.

## Query

```
:STATus:OPERation:PTRansition?
```

## Response

```
<integer>
```

## Parameter

<integer>	Total bytes of transition filter (positive direction change)
Resolution	1
Range	0 to 65535

## Example of Use

To query the transition filter (positive direction change) of the OPERation status register.

```
STAT:OPER:PTR?
```

```
> 16
```

## 4.4 BER Settings

Table 4.4-1 shows device messages for setting functions for BER.

**Table 4.4-1 Device messages for setting BER**

Function	Device Message
Bit Error Rate Query	:CALCurate:BERT[:BASEband]:BER? EP ER
Received Bit Query	:CALCurate:BERT[:BASEband]:DATA:COUNT?
Result and Status Query	:DATA:DATA? ER EP
Error Bit Query	:DATA:DATA:BEC?
Count Clear	:DATA:COUNT:CLEar
Start Measurement by Continuous Mode	:INITiate:MODE:CONTinuous
Start Measurement by Endless Mode	:INITiate:MODE:ENDLess
Start Measurement by Single Mode	:INITiate:MODE:SINGle
Enable Polarity	:INPut:BERT[:BASEband]:CGATe:POLarity POSitive NEGative
	:INPut:BERT[:BASEband]:CGATe:POLarity?
	:INPut:BERT[:BASEband]:CGATe[:STATe] ON OFF 1 0
	:INPut:BERT[:BASEband]:CGATe[:STATe]?
Clock Polarity	:INPut:BERT[:BASEband]:CLOCK:POLarity POSitive NEGative
	:INPut:BERT[:BASEband]:CLOCK:POLarity?
Data Polarity	:INPut:BERT[:BASEband]:DATA:POLarity POSitive NEGative
	:INPut:BERT[:BASEband]:DATA:POLarity?
Display BER User Pattern File List Query	:MMEMory:LIST:PATtern?
Drive to load User Pattern	:MMEMory:MSIS <drive>
	:MMEMory:MSIS?
Load User Pattern	:MMEMory:LOAD:PATtern <pattern>
Measurement Status Query	:STATus:BERT:MEASure?
Data Pattern Type	[ :SENSe]:BERT[:BASEband]:PRBS[:DATA] PN9 PN11 PN15 PN20 PN23 ALL0 ALL1 ALT FPN9 FPN11 FPN15 FPN20 FPN23 USER
	[ :SENSe]:BERT[:BASEband]:PRBS[:DATA]?
Sync Loss Threshold	[ :SENSe]:BERT[:BASEband]:RSYNc:THReshold<numeric_value>,500 5000 50000
	[ :SENSe]:BERT[:BASEband]:RSYNc:THReshold?
Auto Re-sync	[ :SENSe]:BERT[:BASEband]:RSYNc[:STATe] ON OFF 1 0
	[ :SENSe]:BERT[:BASEband]:RSYNc[:STATe]?

Table 4.4-1 Device messages for setting BER (Cont'd)

Function	Device Message
BER – On/Off	[ :SENSE ] :BERT [ :BASEband ] :STATE ON OFF 1 0
	[ :SENSE ] :BERT [ :BASEband ] :STATE?
Measurement Error Bit	[ :SENSE ] :BERT [ :BASEband ] :STOP:CRITeria:EBIT <bit>
	[ :SENSE ] :BERT [ :BASEband ] :STOP:CRITeria:EBIT?
Count Mode	[ :SENSE ] :BERT [ :BASEband ] :STOP:CRITeria[:SElect] EBIT NONE
	[ :SENSE ] :BERT [ :BASEband ] :STOP:CRITeria[:SElect]?
Measurement Bit	[ :SENSE ] :BERT [ :BASEband ] :TBITs <bit>
	[ :SENSE ] :BERT [ :BASEband ] :TBITs?
Measurement Mode	[ :SENSE ] :BERT [ :BASEband ] :MODE SINGLE CONTInuous ENDLeLss
	[ :SENSE ] :BERT [ :BASEband ] :MODE?
PN Fix Pattern Length	[ :SENSE ] :BERT [ :BASEband ] :PRBS:PNFix:LENGth <bit>
	[ :SENSE ] :BERT [ :BASEband ] :PRBS:PNFix:LENGth?
PN Fix Pattern Initial Value	[ :SENSE ] :BERT [ :BASEband ] :PRBS:PNFix:INITIAL <n>
	[ :SENSE ] :BERT [ :BASEband ] :PRBS:PNFix:INITIAL?
Length for Sync on User Pattern	[ :SENSE ] :BERT [ :BASEband ] :PRBS:USER:SYNC:LENGth <bit>
	[ :SENSE ] :BERT [ :BASEband ] :PRBS:USER:SYNC:LENGth?
Sync Loss Count Query	[ :SENSE ] :BERT [ :BASEband ] :SYNLoss:COUNT?
Count Action at Sync Loss	[ :SENSE ] :BERT [ :BASEband ] :RSYNc:COUNT:ACTIon CLear KEEP
	[ :SENSE ] :BERT [ :BASEband ] :RSYNc:COUNT:ACTIon?
Sync Start Position on User Pattern	[ :SENSE ] :BERT [ :BASEband ] :PRBS:USER:SYNC:START <bit>
	[ :SENSE ] :BERT [ :BASEband ] :PRBS:USER:SYNC:START?
User Pattern File Name Query	[ :SENSE ] :BERT [ :BASEband ] :PRBS:USER:PATtern?
User Pattern Length Query	[ :SENSE ] :BERT [ :BASEband ] :PRBS:USER:LENGth?
Start Measurement	:INITiate[:IMMediate]
Stop Measurement	:ABORT

## :CALCurate:BERT[:BASEband]:BER? EP|ER

Bit Error Rate Query

Function

Queries the bit error rate of BER measurement.

Query

:CALCurate:BERT[:BASEband]:BER? <format>

Response

<bit>

Parameter

<format>	Response format
EP	Returns the bit error rate as a percentage.
ER	Returns the bit error rate as an exponent.
<bit>	Bit error rate
EP	0.000 to 100.000%
ER	0.000E+00 to 1.000E+02

Details

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To query the bit error rate in BER measurement as a percentage.  
CALC:BERT:BER? EP  
> 5.000

**:CALCurate:BERT[:BASEband]:DATA:COUNT?**

Received Bit Query

## Function

Queries the reception bit count value of BER measurement.

## Query

`:CALCurate:BERT[:BASEband]:DATA:COUNT?`

## Response

`<bit>`

## Parameter

<code>&lt;bit&gt;</code>	Number of count bits
Range	0 to $(2^{32}-1)$

## Details

Unusable unless the measurement screen is set for BER test. This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

## Example of Use

```
To query the reception bit count value of BER measurement.
CALC:BERT:DATA:COUN?
> 12356789
```

## :DATA:DATA? ER|EP

Result and Status Query

Function

Queries the bit error rate and status information of BER measurement.

Query

:DATA:DATA? <format>

Response

<per>,<countbit>,<errorbit>,<status>,<error>  
(when format is EP)  
<exp>,<countbit>,<errorbit>,<status>,<error>  
(when format is ER)

Parameter

<per>	Bit error rate (percentage)
Range	0.000 to 100.000%
<exp>	Bit error rate (exponent format)
Range	0.000E+00 to 1.000E+02
<countbit>	Number of count bits
<errorbit>	Number of error bits
<status>	Measurement status
<error>	Error status
<format>	Response format
EP	Returns the bit error rate in percentage
ER	Returns the bit error rate in exponent format

Details

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To query the bit error rate in percentage.  
DATA:DATA? EP  
> 10.000,1000,100,0,NONE



**:DATA:DATA:BEC?**

Error Bit Query

Function

Queries the number of error bits of BER measurement.

Query

`:DATA:DATA:BEC?`

Response

&lt;bit&gt;

Parameter

<bit>	Number of error bits
Range	0 to $2^{32} - 1$ bit

Details

Unusable unless the measurement screen is set for BER test.  
 This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To query the number of error bits.  
`DATA:DATA:BEC?`  
`> 0`

**:DATA:COUNt:CLEAr**

Count Clear

Function

Resets the BER measurement bit count to 0.

Command

`:DATA:COUNt:CLEAr`

Details

Unusable unless the measurement screen is set for BER test.  
 This command is valid only when the measurement mode is Single or Endless.  
 Additionally, this command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To reset the bit count to 0.  
`DATA:COUN:CLE`

## :INITiate:MODE:CONTinuous

Start Measurement by Continuous Mode

### Function

Starts the BER measurement in Continuous mode.

### Command

```
:INITiate:MODE:CONTinuous
```

### Details

When executing this command for BER measurement function, switch the application to BER Test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

#### **Note:**

The BER measurement is also available when the signal generator application is active.

For the above command operation for other than BER measurement function, see the operation manual of each application.

### Example of Use

To start the BER measurement in Continuous mode.

```
INIT:MODE:CONT
```

## :INITiate:MODE:ENDLess

Start Measurement by Endless Mode

### Function

Starts the BER measurement in Endless mode.

### Command

```
:INITiate:MODE:ENDLess
```

### Details

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

### Example of Use

To start the BER measurement in Endless mode.

```
INIT:MODE:ENDL
```

## :INITiate:MODE:SINGle

Start Measurement by Single Mode

### Function

Starts the BER measurement in Single mode.

### Command

```
:INITiate:MODE:SINGle
```

### Details

When executing this command for BER measurement function, switch the application to BER Test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

**Note:**

The BER measurement is also available when the signal generator application is active.

For the above command operation for other than BER measurement function, see the operation manual of each application.

### Example of Use

To start the BER measurement in Single mode.

```
INIT:MODE:SING
```

## :INPut:BERT[:BASEband]:CGATe:POLarity POSitive|NEGative|DISable

Enable Polarity

Function

Sets or disables the polarity of the Enable signal for BER measurement.

Command

```
:INPut:BERT[:BASEband]:CGATe:POLarity <polarity>
```

Parameter

<polarity>	Enable signal polarity
POSitive	Positive logic (high active)
NEGative	Negative logic (low active)
DISable	Disables the signal polarity

Details

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To set the Enable signal polarity to positive.  
INP:BERT:CGAT:POL POS

**:INPut:BERT[:BASEband]:CGATe:POLarity?**

Enable Polarity Query

## Function

Queries the polarity of the Enable signal for BER measurement.

## Query

`:INPut:BERT[:BASEband]:CGATe:POLarity?`

## Response

`<polarity>`

## Parameter

<code>&lt;polarity&gt;</code>	Enable signal polarity
POS	Positive logic (active high)
NEG	Negative logic (active low)
DIS	Disables the signal polarity

## Details

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

## Example of Use

To query the polarity of the Enable signal.

```
INP:BERT:CGAT:POL?
> POS
```

**:INPut:BERT[:BASEband]:CGATe[:STATe] ON|OFF|1|0**

Enable Polarity – On/Off

Function

Enables/disables the Enable signals of BER measurement.

Command

`:INPut:BERT[:BASEband]:CGATe[:STATe] <on_off>`

Parameter

<code>&lt;on_off&gt;</code>	Enables/disables Enable signal
<code>ON 1</code>	Enabled
<code>OFF 0</code>	Disabled

Details

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To enable the Enable signal.  
`INP:BERT:CGAT ON`

**:INPut:BERT[:BASEband]:CGATe[:STATE]?**

Enable Polarity – On/Off Query

## Function

Queries whether the Enable signal is enabled or disabled for BER measurement.

## Query

```
:INPut:BERT[:BASEband]:CGATe[:STATE]?
```

## Response

```
<on_off>
```

## Parameter

<on_off>	Enable signal status
ON 1	Enabled
OFF 0	Disabled

## Details

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

## Example of Use

```
To query whether the Enable signal is enabled.
INP:BERT:CGAT?
> 1
```

## :INPut:BERT[:BASEband]:CLOCK:POLarity POSitive|NEGative

Clock Polarity

Function

Sets the polarity of the clock signal for BER measurement.

Command

```
:INPut:BERT[:BASEband]:CLOCK:POLarity <polarity>
```

Parameter

<polarity>	Clock signal polarity
POSitive	Data is detected at the rising edge.
NEGative	Data is detected at the falling edge.

Details

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To set the clock signal polarity to Positive.  
INP:BERT:CLOC:POL POS



**:INPut:BERT[:BASEband]:CLOCK:POLarity?**

Clock Polarity Query

## Function

Queries the polarity of the clock signal of BER measurement.

## Query

`:INPut:BERT[:BASEband]:CLOCK:POLarity?`

## Response

`<polarity>`

## Parameter

<code>&lt;polarity&gt;</code>	Clock signal polarity
POS	Data is detected at the rising edge.
NEG	Data is detected at the falling edge.

## Details

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

## Example of Use

To query the polarity of the clock signal.

`INP:BERT:CLOC:POL?``> POS`

## :INPut:BERT[:BASEband]:DATA:POLarity POSitive|NEGative

Data Polarity

Function

Sets the logic (positive or negative) of the Data signal for BER measurement.

Command

```
:INPut:BERT[:BASEband]:DATA:POLarity <polarity>
```

Parameter

<polarity>	Data signal logic
POSitive	Positive logic
NEGative	Negative logic

Details

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To set the Data signal logic to positive.  
INP:BERT:DATA:POL POS

**:INPut:BERT[:BASEband]:DATA:POLarity?**

Data Polarity Query

## Function

Queries the logic (positive or negative) of the data signal for BER measurement.

## Query

```
:INPut:BERT[:BASEband]:DATA:POLarity?
```

## Response

```
<polarity>
```

## Parameter

<polarity>	Data signal logic
POS	Positive logic
NEG	Negative logic

## Details

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

## Example of Use

To query the logic (positive or negative) of the data signal.

```
INP:BERT:DATA:POL?
> POS
```

## :MMEMory:LIST:PATtern?

Display BER User Pattern File List Query

Function

Queries the list of the user pattern files for BER measurement.

Query

:MMEMory:LIST:PATtern?

Response

<s1>,<s2>,<s3>.....,<s99>,<s100>

Parameter

<s1>.....,<s100> Existing user pattern file names (within 32 characters)  
Range up to 100 files

Details

Unusable unless the measurement screen is set for BER test.  
Returns \*\*\*, if there is no user pattern file.  
The file lists of response messages are in alphabetical order.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To query the list of the user pattern files for BER measurement.  
MMEM:LIST:PATT?  
> TEST1,TEST2,TEST3

**:MMEMemory:MSIS <drive>**

Drive to load User Pattern

## Function

Sets the name of the drive to load the user-defined pattern file for BER measurement.

## Command

```
:MMEMemory:MSIS <drive>
```

## Parameter

```
<drive>          Load source drive name
```

## Details

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

## Example of Use

To load the user-defined pattern from drive D.  
MMEMemory:MSIS D

**:MMEMemory:MSIS?**

Drive to load User Pattern Query

## Function

Queries the drive name loading the user-defined pattern file for BER measurement.

## Query

```
:MMEMemory:MSIS?
```

## Response

```
<drive>
```

## Parameter

```
<drive>          Load source drive name
```

## Details

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

## Example of Use

To query the load source drive of the user-defined pattern.  
MMEMemory:MSIS?  
> D

**:MMEMory:LOAD:PATtern <pattern>**

Load User Pattern

Function

Loads the user-defined pattern for BER measurement from a file.

Command

:MMEMory:LOAD:PATtern <pattern>

Parameter

<pattern>

User-defined pattern to be loaded

Specify a character string within 32 characters, obtained by removing an extension (bnp) from the target user defined pattern file name.

Details

Unusable unless the measurement screen is set for BER test.

Only files with extension "bnp" can be loaded.

It is not settable when data type is not UserDefine.

If the specified user define pattern file does not exist, an error is returned to the standard status register. The standard status register value can be checked by \*ESR? command.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To load the user-defined pattern file "USERPATTERN.bnp".

MMEM:LOAD:PATT "USERPATTERN"

**:STATus:BERT:MEASure?**

BER Measurement Status Query

## Function

Queries the measurement status for BER measurement.

## Query

`:STATus:BERT:MEASure?`

## Response

`<status>`

## Parameter

<code>&lt;status&gt;</code>	Measurement Status
0	During halt
1	During measurement
2	Synchronization is being built up.
3	Stopped due to the occurrence of measurement error.
4	Stopped because SyncLoss count exceeded the maximum.
5	Stopped because count bit exceeded the maximum.

## Details

Unusable unless the measurement screen is set for BER test.

The error contents can be obtained by using `:STATus:ERRor?` when a measurement error occurs.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

## Example of Use

To query the current measurement status.

```
STAT:BERT:MEAS?
```

```
> 0
```

[[:SENSe]:BERT[:BASEband]:PRBS[:DATA]  
 PN9|PN11|PN15|PN20|PN23|ALL0|ALL1|ALT|FPN9|FPN11|FPN15|FPN20|F  
 PN23|USER

Data Pattern Type

Function

Sets the data pattern type for BER measurement.

Command

[[:SENSe]:BERT[:BASEband]:PRBS[:DATA] <pattern>

Parameter

<pattern>	Data pattern type
PN9	PN9
PN11	PN11
PN15	PN15
PN20	PN20
PN23	PN23
ALL0	All 0 (00...0)
ALL1	All 1 (11...1)
ALT	Repetition of "01" patterns (0,1,0,1,...)
FPN9	PN9 Fix
FPN11	PN11 Fix
FPN15	PN15 Fix
FPN20	PN20 Fix
FPN23	PN23 Fix
USER	User-defined pattern

Details

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To set the data pattern type to PN9.

BERT:PRBS PN9



## [:SENSe]:BERT[:BASEband]:PRBS[:DATA]?

Data Pattern Type Query

## Function

Queries the data pattern type for BER measurement.

## Query

[:SENSe]:BERT[:BASEband]:PRBS[:DATA]?

## Response

&lt;pattern&gt;

## Parameter

<pattern>	Data pattern type
PN9	PN9
PN11	PN11
PN15	PN15
PN20	PN20
PN23	PN23
ALL0	All 0 (00...0)
ALL1	All 1 (11...1)
ALT	Repetition of "01" patterns (0,1,0,1,...)
FPN9	PN9 Fix
FPN11	PN11 Fix
FPN15	PN15 Fix
FPN20	PN20 Fix
FPN23	PN23 Fix
USER	User-defined pattern

## Details

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

## Example of Use

To query the data pattern type.

BERT:PRBS?

&gt; PN9

**[[:SENSe]:BERT[:BASEband]:RSYNc:THReshold <n>, 500|5000|50000**

Sync Loss Threshold

Function

Sets the Sync Loss judgment condition for the BER measurement.

Command

[[:SENSe]:BERT[:BASEband]:RSYNc:THReshold <n>,<a>

Parameter

<n>	Numerator of Sync Loss threshold
Range	1 to (a/2) bits
[a]	Dominator of Sync Loss threshold
500	500 bits
5000	5000 bits
50000	50000 bits

Details

Unusable unless the measurement screen is set for BER test.

During BER measurement, if n bits out of continuous a bits are detected as error bits, it is judged as Sync Loss.

This command is valid only when auto resynchronization is disabled.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To set the Sync Loss threshold to 123/500 bits.

BERT:RSYN:THR 123,500

## [:SENSe]:BERT[:BASEband]:RSYNc:THReshold?

Sync Loss Threshold Query

## Function

Queries the Sync Loss judgment condition for the BER measurement.

## Query

[:SENSe]:BERT[:BASEband]:RSYNc:THReshold?

## Response

&lt;n&gt;,&lt;a&gt;

## Parameter

<n>	Numerator of Sync Loss threshold
Range	1 to (a/2) bits
[a]	Dominator of Sync Loss threshold
500	500 bits
5000	5000 bits
50000	50000 bits

## Details

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

## Example of Use

To query the Sync Loss judgment condition.

BERT:RSYN:THR?

&gt; 123,500

## `[[:SENSe]:BERT[:BASEband]:RSYNc[:STATe] ON|OFF|1|0`

Auto Re-sync

### Function

Enables (ON) or disables (OFF) the automatic resynchronization for BER measurement.

### Command

`[[:SENSe]:BERT[:BASEband]:RSYNc[:STATe] <on_off>`

### Parameter

<code>&lt;on_off&gt;</code>	Automatic resynchronization ON/OFF
<code>ON 1</code>	Enables automatic resynchronization
<code>OFF 0</code>	Disables automatic resynchronization

### Details

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

### Example of Use

To enable the automatic resynchronization.  
`BERT:RSYN ON`

## [:SENSe]:BERT[:BASEband]:RSYNc[:STATe]?

Auto Re-sync Query

## Function

Queries the ON/OFF status of the automatic resynchronization for BER measurement.

## Query

[:SENSe]:BERT[:BASEband]:RSYNc[:STATe]?

## Response

&lt;on\_off&gt;

## Parameter

<on_off>	Automatic resynchronization ON/OFF status
1	Automatic resynchronization is enabled.
0	Automatic resynchronization is disabled.

## Details

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

## Example of Use

To query the ON/OFF status of the automatic resynchronization.  
BERT:RSYN?  
> 1

**[[:SENSe]:BERT[:BASEband]:STATE ON|OFF|1|0**

BER- On/Off

Function

Starts or stops BER measurement.

Command

[[:SENSe]:BERT[:BASEband]:STATE <on\_off>

Parameter

<on_off>	Start/stop of BER measurement
ON 1	Start
OFF 0	Stop

Details

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To start BER measurement.  
BERT:STAT ON

**[[:SENSe]:BERT[:BASEband]:STATE?**

BER- On/Off Query

## Function

Queries the measurement status of BER measurement.

## Query

[:SENSe]:BERT[:BASEband]:STATE?

## Response

&lt;on\_off&gt;

## Parameter

<on_off>	BER measurement status
1	During measurement
0	During halt

## Details

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

## Example of Use

To query the measurement status of BER measurement.

BERT:STAT?

&gt; 1

**[[:SENSE]:BERT[:BASEband]:STOP:CRITeria:EBIT <bit>**

Measurement Error Bit

Function

Sets the number of measurement error bits for BER measurement.

Command

[[:SENSE]:BERT[:BASEband]:STOP:CRITeria:EBIT <bit>

Parameter

<bit>	Number of measurement error bits
Range	1 to 2 Gbits 1 to 2147 Mbits 1 to 2147483 Kbits 1 to 2147483647 bits
Suffix Code	GBIT,MBIT,KBIT,BIT BIT is applied when omitted.

Details

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

**Note:**

This function is not available when the measurement mode is set to Endless or the count mode is set to NONE.

Example of Use

To set the number of measurement error bits to 4,095 bits.  
BERT:STOP:CRIT:EBIT 4095



## [:SENSe]:BERT[:BASEband]:STOP:CRITeria:EBIT?

Measurement Error Bit Query

## Function

Queries the number of measurement error bits for BER measurement.

## Query

[:SENSe]:BERT[:BASEband]:STOP:CRITeria:EBIT?

## Response

&lt;bit&gt;

## Parameter

<bit>	Number of measurement error bits
Range	1 to 2 Gbits 1 to 2147 Mbits 1 to 2147483 Kbits 1 to 2147483647 bits

## Details

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

## Example of Use

To query the number of measurement error bits.

```
BERT:STOP:CRIT:EBIT?
> 4095
```

## `[[:SENSE]:BERT[:BASEband]:STOP:CRITeria[:SElect] EBIT|NONE`

Count Mode

Function

Sets the BER measurement end condition.

Command

```
[[:SENSE]:BERT[:BASEband]:STOP:CRITeria[:SElect] <mode>
```

Parameter

<mode>	BER measurement end condition
EBIT	BER measurement ends when the specified number of error bits is reached.
NONE	BER measurement ends when the specified number of count bits is reached.

Details

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To end the BER measurement when the specified number of error bits is reached.  
`BERT:STOP:CRIT EBIT`

## [:SENSe]:BERT[:BASEband]:STOP:CRITeria[:SElect]?

Count Mode Query

## Function

Queries the measurement end condition of BER measurement.

## Query

[:SENSe]:BERT[:BASEband]:STOP:CRITeria[:SElect]?

## Response

&lt;mode&gt;

## Parameter

&lt;mode&gt;

BER measurement end condition

EBIT

BER measurement ends when the specified number of error bits is reached.

NONE

BER measurement ends when the specified number of count bits is reached.

## Details

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

## Example of Use

To query the measurement end condition of BER measurement.

BERT:STOP:CRIT?

&gt; EBIT

## [[:SENSe]:BERT[:BASEband]:TBITs <bit>

Measurement Bit

### Function

Sets the number of measurement bits for BER measurement.

### Command

```
[[:SENSe]:BERT[:BASEband]:TBITs <bit>
```

### Parameter

<bit>	Number of measurement bits
Range	1 to 4 Gbits 1 to 4294 Mbits 1 to 4294967 Kbits 1000 to 4294967295 bits
Suffix Code	GBIT,MBIT,KBIT,BIT BIT is applied when omitted.

### Details

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

**Note:**

This function is not available when the measurement mode is set to Endless or the count mode is set to EBIT.

### Example of Use

To set the number of measurement bits to 10,000 bits.

```
BERT:TBIT 10000
```

## [:SENSe]:BERT[:BASEband]:TBITs?

Measurement Bit Query

## Function

Queries the number of measurement bits for BER measurement.

## Query

[:SENSe]:BERT[:BASEband]:TBITs?

## Response

&lt;bit&gt;

## Parameter

<bit>	Number of measurement bits
Range	1 to 4 Gbits 1 to 4294 Mbits 1 to 4294967 Kbits 1000 to 4294967295 bits

## Details

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

## Example of Use

To query the number of the measurement bits.

```
BERT:TBIT?
> 10000
```

## [[:SENSe]:BERT[:BASEband]:MODE SINGLE|CONTInuous|ENDLess

Measurement Mode

Function

Sets the BER measurement mode.

Command

```
[[:SENSe]:BERT[:BASEband]:MODE <mode>
```

Parameter

mode	Measurement mode
SINGLE	Single mode
CONTInuous	Continuous mode
ENDLess	Endless mode

Details

Unusable unless the measurement screen is set for BER test.

If set to the endless mode, the other settings will be changed as follows:

- Measurement Bit 4294967295 bits

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To set the measurement mode to Single mode.

```
BERT:MODE SING
```

## [:SENSe]:BERT[:BASEband]:MODE?

Measurement Mode Query

## Function

Queries the measurement mode of BER measurement.

## Query

[:SENSe]:BERT[:BASEband]:MODE?

## Response

&lt;mode&gt;

## Parameter

<mode>	Measurement mode
SING	Single mode
CONT	Continuous mode
ENDL	Endless mode

## Details

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

## Example of Use

To query the measurement mode.

```
BERT:MODE?
> SING
```

**[[:SENSe]:BERT[:BASEband]:PRBS:PNFix:LENGth <bit>**

PN Fix Pattern Length

**Function**

Sets the length of PN Fix pattern for BER measurement.

**Command**

`[[:SENSe]:BERT[:BASEband]:PRBS:PNFix:LENGth <bit>`

**Parameter**

<bit>	Bit length of PN Fix pattern
Range	96 to 134217728 bits
Suffix Code	None

**Details**

Unusable unless the measurement screen is set for BER test.  
This command is valid only when Data Type is set to PN Fix.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

**Example of Use**

To set the length of the PN Fix pattern to 1,024 bits.  
`BERT:PRBS:PNF:LENG 1024`



## [:SENSe]:BERT[:BASEband]:PRBS:PNFix:LENGth?

PN Fix Pattern Length Query

## Function

Queries the length of PN Fix pattern for BER measurement.

## Query

[:SENSe]:BERT[:BASEband]:PRBS:PNFix:LENGth?

## Response

&lt;bit&gt;

## Parameter

<bit>	Bit length of PN Fix pattern
Range	96 to 134217728 bits
Suffix Code	None

## Details

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

## Example of Use

To query the length of PN Fix pattern.

BERT:PRBS:PNF:LENG?

&gt; 1024

## [[:SENSE]:BERT[:BASEband]:PRBS:PNFix:INITial <n>

PN Fix Pattern Initial Value

### Function

Sets the initial value of PN Fix pattern in binary, for BER measurement.

### Command

```
[[:SENSE]:BERT[:BASEband]:PRBS:PNFix:INITial <n>
```

### Parameter

<n>	PN Fix pattern initial value (binary)
Range	00...0 to 11...1 [9 bits] (for PN9 Fix) 00...0 to 11...1 [15 bits] (for PN15 Fix) 00...0 to 11...1 [20 bits] (for PN20 Fix) 00...0 to 11...1 [23 bits] (for PN23 Fix)

### Details

Unusable unless the measurement screen is set for BER test.  
This command is valid only when Data Type is set to PN Fix.  
Prefix “#B”, a character string indicating binary, to the parameter.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

### Example of Use

To set the PN9 Fix initial value to 101,010,101.  
BERT:PRBS:PNF:INIT #B101010101

## [:SENSe]:BERT[:BASEband]:PRBS:PNFix:INITial?

PN Fix Pattern Initial Value Query

## Function

Queries the initial value of PN Fix pattern in binary, for BER measurement.

## Query

[:SENSe]:BERT[:BASEband]:PRBS:PNFix:INITial?

## Response

&lt;n&gt;

## Parameter

<n>	PN Fix pattern initial value (binary)
Range	00...0 to 11...1 [9 bits] (for PN9 Fix)
	00...0 to 11...1 [15 bits] (for PN15 Fix)
	00...0 to 11...1 [20 bits] (for PN20 Fix)
	00...0 to 11...1 [23 bits] (for PN23 Fix)

## Details

Unusable unless the measurement screen is set for BER test. This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

## Example of Use

```
To query the initial value of PN9 Fix.
BERT:PRBS:PNF:INIT?
> 101010101
```

**[[:SENSe]:BERT[:BASEband]:PRBS:USER:SYNC:LENGth <bit>**

Length for Sync on User Pattern

Function

Sets the length of the partial bit string, which is used for synchronization judgment, in the user-defined pattern for BER measurement.

Command

[[:SENSe]:BERT[:BASEband]:PRBS:USER:SYNC:LENGth <n>

Parameter

<bit>                    Length of synchronization judgment bit string  
Range                    8 to 1024 bits

Details

Unusable unless the measurement screen is set for BER test.  
This command is valid only when Data Type is set to User Define.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To set the length of the synchronization judgment bit string in the user-defined pattern to 65 bits.  
BERT:PRBS:USER:SYNC:LENG 65

**[[:SENSe]:BERT[:BASEband]:PRBS:USER:SYNC:LENGth?**

Length for Sync on User Pattern Query

## Function

Queries the length of the partial bit string, which is used for synchronization judgment, in the user-defined pattern for BER measurement.

## Query

```
[[:SENSe]:BERT[:BASEband]:PRBS:USER:SYNC:LENGth?
```

## Response

```
<bit>
```

## Parameter

```
<bit>          Length of synchronization judgment bit string
      Range          8 to 1024 bits
```

## Details

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

## Example of Use

To query the length of the synchronization judgment bit string in the user-defined pattern.

```
BERT:PRBS:USER:SYNC:LENG?
> 65
```

## [ :SENSe ] :BERT [ :BASEband ] :SYNLoss :COUNT?

Sync Loss Count Query

### Function

Queries the number of Sync Loss (out of synchronization) errors having occurred during the BER measurement.

### Query

```
[ :SENSe ] :BERT [ :BASEband ] :SYNLoss :COUNT?
```

### Response

<count>

### Parameter

<count>	Number of Sync Loss errors occurred
Range	0 to 65535

### Details

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

### Example of Use

To query the number of Sync Loss errors.  
BERT :SYNL :COUN?  
> 500

## [:SENSe]:BERT[:BASEband]:RSYNc:COUNT:ACTion CLEAR|KEEP

Count Action at Sync Loss

## Function

Sets the action when Sync Loss occurs during BER measurement.

## Command

[:SENSe]:BERT[:BASEband]:RSYNc:COUNT:ACTion &lt;a&gt;

## Parameter

<a>	Action when Sync Loss occurs
CLEAR	Clears current count value
KEEP	Keeps current count value

## Details

Unusable unless the measurement screen is set for BER test.

Selects whether to clear or keep the count value when Sync Loss occurs during measurement.

This command is valid only when auto resynchronization is enabled.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

## Example of Use

To clear the count value when Sync Loss occurs.

```
BERT:RSYN:COUN:ACT CLE
```

## [[:SENSE]:BERT[:BASEband]:RSYNc:COUNT:ACTion?

Count Action at Sync Loss Query

Function

Queries the action when Sync Loss occurs during BER measurement.

Query

[[:SENSE]:BERT[:BASEband]:RSYNc:COUNT:ACTion?

Response

<a>

Parameter

<a>	Action against Sync Loss
CLE	Clears current count value.
KEEP	Keeps current count value.

Details

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To query the action when Sync Loss occurs.  
BERT:RSYN:COUN:ACT?  
> CLE



## [:SENSe]:BERT[:BASEband]:PRBS:USER:SYNC:START &lt;bit&gt;

Sync Start Position on User Pattern

## Function

Sets the start position of the partial bit string, which is used for synchronization judgment, in the user-defined pattern for BER measurement.

## Command

```
[:SENSe]:BERT[:BASEband]:PRBS:USER:SYNC:START <bit>
```

## Parameter

<code>&lt;bit&gt;</code>	Start position of synchronization judgment bit string
Range	1 to (Pattern Length) bits

## Details

Unusable unless the measurement screen is set for BER test.  
 This command is valid only when Data Type is set to User Define.  
 This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

## Example of Use

To set the 31st bit from the start of the user-defined pattern as the start position of synchronization judgment bit string.  
`BERT:PRBS:USER:SYNC:STAR 31`

## [[:SENSe]:BERT[:BASEband]:PRBS:USER:SYNC:START?

Sync Start Position on User Pattern Query

### Function

Queries the start position of the partial bit string, which is used for synchronization judgment, in the user-defined pattern for BER measurement.

### Query

```
[[:SENSe]:BERT[:BASEband]:PRBS:USER:SYNC:START?
```

### Response

```
<bit>
```

### Parameter

<bit>	Start position of synchronization judgment bit string
Range	1 to (Pattern Length) bits

### Details

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

### Example of Use

To query the start position of the partial bit string, which is used for synchronization judgment, in the user-defined pattern for BER measurement.

```
BERT:PRBS:USER:SYNC:STAR?  
> 31
```

## [:SENSe]:BERT[:BASEband]:PRBS:USER:PATtern?

User Pattern File Name Query

## Function

Queries the user-defined pattern name for BER measurement.

## Query

[:SENSe]:BERT[:BASEband]:PRBS:USER:PATtern?

## Response

&lt;pattern&gt;,&lt;drive&gt;

## Parameter

<pattern> Character string within 32 characters, obtained by removing the extension (bpn) from the loaded user-defined pattern file name.

<drive> The name of the drive from which the user-defined pattern file is loaded

## Details

Unusable unless the measurement screen is set for BER test.

\*\*\* is returned if a user-defined pattern is not loaded.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

## Example of Use

To query the user-defined pattern name.

BERT:PRBS:USER:PATT?

&gt;\*\*\*

## [ :SENSe]:BERT[:BASEband]:PRBS:USER:LENGth?

User Pattern Length Query

### Function

Queries the bit length of the user-defined pattern for BER measurement.

### Query

```
[ :SENSe]:BERT[:BASEband]:PRBS:USER:LENGth?
```

### Response

```
<bit>
```

### Parameter

<bit>	Bit length of user-defined pattern
Range	8 to 1024 bits (for MS269xA) 8 to 4096 bits (for MS2830A)

### Details

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

### Example of Use

To query the bit length of the user-defined pattern.

```
BERT:PRBS:USER:LENG?
```

```
>1024
```

---

**:INITiate[:IMMediate]**

Start Measurement

Function

Starts the BER measurement.

Command

`:INITiate[:IMMediate]`

Details

When executing this command for BER measurement function, switch the application to BER Test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

**Note:**

The BER measurement is also available when the signal generator application is active.

For the above command operation for other than BER measurement function, see the operation manual of each application.

Example of Use

To start the BER measurement.

`INIT`

## :ABORt

Stop Measurement

Function

Stops the BER measurement.

Command

:ABORt

Details

When executing this command for BER measurement function, switch the application to BER Test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

**Note:**

The BER measurement is also available when the signal generator application is active.

For the above command operation for other than BER measurement function, see the operation manual of each application.

Example of Use

To stop the BER measurement.

```
ABOR
```

# *Chapter 5 Native Device Message List*

---

This section describes Native remote control commands for executing MS269x Series and/or MS2830A functions (hereinafter, referred to as “this application”) using a list organized by function. Refer to Chapter 6 “Device Message Details” for detailed specifications for each command.

5.1	Application Common Device Messages .....	5-2
5.2	Config Function Device Messages .....	5-7
5.3	Power Meter Device Messages .....	5-11
5.4	BER Measurement Settings .....	5-12

## 5.1 Application Common Device Messages

Application common device messages available in this application are shown in Table 5.1-1.

**Table 5.1-1 Application common device messages**

Function	Command	Query	Response	Remarks
Application Switch/Status	SYS apl,window	SYS? apl	status,window	apl: Application name = SIGANA   SPECT   CONFIG   ... window: Window status = ACT   INACT   MIN   NON status: Application execution status = CURRENT   IDLE   RUN   UNLOAD
System Re-boot	REBOOT	---	---	
Preset Current Application	PRE	---	---	
	INI	---	---	
LCD Power	DISPLAY on_off	DISPLAY?	on_off	
Hard Copy	PRINT file,device	---	---	file: File name device: Drive name = A   B   D   E   ...
	PRINT	---	---	
Hard Copy Mode	PMOD format	PMOD?	format	format: File format = BMP   PNG
	PMOD	PMOD?	BMP	
Save Parameter Setting as file	SVPRM file,device	---	---	file: File name device: Drive name = A   B   D   E   ...
	SVPRM	---	---	



**Table 5.1-1 Application common device messages (Continued)**

Function	Command	Query	Response	Remarks
Recall Parameter Setting file	RCPRM file, device, apl	---	---	file: File name
	RCPRM file, device	---	---	device: Drive name = A   B   D   E   ... apl: Target application = ALL   CURR
Error Message Display Mode	REMDISP mode	REMDISP?	mode	mode: Display mode = NORMAL   REMAIN   REMA   REMAIN_LAST
Calibration	CAL mode	---	---	mode: Calibration mode = ALL   LEVEL   LOLEAK_SUPPRESS   BAND   EXTRABAND   EXTRABAND_CLEAR Asynchronous command
All Calibration Temperature Query	---	CAL:TEMP:ALL?	temperature	
Bandwidth Calibration Temperature Query	---	CAL:TEMP:BAND?	temperature	
Level Calibration Temperature Query	---	CAL:TEMP:LEVEL?	temperature	
Local Leak Calibration Temperature Query	---	CAL:TEMP:LOLeak?	temperature	
All Calibration Time Query	---	CAL:TIME:ALL?	time	
Bandwidth Calibration Time Query	---	CAL:TIME:BAND?	time	
Level Calibration Time Query	---	CAL:TIME:LEV?	time	
Local Leak Calibration Time Query	---	CAL:TIME:LOV?	time	
Reference Clock Status Query	---	ROSC:STAT?	status	
Language mode switching	SYST:LANG SCPI	SYST:LANG?	mode	mode : Language mode = SCPI   NAT
	SYST:LANG NAT			
Result Mode	SYST:RES:MODE A	SYST:RES:MODE?	mode	mode : Result Mode = A   B
	SYST:RES:MODE B			
Reference Signal Query	---	ROSC:SOUR?	source	source : Frequency reference signal source = INT   INTU   EXT   EXTU

Table 5.1-1 Application common device messages (Continued)

Function	Command	Query	Response	Remarks
Attenuation Mode	POW:ATT:MODE <mode>	POW:ATT:MODE?	mode	mode : Attenuator mode = MECH   COMB
Correction (On/Off)	CORR switch_com	CORR?	switch_res	switch_com : = ON OFF 1 0
Correction Make Up	CORR:MAKE freq,real	---	---	
Correction Make Up All Clear	CORR:MAKE:CLE	---	---	
Save Correction File	MMEM:STOR:CORR filename,device	---	---	
Recall Correction File	MMEM:LOAD:CORR filename,device	---	---	
Correction Data Read	---	CORR:DATA?	number,freq_1,real_1 ,freq_2,real_2,...	number : Number of data freq : Frequency to correct real : Level to correct
Correction Make Up	CORD n,freq,real	---	---	
Correction Make Up All Clear	CORC	---	---	
Low Phase Noise (On/Off)	FREQ:SYNT:LPH switch_n	FREQ:SYNT:LPH?	on_off	switch_n : = ON OFF 1 0 on_off: = 1 0
System Error Query	---	SYST:ERR?	Error/event_number, Error/event_descript ion	
Software License Install Command	SWKEYINST fname,drive	---	---	fname Target file name drive Drive name where the license file is stored
Software License Name Query	---	SWKEYNAME? index	license	license License name index Index number

Table 5.1-1 Application common device messages (Continued)

Function	Command	Query	Response	Remarks
Extended END Event Status Enable Register (Signal Generator/BER function)	ESE0 n	ESE0?	byte	byte = Status bit bit7: Not used bit6: Not used bit5: Not used bit4: Not used
Extended END Event Status Register (Signal Generator/BER function)	---	ESR0?	byte	bit3: Not used bit2: Not used bit1: BER bit0: Signal Generator
Extended ERROR Event Status Enable Register (Signal Generator/BER function)	ESE1 n	ESE1?	byte	byte = Status bit bit7: Not used bit6: Not used bit5: Not used
Extended ERROR Event Status Register (Signal Generator/BER function)	---	ESR1?	byte	bit4: Not used bit3: Not used bit2: Not used bit1: BER bit0: Signal Generator

Table 5.1-1 Application common device messages (Continued)

Function	Command	Query	Response	Remarks
END Event Status Enable Register (BER Measurement function)	ESEEND n	ESEEND?	byte	byte = Status bit bit7 : Measurement end bit6 : Not used bit5 : Not used bit4 : Not used
END Event Status Register (BER Measurement function)	---	ESREND?	byte	bit3 : Not used bit2 : Not used bit1 : Measurement interruption bit0 : Measurement complete
ERROR Event Status Enable Register (BER Measurement function)	ESEERR n	ESEERR?	byte	byte = Status bit bit7 : Not used bit6 : Not used bit5 : Not used bit4 : Not used
ERROR Event Status Register (BER Measurement function)	---	ESRERR?	byte	bit3 : Bit count overflow bit2 : Syncloss count overflow bit1 : Measurement stop with synchronization incompletion bit0 : Measurement start failure

## 5.2 Config Function Device Messages

Device messages for setting Config function are shown in Table 5.2-1.

**Table 5.2-1 Config function setting messages**

Function	Command	Query	Response	Remarks
Load Application	LOAD apl	---	---	apl: Application name = SIGANA   SPECT   ...
Unload Application	UNLOAD apl	---	---	
Delimiter (Terminator)	TRM code	TRM?	code	code: Termination code = LF   CRLF   NONE
	DELM code	DELM?	code	
Sound On/Off	SOUND on_off	SOUND?	on_off	
Screen Hard Copy Color	COLOR flag	COLOR?	flag	flag: Color image setting = NORMAL   REVERSE   MONOCHROME   MREVERSE
Frequency Reference	FREQREF source	FREQREF?	source	Source: Selection method = INT   AUTO

Table 5.2-1 Config function setting messages (Continued)

Function	Command	Query	Response	Remarks
Move Parameter File (HDD to Device)	MVRCDAT file,device	---	---	file: Target filename device: Drive name = A   B   D   E   ...
Copy Parameter File (Device to HDD)	CPRCDAT file,device	---	---	
Delete Parameter File	DELRCDAT file,device	---	---	
Protect Parameter File	PRTRCDAT file,on_off,device	PRTRCDAT? file,device	on_off	
Parameter File List Query	---	LISTRCDAT? device	number,file1,file2,...	
Move Hard Copy File (HDD to Device)	MVCOPYDAT file,device	---	---	
Copy Hard Copy File (Device to HDD)	CPCOPYDAT file,device	---	---	
Delete Hard Copy File	DELCOPYDAT file,device	---	---	
Protect Hard Copy File	PRTCOPYDAT file,on_off,device	PRTCOPYDAT? file,device	on_off	
Hard Copy File List Query	---	LISTCOPYDAT? device	number,file1,file2,...	

Table 5.2-1 Config function setting messages (Continued)

Function	Command	Query	Response	Remarks
Move Trace File (HDD to Device)	MVTRCEDAT file,apl,device	---	---	file: Target filename device: Drive name = A   B   D   E   ... apl: Application name = SIGANA   SPECT   ...
Copy Trace File (Device to HDD)	CPTRCEDAT file,apl,device	---	---	
Delete Trace File	DELTRCEDAT file,apl,device	---	---	
Protect Trace File	PRTRCEDAT file,on_off,apl,device	PRTRCEDAT? file,apl,device	on_off	
Trace File List Query	---	LISTTRCEDAT? apl,device	number,file1,file2,.. ..	
Move Digitize File (HDD to Device)	MVDGTZDAT file,apl,device	---	---	
Copy Digitize File (Device to HDD)	CPDGTZDAT file,apl,device	---	---	
Delete Digitize File	DELDGTZDAT file,apl,device	---	---	
Protect Digitize File	PRTDGTZDAT file,on_off,apl,device	PRTDGTZDAT? file,apl,device	on_off	
Digitize File List Query	---	LISTDGTZDAT? apl,device	number,file1,file2,.. ..	

Table 5.2-1 Config function setting messages (Continued)

Function	Command	Query	Response	Remarks
Move System Information File (HDD to Device)	MVSYINFO file,device	---	---	file: Target filename device: Drive name = A   B   D   E   ... apl: Application name = SIGANA   SPECT   ...
Copy System Information File (Device to HDD)	CPSYINFO file,device	---	---	
Delete System Information File	DELSYINFO file,device	---	---	
Protect System Information File	PRTSYINFO file,on_off,device	PRTSYINFO? file,device	on_off	
System Information File List Query	---	LISTSYINFO? device	number,file1,file2,...	
System Information Query	---	SYINFO? info	string	info: Information type = MODEL   TYPE   SERIAL   RTIME
Running Time Query	---	TMCNT?	minutes	minutes: Running time
Option Information Query	---	OPTINFO? ALL HARD SOFT	ALL: num1,sw1,model1,num2,sw2, model2,... HARD: num1,sw1,model1,num2,sw2, model2,... SOFT: num1,type1,sw1,model1,ty pe2,num2,sw2,model2,...	num Option number (000 to 999) sw Switch (On/Off) model Option name type Application name
Software Version Query	---	SOFTVER? apl	version	apl: Application name = SIGANA   SPECT   ...
FPGA Version Query	---	FPGAVER? hardware	version	hardware: Hardware version: Version
Hardware Revision Query	---	HARDREV? hardware	revision	hardware: Hardware revision: Revision
RF Temperature Query	---	SYST:TEMP:RF?	temperature	temperature: RF unit temperature
External Reference Frequency	ROSC:EXT:FREQ freq	ROSC:EXT:FREQ?	freq	



## 5.3 Power Meter Device Messages

Device messages for setting Power Meter are shown in Table 5.3-1.

**Table 5.3-1 Power Meter setting messages**

Function	Command	Query	Response	Remarks
Center Frequency	CNF freq	CNF?	freq	
Average Power Query	---	POWER? DBM WATT DB	real	
Zero Set	ZAJ	---	---	
	ZEROSET	---	---	
Reference Level Offset Mode	ROFFSETMD on_off	ROFFSETMD?	on_off	
Level Offset	RFLVLOFS rel_ampl	RFLVLOFS?	rel_ampl	
Reference Level Offset Value	ROFFSET level	ROFFSET?	level	
Reference Level Set	SETREL	---	---	

## 5.4 BER Measurement Settings

Device messages for setting the bit error rate (BER) measurement function are shown in Table 5.4-1.

**Table 5.4-1 BER measurement setting messages**

Function	Command	Query	Response	Remarks
Measurement Mode	MODE mode	MODE?	mode	mode: Measurement mode = SINGLE   CONTINUOUS   ENDLESS
Start Measurement	START	---	---	
Stop Measurement	STOP	---	---	
Start Measurement by Single Mode	SNGLS	---	---	
Start Measurement by Continuous Mode	CONTS	---	---	
Start Measurement by Endless Mode	ENDLS	---	---	
Count Clear	COUNTCLR	---	---	
Count Mode	COUNTMODE mode	COUNTMODE?	mode	mode: Measurement end condition = DATABIT   ERRORBIT
Measurement Bit	BERBIT bit	BERBIT?	bit	bit: Number of measurement bits
Measurement Error Bit	ERRORBIT bit	ERRORBIT?	bit	bit: Number of measurement error bits
Data Polarity	Data polarity	DATA?	polarity	polarity: Polarity = POS   NEG
Clock Polarity	CLK polarity	CLK?	polarity	polarity: Polarity = RISE   FALL
Enable Polarity	ENBL polarity	ENBL?	polarity	polarity: Polarity = HIGH   LOW   DISABLE

Table 5.4-1 BER measurement setting messages (Cont'd)

Function	Command	Query	Response	Remarks
Data Pattern Type	TYPE pattern	TYPE?	pattern	pattern: Data pattern type = PN9   PN11   PN15   PN20   PN23   ALLO   ALL1   ALT   PN9FIX   PN11FIX   PN15FIX   PN20FIX   PN23FIX   USER
PN Fix Pattern Initial Value	PNINITIAL n	PNINITIAL?	n	
PN Fix Pattern Length	PNFIXLENG bit	PNFIXLENG?	bit	
Sync Start Position on User Pattern	SYNCSTARTPOS bit	SYNCSTARTPOS?	bit	
Length for Sync on User Pattern	SYNCLENG bit	SYNCLENG?	bit	
Drive to load User Pattern	LOADMEDIA drive	LOADMEDIA?	drive	drive: Drive letter
User Pattern File List	---	USERPATLST?	s1,s2,s3,...,s100	s*: Pattern file name
Load User Pattern	LOADUSERPAT pattern	---	---	pattern: Pattern file name
User Pattern File Name Query	---	USERPAT?	pattern,drive	Pattern: Pattern file name drive: Drive
User Pattern Length Query	---	USERPATLENG?	bit	
Auto Re-sync	AUTORESINC on_off	AUTORESINC?	on_off	
Sync Loss Threshold	SYNCLOSSTHLD n,a	SYNCLOSSTHLD?	n,a	n: Numerator of threshold (bit) a: Denominator of threshold (bit) = 500   5000   50000
Count Action at Sync Loss	SYNCLOSSACT action	SYNCLOSSACT0?	action	action: Action at Sync Loss = COUNT_CLEAR   COUNT_KEEP

Table 5.4-1 BER measurement setting messages (Cont'd)

Function	Command	Query	Response	Remarks
Result and Status Query	---	RESULT? EP	per, countbit, errorbit, status, error	per : Error rate (%) exp : Error rate (exponent) countbit : Number of count bits errorbit : Number of error bits syncloss : Number of generated Sync Loss status : Measurement status error : Error status
		RESULT? ER	exp, countbit, errorbit, status, error	
		RESULT? EP_WSYNCLOSS	per, countbit, errorbit, syncloss, status, error	
		RESULT? ER_WSYNCLOSS	exp, countbit, errorbit, syncloss, status, error	
Error Rate Query	---	BER? EP	per	per: Error rate (%)
		BER? ER	exp	exp: Error rate (exponent)
Count Bit Query	---	RCVBIT?	bit	bit: Number of count bits
Error Bit Query	---	BITERR?	bit	bit: Number of error bits
Sync Loss Count Query	---	SYNCLOSS?	count	Count: Number of generated Sync Loss
Status Query	---	STATUS?	status	status: Measurement status = EXEC   SYNCHRONIZING   STOP   ERROR
Stop Status Query	---	STOPSTATUS?	status	status: Measurement stop status = EXEC   SYNCHRONIZING   STOP_NORMAL   STOP_OVERFLOW_DATACOUNT   STOP_OVERFLOW_SYNCLOSS   STOP_ABNORMAL_COUNT
Error Query	---	MEASERROR?	status	status: Error information = NONE   SYNCLOSS   CLOCKERROR   ENABLEERROR

## Chapter 6 Native Device Message Details

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This chapter describes detailed specifications on Native remote control commands for executing MS2690A/MS2691A/MS2692A and/or MS2830A functions in alphabetical order.

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## AUTORESYNC/AUTORESYNC?

Auto Re-sync

Function

Enables (ON) or disables (OFF) the automatic resynchronization for BER measurement.

Command

AUTORESYNC on\_off

Query

AUTORESYNC?

Response

on\_off

Parameter

on_off	Automatic resynchronization ON/OFF
ON 1	Enables automatic resynchronization
OFF 0	Disables automatic resynchronization

Detail

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To enable the automatic resynchronization.  
AUTORESYNC ON



## BER?

Bit Error Rate Query

Function

This command returns the bit error rate of the BER measurement function.

Query

BER? a

Response

p  
Where a is EP (in percentage)  
e  
Where a is ER (in exponents)

Parameter

a	Bit error rate format
EP	The bit rate is returned in percentage.
ER	The bit rate is returned in exponent format.
p	
Range	0.000 to 100.000%
e	
Range	0.00E+00 to 1.00E+02

Detail

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To query the bit error rate of the BER measurement function in percentage.  
BER? EP  
> 5.000

## BERBIT/BERBIT?

Measurement Bit

Function

Sets the number of measurement bits for BER measurement.

Command

```
BERBIT bit
```

Query

```
BERBIT?
```

Response

```
bit  
Integer in bit units, unitless
```

Parameter

```
bit          Number of measurement bits  
Range       1 to 4 Gbits  
            1 to 4294 Mbits  
            1 to 4294967 Kbits  
            1000 to 4294967295 bits  
Suffix Code GBIT,MBIT,KBIT,BIT  
            BIT is applied when omitted.
```

Detail

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

**Note:**

This function is not available when the measurement mode is set to Endless or the count mode is set to EBIT.

Example of Use

To set the number of measurement bits to 10,000 bits.  
BERBIT 10000BIT

## BITERR?

Error Bit Query

Function

Queries the number of error bits in the BER measurement.

Query

BITERR?

Response

bit	Number of error bits
Range	0 to 2 <sup>32</sup> bits

Detail

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To query the number of error bits.  
BITERR?  
> 0

## CAL

Calibration

Function

Executes calibration.

Command

CAL mode

Parameter

mode	Calibration mode
ALL	To execute all calibrations except EXTRABAND
LEVEL	To execute Level CAL
LOLEAK_SUPPRESS	To execute local leak suppression
BAND	To execute CAL within the frequency band
EXTRABAND	Executes analysis bandwidth calibration within the current frequency.
EXTRABAND_CLEAR	Clears the correction value of Extra Band Cal.

Example of Use

To execute all calibrations  
CAL ALL

## CAL:TEMP:ALL?

All Calibration Temperature Query

### Function

This command queries the temperature when the last time all the calibrations were performed.

### Query

CAL:TEMP:ALL?

### Response

temperature

### Parameter

temperature

Temperature of the RF unit at the time of the calibration

Resolution

0.01°C

No suffix code. Returns a value in Celsius (°C) units.

### Details

This command is available only for MS2830A.

This can be used as a criterion for whether to execute calibration.

The standard temperature of the RF unit is about 50°C during operation at normal temperature.

### Example of Use

To query the temperature when the last time all the calibrations were performed

```
CAL:TEMP:ALL?
```

```
> 50.00
```

## CAL:TEMP:BAND?

Bandwidth Calibration Temperature Query

### Function

This command queries the temperature and time at the last Bandwidth Calibration.

### Query

CAL:TEMP:BAND?

### Response

temperature

### Parameter

temperature

Temperature of the RF unit at the time of the calibration

Resolution

0.01°C

No suffix code. Returns a value in Celsius (°C) units.

### Details

This command is available only for MS2830A.

This can be used as a criterion for whether to execute calibration.

The standard temperature of the RF unit is about 50°C during operation at normal temperature.

### Example of Use

To query the temperature at the last Bandwidth Calibration

CAL:TEMP:BAND?

> 50.00

## CAL:TEMP:LEV?

Level Calibration Temperature Query

### Function

This command queries the temperature at the last Level Calibration.

### Query

CAL:TEMP:LEV?

### Response

temperature

### Parameter

temperature

Temperature of the RF unit at the time of the calibration

Resolution

0.01 °C

No suffix code. Returns a value in Celsius (°C) units.

### Details

This command is available only for MS2830A.

This can be used as a criterion for whether to execute calibration.

The standard temperature of the RF unit is about 50°C during operation at normal temperature.

### Example of Use

To query the temperature at the time of the last Level Calibration

```
CAL:TEMP:LEV?
```

```
> 50.00
```

## CAL:TEMP:LOL?

Local Leak Calibration Temperature Query

### Function

This command queries the temperature at the last Local Leak Calibration.

### Query

CAL:TEMP:LOL?

### Response

temperature

### Parameter

temperature

Temperature of the RF unit at the time of the calibration

Resolution

0.01°C

No suffix code. Returns a value in Celsius (°C) units.

### Details

This command is available only for MS2830A.

This can be used as a criterion for whether to execute calibration.

The standard temperature of the RF unit is about 50°C during operation at normal temperature.

### Example of Use

To query the temperature at the last Local Leak Calibration

CAL:TEMP:LOL?

> 50.00

## CAL:TIME:ALL?

All Calibration Time Query

### Function

This command queries the time elapsed since the last All Calibration Command.

### Query

CAL:TIME:ALL?

### Response

time

### Parameter

time                      Time elapsed since calibration was performed  
No suffix code. Value is returned in s units.

### Details

This command is available only for MS2830A.  
This can be used as a criterion for whether to execute calibration.

### Example of Use

To query the time elapsed since the last time all the calibrations were performed  
CAL:TIME:ALL?  
> 100



## CAL:TIME:BAND?

Bandwidth Calibration Time Query

### Function

This command queries the time elapsed since the last Bandwidth Calibration.

### Query

```
CAL:TIME:BAND?
```

### Response

```
time
```

### Parameter

time                      Time elapsed since calibration was performed  
No suffix code. Value is returned in s units.

### Details

This command is available only for MS2830A.  
This can be used as a criterion for whether to execute calibration.

### Example of Use

```
To query the time elapsed since the last Bandwidth Calibration  
CAL:TIME:BAND?  
> 100
```

## CAL:TIME:LEV?

Level Calibration Time Query

Function

This command queries the time elapsed since the last Level Calibration.

Query

```
CAL:TIME:LEV?
```

Response

```
time
```

Parameter

```
time
```

Time elapsed since calibration was performed  
No suffix code. Value is returned in s units.

Details

This command is available only for MS2830A.

This can be used as a criterion for whether to execute calibration.

Example of Use

To query the time elapsed since the last Level Calibration

```
CAL:TIME:LEV?
```

```
> 100
```

## CAL:TIME:LOL?

Local Leak Calibration Time Query

### Function

This command queries the time elapsed since the last Local Leak calibration.

### Query

```
CAL:TIME:LOL?
```

### Response

```
time
```

### Parameter

time                      Time elapsed since calibration was performed  
No suffix code. Value is returned in s units.

### Details

This command is available only for MS2830A.  
This can be used as a criterion for whether to execute calibration.

### Example of Use

```
To query the time elapsed since the last Local Leak Calibration  
CAL:TIME:LOL?  
> 100
```

## CLK/CLK?

Clock Polarity

Function

Sets the polarity of the clock signal for BER measurement.

Command

CLK polarity

Query

CLK?

Response

polarity

Parameter

polarity

Clock signal polarity

RISE

Data is detected at the rising edge

FALL

Data is detected at the falling edge

Detail

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To set the clock signal polarity to RISE.

CLK RISE

## CNF/CNF?

Center Frequency

Function

This command sets the measurement center frequency for the power sensor. The setting range and resolution are determined by that of USB power sensor.

Command

CNF freq

Query

CNF?

Response

freq

No suffix code. Value is returned in Hz units.

Parameter

freq	Center Frequency
Range	Depends on the model of the Power Sensor.
Resolution	Depends on the model of the Power Sensor.
Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ Hz when omitted.

Details

When the display is other than Power Meter, refer to the “Spectrum Analyzer Function Remote Control” or “Signal Analyzer Function Remote Control”.

Example of Use

```
To set the center frequency to 2.5 GHz.
CNF 2.5GHZ
CNF?
> 2500000000
```

## COLOR/COLOR?

Screen Hard Copy Color

Function

Sets the screen hardcopy color image.

Command

COLOR flag

Query

COLOR?

Response

flag

Parameter

flag	Color image setting
NORMAL	Displays color image (Default)
REVERSE	Reverses color image
MONOCHROME	Converts color image to gray scale
MREVERSE	Converts color image to reverse gray scale

Example of Use

To reverse the screen hardcopy color image  
COLOR REVERSE

## CONTS

Start Measurement by Continuous Mode

Function

Starts the BER measurement in Continuous mode.

Command

CONTS

Detail

When executing this command for BER measurement function, switch the application to BER Test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed

**Note:**

The BER measurement is also available when the signal generator application is active.

For the above command operation for other than BER measurement function, see the operation manual of each application.

Example of Use

To start the BER measurement in Continuous mode.

CONTS

## CORC

Correction Make Up All Clear

Function

This command initializes the data on the level frequency correction table.

This is the same command as CORR:MAKE:CLE

Command

CORC

Example of Use

To initialize the data on the level frequency correction table

CORC

## CORD

Correction Make Up

### Function

This command adds some data to the level frequency correction table.  
This is the same function as `CORR:MAKE`

### Command

`CORD n, freq, real`

### Parameter

<code>n</code>	Table Number (Parameter provided for backward compatibility. Setting will be ignored.)
Range	0 to 149
Resolution	1
Suffix code	None
<code>freq</code>	Frequency to be corrected
Range	-1 GHz to 400 GHz
Resolution	1 Hz
Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ
<code>real</code>	Correction level
Range	-100 to 100 dB
Resolution	0.001 dB
Suffix code	DB

### Details

Up to 4096 data can be set. The data is not initialized by sending the command.

The data is not initialized by sending the command. If you add the data continuously, set Correction to Off. You can then perform the setting smoothly.

### Example of Use

To add the data to the level frequency correction table  
`CORD 0, 100MHZ, 3DB`



## CORR/CORR?

Correction (On/Off)

Function

This command sets whether to perform the level frequency correction processing.

Command

CORR switch\_com

Query

CORR?

Response

switch\_res

Parameter

switch_com	Correction processing On/Off
ON 1	Sets Correction processing On.
OFF 0	Sets Correction processing Off. (Default)
Switch_res	Correction processing On/Off
1	Correction processing On
0	Correction processing Off (Default)

Example of Use

To set the level frequency correction processing to On  
 CORR ON  
 CORR?  
 > 1

## CORR:DATA?

Correction Data Read

### Function

This command queries the level frequency correction table data of the signal analyzer.

### Query

CORR:DATA?

### Response

number, freq\_1, real\_1, freq\_2, real\_2, ...

### Parameter

number	Number of data
Range	0 to 4096.
freq	Frequency to be corrected
Range	-1 GHz to 400 GHz
Resolution	1 Hz
Suffix code	None. Value is returned in Hz units.
real	Correction level
Range	-100 to 100 dB
Resolution	0.001 dB
Suffix code	None. Value is returned in dB units.

### Example of Use

To query the level frequency correction table data of the signal analyzer.

```
CORR:DATA?  
> 1,1000000,10.000
```

## CORR:MAKE

Correction Make Up

### Function

This command adds some data to the level frequency correction table.

### Command

`CORR:MAKE freq,real`

### Parameter

<code>freq</code>	Frequency to be corrected
Range	–1 GHz to 400 GHz
Resolution	1 Hz
Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ
Default	0 Hz
<code>real</code>	Correction level
Range	–100 to +100 dB
Resolution	0.001 dB
Suffix code	DB
Default	0 dB

### Details

Up to 4096 data can be set. The data is not initialized by sending the command.

The data is not initialized by sending the command. If you add the data continuously, set Correction to Off. You can then perform the setting smoothly.

### Example of Use

To add the data to the level frequency correction table  
`CORR:MAKE 100MHZ,3DB`

## CORR:MAKE:CLE

Correction Make Up All Clear

### Function

This command initializes the data on the level frequency correction table.

### Command

CORR:MAKE:CLE

### Example of Use

To initialize the data on the level frequency correction table

CORR:MAKE:CLE

## COUNTCLR

Count Clear

### Function

Resets the BER measurement bit count to 0.

### Command

COUNTCLR

### Details

Unusable unless the measurement screen is set for BER test.

This command is valid only when the measurement mode is Single or Endless.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

### Example of Use

To reset the bit count to 0.

CONTCLR

## COUNTMODE/COUNTMODE?

Count Mode

Function

Sets the BER measurement end condition.

Command

COUNTMODE mode

Query

COUNTMODE?

Response

mode

Parameter

mode

BER measurement end condition

    DATABIT

BER measurement ends when the specified number of count bits is reached.

    ERRORBIT

BER measurement ends when the specified number of error bits is reached.

Detail

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To end the BER measurement when the specified number of count bits is reached.

COUNTMODE DATABIT

## CPCOPYDAT

Copy Hard Copy file (Device to HDD)

### Function

Copies a screen hardcopy file from the specified storage device to the internal hard disk.

### Command

```
CPCOPYDAT file,device
```

### Parameter

file	Target filename Character string within 32 characters enclosed by double quotes (“”) or single quotes (‘ ’) (excluding extension). The following characters cannot be used: \ / : * ? “ ” \ ‘ < >
device	Drive name A, B, E, F, ...

### Details

- The format of the target file is switched according to the File Type Setting.
- If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

### Example of Use

To copy the screen hardcopy file “bitmap” from drive E to the internal hard disk

```
CPCOPYDAT "bitmap",e
```

## CPDGTZDAT

Copy Digitize File (Device to HDD)

### Function

Copies a digitized file from the specified storage device to the internal hard disk.

### Command

```
CPDGTZDAT file,apl,device
```

### Parameter

file	Target filename Character string within 128 characters enclosed by double quotes (“”) or single quotes (‘ ’) (excluding extension). The following characters cannot be used: \ / : * ? “ ” \ ‘ < >
apl SIGANA	Target application name Signal Analyzer
device	Drive name A, B, E, F, ...

### Details

If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

### Example of Use

To copy the digitized file “digitize” from drive E to the Signal Analyzer folder in the internal hard disk

```
CPDGTZDAT "digitize",SIGANA,e
```

## CPRCDAT

Copy Parameter File (Device to HDD)

### Function

Copies a parameter file from the specified storage device to the internal hard disk.

### Command

```
CPRCDAT file,device
```

### Parameter

file	Target filename Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension). The following characters cannot be used: \ / : * ? “ ” \ ‘ < >
device	Drive name A, B, E, F, ...

### Details

If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

### Example of Use

To copy the parameter file “parameter” from drive E to the internal hard disk  

```
CPRCDAT “parameter”,e
```



## CPSYSINFO

Copy System Information File (Device to HDD)

### Function

Copies a system information file from the specified storage device to the internal hard disk.

### Command

```
CPSYSINFO file,device
```

### Parameter

file	Target filename Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension). The following characters cannot be used: \ / : * ? “ ” \ ‘ < >
device	Drive name A, B, E, F, ...

### Details

If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

### Example of Use

To copy the system information file “SystemInfo” from drive E to the internal hard disk

```
CPSYSINFO "SystemInfo",e
```

## CPTRCEDAT

Copy Trace Data (Device to HDD)

### Function

Copies a trace file from the specified storage device to the internal hard disk.

### Command

```
CPTRCEDAT file,apl,device
```

### Parameter

file	Target filename Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension). The following characters cannot be used: \ / : * ? “ ” \ ‘ < >
apl	Target application name
SPECT	Spectrum Analyzer
SIGANA	Signal Analyzer
PNOISE	Phase Noise
device	Drive name A, B, E, F, ...

### Details

If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

### Example of Use

To copy the "trace" trace file of the Spectrum Analyzer from drive E to the internal hard disk

```
CPTRCEDAT "trace",SPECT,e
```

## DATA/DATA?

Data Polarity

Function

Sets the logic (positive or negative) of the Data signal for BER measurement.

Command

DATA polarity

Query

DATA?

Response

polarity

Parameter

polarity	Data signal logic
POS	Positive logic
NEG	Negative logic

Detail

Unusable unless the measurement screen is set for BER test.  
 This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To set the Data signal logic to positive.  
 DATA POS

## DELCOPYDAT

Delete Hard Copy File

### Function

This command deletes a screen hardcopy file saved in the specified drive.

### Command

```
DELCOPYDAT file,device
```

### Parameter

file	<b>Target filename</b> Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? “ ” \ ‘ < >
device	<b>Drive name</b> A, B, D, E, F, ...

### Example of Use

To delete the screen hardcopy file “Copy” saved in drive E  
DELCOPYDAT “Copy”,e

**DELDGTZDAT**

Delete Digitize File

## Function

Deletes a digitized file saved in the specified device.

## Command

DELDGTZDAT file,apl,device

## Parameter

file	Target filename Character string within 128 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? “ ” \ ‘ < >
apl SIGANA	Target application name Signal Analyzer
device	Drive name A, B, D, E, F, ...

## Example of Use

To delete the digitized file “Digitize” saved in drive E  
 DELDGTZDAT “Digitize”,SIGANA,e

## DELM/DELM?

Delimiter (Terminator)

Function

Sets a delimiter (termination code) for remote control.

Command

DELM code

Query

DELM?

Response

code

Parameter

code	Delimiter type
LF	LF
CRLF	CR/LF (Default)
NONE	None (EOI only)

Example of Use

To set the delimiter to CR/LF  
DELM CRLF

## DELRCDAT

Delete Parameter File

### Function

Deletes a parameter file saved in the specified device.

### Command

```
DELRCDAT file,device
```

### Parameter

file	<b>Target filename</b> Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? “ ” \ ‘ < >
device	<b>Drive name</b> A, B, D, E, F, ...

### Example of Use

To delete the parameter file “Parameter” saved in drive E  
DELRCDAT “Parameter”,e

## DELSYSINFO

Delete System Information File

### Function

Deletes a system information file saved in the specified device.

### Command

```
DELSYSINFO file,device
```

### Parameter

file	<b>Target filename</b> Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? “ ” \ ‘ < >
device	<b>Drive name</b> A, B, D, E, F, ...

### Example of Use

To delete the system information file “SystemInfo” saved in drive E  
DELSYSINFO “SystemInfo”,e



## DELTRCEDAT

Delete Trace File

### Function

This command deletes the trace file saved in the specified drive.

### Command

```
DELTRCEDAT file,apl,device
```

### Parameter

file	Target filename Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? “ ” \ ‘ < >
apl	Target application name
SPECT	Spectrum Analyzer
SIGANA	Signal Analyzer
PNOISE	Phase Noise
device	Drive name A, B, D, E, F, ...

### Example of Use

To delete the "Trace" trace file of the Spectrum Analyzer saved in drive E  
DELTRCEDAT "Trace",SPECT,e

## DISPLAY/DISPLAY?

LCD Power

Function

This command turns the LCD backlight ON/OFF.

Command

```
DISPLAY on_off
```

Query

```
DISPLAY?
```

ResponseResponse

```
on_off
```

Parameter

on_off	LCD backlight status
ON	On (Default)
OFF	Off

Details

When the **Local** key is pressed, the LCD backlight automatically turns ON.

Example of Use

To turn the LCD backlight OFF  
DISPLAY OFF

## ENBL/ENBL?

Enable Polarity

Function

Sets or disables the polarity of the Enable signal for BER measurement.

Command

ENBL polarity

Query

ENBL?

Response

polarity

Parameter

polarity	Enable signal polarity
HIGH	Positive logic (high active)
LOW	Negative logic (low active)
DISABLE	Disables the signal polarity

Detail

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To set the Enable signal polarity to positive.  
ENBL HIGH

## ENDLS

Start Measurement by Endless Mode

Function

Starts the BER measurement in Endless mode.

Command

ENDLS

Detail

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To start the BER measurement in Endless mode.  
ENDLS

## ERRORBIT/ERRORBIT?

Measurement Error Bit

Function

Sets the number of measurement error bits for BER measurement.

Command

```
ERRORBIT bit
```

Query

```
ERRORBIT?
```

Response

```
bit
```

Integer in bit units, unitless

Parameter

```
bit
```

Number of measurement bits

Range

1 to 2 Gbits

1 to 2147 Mbits

1 to 2147483 Kbits

1 to 2147483647 bits

Suffix Code

GBIT, MBIT, KBIT, BIT

BIT is applied when omitted.

Detail

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

**Note:**

This function is not available when the measurement mode is set to Endless or the count mode is set to NONE.

Example of Use

To set the number of measurement error bits to 4,095 bits.

```
ERRORBIT 4095
```

## ESE0/ESE0?

Extended End Event Status Enable Register

### Function

Sets the extended end event status enable register. When an end event occurs in the specified application, the end summary bit (ESB) value of the corresponding status byte register is set to 1 (true).

### Command

ESE0 n

### Query

ESE0?

### Response

n

### Parameter

n Extended end event status enable register

Value = bit0 + bit1 + ... + bit7

bit7 =  $2^7 = 128$  Bit 7: Not used

bit6 =  $2^6 = 64$  Bit 6: Not used

bit5 =  $2^5 = 32$  Bit 5: Not used

bit4 =  $2^4 = 16$  Bit 4: Not used

bit3 =  $2^3 = 8$  Bit 3: Not used

bit2 =  $2^2 = 4$  Bit 2: Not used

bit1 =  $2^1 = 2$  Bit 1: BER measurement function

bit0 =  $2^0 = 1$  Bit 0: Signal Generator function

### Details

Set the sum of the values for bits to be enabled to the parameter, from the values  $2^0 = 1$ ,  $2^1 = 2$ ,  $2^2 = 4$ ,  $2^3 = 8$ ,  $2^4 = 16$ ,  $2^5 = 32$ ,  $2^6 = 64$ , and  $2^7 = 128$ , corresponding to the extended end event status enable register bits 0, 1, 2, 3, 4, 5, 6, and 7.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

### Example of Use

To enable an end event for the BER measurement function.

ESE0 2

### Related Commands

ESR0? Queries the extended end event status register.

## ESE1/ESE1?

Extended Error Event Status Enable Register

### Function

Sets the extended error event status enable register. When an error event occurs in the specified application, the error summary bit (ESB) value in the corresponding status byte register is set to 1 (true).

### Command

ESE1 n

### Query

ESE1?

### Response

n

### Parameter

n Extended error event status enable register

Value = bit0 + bit1 + ... + bit7

bit7 =  $2^7 = 128$  Bit 7: Not used

bit6 =  $2^6 = 64$  Bit 6: Not used

bit5 =  $2^5 = 32$  Bit 5: Not used

bit4 =  $2^4 = 16$  Bit 4: Not used

bit3 =  $2^3 = 8$  Bit 3: Not used

bit2 =  $2^2 = 4$  Bit 2: Not used

bit1 =  $2^1 = 2$  Bit 1: BER measurement function

bit0 =  $2^0 = 1$  Bit 0: Signal Generator function

### Details

Set the sum of the values for bits to be enabled to the parameter, from the values  $2^0 = 1$ ,  $2^1 = 2$ ,  $2^2 = 4$ ,  $2^3 = 8$ ,  $2^4 = 16$ ,  $2^5 = 32$ ,  $2^6 = 64$ , and  $2^7 = 128$ , corresponding to the extended error event status enable register bits 0, 1, 2, 3, 4, 5, 6, and 7.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

### Example of Use

To enable an error event for the BER measurement function.

ESE1 2

### Related Commands

ESR1?

Queries the extended error event status register

## ESEEND/ESEEND?

End Event Status Enable Register

### Function

Sets the end event status enable register that can be used for the Signal Generator and BER measurement functions. When a specified end event occurs, the end summary bit (ESB) value corresponding to the event is set to 1 (true).

This command can be used for the currently active function.

### Command

ESEEND n

### Query

ESEEND?

### Response

n

### Parameter

n End event status enable register

Value = bit0 + bit1 + ... + bit7

#### Signal Generator function

bit7 = $2^7 = 128$	Bit 7:	Not used
bit6 = $2^6 = 64$	Bit 6:	Not used
bit5 = $2^5 = 32$	Bit 5:	Completion of waveform pattern copy
bit4 = $2^4 = 16$	Bit 4:	Completion of waveform pattern loading to waveform memory
bit3 = $2^3 = 8$	Bit 3:	Not used
bit2 = $2^2 = 4$	Bit 2:	Not used
bit1 = $2^1 = 2$	Bit 1:	Not used
bit0 = $2^0 = 1$	Bit 0:	Not used

#### BER measurement function

bit7 = $2^7 = 128$	Bit 7:	Measurement stop by the STOP or START command
bit6 = $2^6 = 64$	Bit 6:	Not used
bit5 = $2^5 = 32$	Bit 5:	Not used
bit4 = $2^4 = 16$	Bit 4:	Not used
bit3 = $2^3 = 8$	Bit 3:	Not used
bit2 = $2^2 = 4$	Bit 2:	Not used
bit1 = $2^1 = 2$	Bit 1:	Measurement stop due to parameter change
bit0 = $2^0 = 1$	Bit 0:	Measurement completion

Details

Set the sum of the values for bits to be enabled to the parameter, from the values  $2^0 = 1$ ,  $2^1 = 2$ ,  $2^2 = 4$ ,  $2^3 = 8$ ,  $2^4 = 16$ ,  $2^5 = 32$ ,  $2^6 = 64$ , and  $2^7 = 128$ , corresponding to the end event status enable register bits 0, 1, 2, 3, 4, 5, 6, and 7.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

Enables BER measurement stop event due to parameter change.

ESEEND 2

Related Commands

ESREND?      Queries the end event status register.



## ESEERR/ESEERR?

Error Event Status Enable Register

### Function

Sets the error event status enable register that can be used for the Signal Generator and BER measurement functions. When a specified error event occurs, the error summary bit (ESB) value corresponding to the event is set to 1 (true).

This command can be used for the currently active function.

### Command

ESEERR n

### Query

ESEERR?

### Response

n

### Parameter

n

Error event status enable register

Value = bit0 + bit1 + ... + bit7

#### Signal Generator function

bit7 = $2^7 = 128$	Bit 7:	Not used
bit6 = $2^6 = 64$	Bit 6:	Not used
bit5 = $2^5 = 32$	Bit 5:	Waveform pattern copy error
bit4 = $2^4 = 16$	Bit 4:	Waveform pattern loading to waveform memory error
bit3 = $2^3 = 8$	Bit 3:	Not used
bit2 = $2^2 = 4$	Bit 2:	Not used
bit1 = $2^1 = 2$	Bit 1:	Not used
bit0 = $2^0 = 1$	Bit 0:	Not used

#### BER measurement function

bit7 = $2^7 = 128$	Bit 7:	Not used
bit6 = $2^6 = 64$	Bit 6:	Not used
bit5 = $2^5 = 32$	Bit 5:	Not used
bit4 = $2^4 = 16$	Bit 4:	Not used
bit3 = $2^3 = 8$	Bit 3:	Bit count overflow
bit2 = $2^2 = 4$	Bit 2:	Syncloss count overflow
bit1 = $2^1 = 2$	Bit 1:	Measurement stop with synchronization incompleteness
bit0 = $2^0 = 1$	Bit 0:	Measurement start failure

Details

Set the sum of the values for bits to be enabled to the parameter, from the values  $2^0 = 1$ ,  $2^1 = 2$ ,  $2^2 = 4$ ,  $2^3 = 8$ ,  $2^4 = 16$ ,  $2^5 = 32$ ,  $2^6 = 64$ , and  $2^7 = 128$ , corresponding to the error event status enable register bits 0, 1, 2, 3, 4, 5, 6, and 7.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To enable the waveform pattern loading error event.

```
SYS SG
ESEERR 16
```

Related Commands

```
ESEERR?      Queries the error event status register.
>0
```

## ESR0?

Extended End Event Status Register Query

Function

Queries the extended end event status.

Query

ESR0?

Response

n

Parameter

n Extended end event status register

Value = bit0 + bit1 + ... + bit7

bit7 =  $2^7 = 128$  Bit 7: Not used

bit6 =  $2^6 = 64$  Bit 6: Not used

bit5 =  $2^5 = 32$  Bit 5: Not used

bit4 =  $2^4 = 16$  Bit 4: Not used

bit3 =  $2^3 = 8$  Bit 3: Not used

bit2 =  $2^2 = 4$  Bit 2: Not used

bit1 =  $2^1 = 2$  Bit 1: BER measurement function

bit0 =  $2^0 = 1$  Bit 0: Signal Generator function

Details

The response is the sum of the values  $2^0 = 1$ ,  $2^1 = 2$ ,  $2^2 = 4$ ,  $2^3 = 8$ ,  $2^4 = 16$ ,  $2^5 = 32$ ,  $2^6 = 64$ , and  $2^7 = 128$ , corresponding to the extended end event status register bits 0, 1, 2, 3, 4, 5, 6, and 7. When a response is read, the extended end event status register value is cleared.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To readout the extended end event status register.

ESR0?

>0

Related Commands

ESE0 Sets the extended end event status enable register.

## ESR1?

Extended Error Event Status Register Query

Function

Queries the extended error event status.

Query

ESR1?

Response

n

Parameter

n

Extended error event status register

Value = bit0 + bit1 + ... + bit7

bit7 = $2^7 = 128$	Bit 7: Not used
bit6 = $2^6 = 64$	Bit 6: Not used
bit5 = $2^5 = 32$	Bit 5: Not used
bit4 = $2^4 = 16$	Bit 4: Not used
bit3 = $2^3 = 8$	Bit 3: Not used
bit2 = $2^2 = 4$	Bit 2: Not used
bit1 = $2^1 = 2$	Bit 1: BER measurement function
bit0 = $2^0 = 1$	Bit 0: Signal Generator function

Details

The response is the sum of the values  $2^0 = 1$ ,  $2^1 = 2$ ,  $2^2 = 4$ ,  $2^3 = 8$ ,  $2^4 = 16$ ,  $2^5 = 32$ ,  $2^6 = 64$ , and  $2^7 = 128$ , corresponding to the extended error event status register bits 0, 1, 2, 3, 4, 5, 6, and 7. When a response is read, the extended error event status register value is cleared.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To readout the extended error event status register.

ESR1?

>0

Related Commands

ESE1 Sets the extended error event status enable register.

## ESREND?

Event Status Register Query

Function

Queries the end event status that is used for the Signal Generator and BER measurement functions.

This command can be used for the currently active function.

Query

ESREND?

Response

n

Parameter

n

End event status register

Value = bit0 + bit1 + ... + bit7

### Signal Generator function

bit7 = 2 <sup>7</sup> = 128	Bit 7:	Not used
bit6 = 2 <sup>6</sup> = 64	Bit 6:	Not used
bit5 = 2 <sup>5</sup> = 32	Bit 5:	Completion of waveform pattern copy
bit4 = 2 <sup>4</sup> = 16	Bit 4:	Completion of waveform pattern loading to waveform memory
bit3 = 2 <sup>3</sup> = 8	Bit 3:	Not used
bit2 = 2 <sup>2</sup> = 4	Bit 2:	Not used
bit1 = 2 <sup>1</sup> = 2	Bit 1:	Not used
bit0 = 2 <sup>0</sup> = 1	Bit 0:	Not used

### BER measurement function

bit7 = 2 <sup>7</sup> = 128	Bit 7:	Measurement stop by the STOP or START command
bit6 = 2 <sup>6</sup> = 64	Bit 6:	Not used
bit5 = 2 <sup>5</sup> = 32	Bit 5:	Not used
bit4 = 2 <sup>4</sup> = 16	Bit 4:	Not used
bit3 = 2 <sup>3</sup> = 8	Bit 3:	Not used
bit2 = 2 <sup>2</sup> = 4	Bit 2:	Not used
bit1 = 2 <sup>1</sup> = 2	Bit 1:	Measurement stop due to parameter change
bit0 = 2 <sup>0</sup> = 1	Bit 0:	Measurement completion

Details

Unusable unless the measurement screen is set for Signal Generator or BER test.

The response is the sum of the values  $2^0 = 1$ ,  $2^1 = 2$ ,  $2^2 = 4$ ,  $2^3 = 8$ ,  $2^4 = 16$ ,  $2^5 = 32$ ,  $2^6 = 64$ , and  $2^7 = 128$ , corresponding to the end event status register bits 0, 1, 2, 3, 4, 5, 6, and 7. When a response is read, the end event status register value is cleared.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To readout the end event status register for the BER Measurement function.

```
ESREND?
```

```
>0
```

Related Commands

ESEERR            Sets the end event status enable register.

## ESRERR?

Error Event Status Register Query

### Function

Queries the error event status that is used for the Signal Generator and BER functions.

This command can be used for the currently active function.

### Query

ESRERR?

### Response

n

### Parameter

n

Error event status register

Value = bit0 + bit1 + ... + bit7

#### Signal Generator function

bit7 = $2^7 = 128$	Bit 7:	Not used
bit6 = $2^6 = 64$	Bit 6:	Not used
bit5 = $2^5 = 32$	Bit 5:	Waveform pattern copy error
bit4 = $2^4 = 16$	Bit 4:	Waveform pattern loading to waveform memory error
bit3 = $2^3 = 8$	Bit 3:	Not used
bit2 = $2^2 = 4$	Bit 2:	Not used
bit1 = $2^1 = 2$	Bit 1:	Not used
bit0 = $2^0 = 1$	Bit 0:	Not used

#### BER measurement function

bit7 = $2^7 = 128$	Bit 7:	Not used
bit6 = $2^6 = 64$	Bit 6:	Not used
bit5 = $2^5 = 32$	Bit 5:	Not used
bit4 = $2^4 = 16$	Bit 4:	Not used
bit3 = $2^3 = 8$	Bit 3:	Bit count overflow
bit2 = $2^2 = 4$	Bit 2:	Syncloss count overflow
bit1 = $2^1 = 2$	Bit 1:	Measurement stop with synchronization incompleteness
bit0 = $2^0 = 1$	Bit 0:	Measurement start failure

Details

Unusable unless the measurement screen is set for Signal Generator or BER test.

The response is the sum of the values  $2^0 = 1$ ,  $2^1 = 2$ ,  $2^2 = 4$ ,  $2^3 = 8$ ,  $2^4 = 16$ ,  $2^5 = 32$ ,  $2^6 = 64$ , and  $2^7 = 128$ , corresponding to the error event status register bits 0, 1, 2, 3, 4, 5, 6, and 7. When a response is read, the error event status register value is cleared.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To readout the error event status register for the BER measurement function.

```
ESRERR?  
>0
```

Related Commands

ESEERR      Sets the error event status enable register



**FPGAVER?**

FPGA Version Query

Function

Queries the FPGA version.

Query

FPGAVER? hardware

FPGAVER? ALL

Response

version

Parameter

hardware	FPGA type
For MS2690A/MS2691A/MS2692A:	
HWC	Hardware Controller FPGA
CNTR_KEY	Control PLD And Panel
LOCAL	IF/Local FPGA
MICRO	RF/Micro FPGA
MEAS_PCI	PCI FPGA on Measure Unit
MEAS_CORE	Core FPGA on Measure Unit
MEAS_COM	COM DSP on Measure Unit
MEAS_HS_CORE	Core FPGA on Measure Option Unit
SGBB	Baseband FPGA on SG Unit
SGRF	RF FPGA on SG Unit
BBIFIF	BBIF Interface FPGA
BBIFMAIN	BBIF Main FPGA
BBIFPCI	BBIF PCI FPGA
ALL	All FPGA
For MS2830A:	
HWC	Hardware Controller FPGA on Main Unit
CNTR_KEY	Control PLD And Panel on Main Unit
MEAS_PCI	Measure PCI FPGA on Main Unit
MEAS_CORE	Measure Core FPGA on Main Unit
MEAS_COM	Measure COM DSP on Main Unit
SA_RF	RF FPGA on SA RF Unit
SA_13G_RF	RF FPGA on SA 13GHz RF Unit
SG_BB	Baseband FPGA on VSG Unit
SG_RF	RF FPGA on VSG Unit
CONV_DOWN	Down Conv FPGA on Down Convertor Unit
CONV_2ND	2nd Conv FPGA on 2nd Convertor Unit
ATT_DRIVER	ATT_Driver FPGA on ATT Driver Unit
AF	AF FPGA on Sub Supply/Audio Unit

ALL	All FPGA
version	FPGA version number

Details

All FPGA names and their versions are returned when `FPGAVER? ALL` is executed.

“–” is returned when reading a version number of hardware not installed.

Example of Use

```
To query the HWC FPGA version
FPGAVER? HWC
> 5
```

## FREQREF/FREQREF?

Frequency Reference

Function

This command selects the frequency reference signal source.

Command

FREQREF source

Query

FREQREF?

Response

source

Parameter

source	Frequency reference signal source
INT	Uses internal reference signal source.
AUTO	Synchronizes with the external reference signal source if an external reference signal is input. (Default)
	Synchronizes with the internal reference signal source if no input is detected.

Example of Use

```
To use the internal frequency reference signal source
FREQREF INT
FREQREF?
> INT
```

## FREQ:SYNT:LPH/FREQ:SYNT:LPH?

Low Phase Noise

### Function

This command enables/disables Low Phase Noise function.

### Command

FREQ:SYNT:LPH switch\_n

### Query

FREQ:SYNT:LPH?

### Response

on\_off Low Phase Noise switch status

### Parameter

switch_n	Low Phase Noise switch
ON	Enables Low Phase Noise switch.
1	Enables Low Phase Noise switch.
OFF	Disables Low Phase Noise switch.
0	Disables Low Phase Noise switch.
on_off	Low Phase Noise switch status
1	Low Phase Noise switch enabled.
0	Low Phase Noise switch disabled.
Default	On

### Details

This command is available only for MS2830A.

This function is available only when Option 062/066 is installed.

When setting is enabled, the phase noise characteristics can be improved by using the Low Phase Noise function to perform measurement at all applications.

Moreover, if a signal outside the DUT frequency range is input while this function is enabled, it may be possible to measure spurious noise generated within the unit.

Refer to the mainframe Operation Manual (Operation) for details about spurious noise generation conditions.

### Example of Use

To enable Low Phase Noise switch.

```
FREQ:SYNT:LPH ON
```

To query the On/Off status of Low Phase Noise function.

```
FREQ:SYNT:LPH?
```

```
> 1
```

## HARDREV?

Hardware Revision Query

Function

Queries the hardware revision number.

Query

HARDREV? hardware

HARDREV? ALL

Response

revision

Parameter

hardware	Hardware type
For MS2690A/MS2691A/MS2692A:	
IF	IF Unit
LOCAL	IF/Local Unit
MICRO	RF/Micro Unit
MEAS	Measure Unit
WBAND	Measure Option Unit
SG	SG Unit
CPU	CPU Unit
BBIF	BBIF Unit
CARRIER	Carrier Unit
ALL	All hardware
For MS2830A:	
MAIN	Main Unit
SARF	SA RF Unit
SA13GRF	SA 13GHz RF Unit
SG	VSG Unit
CONV_DOWN	Down Converter Unit
CONV_2ND	2nd Converter Unit
ATT_DRIVER	ATT_Driver Unit
AUDIO	Sub Supply/Audio Unit
ALL	All hardware
revision	Revision number

Details

All hardware names and their revisions are returned when HARDREV? ALL is executed.

“–” is returned when reading a revision number of hardware not installed.

Example of Use

```
To query the revision number of the IF unit
HARDREV? IF
> 1
```

## INI

Preset Current Application

Function

This command initializes the settings and status of the currently selected application.

Command

INI

Example of Use

To initialize settings of the Spectrum Analyzer

```
SYS SPECT
```

```
INI
```

## LISTCOPYDAT?

Hard Copy File List Query

Function

Queries a list of screen hardcopy files saved in the specified device.

Query

```
LISTCOPYDAT? device
```

Response

```
number, file1, file2, ...
```

number                      Number of files

    Range                    0 to 1000

file                        File name

If the number of files exceeds 1000, the first 1000 files are returned, sorted by filename.

Parameter

device                      Drive name

    A, B, D, E, F, ...

Example of Use

To query the screen hardcopy filenames saved in drive E

```
LISTCOPYDAT? e
```

```
>3, Copy_00, Copy_01, Copy_02
```

**LISTDGTZDAT?**

Digitize File List Query

**Function**

Queries a list of digitized files saved in the specified device.

**Query**

LISTDGTZDAT? apl,device

**Response**

number, file1, file2, ...

number	Number of files
Range	0 to 1000

file	File name
	If the number of files exceeds 1000, the first 1000 files are returned, sorted by filename.

**Parameter**

apl	Target application name
SIGANA	Signal Analyzer

device	Drive name
	A, B, D, E, F, ...

**Example of Use**

To query the digitized filenames saved in drive E

```
LISTDGTZDAT? SIGANA,e
>3,Digitize_00,Digitize_01,Digitize_02
```

## LISTRCDAT?

Parameter File List Query

### Function

Queries a list of parameter files saved in the specified device.

### Query

```
LISTRCDAT? device
```

### Response

```
number, file1, file2, ...
```

number	Number of files
Range	0 to 1000

file	File name
	If the number of files exceeds 1000, the first 1000 files are returned, sorted by filename.

### Parameter

device	Drive name
	A, B, D, E, F, ...

### Example of Use

```
To query the parameter filenames saved in drive E
LISTRCDAT? e
>3,Param_00,Param_01,Param_02
```



## LISTSYSINFO?

System Information File List Query

### Function

Queries a list of system information files saved in the specified device.

### Query

```
LISTSYSINFO? device
```

### Response

```
number, file1, file2, ...
```

number	Number of files
Range	0 to 1000

file	File name
	If the number of files exceeds 1000, the first 1000 files are returned, sorted by filename.

### Parameter

device	Drive name
	A, B, D, E, F, ...

### Example of Use

```
To query the system information filenames saved in drive E
LISTSYSINFO? e
>3, SystemInfo_00, SystemInfo_01, SystemInfo_02
```

## LISTTRCEDAT?

Trace File List Query

### Function

Queries a list of trace files saved in the specified device.

### Query

```
LISTTRCEDAT? ap1,device
```

### Response

```
number, file1, file2, ...
```

number	Number of files
Range	0 to 1000

file	File name
	If the number of files exceeds 1000, the first 1000 files are returned, sorted by filename.

### Parameter

ap1	Target application name
SPECT	Spectrum Analyzer
PNOISE	Phase Noise

device	Drive name
	A, B, D,E, F, ...

### Example of Use

To query the trace filenames saved in drive E

```
LISTTRCEDAT? SPECT,e  
>3,Trace_00,Trace_01,Trace_02
```

## LOAD

Load Application

Function

Activates an application.

Command

```
LOAD apl
```

Parameter

apl	Target application name
SIGANA	Signal Analyzer
SPECT	Spectrum Analyzer
PNOISE	Phase Noise
PMET	Power Meter
BER	BER Test

Details

This function activates an installed application and registers it to the Application Switch menu.

In order to use the [SIGANA] argument with MS2830A, the analysis bandwidth option (either MS2830A-005/105, 006/106, 007, 009/109, 077/177 or 078/178) is required.

In order to use the [PNOISE] argument with MS2830A, the phase noise measurement option (MS2830A-010/110) is required.

For parameters to specify an application other than the standard ones, refer to the operation manual (remote control) for each application.

Example of Use

To activate the Signal Analyzer application  
 LOAD SIGANA

## LOADMEDIA/LOADMEDIA?

Drive to load User Pattern

Function

Sets the name of the drive to load the user-defined pattern file for BER measurement.

Command

LOADMEDIA drive

Query

LOADMEDIA?

Response

drive

Parameter

drive                      Load source drive name

Detail

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To load the user-defined pattern from drive D.  
LOADMEDIA D

## LOADUSERPAT

Load User Pattern

Function

Loads the user-defined pattern for BER measurement from a file.

Command

LOADUSERPAT pattern

Parameter

pattern	User-defined pattern to be loaded Specify a character string within 32 characters, obtained by removing an extension (bpn) from the target user defined pattern file name.
---------	---

Details

Unusable unless the measurement screen is set for BER test.  
Only files with extension “bpn” can be loaded.  
It is not settable when data type is not UserDefine.  
If the specified user define pattern file does not exist, an error is returned to the standard status register. The standard status register value can be checked by \*ESR? command.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To load the user-defined pattern file “USERPATTERN.bpn”.  
LOADUSERPAT “USERPATTERN”

## MEASERROR?

Error Query

Function

Queries BER measurement error status.

Query

MEASERROR?

Response

error

Parameter

error	Error status
NONE	No error
SYNCLOSS	Sync Loss status
CLOCKERROR	Clock signal error
ENABLEERROR	Enable signal error

Details

Error status query is executed in the following priority:

Enable signal error > Clock signal error > Sync Loss status

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To query error status.

MEASERROR?

> 1

## MMEM:LOAD:CORR

Recall Correction File

### Function

This command loads a level frequency correction table.

### Command

MMEM:LOAD:CORR filename,device

### Parameter

filename	<p><b>Target filename</b>                  Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension)                  The following characters cannot be used:                  \ / : * ? “ ” \ ‘ &lt; &gt;  </p>
device	<p><b>Drive name</b>                  A, B, D, E, F, ...                  Set to Drive D when omitted.</p>

### Example of Use

To load the level frequency table named “TEST” in drive D  
 MMEM:LOAD:CORR “TEST”,D

## MMEM:STOR:CORR

Save Correction File

Function

This command initializes the data on the level frequency correction table.

Command

```
MMEM:STOR:CORR filename,device
```

Parameter

filename	<b>Target filename</b> Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? “ ” \ ‘ < >   Automatically named “Corr date_sequential number.csv”.
device	<b>Drive name</b> A, B, D, E, F, ... Set to Drive D when omitted.

Example of Use

To save the level frequency correction table under the name “TEST” in drive D

```
MMEM:STOR:CORR "TEST",D
```



## MODE/MODE?

### Measurement Mode

#### Function

Selects the BER measurement mode.

#### Command

MODE mode

#### Query

MODE?

#### Response

mode

#### Parameter

mode	Measurement mode
SINGLE	Single mode
CONTINUOUS	Continuous mode
ENDLESS	Endless mode

#### Details

Unusable unless the measurement screen is set for BER test.

When the measurement mode is set to Endless, other settings are changed as below.

Count Mode	Data Bit
Measurement Bit	4294967295 bit

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

#### Example of Use

To set the measurement mode to Single mode.

MODE SINGLE

## MVCOPYDAT

Move Hard Copy File (HDD to Device)

### Function

Moves a screen hardcopy file saved in the internal hard disk to the specified device.

### Command

```
MVCOPYDAT file,device
```

### Parameter

file	Target filename Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? “ ” \ ‘ < >
device	Drive name A, B, E, F, ...

### Details

- The format of the target file is switched according to the File Type Setting.
- If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

### Example of Use

To move the screen hardcopy file “bitmap” to drive E  
MVCOPYDAT “bitmap”,e

## MVDGTZDAT

Move Digitize file (HDD to Device)

### Function

Moves a digitized file saved in the internal hard disk to the specified device.

### Command

```
MVDGTZDAT file,apl,device
```

### Parameter

file	Target filename Character string within 128 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? “ ” \ ‘ < >
apl SIGANA	Target application name Signal Analyzer
device	Drive name A, B, E, F, ...

### Details

If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

### Example of Use

To move the digitized file “digitize” for the Signal Analyzer function to drive E

```
MVDGTZDAT "digitize",SIGANA,e
```

## MVRCDAT

Move Parameter File (HDD to Device)

### Function

Moves a parameter file saved in the internal hard disk to the specified device.

### Command

```
MVRCDAT file,device
```

### Parameter

file	Target filename Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? “ ” \ ‘ < >
device	Drive name A, B, E, F, ...

### Details

If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

### Example of Use

To move the parameter file “parameter” to drive E  
MVRCDAT “parameter”,e

## MVSYINFO

Move System Information File (HDD to Device)

### Function

Moves a system information file saved in the internal hard disk to the specified device.

### Command

```
MVSYINFO file,device
```

### Parameter

file	<p>Target filename</p> <p>Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension)</p> <p>The following characters cannot be used:</p> <p style="text-align: center;">\ / : * ? " ' &lt; &gt;  </p>
device	<p>Drive name</p> <p style="text-align: center;">A, B, E, F, ...</p>

### Details

If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

### Example of Use

To move the system information file “SystemInfo” to drive E  
MVSYINFO “SystemInfo”,e

## MVTRCEDAT

Move Trace File (HDD to Device)

### Function

Moves a trace file recorded in the internal hard disk to the specified device.

### Command

```
MVTRCEDAT file,apl,device
```

### Parameter

file	Target filename Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? “ ” \ ‘ < >
apl	Target application name
SPECT	Spectrum Analyzer
SIGANA	Signal Analyzer
PNOISE	Phase Noise
device	Drive name A, B, E, F, ...

### Details

If a file of the same name already exists in the move destination folder, the file in the move destination folder is deleted.

### Example of Use

To move the trace file “trace” saved in the Spectrum Analyzer folder of the internal hard disk to drive E

```
MVTRCEDAT “trace”,SPECT,e
```

## OPTINFO?

Option Information Query

Function

Queries option information.

Query

OPTINFO? [format]

Response

num1, sw1, model1, num2, sw2, model2, ...

(when format is ALL)

num1, sw1, model1, num2, sw2, model2, ...

(when format is HARD)

num1, type1, sw1, model1, type2, num2, sw2, model2, ...

(whwn format is SOFT)

num                      Option number (000 to 999)

sw                        Switch (On/Off)

model                    Option name

type                     Application type

Parameter

format                    Response format

ALL                      Queries all hardware/software options.

HARD                     Queries hardware options.

SOFT                     Queries software options.

Detail

The option information is output in the registered number.

Example of Use

To query the option number.

OPTINFO? ALL

>3,001,OFF,RUBIDIUM REFERENCE OSCILLATOR,

003,OFF,PRESELECTOR SPURIOUS MODE,...

2,3,MX269000A,001,OFF,SOFTOPTION-001,MX269000A,002,OFF,S

OFTOPTION-010,...

## PMOD/PMOD?

Hard Copy Mode

Function

This command sets the screen hardcopy file format.

Command

PMOD format

Query

PMOD?

Response

format

Parameter

format	File format
BMP	BMP format (Default)
PNG	PNG format
When omitted.	BMP format

Example of Use

To save hardcopies in the PNG format  
PMOD PNG



## PNFIXLENG/PNFIXLENG?

PN Fix Pattern Length

Function

Sets the length of PN Fix pattern for BER measurement.

Command

PNFIXLENG bit

Query

PNFIXLENG?

Response

bit

Integer in bit units, unitless

Parameter

bit

Bit length of PN Fix pattern

Range

96 to 134217728 bits

Suffix Code

None

Details

Unusable unless the measurement screen is set for BER test.

This command is valid only when Data Type is set to PN Fix.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To set the bit length of the PN Fix pattern to 1,024.

PNFIXLENG 1024

## PNINITIAL/PNINITIAL?

PN Fix Pattern Initial Value

Function

Sets the initial value of PN Fix pattern in binary, for BER measurement.

Command

```
PNINITIAL n
```

Query

```
PNINITIAL?
```

Response

```
n
```

Parameter

n	PN Fix pattern initial value (binary)
Range	00...0 to 11...1 [9 bits] (for PN9 Fix)
	00...0 to 11...1 [15 bits] (for PN15 Fix)
	00...0 to 11...1 [20 bits] (for PN20 Fix)
	00...0 to 11...1 [23 bits] (for PN23 Fix)

Details

Unusable unless the measurement screen is set for BER test.  
This command is valid only when Data Type is set to PN Fix.  
Prefix "#B", a character string indicating binary, to the parameter.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To set the PN9 Fix initial value to "101010101".  
PNINITIAL #B101010101

## POWER?

Average Power Query

Function

This command queries the measurement power in specified units.

Query

POWER? [unit]

Response

real

Parameter

unit	Unit
DBM	Query the measurement power value in dBm units.
WATT	Query the measurement power value in W units.
DB	Query the relative power value in dB units.
When omitted	DBM
real	Measurement power
Resolution	When unit is DBM, DB: 0.01 When unit is W: Three significant figures (floating point type)
Not connected	-999.999

Details

The measurement power includes the offset value and averaging result.

Example of Use

To query the measurement power value in W units.  
 POWER? WATT  
 > 0.002

## POW:ATT:MODE/POW:ATT:MODE?

Attenuation Mode

Function

This command sets Attenuation Mode.

Command

POW:ATT:MODE mode

Query

POW:ATT:MODE?

Parameter

<mode> Attenuator mode

For MS2690A/MS2691A/MS2692A:

This command is not available.

For MS2830A:

MECH Uses mechanical attenuator.

COMB Switches between electronic and mechanical attenuator according to frequencies.

Default MECH

Details

This sets the attenuator operation mode to be used.

Example of Use

To set attenuation mode to mechanical attenuator mode

```
POW:ATT:MODE MECH
```

To query attenuation mode

```
POW:ATT:MODE?
```

```
> MECH
```

## PRE

Preset Current Application

Function

This command initializes the settings and status of the currently selected application.

Command

```
PRE
```

Example of Use

To initialize settings of the Spectrum Analyzer

```
SYS SPECT
```

```
PRE
```

## PRINT

Hard Copy

### Function

This command saves a screen hardcopy into a file. The name of the file to be saved and save destination drive name can be specified.

### Command

```
PRINT file,device
```

### Parameter

file	<p>Target filename</p> <p>Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension)</p> <p>The following characters cannot be used:</p> <p style="padding-left: 2em;">\ / : * ? " ' &lt; &gt;  </p> <p>Automatically named as “Copy date sequential number.bmp” when omitted.</p>
device	<p>Drive name</p> <p>A, B, D, E, F, ...</p> <p>Set to Drive D when omitted.</p>

### Details

A sequential number from 00 to 999 will be added to the file name. When a file is saved following a file with file number 999, 00 is added to the newly saved file.

Files are saved to the following directory in the specified drive.  
\\Anritsu Corporation\\Signal Analyzer\\User Data\\Copy Files

When file name is omitted, up to 1000 files can be saved in a folder. When file name is specified, it is possible to save more than 1000 files.

### Example of Use

To save a screen hardcopy into a file, after naming the file “TEST,” in the internal hard disk

```
PRINT "TEST",D
```

## PRTCOPYDAT/PRTCOPYDAT?

Protect Hard Copy File

### Function

This command protects a screen hardcopy file saved in the specified drive. Protected files cannot be deleted.

### Command

```
PRTCOPYDAT file,on_off,device
```

### Query

```
PRTCOPYDAT? file,device
```

### Response

```
on_off
```

### Parameter

file	Target filename Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? “ ” \ ‘ < >
on_off	Protection ON/OFF
ON	Protects the file.
OFF	Does not protect the file.
device	Drive name A, B, D, E, F, ...

### Example of Use

To protect the screen hardcopy file “Copy” saved in drive E  
PRTCOPYDAT “Copy”,ON,e

## PRTDGTZDAT/PRTDGTZDAT?

### Protect Digitize File

#### Function

This command saves a digitize file saved to the specified drive. Protected files cannot be deleted.

#### Command

```
PRTDGTZDAT file,on_off,apl,device
```

#### Query

```
PRTDGTZDAT? file,apl,device
```

#### Response

```
on_off
```

#### Parameter

file	Target filename Character string within 128 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? “ ” \ ‘ < >
on_off	Protection ON/OFF
ON	Protects the file.
OFF	Does not protect the file.
apl	Target application name
SIGANA	Signal Analyzer
device	Drive name A, B, D, E, F, ...

#### Example of Use

To protect the digitized file “Digitize” saved in drive E  

```
PRTDGTZDAT “Digitize”,ON,SIGANA,e
```



## PRTRCDAT/PRTRCDAT?

Protect Parameter File

### Function

Protects a parameter file saved in the specified drive. Protected files cannot be deleted.

### Command

```
PRTRCDAT file,on_off,device
```

### Query

```
PRTRCDAT? file,device
```

### Response

```
on_off
```

### Parameter

file	Target filename Character string within 32 characters enclosed by double quotes (“”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? “ ” \ ‘ < >
on_off	Protection ON/OFF
ON	Protects the file.
OFF	Does not protect the file.
device	Drive name A, B, D, E, F, ...

### Example of Use

To protect the parameter file “Parameter” saved in drive E  
 PRTRCDAT “Parameter”,ON,e

## PRTSYSINFO/PRTSYSINFO?

Protect System Information File

### Function

This command protects a system information file saved to the specified drive. Protected files cannot be deleted.

### Command

```
PRTSYSINFO file,on_off,device
```

### Query

```
PRTSYSINFO? file,device
```

### Response

```
on_off
```

### Parameter

file	Target filename Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? “ ” \ ‘ < >
on_off	Protection ON/OFF
ON	Protects the file.
OFF	Does not protect the file.
device	Drive name A, B, D, E, F, ...

### Example of Use

To protect the system information file “SystemInfo” saved in drive E  
PRTSYSINFO “SystemInfo”,ON,e

## PRTRCEDAT/PRTRCEDAT?

### Protect Trace File

#### Function

This command saves a trace file saved in the specified drive. Protected files cannot be deleted.

#### Command

```
PRTRCEDAT file,on_off,apl,device
```

#### Query

```
PRTRCEDAT? file,apl,device
```

#### Response

```
on_off
```

#### Parameter

file	Target filename Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? “ ” \ ‘ < >
on_off	Protection ON/OFF
ON	Protects the file.
OFF	Does not protect the file.
apl	Target application name
SPECT	Spectrum Analyzer
SIGANA	Signal Analyzer
PNOISE	Phase Noise
device	Drive name A, B, D, E, F, ...

#### Example of Use

To protect the "Trace" trace file of the Spectrum Analyzer saved in drive E

```
PRTRCEDAT "Trace",ON,SPECT,e
```

## RCPRM

Recall Parameter Setting file

### Function

This command recalls the application settings and status into a parameter setting file.

### Command

```
RCPRM file,dev,apl
```

### Parameter

file	Target filename Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension) The following characters cannot be used: \ / : * ? “ ” \ ‘ < >
device	Drive name A, B, D, E, F, ...
apl	Target application
ALL	All applications
CURR	Only the currently operated application
When omitted.	All applications

### Example of Use

To restore settings of all applications to the contents of the parameter setting file “TEST” saved in the internal hard disk  
RCPRM "TEST",D,ALL

## RCVBIT?

Received Bit Query

Function

This command returns the received bit count during BER measurement.

Query

RCVBIT?

Response

n

Parameter

n	Bit count
Range	0 to $(2^{32} - 1)$

Detail

Unusable unless the measurement screen is set for BER test.  
 This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To query the received bit count.  
 RCVBIT?  
 > 12356789

## REBOOT

System Re-boot

Function

This command reboots the system.

Command

REBOOT

Details

If this command is received, remote control communication is disabled until all applications are rebooted.

Example of Use

To reboot the system  
 REBOOT

## REMDISP/REMDISP?

Error Message Display Mode

Function

Selects the error message display mode when an error occurs during remote control.

Command

REMDISP mode

Query

REMDISP?

Response

mode

Parameter

mode	Error message display mode
NORMAL	Deletes the error message display once the next command is received. (Default)
REMAIN	To keep the first error message displayed.
REMA	(Same as REMAIN)
REMAIN_LAST	Keeps the last error message displayed.

Details

The setting of the error message display mode cannot be initialized.

Example of Use

To keep the first error message displayed  
REMDISP REMAIN

## RESULT?

Result and Status Query

Function

Queries the bit error rate and status information of BER measurement.

Query

RESULT? format

Response

per, countbit, errorbit, status, error

(when format is EP)

exp, countbit, errorbit, status, error

(when format is ER)

per, countbit, errorbit, syncloss, status, error

(when format is EP\_WSYNCLOSS)

exp, countbit, errorbit, syncloss, status, error

(when format is ER\_WSYNCLOSS)

per

Bit error rate (percentage)

Range

0.000 to 100.000%

exp

Bit error rate (exponent format)

Range

0.000E+00 to 1.000E+02

countbit

Number of count bits

errorbit

Number of error bits

syncloss

Number of Sync Loss errors occurred during measurement

status

Measurement status

error

Error status

Parameter

format

Response format

EP

Returns the bit error rate in percentage

ER

Returns the bit error rate in exponent format

EP\_WSYNCLOSS

Returns the bit error rate in percentage

ER\_WSYNCLOSS

Returns the bit error rate in exponent format

Detail

Unusable unless the measurement screen is set for BER test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To query the bit error rate in percentage.

RESULT? EP

> 10.000,1000,100,0,NONE

## RFLVLOFS/RFLVLOFS?

Level Offset Value

Function

This command sets the level offset value in dB units.

Command

```
RFLVLOFS rel_ampl
```

Query

```
RFLVLOFS?
```

Response

```
rel_ampl
```

Parameter

rel_ampl	Offset value
Range	-100.00 to +100.00
Resolution	0.01
Default	0.00
Suffix code	DB
	DB when omitted.

Details

This function cannot be executed when the display is other than Power Meter.

Example of Use

```
To set the level offset value to 10 dB.  
RFLVLOFS 10  
RFLVLOFS?  
> 10.00
```



## ROFFSET/ROFFSET?

Ref.Level Offset Value

### Function

This command sets the reference level offset function On/Off and sets the offset value.

### Command

```
ROFFSET level
ROFFSET on_off
```

### Query

```
ROFFSET?
```

### Response

```
level          When the reference level offset function is ON
OFF           When the reference level offset function is OFF
```

### Parameter

```
level          Reference level offset value
    Range      -100.00 to +100.00 dB
    Resolution 0.01 dB
    Suffix code DB
                dB is used even when omitted.

on_off         Reference level offset function ON/OFF
    ON         Sets the reference level offset function to ON.
    OFF        Sets the reference level offset function to OFF.
```

### Example of Use

```
To set the reference level offset function to On at +10 dB.
ROFFSET 10
ROFFSET 10DB
ROFFSET ON
ROFFSET?
> 10.00
```

## ROFFSETMD/ROFFSETMD?

Reference Level Offset Mode

Function

This command sets the reference level offset function On/Off.

Command

```
ROFFSETMD on_off
```

Query

```
ROFFSETMD?
```

Response

```
on_off
```

Parameter

```
on_off
```

Reference level offset function On/Off

```
ON
```

Sets the reference level offset function to On.

```
OFF
```

Sets the reference level offset function to Off.

Example of Use

To set the reference level offset function to On.

```
ROFFSETMD ON
```

## ROSC:EXT:FREQ/ROSC:EXT:FREQ?

External Reference Frequency

Function

This command sets the frequency of the reference frequency signal.

Command

ROSC:EXT:FREQ freq

Query

ROSC:EXT:FREQ?

Response

freq

No suffix code. Value is returned in Hz units.

Parameter

freq	Frequency of reference frequency signal
Range	
[MS269xA]	Either value of 10 MHz or 13 MHz
[MS2830A]	5 MHz, 10 MHz or 13 MHz
Default	10 MHz
Suffix code	HZ, KHZ, KZ, MHZ, MZ, GHZ, GZ

Details

This sets signal frequency, when using external reference signal as the signal source for reference frequency.

If the Reference Signal is Fixed to Internal, this function cannot be set.

Example of Use

To set the frequency of the reference frequency signal to 10 MHz

```
ROSC:EXT:FREQ 10MHZ
ROSC:EXT:FREQ?
> 10000000
```

## ROSC:SOUR?

Reference Signal Query

Function

This command queries the frequency reference signal source.

Query

ROSC:SOUR?

Response

source

Parameter

source	Language mode
INT	Internal reference signal source
INTU	Internal reference signal source (Unlock state)
EXT	External reference signal source
EXTU	External reference signal source (Unlock state)

Details

During frequency reference stabilization, \*\*\* is returned.

Example of Use

To query the external reference signal source  
ROSC:SOUR?  
> EXT

## ROSC:STAT?

Reference Clock Status Query

### Function

This command queries the status of the frequency reference signal source.

### Query

```
ROSC:STAT?
```

### Response

```
status
```

### Parameter

status	Status of frequency reference signal source
0	Frequency reference signal source is in the locked status.
1	Frequency reference signal source is in the unlocked status.

### Example of Use

```
To query the internal frequency reference signal source
ROSC:STAT?
> 0
```

## SETREL

Reference Level Set

Function

This command sets the power in the Power Meter display as the reference in relative value.

Command

```
SETREL
```

Example of Use

To set the power in the Power Meter display as the reference.  
SETREL

## SNGLS

Start Measurement by Single Mode

Function

Starts the BER measurement in Single mode.

Command

```
SNGLS
```

Detail

When executing this command for BER measurement function, switch the application to BER Test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

**Note:**

The BER measurement is also available when the signal generator application is active.

For the above command operation for other than BER measurement function, see the operation manual of each application.

Example of Use

To start the BER measurement in Single mode.  
SNGLS

## SOFTVER?

Software Version Query

Function

Queries the application version.

Query

```
SOFTVER? apl
```

Response

```
version
```

Parameter

apl	Target application name
SIGANA	Signal Analyzer
SPECT	Spectrum Analyzer
PNOISE	Phase Noise
PMET	Power Meter
BER	BER Test

Details

For parameters to specify an application other than the standard ones, refer to the operation manual (remote control) for each application.

Example of Use

To query the version of the Signal Analyzer application

```
SOFTVER? SIGANA
> 4.0.0
```

## SOUND/SOUND?

Sound On/Off

Function

Sets the sound file ON/OFF.

Command

SOUND on\_off

Query

SOUND?

Response

on\_off

Parameter

on_off	Sound ON/OFF
ON	On (Default)
OFF	Off

Example of Use

To set sound to ON  
SOUND ON



## START

Start Measurement

Function

Starts the BER measurement.

Command

START

Details

When executing this command for BER measurement function, switch the application to BER Test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

**Note:**

The BER measurement is also available when the signal generator application is active.

For the above command operation for other than BER measurement function, see the operation manual of each application.

Example of Use

To start the BER measurement.

START

## STATUS?

Status Query

Function

Queries the BER measurement status.

Query

```
STATUS?
```

Response

status	Measurement status
EXEC	During measurement
SYNCHRONIZING	Synchronization is established.
STOP	Measurement is stopped with no error.
ERROR	Measurement is stopped and an error has occurred.

Details

Unusable unless the measurement screen is set for BER test.  
The error contents can be queried by using the `MEASERROR?` command.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

```
To query the measurement status.  
STATUS?  
> EXEC
```

## STOP

Stop Measurement

Function

Stops the BER measurement.

Command

STOP

Detail

When executing this command for BER measurement function, switch the application to BER Test.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

**Note:**

The BER measurement is also available when the signal generator application is active.

For the above command operation for other than BER measurement function, see the operation manual of each application.

Example of Use

To stop the BER measurement.

STOP

## STOPSTATUS?

Stop Status Query

Function

Queries the BER measurement stop status.

Query

STOPSTATUS?

Response

status	Measurement stop status
STOP_NORMAL	Measurement is stopped normally.
STOP_OVERFLOW_DATACOUNT	The number of count bits exceeds the upper limit.
STOP_OVERFLOW_SYNCLOSS	The number of Sync Loss errors exceeds the upper limit.
STOP_ABNORMAL_COUNT	Measurement is stopped due to abnormality.
EXEC	During measurement
SYNCHRONIZING	Synchronization is established.

Detail

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To query the measurement stop status.  
STOPSTATUS?  
> EXEC

## SVPRM

Save Parameter Setting as file

### Function

Saves the application settings and status into a parameter setting file.

### Command

```
SVPRM file,device
```

### Parameter

file	<p>Target filename</p> <p>Character string within 32 characters enclosed by double quotes (“ ”) or single quotes (‘ ’) (excluding extension)</p> <p>The following characters cannot be used:  \ / : * ? " " \ ' &lt; &gt;  </p> <p>When omitted, the file is automatically named in the following format: “Param date_sequential number.xml”</p>
device	<p>Drive name</p> <p>A, B, D, E, F, ...</p> <p>Set to Drive D when omitted.</p>

### Details

A sequential number from 00 to 999 will be added to the file name. When a file is saved following a file with file number 999, 00 is added to the newly saved file.

Files are saved to the following directory in the specified drive.  
\Anritsu Corporation\Signal Analyzer\User Data\Parameter Setting

When file name is omitted, up to 1000 files can be saved in a folder. When file name is specified, it is possible to save more than 1000 files.

### Example of Use

To save the parameter setting file “TEST” in the internal hard disk  
SVPRM "TEST",D

## SWKEYINST

### Software License Install Command

Function

Installs the software license key from the specified file.

Command

```
SWKEYINST fname,drive
```

Query

None

Response

None

Parameter

fname

Target file name

Character string within 32 characters enclosed by double quotes (" ") or single quotes (' ') (excluding extension).

The following characters cannot be used:

`\ / : * ? " ' < > |`

drive

The name of the drive from which the license file is loaded

Detail

Installs the software license key from the specified file in the specified drive.

Searches the specified file in the following directory in the specified drive.

`\Anritsu Corporation\Signal Analyzer\Install`

Example of Use

To install the software license from MX269006.xml file in the USB memory device(E:\).

```
SWKEYINST "MX269006A",e
```

## SWKEYNAME?

Software License Name Query

### Function

Queries the software license key corresponding to the specified index number.

### Command

None

### Query

SWKEYNAME? index

### Response

license

License name

License number corresponding to index number.

### Parameter

index

Index number

Range

1 to 100

### Example of Use

To query the fifth license name.

```
SWKEYNAME? 5
```

```
>MX269010A
```

## SYNCLENG/SYNCLENG?

Length for Sync on User Pattern

### Function

Sets the length of the partial bit string, which is used for synchronization judgment, in the user-defined pattern for BER measurement.

### Command

SYNCLENG bit

### Query

SYNCLENG?

### Response

bit

### Parameter

bit

Length of synchronization judgment bit string

Range

8 to 1024 bits

### Details

Unusable unless the measurement screen is set for BER test.  
This command is valid only when Data Type is set to User Define.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

### Example of Use

To set the length of the synchronization judgment bit string in the user-defined pattern to 65 bits.

SYNCLENG 65



## SYNCLOSS?

Sync Loss Count Query

### Function

Queries the number of Sync Loss (out of synchronization) errors having occurred during the BER measurement.

### Query

SYNCLOSS?

### Response

count	Number of Sync Loss errors occurred
Range	0 to 65535

### Detail

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

### Example of Use

To query the number of Sync Loss errors.  
SYNCLOSS?  
> 500

## SYNCLOSSACT/SYNCLOSSACT?

Count Action at Sync Loss

### Function

Sets the action when Sync Loss occurs during BER measurement.

### Command

```
SYNCLOSSACT a
```

### Query

```
SYNCLOSSACT?
```

### Response

```
a
```

### Parameter

a	Action when Sync Loss occurs
COUNT_CLEAR	Clears current count value
COUNT_KEEP	Keeps current count value

### Details

Unusable unless the measurement screen is set for BER test.  
Selects whether to clear or keep the count value when Sync Loss occurs during measurement.  
This command is valid only when auto resynchronization is enabled.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

### Example of Use

To clear the count value when Sync Loss occurs.  
SYNCLOSSACT COUNT\_CLEAR

## SYNCLOSSTHLD/SYNCLOSSTHLD?

Sync Loss Threshold

Function

Sets the Sync Loss judgment condition for the BER measurement.

Command

SYNCLOSSTHLD  $n, a$

Query

SYNCLOSSTHLD?

Response

$n, a$

Parameter

$n$	Numerator of Sync Loss threshold
Range	1 to $(a/2)$ bits
$a$	Dominator of Sync Loss threshold
500	500 bits
5000	5000 bits
50000	50000 bits

Details

Unusable unless the measurement screen is set for BER test.  
 During BER measurement, if  $n$  bits out of continuous  $a$  bits are detected as error bits, it is judged as Sync Loss.  
 This command is valid only when auto resynchronization is disabled.  
 This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To set the Sync Loss threshold to 123/500 bits.  
 SYNCLOSSTHLD 123,500

## SYNCSTARTPOS/SYNCSTARTPOS?

Sync Start Position on User Pattern

### Function

Sets the start position of the partial bit string, which is used for synchronization judgment, in the user-defined pattern for BER measurement.

### Command

SYNCSTARTPOS bit

### Query

SYNCSTARTPOS?

### Response

bit

### Parameter

bit

Start position of synchronization judgment bit string

Range

1 to (Pattern Length) bits

### Details

Unusable unless the measurement screen is set for BER test.

This command is valid only when Data Type is set to User Define.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

### Example of Use

To set the 31st bit from the start of the user-defined pattern as the start position of synchronization judgment bit string.

SYNCSTARTPOS 31

**SYS/SYS?**

Application Switch/Status

## Function

Switches the target application for operation/control. Also queries the status of the specified application.

## Command

```
SYS apl,window
```

## Query

```
SYS? apl
```

## Response

```
status,window
```

## Parameter

apl	Target application name
SIGANA	Signal Analyzer
SPECT	Spectrum Analyzer
PNOISE	Phase Noise
CONFIG	Config
SG	Signal Generator
BER	BER Test
WIMAX	WiMAX
WCDMADL	W-CDMA/HSPA Downlink
WCDMAUL	W-CDMA/HSPA Uplink
GSM	GSM
ETC_DSRC	ETC/DSRC
TDSCDMA	TD-SCDMA
XGPHS	XG-PHS
VMA	Vector Modulation Analysis
3GLTE_DL	3GLTE Downlink
3GLTE_UL	3GLTE Uplink
LTETDDDL	LTE-TDD Downlink
CDMA2KFWD	CDMA2000
EVDOFWD	EVDO
WCDMA_BS	W-CDMA BS
RNC	W-CDMA RNC Simulator Control
MEDIAFLO	MediaFLO
ISDBTMM	ISDB-Tmm
UMTS	UMTS Measurement Software
BBIF	Digital I/F Control Software

PA	PA Measurement
PMET	Power Meter

Any optional installed software other than those above can be specified. Refer to the Operation Manual (Remote Control) of each application for details.

window	Application window status
ACT	Operation enabled (displayed on top screen)
INACT	Inactive
MIN	Minimized
NON	Not displayed (query only)
When omitted.	Same as ACT
status	Application status
CURRENT	Executed and targeted for operation
RUN	Executed but not targeted for operation
IDLE	Loaded but not executed
UNLOAD	Not loaded

#### Details

This function is used to switch the operation/control target application.

The status of the target application for remote control is `CURRENT`.

An application that has not been loaded cannot be switched to. Before using this command, load the application by using the `LOAD` command.

#### Example of Use

To switch the operation target application to the Signal Analyzer

```
SYS SIGANA,ACT
SYS? SIGANA
> CURRENT,ACT
```

## SYSINFO?

System Information Query

Function

Queries system information.

Query

```
SYSINFO? info
```

```
SYSINFO? ALL
```

Response

```
string
```

Returns specified information with a character string.

All system information is returned when ALL is specified.

Parameter

info	Information type
MODEL	Product Model
TYPE	Product type
SERIAL	Serial number
RTIME	Running time (minutes)

Example of Use

To query all system information

```
SYSINFO? ALL
```

```
> Signal Analyzer,MS2690A,610000000,100,
```

## SYST:ERR?

System Error Query

### Function

This command queries the error messages that exist in errors and the event queue.

A description consisting of numbers and characters related to the error or event is saved to the error or event queue.

### Query

SYST:ERR?

### Response

<Error/event\_number>, "<Error/event\_description>"

### Parameters

<Error/event\_number>

This is an integer in the range of -32768 to +32767. The value zero indicates that there is no error or that no event has occurred. A negative number indicates the occurrence of a standard error reserved by SCPI. A positive number indicates the occurrence of an error defined by MS269xA.

<Error/event\_description>

Each error message corresponds to an <Error/event number>. This character string can be up to 255 characters long.

**Table 6-1 Error messages**

Error/event_number	Error/event_description	Description
-100	Command error	Indicates that the command is incorrect or invalid.
-108	Parameter not allowed	Indicates that the number of parameters does not match.
-109	Missing parameter	Indicates that the number of parameters does not match. This is used if the number is not either too large or too small.
-113	Undefined header	This is an undefined command.
-120	Numeric data error	An invalid value is included.
-140	Character data error	This indicates that characters that cannot be used were input.
-150	String data error	This indicates that an incorrect character string is included in the command.
-160	Block data error	This is an error in the binary data format.
-200	Execution error	This indicates that this is an execution error other than parameter settings.



Table 6-1 Error messages (Continued)

Error/event_number	Error/event_description	Description
-220	Parameter error	This indicates that a set parameter is incorrect or invalid.
-221	Setting conflict	This indicates that this is setting disabled state.
-222	Data out of range	This indicates that the settable range has been exceeded.
-250	Mass storage error	A file operation error occurs.
-252	Missing media	No specified driver
-253	Corrupt media	Format error
-256	File name not found	No file
-350	Queue overflow	This indicates that the error event queue has overflowed.

## Details

For commands that requires synchronization by \*WAI commands when querying marker value:

Make sure to perform synchronization by \*WAI and \*OPC commands before querying the error messages by SYST:ERR?

## Example of Use

```
To query an error message
SYST:ERR?
> -100,Command error
```

## SYST:LANG/SYST:LANG?

Language mode switching

## Function

This command witches the language mode.

## Command

```
SYST:LANG SCPI
SYST:LANG NAT
```

## Query

```
SYST:LANG?
```

## Response

```
mode
```

## Parameter

mode	Language mode
SCPI	SCPI mode
NAT	Native mode (Default)

## Example of Use

```
To switch the language mode to the SCPI mode
SYST:LANG SCPI
```

## SYST:RES:MODE/SYST:RES:MODE?

Result Mode

Function

This command sets the output mode of the measured result.

Command

```
SYST:RES:MODE A
```

```
SYST:RES:MODE B
```

Query

```
SYST:RES:MODE?
```

Parameter

mode	Output mode
A	Mode A (Default)
B	Mode B

Details

The Result Mode is initialized to Mode A through the following operation.

- Execute System Reset.
- Execute the system recovery function.

Example of Use

To set the response mode to Mode A

```
SYST:RES:MODE A
```

```
SYST:RES:MODE?
```

```
> A
```

## SYST:TEMP:RF?

RF Temperature Query

### Function

This command returns the reading for the temperature of the RF unit in the signal analyzer.

### Query

SYST:TEMP:RF?

### Response

temperature

### Parameter

temperature	Measured temperature of RF unit in the signal analyzer
Resolution	0.01°C
Suffix code	Returns a value in Celsius (°C) units.

### Details

This can be used as a criterion for whether to execute calibration. The standard temperature of the RF unit is about 50°C during operation at normal temperature.

### Example of Use

To return the reading for the temperature of the RF unit in the signal analyzer

```
SYST:TEMP:RF?
> 50.78
```

## TMCNT?

Running Time Query

### Function

This command queries the running time.

### Query

TMCNT?

### Response

minutes	Running time
Suffix code	Returns the time in minutes, without a suffix code.

### Example of Use

To query the running time

```
TMCNT?
> 100
```

## TRM/TRM?

Delimiter (Terminator)

Function

Sets a delimiter (termination code) for remote control.

Command

TRM code

Query

TRM?

Response

code

Parameter

code	Delimiter type
LF	LF
CRLF	CR/LF (Default)
NONE	None (EOI only)

Example of Use

To set the delimiter to CR/LF  
TRM CRLF

## TYPE/TYPE?

Data Pattern Type

Function

Sets the data pattern type for BER measurement.

Command

TYPE pattern

Query

TYPE?

Response

pattern

Parameter

pattern	Data pattern type
PN9	PN9
PN11	PN11
PN15	PN15
PN20	PN20
PN23	PN23
ALL0	All 0 (00...0)
ALL1	All 1 (11...1)
ALT	Repetition of "01" patterns (0101....)
PN9FIX	PN9 Fix
PN11FIX	PN11 Fix
PN15FIX	PN15 Fix
PN20FIX	PN20 Fix
PN23FIX	PN23 Fix
USER	User-defined pattern

Detail

Unusable unless the measurement screen is set for BER test.  
 This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

Example of Use

To set the data pattern type to PN9.  
 TYPE PN9

## UNLOAD

Unload Application

### Function

Exits an application.

### Command

```
UNLOAD apl
```

### Parameter

apl	Target application name
SIGANA	Signal Analyzer
SPECT	Spectrum Analyzer
PNOISE	Phase Noise
PMET	Power Meter
BER	BER Test

### Details

This function exits an activated application and deletes it from the Application Switch menu.

In order to use the [SIGANA] argument with MS2830A, the analysis bandwidth option (either MS2830A-005/105, 006/106, 007, 009/109, 077/177 or 078/178) is required.

In order to use the [PNOISE] argument with MS2830A, the phase noise measurement option (MS2830A-010/110) is required.

For parameters to specify an application other than the standard ones, refer to the operation manual (remote control) for each application.

### Example of Use

To exit the Signal Analyzer application

```
UNLOAD SIGANA
```

## USERPAT?

User Pattern File Name Query

### Function

Queries the user-defined pattern name for BER measurement.

### Query

```
USERPAT?
```

### Response

```
pattern,drive
```

### Parameter

`pattern` Character string within 32 characters, obtained by removing the extension (`.bpn`) from the loaded user-defined pattern file name.

`drive` The name of the drive from which the user-defined pattern file is loaded

### Details

Unusable unless the measurement screen is set for BER test.  
\*\*\* is returned if a user-defined pattern is not loaded.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

### Example of Use

To query the user-defined pattern name.

```
USERPAT?
```

```
> ***
```

## USERPATLENG?

User Pattern Length Query

Function

Queries the bit length of the user-defined pattern for BER measurement.

Query

USERPATLENG?

Response

bit	Bit length of user-defined pattern
Range	8 to 1024 bits (for MS269xA) 8 to 4096 bits (for MS2830A)

Detail

Unusable unless the measurement screen is set for BER test.  
This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

**Note:**

The BER measurement is also available when the signal generator application is active.

Example of Use

To query the bit length of the user-defined pattern.  
USERPATLENG?  
> 1024



## USERPATLST?

Display BER User Pattern File List Query

### Function

This command returns the list of user-defined pattern files for BER measurement.

### Query

USERPATLST?

### Response

s1, s2, s3, ..., s99, s100

### Parameter

s1, ....., s100	User-defined pattern file name (within 32 characters)
Range	up to 100 files

### Details

Unusable unless the measurement screen is set for BER test.

“\*\*\*” is returned if there is no user-defined pattern.

The user-defined pattern files returned in a response message are listed in alphabetical order.

This command is available when MS269xA Option 020/120 Vector Signal Generator or MS2830A Option 026/126 BER Measurement Function is installed.

### Example of Use

To query the list of user-defined pattern files for BER measurement.

USERPATLST?

> TEST1, TEST2, TEST3

## ZAJ

Zero Set

Function

Executes the zeroing of the power sensor. This command is the same as ZEROSET command.

Command

ZAJ

Details

This function cannot be executed, when the display is other than the Power Meter.

Do not execute calibration during the zeroing. Failure to do so will not guarantee the response to the following query command:

STATus:OPERation:CONDition?

Example of Use

To execute the zero adjustment for the power sensor.

ZAJ

## ZEROSET

Zero Set

Function

Executes the zeroing of the power sensor. This command is the same as ZAJ command.

Command

ZEROSET

Details

This function cannot be executed, when the display is other than the Power Meter.

Do not execute calibration during the zeroing. Failure to do so will not guarantee the response to the following query command:

STATus:OPERation:CONDition?

Example of Use

To execute the zero adjustment for the power sensor.

ZEROSET