

PX8000
Precision Power Scope
Communication Interface

U S E R ' S M A N U A L

Thank you for purchasing the PX8000 Precision Power Scope (hereinafter, “PX8000” will refer to this products).

This Communication Interface User’s Manual explains the following interface features and commands.

- Ethernet interface
- USB interface
- GP-IB interface

To ensure correct use, please read this manual thoroughly before operation. Keep this manual in a safe place for quick reference in the event a question arises.

List of Manuals

The following manuals, including this one, are provided as manuals for the PX8000. Read them along with this manual.

Manual Title	Manual No.	Description
PX8000 Precision Power Scope Features Guide	IM PX8000-01EN	The manual explains all the PX8000 features other than the communication interface features.
PX8000 Precision Power Scope User’s Manual	IM PX8000-02EN	The manual explains how to operate the PX8000.
PX8000 Precision Power Scope Getting Started Guide	IM PX8000-03EN	Provided as a printed manual. This guide explains the handling precautions, basic operations, and specifications of the PX8000.
PX8000 Precision Power Scope Communication Interface User’s Manual	IM PX8000-17EN	This manual. The manual explains the PX8000 communication interface features and instructions on how to use them.
Model PX8000 Precision Power Scope	IMPX8000-92Z1	Document for China

The “EN” and “Z1” in the manual numbers are the language codes.

PDF files of all the manuals above are included in the accompanying manual CD.

Contact information of Yokogawa offices worldwide is provided on the following sheet.

Document No.	Description
PIM 113-01Z2	List of worldwide contacts

Notes

- The contents of this manual are subject to change without prior notice as a result of continuing improvements to the instrument’s performance and functions. The figures given in this manual may differ from those that actually appear on your screen.
- Every effort has been made in the preparation of this manual to ensure the accuracy of its contents. However, should you have any questions or find any errors, please contact your nearest YOKOGAWA dealer.
- Copying or reproducing all or any part of the contents of this manual without the permission of YOKOGAWA is strictly prohibited.
- The TCP/IP software of this product and the documents concerning it have been developed/ created by YOKOGAWA based on the BSD Networking Software, Release 1 that has been licensed from the Regents of the University of California.

Trademarks

- Microsoft, Internet Explorer, MS-DOS, Windows, Windows XP, and Windows Vista are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.
- Adobe is either registered trademark or trademark of Adobe Systems Incorporated.
- MATLAB is a registered trademark of The MathWorks, Inc. in the United States.
- GIGAZoom ENGINE is a registered trademark of Yokogawa Electric Corporation.
- In this manual, the ® and TM symbols do not accompany their respective registered trademark or trademark names.
- Other company and product names are trademarks or registered trademarks of their respective companies.

About the USB Interface and Ethernet Interface

To use the USB communication features, your PC must have the following software:

- Communication library (TMCTL)
- YOKOGAWA USB TMC driver (dedicated USB driver)

To use the Ethernet communication features, your PC must have the following software:

- Communication library (TMCTL)

To download the library and driver listed above, go to the following website, and then browse to the download page.

<http://www.yokogawa.com/yymi/>

Revisions

- 1st Edition: January 2014
- 2nd Edition: January 2014
- 3rd Edition: August 2014
- 4th Edition: December 2015
- 5th Edition: June 2017
- 6th Edition: October 2017

How to Use This Manual

Structure of the Manual

This manual contains six chapters and an appendix.

Chapter 1 Ethernet Interface

Describes the features and specifications of the Ethernet interface.

Chapter 2 USB Interface

Describes the features and specifications of the USB interface.

Chapter 3 GP-IB Interface

Describes the features and specifications of the GP-IB interface.

Chapter 4 Programming Overview

Describes command syntax and other programming information.

Chapter 5 Commands

Describes every command individually.

Chapter 6 Status Reports

Describes the status byte, various registers, and queues.

Appendix

Provides reference material such as an ASCII character code table.

Index

Symbols and Notation Used in This Manual

Notes and Cautions

The notes and cautions in this manual are categorized using the following symbols.

WARNING

Calls attention to actions or conditions that could cause serious or fatal injury to the user, and precautions that can be taken to prevent such occurrences.

CAUTION

Calls attentions to actions or conditions that could cause light injury to the user or damage to the instrument or user's data, and precautions that can be taken to prevent such occurrences.

French

AVERTISSEMENT

Attire l'attention sur des gestes ou des conditions susceptibles de provoquer des blessures graves (voire mortelles), et sur les précautions de sécurité pouvant prévenir de tels accidents.

ATTENTION

Attire l'attention sur des gestes ou des conditions susceptibles de provoquer des blessures légères ou d'endommager l'instrument ou les données de l'utilisateur, et sur les précautions de sécurité susceptibles de prévenir de tels accidents.

Note

Calls attention to information that is important for proper operation of the instrument.

Character Notations

Hard Key Names and Soft Key Names in Bold Characters

Indicate panel keys that are used in the procedure and soft keys and menu items that appear on the screen.

SHIFT+Panel Key

When SHIFT+panel key appears in a procedural explanation, it means to press the shift key so that its indicator lights, and then to press the indicated panel key. A setup menu for the item written in purple above the key that you pressed appears on the screen.

Unit

k	Denotes 1000. Example: 100 kHz (frequency)
K	Denotes 1024. Example: 720 KB (file size)

Metasyntax

The following table contains the symbols that are used in the syntax discussed mainly in chapters 4 and 5. These symbols are referred to as BNF (Backus-Naur Form) symbols. For details on how to write data using these symbols, see pages 4-6 and 4-7.

Symbol	Description	Syntax Example	Example
<>	A defined value	CHANnel<x> <x> = 1 to 4	CHANNEL2
{ }	Select an option in { }	COUPling {AC DC GND}	COUPLING AC
	Exclusive OR		
[]	Can be omitted	TRIGger [:SIMPlE] :SLOPe	TRIGGER:SLOPE

Contents

List of Manuals.....	i
How to Use This Manual.....	iii
Chapter 1 Ethernet Interface	
1.1 Component Names and Functions.....	1-1
1.2 Ethernet Interface Features and Specifications	1-2
1.3 Connecting to the Ethernet Interface.....	1-4
1.4 Configuring the PX8000 Ethernet Settings.....	1-5
Chapter 2 USB Interface	
2.1 Component Names and Functions.....	2-1
2.2 USB Interface Features and Specifications.....	2-2
2.3 Connecting to the USB Interface.....	2-3
2.4 Configuring the PX8000 USB Settings.....	2-4
Chapter 3 GP-IB Interface	
3.1 Component Names and Functions.....	3-1
3.2 GP-IB Interface Features and Specifications	3-2
3.3 Connecting to the GP-IB Interface	3-4
3.4 Configuring the PX8000 GP-IB Settings	3-6
3.5 Responses to Interface Messages.....	3-7
Chapter 4 Programming Overview	
4.1 Messages.....	4-1
4.2 Commands.....	4-3
4.3 Response.....	4-5
4.4 Data.....	4-6
4.5 Synchronization with the Controller.....	4-8
Chapter 5 Commands	
5.1 List of Commands	5-1
5.2 ACQUIRE Group.....	5-24
5.3 CALIBRATE Group	5-25
5.4 CHANNEL Group	5-26
5.5 CLEAR Group	5-31
5.6 COMMUNICATE Group	5-32
5.7 CURSOR Group.....	5-34
5.8 DISPLAY Group	5-46
5.9 FFT Group.....	5-59
5.10 FILE Group.....	5-62
5.11 GONOGO Group	5-66
5.12 HARMONICS Group	5-70
5.13 HCOPY Group	5-71
5.14 HISTORY Group.....	5-72
5.15 IMAGE Group	5-75
5.16 INITIALIZE Group.....	5-76
5.17 INPUT Group	5-77
5.18 LSTART Group.....	5-83
5.19 MATH Group.....	5-84

Contents

5.20	MEASure Group	5-88
5.21	MOTor Group.....	5-95
5.22	MTRigger Group.....	5-97
5.23	NMEasure (Numeric MEasure) Group	5-98
5.24	NULL Group	5-102
5.25	NUMeric Group	5-103
5.26	POWer Group.....	5-110
5.27	RECall Group	5-111
5.28	SEARch Group.....	5-112
5.29	SELFtest Group.....	5-114
5.30	SNAP Group.....	5-115
5.31	SStart Group.....	5-116
5.32	STARt Group	5-117
5.33	STATus Group	5-118
5.34	STOP Group.....	5-119
5.35	STORe Group.....	5-120
5.36	SYSTem Group	5-121
5.37	TIMEbase Group	5-125
5.38	TRIGger Group.....	5-126
5.39	WAVEform Group.....	5-135
5.40	XY Group.....	5-138
5.41	ZOOM Group.....	5-140
5.42	Common Command Group	5-142

Chapter 6 Status Reports

6.1	About Status Reports	6-1
6.2	Status Byte	6-3
6.3	Standard Event Register	6-4
6.4	Extended Event Register.....	6-5
6.5	Output and Error Queues	6-6

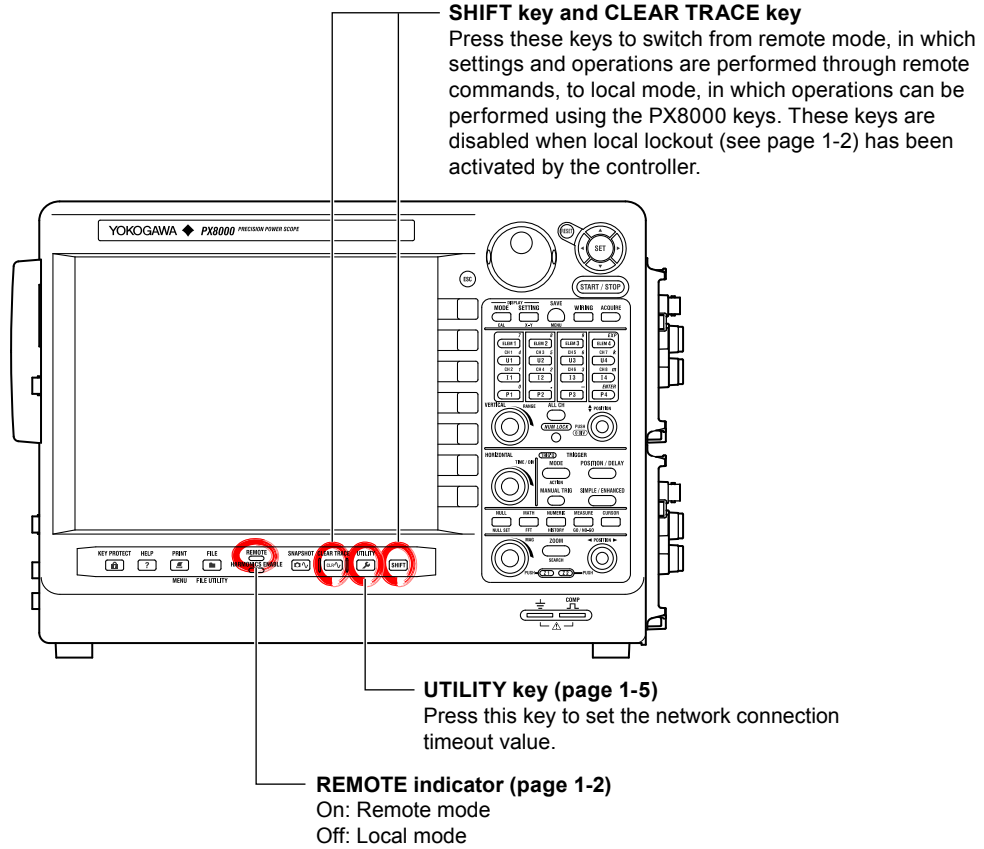
Appendix

Appendix 1	ASCII Character Codes.....	App-1
Appendix 2	Error Messages.....	App-2
Appendix 3	About the IEEE 488.2-1992 Standard.....	App-5

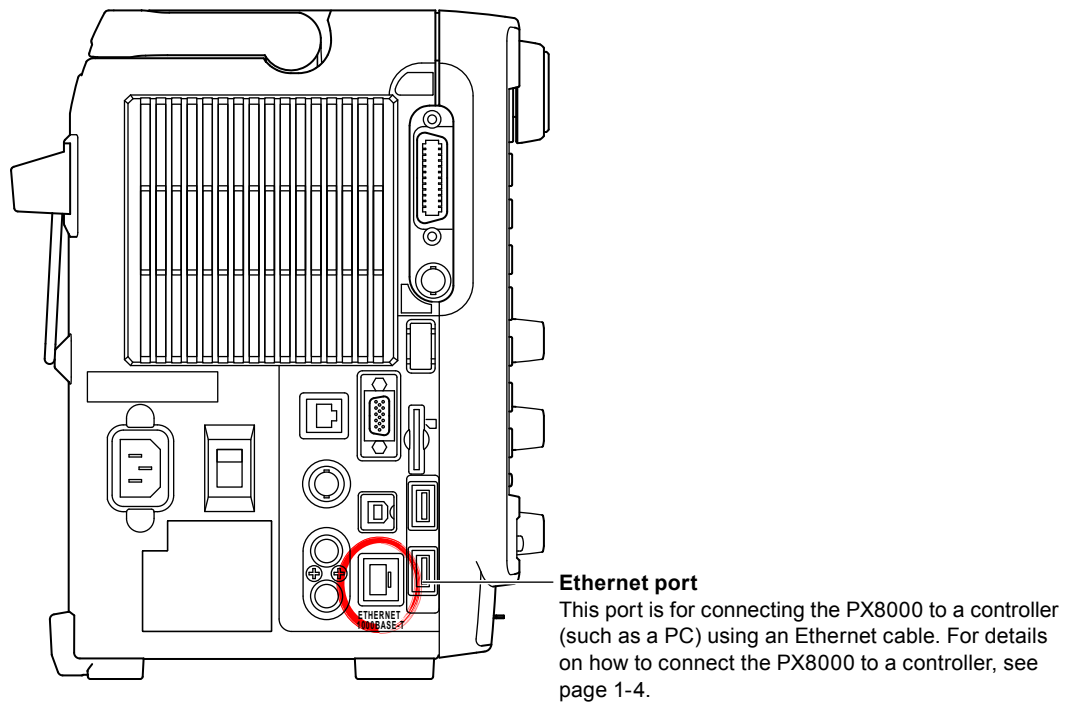
Index

1.1 Component Names and Functions

Front Panel



Side Panel



1.2 Ethernet Interface Features and Specifications

Ethernet Interface Features

Reception Features

Allows you to specify the same settings that you can using the front panel keys.

Receives output requests for measured and computed data, panel setting data, and error codes.

Transmission Features

The PX8000 can (1) transmit measured and computed data, (2) transmit panel setting data and the status byte, and (3) error codes when errors occur.

Ethernet Interface Specifications

Number of ports:	1
Electrical and mechanical specifications:	complies with IEEE802.3
Data rate:	1000 Mbps max.
Simultaneous connections:	1
Communication protocol:	TCP/IP (VXI-11)
Connector:	RJ-45

Data Transfer Rate

The following table contains approximations of how much time it takes for the PX8000 to transmit waveform data.

Model:	PX8000
Controller:	PC: Pentium 4 3.2 GHz, OS: Windows XP
Network adapter:	Intel PRO/1000 GT Desktop Adapter
Programming language:	Visual C++

Number of Data Points	Byte Data	Word Data	ASCII Data
1000	Approx. 1 ms	Approx. 1 ms	Approx. 30 ms
10000	Approx. 1 ms	Approx. 2 ms	Approx. 300 ms
100000	Approx. 10 ms	Approx. 11 ms	Approx. 3 s
1000000	Approx. 100 ms	Approx. 125 ms	Approx. 30 s

Switching between Remote and Local Modes

Switching from Local to Remote Mode

The PX8000 switches to remote mode when it is in local mode and it receives a `:COMMunicate:REMOte ON` command from the PC.

- The REMOTE indicator illuminates.
- All keys except the **SHIFT+CLEAR TRACE** keys are disabled.
- The local mode settings are retained even when the PX8000 switches to remote mode.

Switching from Remote to Local Mode

When the PX8000 is in Remote mode and you press **SHIFT+CLEAR TRACE**, the PX8000 switches to local mode. However, this does not work if the PX8000 has received a `:COMMunicate:LOCKout ON` command from the PC. The PX8000 switches to local mode when it receives a `:COMMunicate:REMOte OFF` command from the PC, regardless of the local lockout state.

- The REMOTE indicator turns off.
- All keys are enabled.
- The settings in remote mode are retained even when the PX8000 switches to local mode.

Note

You cannot use the Ethernet interface at the same time as other interfaces (GP-IB and USB interfaces).

Setting the Timeout Value

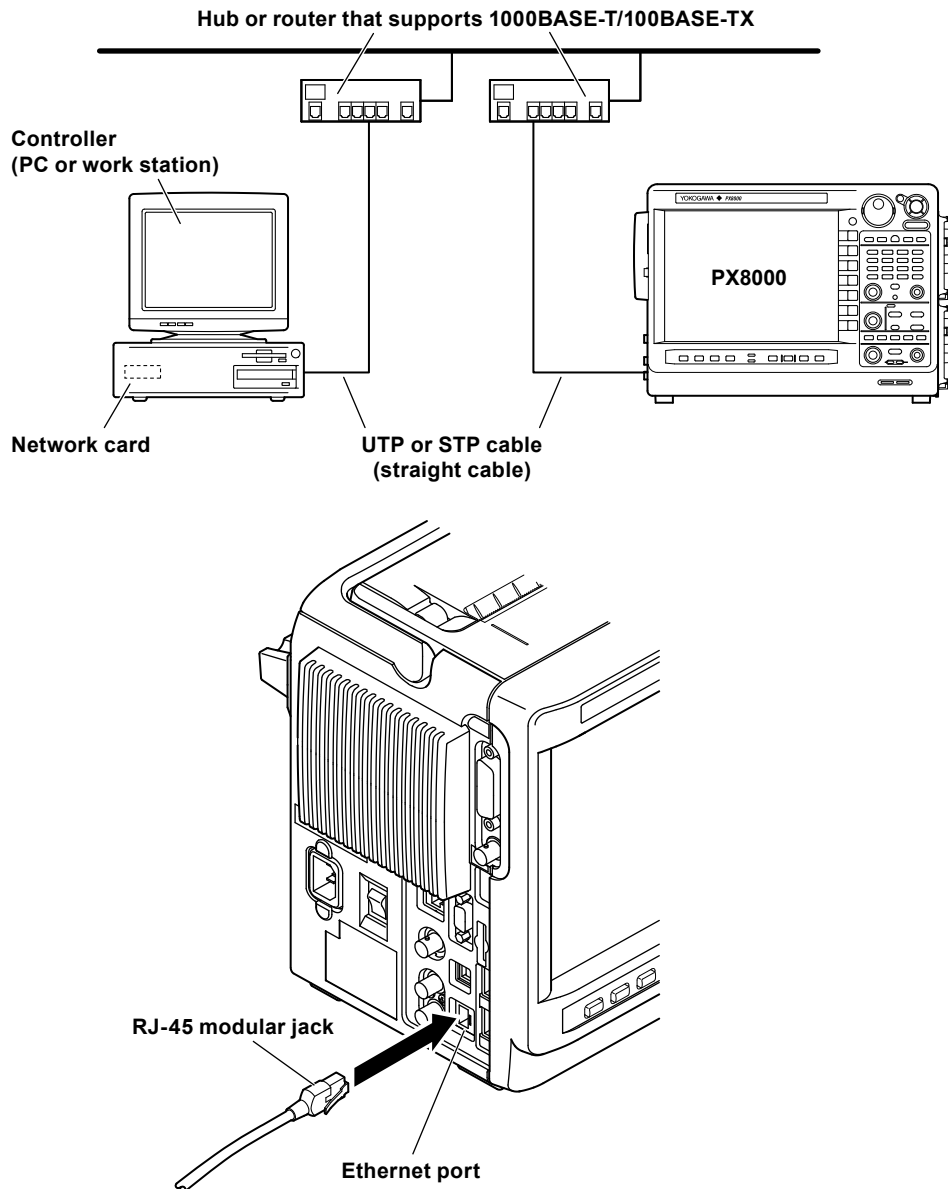
If the PX8000 is not accessed within a given period of time (specified by the timeout value), it will disconnect from the network. The timeout value can be set from 0 to 3600 s. The default setting is Infinite (0 s).

For instructions on how to set the timeout value, see section 1.4, “Configuring the PX8000 Ethernet Settings.”

1.3 Connecting to the Ethernet Interface

Connection Procedure

Connect a UTP (Unshielded Twisted-Pair) or STP (Shielded Twisted-Pair) cable that is connected to a hub or other network device to the Ethernet port on the PX8000 side panel.



Notes about Connections

- To connect the PX8000 to a PC, be sure to use straight cables and to connect through a hub or router. Proper operation is not guaranteed for a one-to-one connection using a cross cable.
- Use a network cable that conforms to the transfer speed of your network.

Note

For details on how to connect the PX8000 to a network, see section 23.1, "Connecting the PX8000 to a Network" in the user's manual, IM PX8000-02EN.

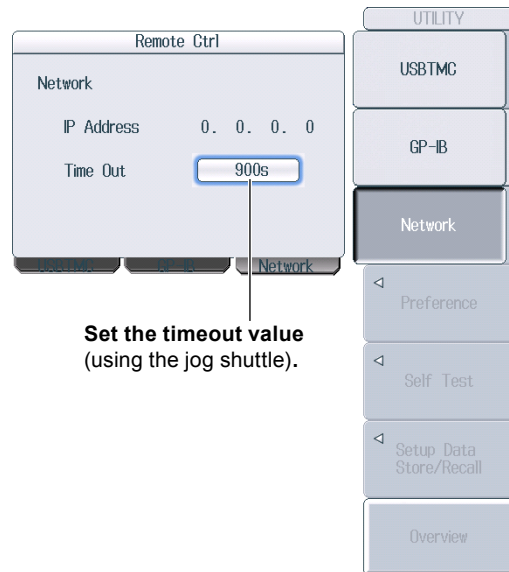
1.4 Configuring the PX8000 Ethernet Settings

This section explains the settings listed below. You must configure these settings when controlling the PX8000 remotely through an Ethernet interface.

- Network connection timeout setting

UTILITY Remote Ctrl Menu

Press **UTILITY** and the **Remote Ctrl** soft key, and then the **Network** soft key to display the following menu.



Note

Only use one communication interface: GP-IB, USB, or Network. If you send commands simultaneously from more than one communication interface, the PX8000 will not execute the commands properly.

TCP/IP Settings

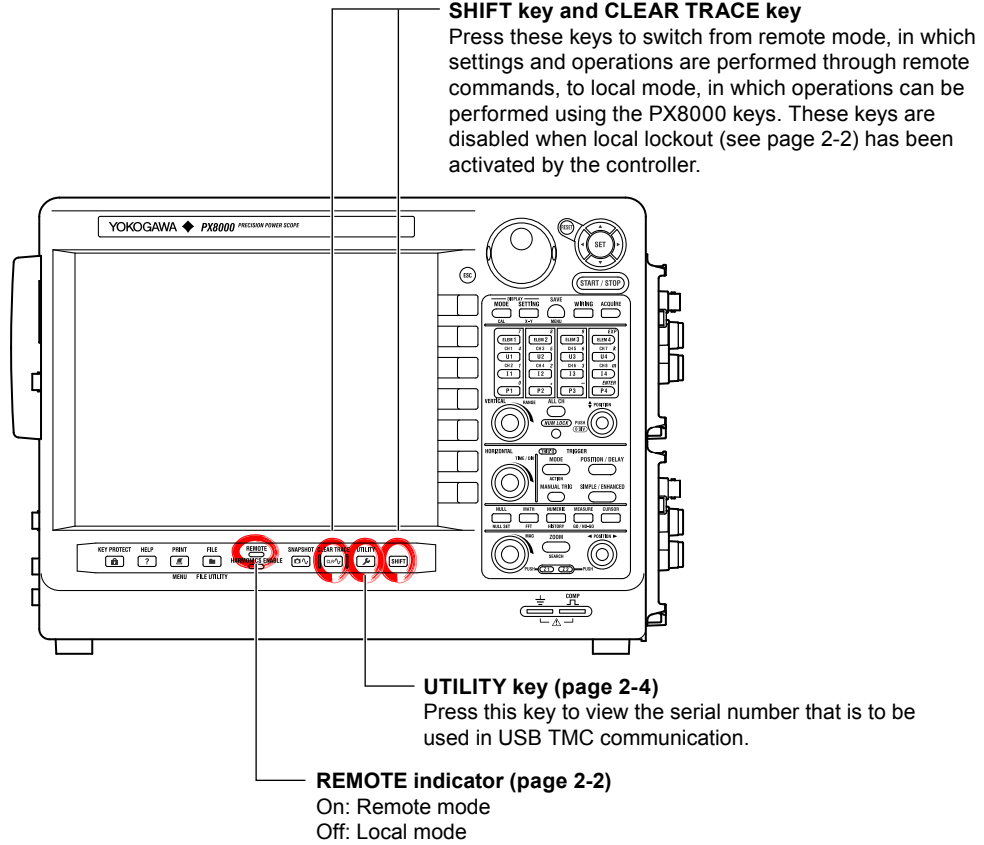
To use the Ethernet interface features, you must specify the following TCP/IP settings.

- IP address
- Subnet mask
- Default gateway

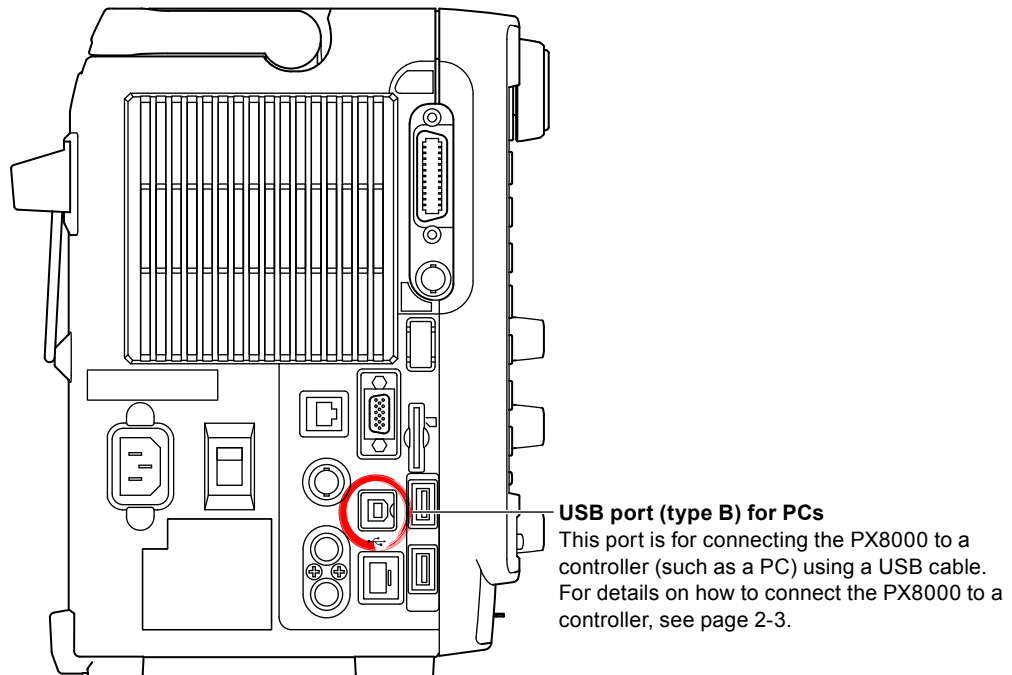
For details on how to specify these settings, see section 23.2, “Configuring TCP/IP Settings” in the user’s manual, IM PX8000-02EN.

2.1 Component Names and Functions

Front Panel



Side Panel



2.2 USB Interface Features and Specifications

USB Interface Features

Reception Features

Allows you to specify the same settings that you can using the front panel keys.
Receives output requests for measured and computed data, panel setting data, and error codes.

Transmission Features

The PX8000 can (1) transmit measured and computed data, (2) transmit panel setting data and the status byte, and (3) error codes when errors occur.

USB Interface Specifications

Electrical and mechanical specifications: USB 2.0

Connector: Type B connector (receptacle)

Number of ports: 1

Power supply: Self powered

System requirements: A PC with a USB port, running Windows 7 (32 bit), Windows Vista (32 bit), or Windows XP (32 bit, SP2 or later). A separate device driver is required to enable the connection with the PC.

Data Transfer Rate

The following table contains approximations of how much time it takes for the PX8000 to transmit waveform data.

Model: PX8000

Controller: PC: Pentium 4 3.2 GHz, USB 2.0 (ICH6), OS: Windows XP

Programming language: Visual C++

Number of Data Points	Byte Data	Word Data	ASCII Data
1000	Approx. 1 ms	Approx. 1 ms	Approx. 30 ms
10000	Approx. 1 ms	Approx. 2 ms	Approx. 300 ms
100000	Approx. 16 ms	Approx. 15 ms	Approx. 3 s
1000000	Approx. 111 ms	Approx. 170 ms	Approx. 30 s

Switching between Remote and Local Modes

Switching from Local to Remote Mode

The PX8000 switches to remote mode when it is in local mode and it receives a `:COMMunicate:REMOte ON` command from the PC.

- The REMOTE indicator illuminates.
- All keys except the **SHIFT+CLEAR TRACE** keys are disabled.
- The local mode settings are retained even when the PX8000 switches to remote mode.

Switching from Remote to Local Mode

When the PX8000 is in Remote mode and you press **SHIFT+CLEAR TRACE**, the PX8000 switches to local mode. However, this does not work if the PX8000 has received a `:COMMunicate:LOCKout ON` command from the PC. The PX8000 switches to local mode when it receives a `:COMMunicate:REMOte OFF` command from the PC, regardless of the local lockout state.

- The REMOTE indicator turns off.
- All keys are enabled.
- The settings in remote mode are retained even when the PX8000 switches to local mode.

Note

You cannot use the USB interface at the same time as other interfaces (GP-IB and Ethernet interfaces).

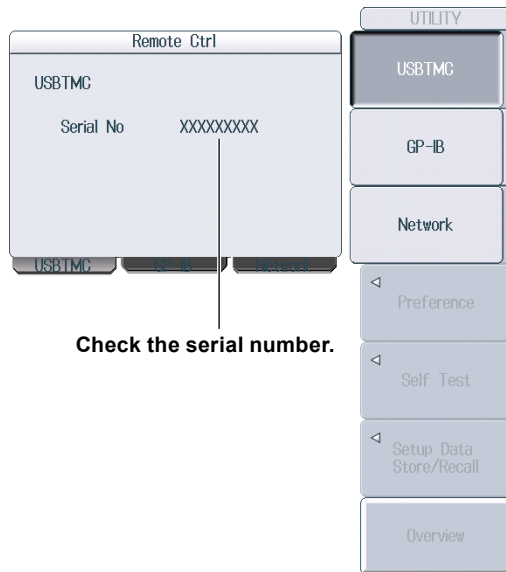
2.4 Configuring the PX8000 USB Settings

This section explains the settings listed below. You must configure these settings when controlling the PX8000 remotely through a USB interface.

- Viewing the serial number that is used in USB TMC communications

UTILITY Remote Ctrl Menu

Press **UTILITY**, the **Remote Ctrl** soft key, and then the **USB TMC** soft key to display the following menu.

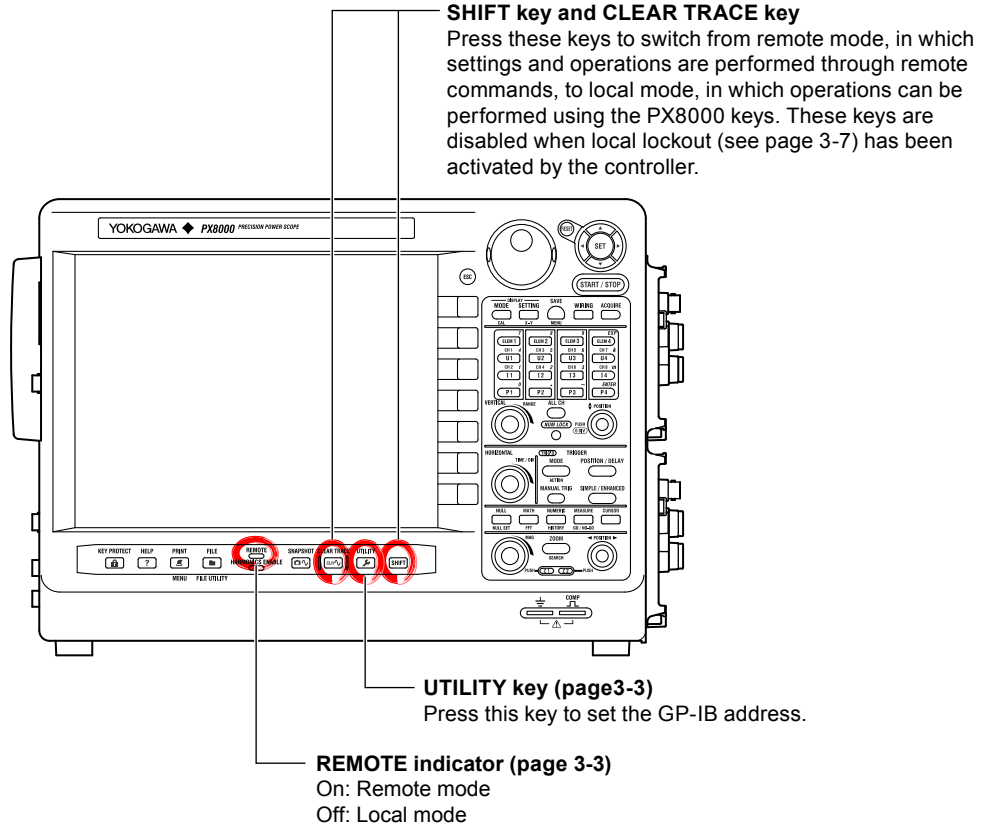


Note

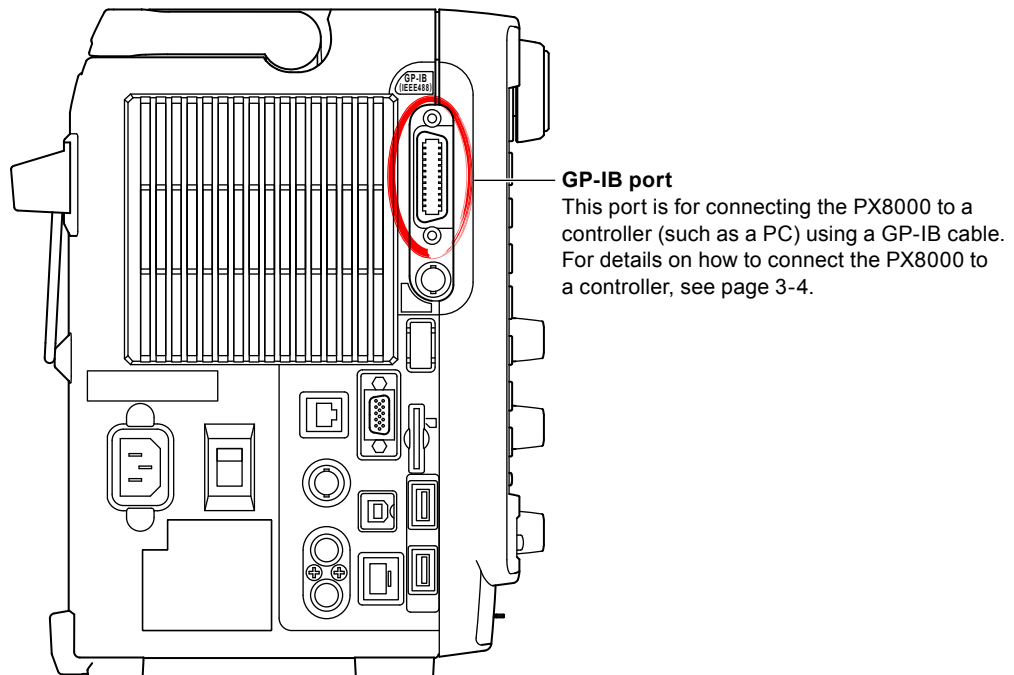
- Only use one communication interface: GP-IB, USB, or Network. If you send commands simultaneously from more than one communication interface, the PX8000 will not execute the commands properly.
- Install the YOKOGAWA USB TMC (Test and Measurement Class) driver on your PC. For information about how to obtain the YOKOGAWA USB TMC driver, contact your nearest YOKOGAWA dealer. You can also access the YOKOGAWA USB driver download webpage and download the driver.
<http://www.yokogawa.com/yml/>
- Do not use USB TMC drivers (or software) supplied by other companies.

3.1 Component Names and Functions

Front Panel



Side Panel



3.2 GP-IB Interface Features and Specifications

GP-IB Interface Features

Listener Capabilities

- Allows you to specify the same PX8000 settings that you can using the front panel keys. You cannot turn the power on and off or change communication settings.
- Receives output requests for measured and computed data, panel setting data, and error codes.
- Receives status report commands and other commands.

Talker Capabilities

The PX8000 can (1) transmit measured and computed data, (2) transmit panel setting data and the status byte, and (3) error codes when errors occur.

Note

Talk-only, listen-only, and controller capabilities are not available on the PX8000.

GP-IB Interface Specifications

Supported Devices: National Instruments Corporation

- PCI-GPIB or PCI-GPIB+
- PCIe-GPIB or PCIe-GPIB+
- PCMCIA-GPIB or PCMCIA-GPIB+
- GPIB-USB-HS

Driver NI-488.2M Version 1.60 or later

Electrical and mechanical specifications: IEEE St'd 488-1978

Functional specifications: See the table below.

Protocol: IEEE St'd 488.2-1992

Code: ISO (ASCII) codes

Mode: Addressable mode

Address setup: Press **UTILITY** and then the **Remote Ctrl** soft key. Then, set the network interface (Device) to GP-IB and the address to a number from 0 to 30.

Clearing remote mode: Press **SHIFT+CLEAR TRACE** to switch the PX8000 to local mode. These keys are disabled when local lockout has been activated by a controller.

Functional Specifications

Function	Subset Name	Description
Source handshaking	SH1	Full source handshaking capability
Acceptor handshaking	AH1	Full acceptor handshaking capability
Talker	T6	Basic talker capability, serial polling, untalk on MLA (My Listen Address), and no talk-only capability
Listener	L4	Basic listener capability, unlisten on MTA (My Talk Address), and no listen-only capability
Service request	SR1	Full service request capability
Remote local	RL1	Full remote/local capability
Parallel polling	PP0	No parallel poll capability
Device clear	DC1	Full device clear capability
Device trigger	DT0	No device trigger capability
Controller	C0	No controller capability
Electric characteristics	E1	Open collector

Data Transfer Rate

The following table contains approximations of how much time it takes for the PX8000 to transmit waveform data.

Model: PX8000
 Controller: PC: Pentium 4 3.2 GHz, GP-IB (GPIB-USB-B), OS: Windows XP
 Programming language: Visual C++

Number of Data Points	Byte Data	Word Data	ASCII Data
1000	Approx. 24 ms	Approx. 20 ms	Approx. 54 ms
10000	Approx. 31 ms	Approx. 44 ms	Approx. 510 ms
100000	Approx. 170 ms	Approx. 310 ms	Approx. 5 s
1000000	Approx. 1600 ms	Approx. 3100 ms	Approx. 50 s

Switching between Remote and Local Modes

Switching from Local to Remote Mode

The PX8000 switches to remote mode when it is in local mode and it receives a REN (Remote Enable) message from the PC.

- The REMOTE indicator illuminates.
- All keys except the **SHIFT+CLEAR TRACE** keys are disabled.
- The local mode settings are retained even when the PX8000 switches to remote mode.

Switching from Remote to Local Mode

When the PX8000 is in Remote mode and you press **SHIFT+CLEAR TRACE**, the PX8000 switches to local mode. These keys are disabled when local lockout (see page 3-7) has been activated by a controller.

- The REMOTE indicator turns off.
- All keys are enabled.
- The settings in remote mode are retained even when the PX8000 switches to local mode.

Note

You cannot use the GP-IB interface simultaneously with other interfaces (USB and Ethernet interfaces).

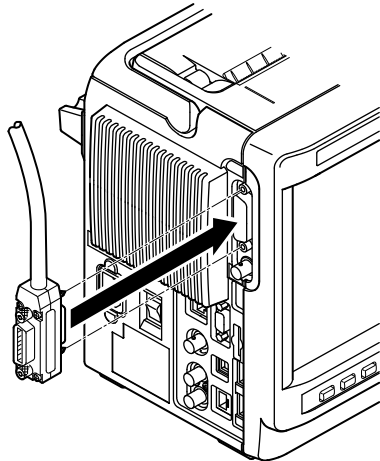
3.3 Connecting to the GP-IB Interface

GP-IB Cable

The PX8000 is equipped with an IEEE St'd 488-1978 24-pin GP-IB connector. Use GP-IB cables that comply with IEEE St'd 488-1978.

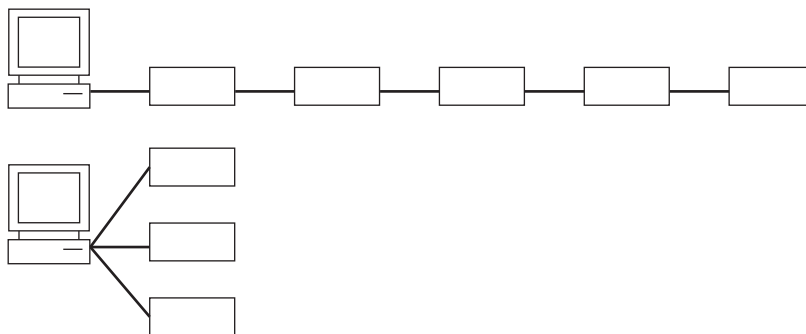
Connection Procedure

Connect a GP-IB cable as shown below.



Notes about Connections

- Securely fasten the GP-IB cable connector screws.
- On the PC end, use a GP-IB board (or card) made by National Instruments. For more details, see section 3.2.
- The PX8000 may not operate properly if the PX8000 is connected to the PC through converters (such as a GP-IB to USB converter). For more details, contact your nearest YOKOGAWA dealer.
- Several cables can be used to connect multiple devices. However, no more than 15 devices, including the controller, can be connected on a single bus.
- When connecting multiple devices, you must assign a unique address to each device.
- Use cables that are 2 m or shorter in length to connect devices.
- Keep the total length of the cables under 20 m.
- When devices are communicating, have at least two-thirds of the devices on the bus turned on.
- To connect multiple devices, wire them in a daisy-chain or star configuration as shown below. You can also mix these configurations. Loop configuration is not allowed.



CAUTION

Be sure to turn off the PC and this instrument before you connect or remove communication cables. Otherwise, erroneous operation may result, or the internal circuitry may break.

French

ATTENTION

Veiller à mettre le PC et l'instrument hors tension avant de brancher ou de débrancher les câbles de communication, pour éviter de provoquer des dysfonctionnements ou des courts-circuits internes.

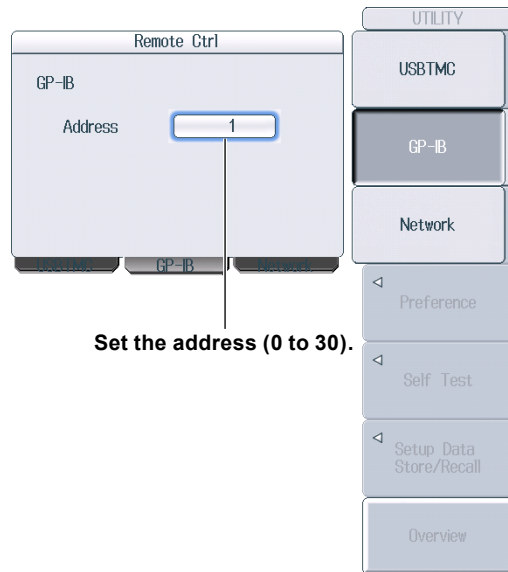
3.4 Configuring the PX8000 GP-IB Settings

This section explains the settings listed below. You must configure these settings when controlling the PX8000 remotely through a GP-IB interface.

- GP-IB address

UTILITY Remote Ctrl Menu

Press **UTILITY**, the **Remote Ctrl** soft key, and then the **GP-IB** soft key to display the following menu.



Note

- Only use one communication interface: GP-IB, USB, or Network. If you send commands simultaneously from more than one communication interface, the PX8000 will not execute the commands properly.
- When the controller is communicating with the PX8000 or with other devices through GP-IB, do not change the address.
- Each device that is connected by GP-IB has its own unique address in the GP-IB system. This address is used to distinguish one device from other devices. Therefore, you must assign a unique address to the PX8000 when connecting it to a PC or other device.

3.5 Responses to Interface Messages

Responses to Interface Messages

Responses to Uni-Line Messages

- **IFC (Interface Clear)**
Clears the talker and listener functions. Stops data transmission if it is in progress.
- **REN (Remote Enable)**
Switches between remote and local modes.

IDY (Identify) is not supported.

Responses to Multi-Line Messages (Address commands)

- **GTL (Go To Local)**
Switches to local mode.
- **SDC (Selected Device Clear)**
 - Clears the program message (command) being received and the output queue (see page 6-6).
 - Discards *OPC and *OPC? commands that are being executed.
 - Immediately aborts *WAI and COMMunicate:WAIT.

PPC (Parallel Poll Configure), GET (Group Execute Trigger), and TCT (Take Control) are not supported.

Responses to Multi-Line Messages (Universal commands)

- **LLO (Local Lockout)**
Disables the **CLEAR TRACE** key on the front panel to prohibit switching to the local mode.
- **DCL (Device Clear)**
Performs the same operation as SDC.
- **SPE (Serial Poll Enable)**
Sets the talker function on all devices on the bus to serial polling mode. The controller will poll each device in order.
- **SPD (Serial Poll Disable)**
Clears the talker function's serial poll mode on all devices on the bus.

PPU (Parallel Poll Unconfigure) is not supported.

What Are Interface Messages?

Interface messages are commands that a controller transmits. They are also referred to as interface commands or bus commands. They are classified as follows:

Uni-line Messages

Uni-line messages are sent over a single control line. The following three terminators are available.

- IFC (Interface Clear)
- REN (Remote Enable)
- IDY (Identify)

3.5 Responses to Interface Messages

Multi-line Messages

Multi-line messages are sent over eight data lines. The messages are grouped as follows:

- **Address Commands**

Some address commands are valid when a device is designated as a listener, and some are valid when it is designated as a talker. The following five commands are available.

Commands available to a device designated as a listener

- GTL (Go To Local)
- SDC (Selected Device Clear)
- PPC (Parallel Poll Configure)
- GET (Group Execute Trigger)

Commands available to a device designated as a talker

- TCT (Take Control)

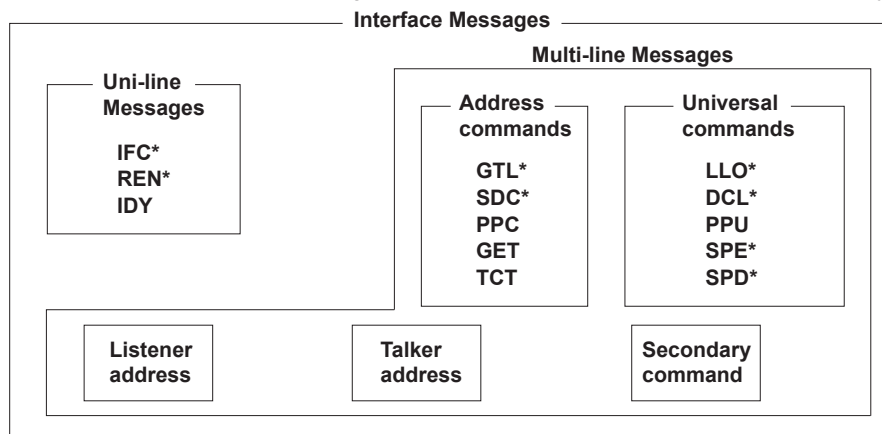
- **Universal Commands**

Universal commands are available to all devices regardless of their listener or talker designation.

The following five commands are available.

- LLO (Local Lockout)
- DCL (Device Clear)
- PPU (Parallel Poll Unconfigure)
- SPE (Serial Poll Enable)
- SPD (Serial Poll Disable)

There are other interface messages: listener-address, talk-address, and secondary commands.



The PX8000 supports interface messages marked with an asterisk.

Note

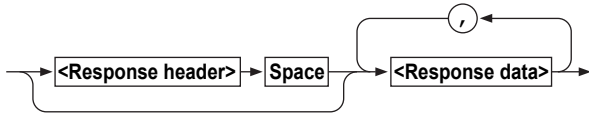
Difference between SDC and DCL

In multi-line messages, SDC messages are those that require talker or listener designation and DCL messages are those that do not require the designation. Therefore, the SDC command affects a specific device while the DCL command affects all devices on the bus.

4.1 Messages

Response Message Unit Syntax

The response message unit syntax is as follows:



<Response Header>

A response header sometimes precedes the response data. A space separates the data from the header. For details, see page 4-5.

<Response Data>

Response data contains the content of the response. If there are multiple data values, each data value is separated by a comma. For details, see page 4-5.

Examples

1.25E-02	<RMT>
└──────────┘	
Data	
:ACQUIRE:MODE NORMAL	
└──────────┘ └──────────┘	
Header	Data

If there are multiple queries in a program message, responses are returned in the same order that the queries were received in. In most cases, a single query returns a single response message unit, but there are a few queries that return multiple units. The first response message unit always corresponds to the first query, but the *n*th response unit may not necessarily correspond to the *n*th query. If you want to make sure that every response is retrieved, divide the program messages into individual messages.

Precautions to Be Taken when Exchanging Messages

- If the controller sends a program message that does not contain a query, the controller can send the next program message at any time.
- If the controller sends a program message that contains a query, the controller must finish receiving the response message before it can send the next program message. If the controller sends the next program message before receiving the response message in its entirety, an error will occur. A response message that is not received in its entirety will be discarded.
- If the controller tries to receive a response message when there is none, an error will occur. If the controller tries to receive a response message before the transmission of the program message is complete, an error will occur.

- If the controller sends a program message containing multiple message units, but the message contains incomplete units, the PX8000 will try to execute the ones that are believed to be complete. However, these attempts may not always be successful. In addition, if such a message contains queries, the PX8000 may not necessary return responses.

Deadlock

The PX8000 can store at least 1024 bytes of messages in its transmit and receive buffers (the number of available bytes varies depending on the operating conditions). If both the transmit and receive buffers become full at the same time, the PX8000 will no longer be able to operate. This condition is called a deadlock. If this happens, you can resume operation after you have discarded response messages. Deadlock will not occur if the program message (including the <PMT>) is kept below 1024 bytes. Program messages that do not contain queries never cause deadlocks.

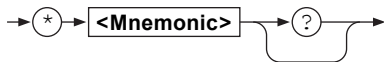
4.2 Commands

Commands

There are three types of commands (program headers) that a controller may send to the PX8000. The commands differ in their program header formats.

Common Command Header

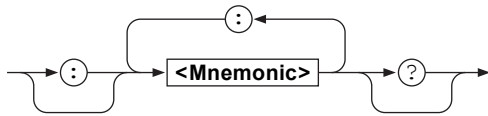
Commands that are defined in IEEE 488.2-1987 are called common commands. The header format of a common command is shown below. Be sure to include an asterisk (*) at the beginning of a common command.



Common command example *CLS

Compound Header

Other commands that are specific to the PX8000 are classified and arranged in a hierarchy according to their functions. The compound header syntax is shown below. Be sure to use a colon to specify a lower hierarchical level.



Compound header example :ACQUIRE:MODE

Simple Header

These commands are functionally independent and are not contained within a hierarchy. The format of a simple header is shown below.



Simple header example :START

Note

A <mnemonic> is an alphanumeric character string.

When Concatenating Commands

• Command Groups

A command group is a group of commands that have common compound headers arranged in a hierarchy. A command group may contain sub-groups.

Example Group of commands related to acquisition

```
:ACQUIRE:AVERAGE:COUNT
:ACQUIRE:AVERAGE:EWEIGHT
:ACQUIRE:CLOCK
:ACQUIRE:COUNT
:ACQUIRE:LOGGER
:ACQUIRE:MODE
:ACQUIRE:PROTATE
:ACQUIRE:RLLENGTH
```

• When Concatenating Commands of the Same Group

The PX8000 stores the hierarchical level of the command that is currently being executed and processes the next command on the assumption that it belongs to the same level. Therefore, the common header section can be omitted for commands that belong to the same group.

Example :ACQUIRE:MODE NORMAL;
COUNT 1<PMT>

• When Concatenating Commands of Different Groups

If the subsequent command does not belong to the same group, place a colon in front of the header (cannot be omitted).

Example :ACQUIRE:MODE NORMAL;:DISPLAY:
FORMAT SINGLE<PMT>

• When Concatenating Simple Headers

If a simple header follows another command, place a colon in front of the simple header (cannot be omitted).

Example :ACQUIRE:MODE NORMAL;:
START<PMT>

• When Concatenating Common Commands

Common commands that are defined in IEEE 488.2-1992 are independent of hierarchy. There is no need to use a colon.

Example :ACQUIRE:MODE NORMAL;*CLS;
COUNT 1<PMT>

• When Separating Commands with <PMT>

If you separate two commands with a terminator, two program messages will be sent. Therefore, the common header must be specified for each command even if commands belonging to the same command group are being concatenated.

Example :ACQUIRE:MODE NORMAL<PMT>:
ACQUIRE:COUNT 1<PMT>

4.2 Commands

Upper-Level Query

An upper-level query is a query that is made by appending a question mark to a command higher in the group. The controller can receive all of the settings in a group collectively by executing a highest-level query. Some upper-level queries of a group, which may be comprised of more than three hierarchical levels, can cause the PX8000 to transmit all the lower level settings.

```
Example :CHANnel1?<PMT>
        -> :CHANNEL1:DISPLAY 1;
        LABEL "U1";VOLTAGE:AUTO 0;
        OFFSET 0.00000E+00;POSITION 0.00;
        SCALE 200.000E+00,-200.000E+00;
        VARIABLE 0;ZOOM 1.000
```

The response to an upper-level query can be sent back to the PX8000 as a program message. This enables the settings that were present when the upper-level query was made to be reproduced later on. However, some upper-level queries do not return setup data that is not currently in use. Exercise caution because not all of a group's information is necessarily returned in a response.

Header Interpretation Rules

The PX8000 interprets the header that it receives according to the rules below.

- Mnemonics are not case sensitive.
Example `CURSOR` can be written as `cursor` or `Cursor`.
- The lower-case characters can be omitted.
Example `CURSOR` can be written as `CURSO` or `CURS`.
- The question mark at the end of a header indicates that it is a query. You cannot omit the question mark.
Example The shortest abbreviation for `CURSOR?` is `CURS?`.
- If the `<x>` (value) at the end of a mnemonic is omitted, it is interpreted as a 1.
Example If you write `CHAN` for `CHANnel<x>`, `CHANnel1` is specified.
- Parts of commands and parameters enclosed in square brackets (`[]`) can be omitted.
Example `TRIGGER[:SIMPLE]:LEVEL` can be written as `TRIG:LEV`.

However, the last section enclosed in square brackets cannot be omitted in an upper-level query.

Example `TRIGGER?` and `TRIGGER:SIMPLE?` are different queries.

4.3 Response

Response

When the controller sends a query with a question mark, the PX8000 returns a response message to the query. The PX8000 returns response messages in one of the following two forms.

- **Response Consisting of a Header and Data**
Responses that can be used as program messages without any changes are returned with command headers attached.

```
Example  :ACQire:MODE?<PMT>  
         -> :ACQUIRE:MODE NORMAL<RMT>
```

- **Response Only Consisting of Data**
Responses that cannot be used as program messages unless changes are made (query-only commands) are returned without headers. However, there are query-only commands whose responses the PX8000 will attach headers to.

```
Example  [:INPut]:POVer?<PMT> -> 0<RMT>
```

If You Want the PX8000 to Return Responses without Headers

You can configure the PX8000 so that even responses that have both headers and data are returned without headers. Use the `COMMunicate:HEADer` command for this purpose.

Abbreviated Form

The PX8000 normally returns response headers with the lower-case section removed. You can configure the PX8000 so that full headers are returned. Use the `COMMunicate:VERBose` command for this purpose. The sections enclosed in square brackets ([]) are also omitted in the abbreviated form.

4.4 Data

Data

Data contains conditions and values that are written after the header. A space separates the data from the header. Data is grouped as follows:

Data	Description
<Decimal>	A value expressed in decimal notation Example Probe attenuation for CH1 -> CHANnel1:PROBe 100
<Voltage>, <Current>, <Power>, <Time>, <Frequency>	A physical value Example Time-axis range -> TIMEbase:TDIV 1US
<Register>	A register value expressed as binary, octal, decimal or hexadecimal Example Extended event register value -> STATUS:EESE #HFE
<Character data>	Predefined character string (mnemonic). Select from the available strings in braces. Example Select the input coupling of CH1 -> CHANnel1:COUPling {AC DC GND}
<Boolean>	Indicates on and off. Specify ON, OFF, or a value Example Turn on the CH1 display -> CHANnel1:DISPlay ON
<String data>	User-defined string Example Comment attached to screen data output -> HCOpy:COMMeNt "ABCDEF"
<Filename>	Indicates a file name. Example Save file name -> FILE:SAVE:NAME "CASE1"
<Block data>	Data that contains 8-bit values Example Response to acquired waveform data -> #800000010ABCDEFGHJIJ

<Decimal>

<Decimal> indicates a value expressed as a decimal number, as shown in the table below. Decimal values are written in the NR form as specified in ANSI X3.42-1975.

Symbol	Description	Examples
<NR1>	Integer	125 -1 +1000
<NR2>	Fixed point number	125.0 -.90 +001.
<NR3>	Floating-point number	125.0E+0 -9E-1 +.1E4
<NRf>	Any form from <NR1> to <NR3>	

- The PX8000 can receive decimal values that are sent from the controller in any form, from <NR1> to <NR3>. This is expressed as <NRf>.
- The PX8000 returns a response to the controller in one of the forms from <NR1> to <NR3> depending on the query. The same form is used regardless of the size of the value.
- For the <NR3> form, the plus sign after the "E" can be omitted. You cannot omit the minus sign.

- If a value outside the setting range is entered, the value is adjusted to the closest value within the range.
- If a value has more significant digits than are available, the value will be rounded.

<Voltage>, <Current>, <Power>, <Time>, and <Frequency>

<Voltage>, <Current>, <Power>, <Time>, and <Frequency> indicate decimal values that have physical significance. A <Multiplier> or <Unit> can be attached to the <NRf> form that was described earlier. The following types of expressions are possible.

Form	Example
<NRf><Multiplier><Unit>	5MV
<NRf><Unit>	5E-3V
<NRf>	5E-3

<Multiplier>

<Multipliers> that you can use are indicated in the following table.

Symbol	Word	Multiplier
EX	Exa	10 ¹⁸
PE	Peta	10 ¹⁵
T	Tera	10 ¹²
G	Giga	10 ⁹
MA	Mega	10 ⁶
K	Kilo	10 ³
M	Milli	10 ⁻³
U	Micro	10 ⁻⁶
N	Nano	10 ⁻⁹
P	Pico	10 ⁻¹²
F	Femto	10 ⁻¹⁵
A	Atto	10 ⁻¹⁸

<Unit>

<Units> that you can use are indicated in the following table.

Symbol	Word	Description
V	Volt	Voltage
A	Ampere	Current
W	Watt	Power
S	Second	Time
HZ	Hertz	Frequency
MHZ	Megahertz	Frequency

- <Multiplier> and <Unit> are not case sensitive.
- "U" is used to indicate micro ("μ").
- "MA" is used for Mega to distinguish it from Milli. Megahertz, which is expressed as "MHZ," is an exception. Therefore, "M (Milli)" cannot be used for frequencies.
- If both <Multiplier> and <Unit> are omitted, the default unit is used.
- Response messages are always expressed in the <NR3> form. Response messages are returned using the default unit without the <Multiplier> or <Unit>.

<Register>

<Register> is an integer that can be expressed in decimal, hexadecimal, octal, or binary notation. It is used when each bit of the value has a particular meaning. The following types of expressions are possible.

Form	Example
<NRf>	1
#H<Hexadecimal value made up of the digits 0 to 9 and A to F>	#H0F
#Q<Octal value made up of the digits 0 to 7>	#Q777
#B<Binary value made up of the digits 0 and 1>	#B001100

- <Register> is not case sensitive.
- Response messages are always expressed in the <NR1> form.

<Character Data>

<Character data> is a predefined character string (mnemonics). It is mainly used to indicate that an option listed as a character string in braces must be selected and entered. The data interpretation rules are the same as those described in "Header Interpretation Rules" on page 4-4.

Form	Example
{AC DC GND}	AC

- As with the header, the COMMunicate:VERBoSe command can be used to select whether to return the response in the full form or in the abbreviated form.
- The COMMunicate:HEADer setting does not affect <character data>.

<Boolean>

<Boolean> is data that indicates on or off. The following types of expressions are possible.

Form	Examples
{ON OFF <NRf>}	ON OFF 1 0

- When <Boolean> is expressed in the <NRf> form, OFF is selected if the rounded integer value is 0, and ON is selected for all other cases.
- A response message is always returned with a 1 if the value is ON and with a 0 if the value is OFF.

<String data>

<String data> is not a predefined character string like <character data>. It can be any character string. The character string must be enclosed in single quotation marks (') or double quotation marks (").

Form	Examples
<String data>	'ABC' "IEEE488.2-1987"

- If a character string contains a double quotation mark ("), the double quotation mark is expressed as

two consecutive quotation marks (""). This rule also applies to single quotation marks.

- A response message is always enclosed in double quotation marks (").
- <String data> is any character string. Therefore, the PX8000 assumes that the remaining program message units are part of the character string if no single (') or double quotation mark (") is encountered. As a result, no error is detected if a quotation mark is omitted.

<Filename>

<Filename> is data that indicates a file name. The following types of expressions are possible.

Form	Example
{<NRf> <Character data> <String data>}	1 CASE "CASE"

<NRf> is rounded to an 8-digit integer and converted to ASCII code. The result is the file name. Negative values are not allowed.

Example 1 becomes "00000001"

- The first 12 characters of <character data> or the first 16 characters of <string data> are the file name.
- Response messages are always expressed in the <string data> form.
- For information about the number of characters in a file name expressed in the <string data> form, see the features guide, IM PX8000-01EN.

<Block data>

<Block data> is any 8-bit data. It is only used in response messages on the PX8000. The syntax is as follows:

Form	#N<N-digit decimal number><Data byte sequence>
Example	#800000010ABCDEFGHIJ

- #N
Indicates that the data is <block data>. "N" indicates the number of succeeding data bytes (digits) in ASCII code.
- <N-digit decimal number>
Indicates the number of bytes of data.
Example 00000010 = 10 bytes
- <Data byte sequence>
Expresses the actual data.
Example ABCDEFGHIJ
- Data is comprised of 8-bit values (0 to 255). This means that the ASCII code "0AH" which stands for "NL" can also be included in the data. Hence, care must be taken when programming the controller.

4.5 Synchronization with the Controller

Overlap Commands and Sequential Commands

There are two types of commands: overlap and sequential. The execution of one overlap command can start before the execution of the previous overlap command is completed.

If you specify the voltage range and send the next program message to query the result, the PX8000 always returns the most recent setting (1000 V in this case).

```
:INPut:VOLTage:RANGe;ELEMeNt1 1000V;  
ELEMeNt?<PMT>
```

This is because the next command is forced to wait until the processing of `INPut:VOLTage:RANGe;ELEMeNt1` is completed. This type of command is called a sequential command.

Let us assume you send the next program message when you want to load a file and query the voltage range of the result.

```
:FILE:LOAD:SETup:EXECute "CASE1";:  
INPut:VOLTage:RANGe;ELEMeNt1?
```

In this case, `INPut:VOLTage:RANGe;ELEMeNt1?` is executed before the loading of the file is completed, and the voltage range that is returned is the value before the file is loaded.

Overlapping refers to the act of executing the next command before the processing of the current command is completed, such as in the command `FILE:LOAD:SETup:EXECute "CASE1"`. A command that operates in this way is called an overlap command. You can prevent overlapping by using the following methods.

Synchronizing to Overlap Commands

• Using a *WAI Command

A `*WAI` command holds the subsequent commands until the overlap command is completed.

```
Example :COMMunicate:OPSE #H0040;:FILE:  
LOAD:SETup:EXECute "CASE1";  
*WAI;:INPut:VOLTage:RANGe:  
ELEMeNt1?<PMT>
```

The `COMMunicate:OPSE` command is used to select which command to apply `*WAI` to. Here, it is applied to the media access command.

`*WAI` is executed before `INPut:VOLTage:RANGe;ELEMeNt1?`, so `INPut:VOLTage:RANGe;ELEMeNt1?` is not executed until the file loading is completed.

• Using the COMMunicate:OVERlap command

The `COMMunicate:OVERlap` command enables (or disables) overlapping.

```
Example :COMMunicate:OVERlap #HFFBF;:  
FILE:LOAD:SETup:EXECute "CASE1";:  
INPut:VOLTage:RANGe:  
ELEMeNt1?<PMT>
```

`COMMunicate:OVERlap #HFFBF` enables overlapping for commands other than media access. Because overlapping of file loading is disabled, `FILE:LOAD:SETup:EXECute "CASE1"` operates in the same way as a sequential command. Thus, `INPut:VOLTage:RANGe;ELEMeNt1?` is not executed until file loading is completed.

• Using the *OPC Command

The `*OPC` command sets the OPC bit, which is bit 0 in the standard event register (see page 6-4), to 1 when the overlapping is completed.

```
Example :COMMunicate:OPSE #H0040;*ESE 1;  
*ESR?;*SRE 32;:FILE:LOAD:SETup:  
EXECute "CASE1";*OPC<PMT>  
(Read the response to *ESR?)  
(Wait for a service request)  
:INPut:VOLTage:RANGe:  
ELEMeNt1?<PMT>
```

The `COMMunicate:OPSE` command is used to select which command to apply `*OPC` to. Here, it is applied to the media access command.

`*ESE 1` and `*SRE 32` indicate that a service request is only generated when the OPC bit is 1. `*ESR?` clears the standard event register.

In the example above, `INPut:VOLTage:RANGe;ELEMeNt1?` is not executed until a service request is generated.

- **Using the *OPC? Query**

The *OPC? query generates a response when an overlapping operation is completed.

```
Example :COMMunicate:OPSE #H0040;:FILE:
LOAD:SETup:EXECute "CASE1";
*OPC?<PMT>
(Read the response to *OPC?)
:INPut:VOLTage:RANGe:
ELEMent1?<PMT>
```

The COMMunicate:OPSE command is used to select which command to apply *OPC? to. Here, it is applied to the media access command.

Because *OPC? does not generate a response until the overlapping operation is completed, the file loading will have been completed by the time the response to *OPC? is read.

Note

Most commands are sequential commands. Overlap commands are indicated as such in chapter 5. All other commands are sequential commands.

Achieving Synchronization without Using Overlap Commands

Even with sequential commands, synchronization with non-communication events such as triggers is sometimes required to correctly query the measured data.

For example, if the following program message is transmitted to query waveform data acquired with the trigger mode set to single, the WAVEform:SEND? command may be executed regardless of whether the acquisition has been completed and may result in a command execution error.

```
:TRIGger:MODE SINGLE;:START;:WAVEform:
SEND?<PMT>
```

If this happens, you must use the following method to synchronize to the end of waveform acquisition.

- **Using the STATus:CONDition? query**

STATus:CONDition? is used to query the contents of the condition register (see page 6-5).

You can determine whether waveform acquisition is in progress by reading bit 0 in the condition register. If the bit is 1, waveform acquisition is in progress. If the bit is 0, waveform acquisition is not in progress.

```
Example :TRIGger:MODE SINGLE;:START<PMT>
:STATus:CONDition?<PMT>
(Read the response. If bit 0 is 1, return to
the previous command.)
:WAVEform:SEND?<PMT>
```

WAVEform:SEND? is not executed until bit 0 in the condition register becomes 0.

- **Using the Extended Event Register**

The changes in the condition register can be reflected in the extended event register (see page 6-5).

```
Example :STATus:FILTer1 FALL;:STATus:
EESE 1;EESR?;*SRE 8;:TRIGger:
MODE SINGLE;:START<PMT>
(Read the response to STATus:EESR?)
(Wait for a service request)
:WAVEform:SEND?<PMT>
```

The STATus:FILTer1 FALL command sets the transition filter so that bit 0 in the extended event (FILTer1) is set to 1 when bit 0 in the condition register changes from 1 to 0.

The STATus:EESE 1 command is used to only change the status byte based on bit 0 in the extended event register.

The STATus:EESR? command is used to clear the extended event register.

The *SRE 8 command is used to generate service requests based only on the changes in the extended event register bits.

The WAVEform:SEND? command is not executed until a service request is generated.

- **Using the COMMunicate:WAIT command**

The COMMunicate:WAIT command is used to wait for a specific event to occur.

```
Example :STATus:FILTer1 FALL;:STATus:
EESR?;:TRIGger:MODE SINGLE<PMT>
(Read the response to STATus:EESR?)
:COMMunicate:WAIT 1;:WAVEform:
SEND?<PMT>
```

For a description of STATus:FILTer1 FALL and STATus:EESR?, see the previous section about the extended event register.

The COMMunicate:WAIT 1 command specifies that the program will wait for bit 0 in the extended event register to be set to 1.

WAVEform:SEND? is not executed until bit 0 in the extended event register becomes 1.

5.1 List of Commands

Command	Function	Page
ACQUIRE Group		
:ACQUIRE?	Queries all waveform acquisition settings.	5-24
:ACQUIRE:AVERAge?	Queries all averaging settings.	5-24
:ACQUIRE:AVERAge:COUNT	Sets or queries the number of waveform acquisitions to perform during averaging.	5-24
:ACQUIRE:AVERAge:EWEight (Exponent WEight)	Sets or queries the attenuation constant of exponential averaging.	5-24
:ACQUIRE:CLOCK	Sets or queries the time base (internal or external clock).	5-24
:ACQUIRE:COUNT	Sets or queries the number of waveform acquisitions to perform in Normal mode.	5-24
:ACQUIRE:LOGGer	Executes logger setup.	5-24
:ACQUIRE:MODE	Sets or queries the waveform acquisition mode.	5-24
:ACQUIRE:PROTate	Sets or queries the pulse/rotate setting to use during external clock input.	5-24
:ACQUIRE:RLENgth	Sets or queries the record length.	5-24
CALIBRATE Group		
:CALIBRATE?	Queries all calibration settings.	5-25
:CALIBRATE:AUXiliary:MODE	Sets or queries the AUX module's auto calibration mode.	5-25
:CALIBRATE:ELEMent:MODE	Sets or queries the power measurement element's auto calibration mode.	5-25
:CALIBRATE[:EXECute]	Executes calibration.	5-25
CHANnel Group		
:CHANnel<x>?	Queries all vertical axis settings of a channel.	5-26
:CHANnel<x>:DISPlay	Sets or queries whether the channel is displayed.	5-26
:CHANnel<x>:LABel	Sets or queries the waveform label of a channel.	5-26
:CHANnel<x>:MODUle?	Queries the module that is installed in the channel.	5-26
:CHANnel<x>:SENSe	Sets or queries the sense type of the AUX module.	5-26
:CHANnel<x>[:VOLTage]?	Queries all settings of voltage, current, and AUX modules.	5-26
:CHANnel<x>[:VOLTage]:AUTO	Sets or queries the auto range on/off status of a channel.	5-26
:CHANnel<x>[:VOLTage]:BWIDth	Sets or queries the bandwidth limit of the AUX module.	5-26
:CHANnel<x>[:VOLTage]:COUPling	Sets or queries the input coupling setting of the AUX module.	5-26
:CHANnel<x>[:VOLTage]:LSCale?	Queries all linear scaling settings of voltage, current, and AUX modules.	5-27
:CHANnel<x>[:VOLTage]:LSCale: AVALue	Sets or queries scaling coefficient A when the linear scaling mode of the AUX module is on.	5-27
:CHANnel<x>[:VOLTage]:LSCale: BVALue	Sets or queries offset B when the linear scaling mode of the AUX module is on.	5-27
:CHANnel<x>[:VOLTage]:LSCale: DISPlaytype?	Queries all the linear-scaling display-type settings of the AUX module.	5-27
:CHANnel<x>[:VOLTage]:LSCale: DISPlaytype:DECimalnum	Sets or queries the decimal place when the linear scaling mode of the AUX module is on and the display format is Float.	5-27
:CHANnel<x>[:VOLTage]:LSCale: DISPlaytype:MODE	Sets or queries the display mode when the linear scaling mode of the AUX module is on.	5-27
:CHANnel<x>[:VOLTage]:LSCale: DISPlaytype:SUBunit	Sets or queries the unit prefix when the linear scaling mode of the AUX module is on and the display format is Float.	5-28
:CHANnel<x>[:VOLTage]:LSCale: GETMeasure	Executes the measurement of P1:X and P2:X values when the linear scaling mode of the AUX module is on.	5-28
:CHANnel<x>[:VOLTage]:LSCale: MODE	Sets or queries the linear scaling function of the AUX module.	5-28
:CHANnel<x>[:VOLTage]:LSCale: {P1X P1Y P2X P2Y}	Sets or queries the measured values (P1:X and P2:X) and scaling values (P1:Y and P2:Y) when the linear scaling mode of the AUX mode is on.	5-28
:CHANnel<x>[:VOLTage]:LSCale: UNIT	Sets or queries the linear scaling unit of the AUX module.	5-28
:CHANnel<x>[:VOLTage]:OFFSet	Sets or queries the offset voltage of a voltage, current, or AUX module.	5-28

5.1 List of Commands

Command	Function	Page
:CHANnel<x>[:VOLTage]:POSition	Sets or queries the vertical position of a voltage, current, or AUX module.	5-29
:CHANnel<x>[:VOLTage]:PROBe	Sets or queries the probe type of the AUX module.	5-29
:CHANnel<x>[:VOLTage]:PULSe?	Queries all the pulse reference level settings when the sense type of the AUX module is PULSe.	5-29
:CHANnel<x>[:VOLTage]:PULSe:HIGH	Sets or queries the voltage level for the high pulse reference level when the sense type of the AUX module is PULSe.	5-29
:CHANnel<x>[:VOLTage]:PULSe:LOW	Sets or queries the voltage level for the low pulse reference level when the sense type of the AUX module is PULSe.	5-29
:CHANnel<x>[:VOLTage]:RANGe	Sets or queries the voltage range of the AUX module.	5-29
:CHANnel<x>[:VOLTage]:SCALE	Sets or queries the upper and lower limits of the screen for a voltage, current, or AUX module.	5-29
:CHANnel<x>[:VOLTage]:VARiable	Sets or queries the zoom method (vertical scale) of a voltage, current, or AUX module.	5-30
:CHANnel<x>[:VOLTage]:ZOOM	Sets or queries the vertical zoom factor of a voltage, current, or AUX module.	5-30

CLEar Group

:CLEar	Clears traces.	5-31
--------	----------------	------

COMMunicate Group

:COMMunicate?	Queries all communication settings.	5-32
:COMMunicate:HEADer	Sets or queries whether a header is added to the response to a query.	5-32
:COMMunicate:LOCKout	Sets or clears local lockout.	5-32
:COMMunicate:OPSE	Sets or queries the overlap command that is used by the *OPC, *OPC?, and *WAI commands.	5-32
:COMMunicate:OPSR?	Queries the operation pending status register.	5-32
:COMMunicate:OVERlap	Sets or queries the commands that operate as overlap commands.	5-32
:COMMunicate:REMOte	Sets or queries whether the PX8000 is in remote or local mode. ON is remote mode.	5-32
:COMMunicate:VERBose	Sets or queries whether the response to a query is returned fully spelled out or in its abbreviated form.	5-32
:COMMunicate:WAIT	Waits for a specified extended event to occur.	5-32
:COMMunicate:WAIT?	Creates the response that is returned when a specified extended event occurs.	5-33

CURSor Group

:CURSor?	Queries all cursor measurement settings.	5-34
:CURSor:FFT?	Queries all FFT cursor settings.	5-34
:CURSor:FFT:MARKer:FORM	Sets or queries the form of an FFT cursor (marker cursor).	5-34
:CURSor:FFT:MARKer:M<x>?	Queries all settings of an FFT cursor (marker cursor).	5-34
:CURSor:FFT:MARKer:M<x>:DF<y>?	Queries all ΔF display settings. ΔF is between the FFT cursors (marker cursors).	5-34
:CURSor:FFT:MARKer:M<x>:DF<y>:STATE	Sets or queries whether the ΔF value between the FFT cursors (marker cursors) is displayed.	5-34
:CURSor:FFT:MARKer:M<x>:DF<y>:VALue?	Queries the ΔF value between the FFT cursors (marker cursors).	5-34
:CURSor:FFT:MARKer:M<x>:DY<y>?	Queries all ΔY display settings. ΔY is between the FFT cursors (marker cursors).	5-34
:CURSor:FFT:MARKer:M<x>:DY<y>:STATE	Sets or queries whether the ΔY value between the FFT cursors (marker cursors) is displayed.	5-34
:CURSor:FFT:MARKer:M<x>:DY<y>:VALue?	Queries the ΔY value between the FFT cursors (marker cursors).	5-34
:CURSor:FFT:MARKer:M<x>:F?	Queries all frequency-axis settings of an FFT cursor (marker cursor).	5-35
:CURSor:FFT:MARKer:M<x>:F:STATE	Sets or queries whether the frequency-axis value of an FFT cursor (marker cursor) is displayed.	5-35
:CURSor:FFT:MARKer:M<x>:F:VALue?	Queries the frequency-axis value of an FFT cursor (marker cursor).	5-35
:CURSor:FFT:MARKer:M<x>:POSITION	Sets or queries the position of an FFT cursor (marker cursor).	5-35

5.1 List of Commands

Command	Function	Page
:CURSor:FFT:MARKer:M<x>:TRACe	Sets or queries the source waveform that you want to measure using the FFT cursor (marker cursor).	5-35
:CURSor:FFT:MARKer:M<x>:Y?	Queries all Y-axis settings of an FFT cursor (marker cursor).	5-35
:CURSor:FFT:MARKer:M<x>:Y:STATe	Sets or queries whether the Y-axis value of an FFT cursor (marker cursor) is displayed.	5-35
:CURSor:FFT:MARKer:M<x>:Y:VALue?	Queries the Y-axis value of an FFT cursor (marker cursor).	5-35
:CURSor:FFT:PEAK<x>?	Queries all settings of an FFT cursor (peak cursor).	5-35
:CURSor:FFT:PEAK<x>:F?	Queries all frequency-axis settings of an FFT cursor (peak cursor).	5-35
:CURSor:FFT:PEAK<x>:F:STATe	Sets or queries whether the frequency-axis value of an FFT cursor (peak cursor) is displayed.	5-35
:CURSor:FFT:PEAK<x>:F:VALue?	Queries the frequency-axis value of an FFT cursor (peak cursor).	5-36
:CURSor:FFT:PEAK<x>:RANGe	Sets or queries the FFT peak cursor measurement range.	5-36
:CURSor:FFT:PEAK<x>:Y?	Queries all Y-axis settings of an FFT cursor (peak cursor).	5-36
:CURSor:FFT:PEAK<x>:Y:STATe	Sets or queries whether the Y-axis value of an FFT cursor (peak cursor) is displayed.	5-36
:CURSor:FFT:PEAK<x>:Y:VALue?	Queries the Y-axis value of an FFT cursor (peak cursor).	5-36
:CURSor:FFT:TYPE	Sets or queries the FFT cursor type.	5-36
:CURSor[:TY]?	Queries all cursor settings for the T-Y display.	5-36
:CURSor[:TY]:DEGRee?	Queries all angle cursor settings for the T-Y display.	5-36
:CURSor[:TY]:DEGRee:D<x>?	Queries all angle (X1 and X2) settings for the angle cursors on the T-Y display.	5-36
:CURSor[:TY]:DEGRee:D<x>:STATe	Sets or queries whether the angles (X1 and X2) between the angle cursors on the T-Y display is displayed.	5-36
:CURSor[:TY]:DEGRee:D<x>:VALue?	Queries the angles (X1 and X2) between the angle cursors on the T-Y display.	5-36
:CURSor[:TY]:DEGRee:DD?	Queries all angle difference (ΔX) settings. The angle difference is between the angle cursors on the T-Y display.	5-36
:CURSor[:TY]:DEGRee:DD:STATe	Sets or queries whether the angle difference (ΔX) between the angle cursors on the T-Y display is displayed.	5-36
:CURSor[:TY]:DEGRee:DD:VALue?	Queries the angle difference (ΔX) between the angle cursors on the T-Y display.	5-37
:CURSor[:TY]:DEGRee:DY?	Queries all measurement difference (ΔY) settings between the angle cursors on the T-Y display.	5-37
:CURSor[:TY]:DEGRee:DY:STATe	Sets or queries whether the measurement difference (ΔY) value between the angle cursors on the T-Y display is displayed.	5-37
:CURSor[:TY]:DEGRee:DY:VALue?	Queries the measurement difference (ΔY) between the angle cursors on the T-Y display.	5-37
:CURSor[:TY]:DEGRee:JUMP	Moves the specified angle cursor to the center of the specified zoom window.	5-37
:CURSor[:TY]:DEGRee:POSItion<x>	Sets or queries an angle cursor position on the T-Y display.	5-37
:CURSor[:TY]:DEGRee:REFerence<x>	Sets or queries the angle reference (Ref1) or end (Ref2) point on the T-Y display.	5-37
:CURSor[:TY]:DEGRee:RVALue	Sets or queries an angle cursor's reference angle on the T-Y display.	5-37
:CURSor[:TY]:DEGRee:TRACe	Sets or queries the source waveform that you want to measure using the angle cursors on the T-Y display.	5-37
:CURSor[:TY]:DEGRee:Y<x>?	Queries all measurement (Y1 and Y2) settings for an angle cursor on the T-Y display.	5-37
:CURSor[:TY]:DEGRee:Y<x>:STATe	Sets or queries whether the measurements (Y1 and Y2) of an angle cursor on the T-Y display is displayed.	5-37
:CURSor[:TY]:DEGRee:Y<x>:VALue?	Sets or queries the measurements (Y1 and Y2) of an angle cursor on the T-Y display.	5-38
:CURSor[:TY]:HORizontal?	Queries all horizontal cursor settings for the T-Y display.	5-38
:CURSor[:TY]:HORizontal:DY?	Queries all ΔY -axis settings of the horizontal cursors on the T-Y display.	5-38
:CURSor[:TY]:HORizontal:DY:STATe	Sets or queries whether the ΔY -axis value between the horizontal cursors on the T-Y display is displayed.	5-38
:CURSor[:TY]:HORizontal:DY:VALue?	Queries the ΔY -axis value of the horizontal cursors on the T-Y display.	5-38
:CURSor[:TY]:HORizontal:POSItion<x>	Sets or queries a horizontal cursor position on the T-Y display.	5-38

5.1 List of Commands

Command	Function	Page
:CURSor[:TY]:HORizontal:TRACe	Sets or queries the source waveform that you want to measure using the horizontal cursors on the T-Y display.	5-38
:CURSor[:TY]:HORizontal:Y<x>?	Queries all Y-axis settings of the horizontal cursor on the T-Y display.	5-38
:CURSor[:TY]:HORizontal:Y<x>:STATe	Sets or queries whether the Y-axis value for a horizontal cursor on the T-Y display is displayed.	5-38
:CURSor[:TY]:HORizontal:Y<x>:VALue?	Queries the Y-axis value of a horizontal cursor on the T-Y display.	5-38
:CURSor[:TY]:MARKer?	Queries all marker cursor settings for the T-Y display.	5-39
:CURSor[:TY]:MARKer:FORM	Sets or queries the form of the marker cursors on the T-Y display.	5-39
:CURSor[:TY]:MARKer:M<x>?	Queries all settings related to the marker cursor measurement items for the T-Y display.	5-39
:CURSor[:TY]:MARKer:M<x>:DX<y>?	Queries all ΔX value settings. ΔX is between the marker cursors on the T-Y display.	5-39
:CURSor[:TY]:MARKer:M<x>:DX<y>:STATe	Sets or queries whether the ΔX value between the marker cursors on the T-Y display is displayed.	5-39
:CURSor[:TY]:MARKer:M<x>:DX<y>:VALue?	Queries the ΔX value between the marker cursors on the T-Y display.	5-39
:CURSor[:TY]:MARKer:M<x>:DY<y>?	Queries all ΔY value settings. ΔY is between the marker cursors on the T-Y display.	5-39
:CURSor[:TY]:MARKer:M<x>:DY<y>:STATe	Sets or queries whether the ΔY value between the marker cursors on the T-Y display is displayed.	5-39
:CURSor[:TY]:MARKer:M<x>:DY<y>:VALue?	Queries the ΔY value between the marker cursors on the T-Y display.	5-39
:CURSor[:TY]:MARKer:M<x>:JUMP	Moves the specified marker cursor to the center of the specified zoom window.	5-39
:CURSor[:TY]:MARKer:M<x>:POSITION	Sets or queries a marker cursor position on the T-Y display.	5-39
:CURSor[:TY]:MARKer:M<x>:TRACe	Sets or queries the source waveform that you want to measure using the marker cursors on the T-Y display.	5-40
:CURSor[:TY]:MARKer:M<x>:X?	Queries all X-axis settings for a marker cursor on the T-Y display.	5-40
:CURSor[:TY]:MARKer:M<x>:X:STATe	Sets or queries whether the X-axis value for a marker cursor on the T-Y display is displayed.	5-40
:CURSor[:TY]:MARKer:M<x>:X:VALue?	Queries the X-axis value of a marker cursor on the T-Y display.	5-40
:CURSor[:TY]:MARKer:M<x>:Y?	Queries all Y-axis settings for a marker cursor on the T-Y display.	5-40
:CURSor[:TY]:MARKer:M<x>:Y:STATe	Sets or queries whether the Y-axis value for a marker cursor on the T-Y display is displayed.	5-40
:CURSor[:TY]:MARKer:M<x>:Y:VALue?	Queries the Y-axis value of a marker cursor on the T-Y display.	5-40
:CURSor[:TY]:TYPE	Sets or queries the cursor type on the T-Y display.	5-40
:CURSor[:TY]:VERTical?	Queries all vertical cursor settings for the T-Y display.	5-40
:CURSor[:TY]:VERTical:DX?	Queries all ΔX value settings. ΔX is between the vertical cursors on the T-Y display.	5-40
:CURSor[:TY]:VERTical:DX:STATe	Sets or queries whether the ΔX value between the vertical cursors on the T-Y display is displayed.	5-40
:CURSor[:TY]:VERTical:DX:VALue?	Queries the ΔX value between the vertical cursors on the T-Y display.	5-40
:CURSor[:TY]:VERTical:DY?	Queries all Y-axis-value settings for vertical cursors on the T-Y display.	5-41
:CURSor[:TY]:VERTical:DY:STATe	Sets or queries whether the Y-axis value for vertical cursors on the T-Y display is displayed.	5-41
:CURSor[:TY]:VERTical:DY:VALue?	Queries the Y-axis value of vertical cursors on the T-Y display.	5-41
:CURSor[:TY]:VERTical:JUMP	Moves the specified vertical cursor to the center of the specified zoom window.	5-41
:CURSor[:TY]:VERTical:PERDt?	Queries all settings related to the reciprocal of the time difference between the vertical cursors ($1/\Delta T$) on the T-Y display.	5-41
:CURSor[:TY]:VERTical:PERDt:STATe	Sets or queries whether the reciprocal of the time difference between the vertical cursors ($1/\Delta T$) on the T-Y display is displayed.	5-41
:CURSor[:TY]:VERTical:PERDt:VALue?	Queries the reciprocal of the time difference between the vertical cursors ($1/\Delta T$) on the T-Y display.	5-41
:CURSor[:TY]:VERTical:POSITION<x>	Sets or queries a vertical cursor position on the T-Y display.	5-41

5.1 List of Commands

Command	Function	Page
:CURSOR[:TY]:VERTICAL:TRACE	Sets or queries the source waveform that you want to measure using the vertical cursors on the T-Y display.	5-41
:CURSOR[:TY]:VERTICAL:X<x>?	Queries all X-axis-value settings for a vertical cursor on the T-Y display.	5-41
:CURSOR[:TY]:VERTICAL:X<x>:STATE	Sets or queries whether the X-axis value for a vertical cursor on the T-Y display is displayed.	5-41
:CURSOR[:TY]:VERTICAL:X<x>:VALUE?	Queries the X-axis value of a vertical cursor on the T-Y display.	5-42
:CURSOR[:TY]:VERTICAL:Y<x>?	Queries all Y-axis-value settings for a vertical cursor on the T-Y display.	5-42
:CURSOR[:TY]:VERTICAL:Y<x>:STATE	Sets or queries whether the Y-axis value for a vertical cursor on the T-Y display is displayed.	5-42
:CURSOR[:TY]:VERTICAL:Y<x>:VALUE?	Queries the Y-axis value (measured value) of a vertical cursor on the T-Y display.	5-42
:CURSOR:WAIT?	While the PX8000 is waiting for the specified CURSOR command to finish, it will wait the time specified by the :CURSOR:WAIT? timeout value until it begins processing the subsequent command.	5-42
:CURSOR:XY?	Queries all cursor settings for the X-Y display.	5-42
:CURSOR:XY:HORIZONTAL?	Queries all horizontal cursor settings for the X-Y display.	5-42
:CURSOR:XY:HORIZONTAL:DY?	Queries all ΔY -axis-value settings. The ΔY -axis value is between the horizontal cursors on the X-Y display.	5-42
:CURSOR:XY:HORIZONTAL:DY:STATE	Sets or queries whether the ΔY -axis value between the horizontal cursors on the X-Y display is displayed.	5-42
:CURSOR:XY:HORIZONTAL:DY:VALUE?	Queries the ΔY -axis value between the horizontal cursors on the X-Y display.	5-42
:CURSOR:XY:HORIZONTAL:POSITION<x>	Sets or queries horizontal cursor positions on the X-Y display.	5-43
:CURSOR:XY:HORIZONTAL:TRACE	Sets or queries the source waveform that you want to measure using the horizontal cursors on the X-Y display.	5-43
:CURSOR:XY:HORIZONTAL:Y<x>?	Queries all Y-axis-value settings for an horizontal cursor on the X-Y display.	5-43
:CURSOR:XY:HORIZONTAL:Y<x>:STATE	Sets or queries whether the Y-axis value for an horizontal cursor on the X-Y display is displayed.	5-43
:CURSOR:XY:HORIZONTAL:Y<x>:VALUE?	Queries the Y-axis value of an horizontal cursor on the X-Y display.	5-43
:CURSOR:XY:MARKER?	Queries all marker cursor settings for the X-Y display.	5-43
:CURSOR:XY:MARKER:FORM	Sets or queries the form of the marker cursors on the X-Y display.	5-43
:CURSOR:XY:MARKER:M<x>?	Queries all measurement parameter settings for the specified marker cursor of the X-Y display.	5-43
:CURSOR:XY:MARKER:M<x>:DT<y>?	Queries all settings related to the time difference between the specified marker cursors (ΔT) on the X-Y display.	5-43
:CURSOR:XY:MARKER:M<x>:DT<y>:STATE	Sets or queries whether the time difference between the specified marker cursors (ΔT) on the X-Y display is displayed.	5-43
:CURSOR:XY:MARKER:M<x>:DT<y>:VALUE?	Queries the time difference between the specified marker cursors (ΔT) on the X-Y display.	5-43
:CURSOR:XY:MARKER:M<x>:POSITION	Sets or queries a marker cursor's time-axis-equivalent position on the X-Y display.	5-44
:CURSOR:XY:MARKER:M<x>:T?	Queries all time value settings for a marker cursor on the X-Y display.	5-44
:CURSOR:XY:MARKER:M<x>:T:STATE	Sets or queries whether the time value for a marker cursor on the X-Y display is displayed.	5-44
:CURSOR:XY:MARKER:M<x>:T:VALUE?	Queries the time value of a marker cursor on the X-Y display.	5-44
:CURSOR:XY:MARKER:M<x>:TRACE	Sets or queries the source waveform that you want to measure using the marker cursors on the X-Y display.	5-44
:CURSOR:XY:MARKER:M<x>:X?	Queries all X-axis-value settings for a marker cursor on the X-Y display.	5-44
:CURSOR:XY:MARKER:M<x>:X:STATE	Sets or queries whether the X-axis value for a marker cursor on the X-Y display is displayed.	5-44
:CURSOR:XY:MARKER:M<x>:X:VALUE?	Queries the X-axis value of a marker cursor on the X-Y display.	5-44
:CURSOR:XY:MARKER:M<x>:Y?	Queries all Y-axis-value settings for a marker cursor on the X-Y display.	5-44
:CURSOR:XY:MARKER:M<x>:Y:STATE	Sets or queries whether the Y-axis value for a marker cursor on the X-Y display is displayed.	5-44
:CURSOR:XY:MARKER:M<x>:Y:VALUE?	Queries the Y-axis value of a marker cursor on the X-Y display.	5-44
:CURSOR:XY:TYPE	Sets or queries the cursor type on the X-Y display.	5-45
:CURSOR:XY:VERTICAL?	Queries all vertical cursor settings for the X-Y display.	5-45

5.1 List of Commands

Command	Function	Page
:CURSor:XY:VERTical:DX?	Queries all ΔX -axis settings. ΔX is between the vertical cursors on the X-Y display.	5-45
:CURSor:XY:VERTical:DX:STATe	Sets or queries whether the ΔX -axis value between the vertical cursors on the X-Y display is displayed.	5-45
:CURSor:XY:VERTical:DX:VALue?	Queries the ΔX -axis value between the vertical cursors on the X-Y display	5-45
:CURSor:XY:VERTical:POSition<x>	Sets or queries a vertical cursor position on the X-Y display.	5-45
:CURSor:XY:VERTical:TRACe	Sets or queries the source waveform that you want to measure using the vertical cursors on the X-Y display.	5-45
:CURSor:XY:VERTical:X<x>?	Queries all X-axis-value settings for a vertical cursor on the X-Y display.	5-45
:CURSor:XY:VERTical:X<x>:STATe	Sets or queries whether the X-axis value for a vertical cursor on the X-Y display is displayed.	5-45
:CURSor:XY:VERTical:X<x>:VALue?	Queries the X-axis value of a vertical cursor on the X-Y display.	5-45

DISPlay Group

:DISPlay?	Queries all display settings.	5-46
:DISPlay:BAR?	Queries all bar graph display settings.	5-46
:DISPlay:BAR:FORMat	Sets or queries the bar graph display format.	5-46
:DISPlay:BAR:ITEM<x>?	Queries all the display settings of the specified bar graph.	5-46
:DISPlay:BAR:ITEM<x>[:FUNction]	Sets or queries the function and element of the specified bar graph item.	5-46
:DISPlay:BAR:NUMeric:STATe	Sets or queries the on/off status of the numeric data display on the bar graph.	5-46
:DISPlay:BAR:NUMeric:ORDer<x>	Sets or queries the harmonic order indicating the cursor 1 (x) and cursor 2 (+) positions when the bar graph numeric data display is on.	5-46
:DISPlay:BAR:ORDer	Sets or queries the bar graph display range.	5-46
:DISPlay:COLor:BASEcolor	Sets or queries the base color of the screen.	5-46
:DISPlay:DECimation	Sets or queries the number of dots (after decimation) that are used on the dot display.	5-47
:DISPlay:DMODE	Sets or queries the display mode.	5-47
:DISPlay:INTENSity?	Queries all intensity settings.	5-47
:DISPlay:INTENSity:{CURSor GRID MARKer}	Sets or queries the intensity of a display item.	5-47
:DISPlay:NUMeric?	Queries all numeric display settings.	5-47
:DISPlay:NUMeric:ALL?	Queries all settings of the numeric data display in All Items display mode.	5-47
:DISPlay:NUMeric:ALL:ORDer	Sets or queries the displayed harmonic order on the harmonic measurement function display page of the numeric data display in All Items display mode.	5-47
:DISPlay:NUMeric:ALL:PAGE	Sets or queries the displayed page of the numeric data display in All Items display mode.	5-47
:DISPlay:NUMeric:CUSTom?	Queries all numeric data display settings in custom display mode.	5-48
:DISPlay:NUMeric:CUSTom:FILE:CDIRectory	Changes the directory that files are loaded from or saved to for the numeric data display in custom display mode.	5-48
:DISPlay:NUMeric:CUSTom:FILE:DRIVE	Sets the drive that files are loaded from or saved to for the numeric data display in custom display mode.	5-48
:DISPlay:NUMeric:CUSTom:FILE:FREE?	Queries the amount of free space (in bytes) on the drive that files are loaded from or saved to for the numeric data display in custom display mode.	5-48
:DISPlay:NUMeric:CUSTom:FILE:LOAD:ABORt	Aborts a file loading operation for the numeric data display in custom display mode.	5-48
:DISPlay:NUMeric:CUSTom:FILE:LOAD:BMP	Loads the specified background file for the numeric data display in custom display mode.	5-48
:DISPlay:NUMeric:CUSTom:FILE:LOAD:BOTH	Loads the specified display configuration and background files for the numeric data display in custom display mode.	5-48
:DISPlay:NUMeric:CUSTom:FILE:LOAD:ITEM	Loads the specified display configuration file for the numeric data display in custom display mode.	5-48
:DISPlay:NUMeric:CUSTom:FILE:PATH?	Queries the absolute path of the directory that files are loaded from or saved to for the numeric data display in custom display mode.	5-48
:DISPlay:NUMeric:CUSTom:FILE:SAVE:ANAMing	Sets or queries the automatic file name generation feature for saving display configuration files of the numeric data display in custom display mode.	5-49
:DISPlay:NUMeric:CUSTom:FILE:SAVE:ITEM	Saves the specified display configuration file for the numeric data display in custom display mode.	5-49
:DISPlay:NUMeric:CUSTom:ITEM<x>?	Queries all the settings of the specified display item of the numeric data display in custom display mode.	5-49

5.1 List of Commands

Command	Function	Page
:DISPlay:NUMeric:CUSTom:ITEM<x>:COLor	Sets or queries the font color of the specified display item of the numeric data display in custom display mode.	5-49
:DISPlay:NUMeric:CUSTom:ITEM<x>[:FUNction]	Sets or queries the display item (numeric item or string) of the numeric data display in custom display mode.	5-50
:DISPlay:NUMeric:CUSTom:ITEM<x>:POSition	Sets or queries the display position of the specified display item of the numeric data display in custom display mode.	5-50
:DISPlay:NUMeric:CUSTom:ITEM<x>:SIZE	Sets or queries the font size of the specified display item of the numeric data display in custom display mode.	5-50
:DISPlay:NUMeric:CUSTom:PAGE	Sets or queries the displayed page of the numeric data display in custom display mode.	5-50
:DISPlay:NUMeric:CUSTom:PERPage	Sets or queries the number of items displayed per page of the numeric data display in custom display mode.	5-51
:DISPlay:NUMeric:CUSTom:TOTal	Sets or queries the total number of display items of the numeric data display in custom display mode.	5-51
:DISPlay:NUMeric:FRAME	Sets or queries the on/off status of the numeric data display's data section frame.	5-51
:DISPlay:NUMeric:FORMat	Sets or queries the numeric data display format.	5-51
:DISPlay:NUMeric:LIST?	Queries all numeric data display (harmonic single and dual list display) settings.	5-51
:DISPlay:NUMeric:LIST:CURSor	Sets or queries the page position of the numeric data displays (harmonic single and dual list display).	5-51
:DISPlay:NUMeric:LIST:HEADer	Sets or queries the page position of the measurement function display area in the numeric data displays (harmonic single and dual list displays).	5-52
:DISPlay:NUMeric:LIST:ITEM<x>	Sets or queries the displayed item (function element) of the numeric data displays (harmonic single and dual list displays).	5-52
:DISPlay:NUMeric:LIST:ORDER	Sets or queries the cursor position of the harmonic data display area in the numeric data displays (harmonic single and dual list displays).	5-52
:DISPlay:NUMeric:MATRIX?	Queries all numeric data display settings in matrix display mode.	5-52
:DISPlay:NUMeric:MATRIX:COLumn?	Queries all column settings of the numeric data display in matrix display mode.	5-52
:DISPlay:NUMeric:MATRIX:COLumn:ITEM<x>	Sets or queries the specified column display item of the numeric data display in matrix display mode.	5-52
:DISPlay:NUMeric:MATRIX:COLumn:NUMBER	Sets or queries the number of columns of the numeric data display in matrix display mode.	5-52
:DISPlay:NUMeric:MATRIX:COLumn:RESet	Resets the column display items to their default values on the numeric data display in matrix display mode.	5-52
:DISPlay:NUMeric:MATRIX:CURSor	Sets or queries the cursor position on the numeric data display in matrix display mode.	5-53
:DISPlay:NUMeric:MATRIX:ITEM<x>	Sets or queries the specified display item (function and harmonic order) on the numeric data display in matrix display mode.	5-53
:DISPlay:NUMeric:MATRIX:PAGE	Sets or queries the displayed page of the numeric data display in matrix display mode.	5-53
:DISPlay:NUMeric:MATRIX:PRESet	Presets the display order pattern of displayed items on the numeric data display in matrix display mode.	5-53
:DISPlay:NUMeric:{VAL4 VAL8 VAL16}?	Queries all numeric data display settings in 4 Items, 8 Items, or 16 Items display mode.	5-53
:DISPlay:NUMeric:{VAL4 VAL8 VAL16}:CURSor	Sets or queries the cursor position on the numeric data display in 4 Items, 8 Items, or 16 Items display mode.	5-53
:DISPlay:NUMeric:{VAL4 VAL8 VAL16}:ITEM<x>	Sets or queries the function, element, and harmonic order of the specified numeric data display item in 4 Items, 8 Items, or 16 Items display mode.	5-54
:DISPlay:NUMeric:{VAL4 VAL8 VAL16}:PAGE	Sets or queries the displayed page of the numeric data display in 4 Items, 8 Items, or 16 Items display mode.	5-54
:DISPlay:NUMeric:{VAL4 VAL8 VAL16}:PRESet	Presets the display order pattern of displayed items on the numeric data display in 4 Items, 8 Items, or 16 Items display mode.	5-54
:DISPlay:NUMeric:RESolution	Sets or queries the numeric data display resolution.	5-54
:DISPlay:VECTor?	Queries all vector display settings.	5-54
:DISPlay:VECTor:FORMat	Sets or queries the display format of all vectors.	5-54
:DISPlay:VECTor:ITEM<x>?	Queries all settings for the specified vector.	5-54
:DISPlay:VECTor:ITEM<x>:OBJect	Sets or queries the wiring unit that is displayed using the specified vector.	5-55
:DISPlay:VECTor:ITEM<x>:{UMAG IMAG}	Sets or queries the voltage or current zoom factor for the vector display.	5-55

5.1 List of Commands

Command	Function	Page
:DISPlay:VECTor:NUMeric	Sets or queries the on/off status of the numeric data display on the vector display.	5-55
:DISPlay:WAVE?	Queries all waveform display settings.	5-55
:DISPlay[:WAVE]:{CHANnel<x> POWER<y> MATH<x>}:COLor	Sets or queries a waveform color.	5-55
:DISPlay[:WAVE]:ESize (Extra window SIZE)	Sets or queries the size of the extra window.	5-55
:DISPlay[:WAVE]:FORMat	Sets or queries the display format (the number of divisions in the vertical direction).	5-55
:DISPlay[:WAVE]:GRATicule	Sets or queries the grid type.	5-55
:DISPlay[:WAVE]:INTerpolate	Sets or queries the waveform interpolation method.	5-56
:DISPlay[:WAVE]:LINDicator (Level INDicator)	Sets or queries whether the right indicator on the TY waveform display is displayed.	5-56
:DISPlay[:WAVE]:MAPPing	Sets or queries the waveform mapping mode for when the display format is set to an option other than 1.	5-56
:DISPlay[:WAVE]:SVALue (Scale VALue)	Sets or queries whether scale values are displayed.	5-56
:DISPlay[:WAVE]:TLABel (Trace LABel)	Sets or queries whether waveform labels are displayed.	5-56

FFT Group

:FFT?	Queries all FFT settings.	5-59
:FFT:POINT	Sets or queries the number of analysis source points of the FFT windows.	5-59
:FFT:START	Sets or queries the analysis-source start point of the FFT windows.	5-59
:FFT:WAVEform<x>?	Queries all FFT window settings.	5-59
:FFT:WAVEform<x>:HAXis	Sets or queries an FFT window's horizontal-axis display method.	5-59
:FFT:WAVEform<x>:HORizontal?	Queries all horizontal axis settings for FFT analysis.	5-59
:FFT:WAVEform<x>:HORizontal:CSpan?	Queries all center and span settings for the horizontal axis for FFT analysis.	5-59
:FFT:WAVEform<x>:HORizontal:CSpan:CENTer	Sets or queries the center value of the horizontal axis for FFT analysis.	5-59
:FFT:WAVEform<x>:HORizontal:CSpan:SPAN	Sets or queries the span value of the horizontal axis for FFT analysis.	5-59
:FFT:WAVEform<x>:HORizontal:LRIGHT?	Queries all the settings for the left and right ends of the horizontal axis for FFT analysis.	5-60
:FFT:WAVEform<x>:HORizontal:LRIGHT:RANGE	Sets or queries the range for the left and right ends of the horizontal axis for FFT analysis.	5-60
:FFT:WAVEform<x>:HORizontal:MODE	Sets or queries the FFT analysis horizontal axis mode.	5-60
:FFT:WAVEform<x>:MODE	Sets or queries whether an FFT window is displayed.	5-60
:FFT:WAVEform<x>:SOURce<x>	Sets or queries an FFT window's FFT source channel.	5-60
:FFT:WAVEform<x>:SType (Sub TYPE)	Sets or queries an FFT window's analysis sub type.	5-60
:FFT:WAVEform<x>:TYPE	Sets or queries an FFT window's analysis type.	5-60
:FFT:WAVEform<x>:UNIT	Sets or queries a unit string that is attached to FFT computation results.	5-60
:FFT:WAVEform<x>:VSCale?	Queries all FFT vertical scale settings.	5-61
:FFT:WAVEform<x>:VSCale:CENTer	Sets or queries the center value of an FFT window's vertical scale.	5-61
:FFT:WAVEform<x>:VSCale:MODE (Vertical SCAle MODE)	Sets or queries an FFT window's vertical scale mode.	5-61
:FFT:WAVEform<x>:VSCale:SENSitivity	Sets or queries the sensitivity of an FFT window's vertical scale.	5-61
:FFT:WINDow?	Queries all FFT analysis settings.	5-61
:FFT:WINDow:EXponential?	Queries all FFT exponential window settings.	5-61
:FFT:WINDow:EXponential:DRATe	Sets or queries the FFT exponential window's damping rate.	5-61
:FFT:WINDow:EXponential:FORCE<x>	Sets or queries the FFT exponential window's Force1 or Force2 value.	5-61
:FFT:WINDow:TYPE	Sets or queries the computation window type for FFT analysis.	5-61

Command	Function	Page
FILE Group		
:FILE?	Queries all storage media settings.	5-62
:FILE:COPY:ABORT	Aborts file copying.	5-62
:FILE:COPY:CDIRectory	Changes the file copy destination directory.	5-62
:FILE:COPY[:EXECute]	Executes file copying. This is an overlap command.	5-62
:FILE:COPY:PATH?	Queries the file copy destination directory.	5-62
:FILE:DELeTe	Deletes files. This is an overlap command.	5-62
:FILE[:DIRectory]:CDIRectory (Change DIRectory)	Changes the current directory on the storage medium.	5-62
:FILE[:DIRectory]:DRIVE	Sets the storage medium to perform file operations on.	5-62
:FILE[:DIRectory]:FREE?	Queries the free space on the medium that is being operated on in bytes.	5-62
:FILE[:DIRectory]:MDIRectory (Make DIRectory)	Creates a directory in the current directory.	5-62
:FILE[:DIRectory]:PATH?	Queries the current directory.	5-62
:FILE:LOAD:BINary:ABORT	Aborts the loading of binary data.	5-62
:FILE:LOAD:{BINary SETup SNAP} [:EXECute]	Executes the loading of various types of data. This is an overlap command.	5-63
:FILE:SAVE?	Queries all file save settings.	5-63
:FILE:SAVE:ANAMing	Sets or queries the auto naming mode for saving files.	5-63
:FILE:SAVE:{ASCIi BINary FLOat WDFBin)?	Queries all the settings related to the saving of a specific type of file.	5-63
:FILE:SAVE:{ASCIi BINary FLOat WDFBin}:ABORT	Aborts the saving of a specific type of file.	5-63
:FILE:SAVE:{ASCIi BINary FLOat WDFBin}:CRANge<x>	Sets or queries the cursor position for when data is to be saved using a cursor range.	5-63
:FILE:SAVE: {ASCIi FFT MEASure}:DPOint	Sets or queries the type of decimal point that is used when saving specified type.	5-63
:FILE:SAVE:{ASCIi BINary FFT FLOat MEASure NUMeric SETup SNAP WDFBin}[:EXECute]	Executes the saving of a specific type of file. This is an overlap command.	5-63
:FILE:SAVE:ASCIi:EXTension	Sets or queries the file name extension that is used when saving data in ASCII format.	5-63
:FILE:SAVE:{ASCIi BINary FLOat WDFBin}:HISTory	Sets or queries what waveforms the history memory feature will save for a specific type of data.	5-63
:FILE:SAVE:ASCIi:INTerval	Sets or queries the data removal interval that is used when saving data in ASCII format.	5-63
:FILE:SAVE:{ASCIi BINary FLOat WDFBin}:RANge	Sets or queries the save range for a specific type of data.	5-64
:FILE:SAVE:{ASCIi BINary FLOat WDFBin}:STRace:{CHANnel<x> POWer<y> MATH<x>}	Sets or queries the waveform that will be saved for a specific type of data.	5-64
:FILE:SAVE:{ASCIi BINary FLOat WDFBin}:TALL (Trace ALL)	Sets or queries the selection method for the waveforms that will be saved for a specific type of data.	5-64
:FILE:SAVE:{ASCIi MEASure}: TINformation	Sets or queries whether time information is included when saving data in ASCII format or CSV format.	5-64
:FILE:SAVE:COMMENT	Sets or queries the comment that will be saved.	5-64
:FILE:SAVE:FFT:FINformation	Sets or queries whether frequency information is included when FFT waveforms are saved in ASCII format.	5-64
:FILE:SAVE:MEASure:UNIT	Sets or queries whether a unit is included in each cell when the waveform parameter measurement results are saved.	5-65
:FILE:SAVE:NAME	Sets or queries the name of the file that will be saved.	5-65
:FILE:SAVE:NUMeric?	Queries all settings related to the saving of numeric data files.	5-65
:FILE:SAVE:NUMeric:ITEM	Sets or queries the method that is used to select which items are saved when numeric data is saved to a file.	5-65
:FILE:SAVE:NUMeric:ALL	Collectively sets the on/off status of the output of all element functions when numeric data is saved to a file.	5-65

5.1 List of Commands

Command	Function	Page
:FILE:SAVE:NUMeric:{ELEMENT<x> SIGMA SIGMB}	Sets or queries the on/off status of the output of the specified element or wiring unit ΣA or ΣB when numeric data is saved to a file.	5-65
:FILE:SAVE:NUMeric:<Function>	Sets or queries the on/off status of the specified function's output when numeric data is saved to a file.	5-65
:FILE:SAVE:NUMeric:PRESet	Presets the output on/off pattern of the element functions to be used when numeric data is saved to a file.	5-65

GONogo Group

:GONogo?	Queries all GO/NO-GO determination settings.	5-66
:GONogo:ACONdition	Sets or queries the GO/NO-GO determination-action condition.	5-66
:GONogo:ACTion?	Queries all settings for the action that is performed when the condition is met and the settings for the condition itself.	5-66
:GONogo:ACTion:BUZZer	Sets or queries whether a beep is sounded when the condition is met.	5-66
:GONogo:ACTion:HCOpy (HardCOpy)	Sets or queries whether a screen capture is printed from the built-in printer when the condition is met.	5-66
:GONogo:ACTion:IMAGe?	Queries all settings for the screen capture that is saved when the condition is met.	5-66
:GONogo:ACTion:IMAGe:CDIRectory	Sets the current directory where the screen capture is saved to when the condition is met.	5-66
:GONogo:ACTion:IMAGe:DRIVE	Sets or queries the medium that the screen capture is saved to when the condition is met.	5-66
:GONogo:ACTion:IMAGe[:MODE]	Sets or queries whether a screen capture is saved when the condition is met.	5-66
:GONogo:ACTion:IMAGe:PATH?	Queries the path on the storage medium that a screen capture is saved to when the condition is met.	5-67
:GONogo:ACTion:SAVE?	Queries all settings related to the storage medium that waveform data is saved to when the condition is met.	5-67
:GONogo:ACTion:SAVE:CDIRectory	Sets the current directory on the storage medium where waveform data is saved to when the condition is met.	5-67
:GONogo:ACTion:SAVE:DRIVE	Sets or queries the storage medium that waveform data is saved to when the condition is met.	5-67
:GONogo:ACTion:SAVE[:MODE]	Sets or queries whether waveforms are saved to the storage medium when the condition is met.	5-67
:GONogo:ACTion:SAVE:PATH?	Queries the path on the storage medium that waveform data is saved to when the condition is met.	5-67
:GONogo:ACTion:SAVE:TYPE	Sets or queries the file format that waveforms are saved as on the storage medium when the condition is met.	5-67
:GONogo:COUNT?	Queries the number of GO/NO-GO determinations that were performed.	5-67
:GONogo:LOGic	Sets or queries the GO/NO-GO determination logic.	5-67
:GONogo:MODE	Sets or queries the GO/NO-GO determination mode.	5-67
:GONogo:NGCount?	Queries the GO/NO-GO determination NO-GO count.	5-67
:GONogo:PARAmeter?	Queries all parameter determination settings.	5-68
:GONogo:PARAmeter:ITEM<x>?	Queries all settings for the specified waveform parameter for parameter determination.	5-68
:GONogo:PARAmeter:ITEM<x>:CAUSE?	Queries whether the specified waveform parameter for parameter determination is the cause of a NO-GO judgment.	5-68
:GONogo:PARAmeter:ITEM<x>:MODE	Sets or queries the specified waveform parameter's reference condition for parameter determination.	5-68
:GONogo:PARAmeter:ITEM<x>:TRACe	Sets or queries the specified waveform parameter's source waveform for parameter determination.	5-68
:GONogo:PARAmeter:ITEM<x>:TYPE?	Queries, for parameter determination, the specified waveform parameter's measurement item and upper and lower limits.	5-68
:GONogo:PARAmeter:ITEM<x>:TYPE:<Parameter>	Sets or queries the upper and lower limits of the measurement item for the specified waveform parameter.	5-68
:GONogo:PARAmeter:ITEM<x>:VALue?	Queries the measured value of the specified waveform parameter.	5-68
:GONogo:REMOte	Sets or queries the remote mode of GO/NO-GO determination.	5-68
:GONogo:SEQuence	Sets or queries the action mode of GO/NO-GO determination.	5-68
:GONogo:TRANge	Sets or queries the determination range of GO/NO-GO determination.	5-69
:GONogo:WAIT?	Waits for the completion of GO/NO-GO determination by using a timeout value.	5-69
:GONogo:ZONE?	Queries all waveform zone determination settings.	5-69

Command	Function	Page
:GONogo:ZONE:PATtern<x>?	Queries all settings for the specified determination pattern for waveform zone determination.	5-69
:GONogo:ZONE:PATtern<x>:CAUSE?	Queries whether the specified determination pattern for waveform zone determination is the cause of a NO-GO judgment.	5-69
:GONogo:ZONE:PATtern<x>:MODE	Sets or queries the specified determination pattern's reference condition for waveform zone determination.	5-69
:GONogo:ZONE:PATtern<x>:TRACE	Sets or queries the specified determination pattern's determination waveform for waveform zone determination.	5-69
:GONogo:ZONE:PATtern<x>:ZONE	Sets or queries the specified determination pattern's source waveform zone data for waveform zone determination.	5-69

HARMonics Group

:HARMonics?	Queries all harmonic measurement settings.	5-70
:HARMonics:MODE	Sets or queries the on/off status of harmonic measurement.	5-70
:HARMonics:ORDer	Sets or queries the maximum and minimum harmonic orders that are analyzed.	5-70
:HARMonics:PLLSource	Sets or queries the PLL source.	5-70
:HARMonics:POSition[:START]	Sets or queries the computation start position of harmonic measurement.	5-70
:HARMonics:POSition:NCOPY (NumericCOPY)	Copies the cursor start position of numeric measurement to the computation start position of harmonic measurement.	5-70
:HARMonics:THD	Sets or queries the equation used to compute the THD (total harmonic distortion).	5-70

HCOPY Group

:HCOPY?	Queries all screen capture data output settings.	5-71
:HCOPY:COMMeNt	Sets or queries the screen comment.	5-71
:HCOPY:EXECute	Executes data output.	5-71

HISTory Group

:HISTory?	Queries all of the settings for the history feature.	5-72
:HISTory:ABORT	Aborts the history search.	5-72
:HISTory:CLear	Clears the data of all history waveforms.	5-72
:HISTory:DATE?	Queries the trigger date of the data at the specified record number.	5-72
:HISTory:DISPlay	Sets or queries the history start and end numbers that will be displayed.	5-72
:HISTory:DMODE (Display MODE)	Sets or queries the history waveform display mode.	5-72
:HISTory:EXECute	Executes the history waveform search.	5-72
:HISTory:PARAmeter?	Queries all history-waveform parameter-search settings.	5-72
:HISTory:PARAmeter:ITEM<x>?	Queries all the specified parameter's settings for history-waveform parameter searches.	5-72
:HISTory:PARAmeter:ITEM<x>: CONDition	Sets or queries the specified parameter's reference condition for history-waveform parameter searches.	5-72
:HISTory:PARAmeter:ITEM<x>: SOURce	Sets or queries the specified parameter's source trace for history-waveform parameter searches.	5-72
:HISTory:PARAmeter:ITEM<x>: TYPE?	Queries, for history-waveform parameter searches, the specified parameter's automatically measured item and upper and lower limits.	5-73
:HISTory:PARAmeter:ITEM<x>: TYPE:<Parameter>	Sets or queries the specified parameter's upper and lower limits for history-waveform parameter searches.	5-73
:HISTory:PARAmeter:ITEM<x>: VALue?	Queries the specified parameter's measured value for history-waveform parameter searches.	5-73
:HISTory:PARAmeter:LOGic	Sets or queries the logic to apply to history waveform searches.	5-73
:HISTory:PARAmeter:TRANge	Sets or queries the determination range of history waveform parameter searches.	5-73
:HISTory:RECORD	Sets or queries the source record.	5-73
:HISTory:RECORD? MINimum	Queries the minimum record number.	5-73
:HISTory:SMODE	Sets or queries the history waveform search mode.	5-73
:HISTory:TIME?	Queries the trigger time of the data at the specified record number.	5-73
:HISTory:ZONE?	Queries all history-waveform zone-search settings.	5-74
:HISTory:ZONE:EDIT<x>?	Queries all settings for the specified search zone.	5-74
:HISTory:ZONE:EDIT<x>:CONDition	Sets or queries the specified search zone's search condition.	5-74

5.1 List of Commands

Command	Function	Page
:HISTory:ZONE:EDIT<x>:SOURCE	Sets or queries the specified search zone's source waveform.	5-74
:HISTory:ZONE:LOGic	Sets or queries the logic condition of history-waveform zone searches.	5-74

IMAGe Group

:IMAGe?	Queries all screen capture data output settings.	5-75
:IMAGe:BACKground	Sets or queries the screen capture background (png).	5-75
:IMAGe:COMMeNt	Sets or queries the screen comment.	5-75
:IMAGe:EXECute	Saves the screen capture data.	5-75
:IMAGe:FORMat	Sets or queries the screen capture output format.	5-75
:IMAGe:SAVE?	Queries all file output settings.	5-75
:IMAGe:SAVE:ANAMing	Sets or queries the setting of the auto naming feature for saving files.	5-75
:IMAGe:SAVE:CDIRectory	Changes the output destination directory.	5-75
:IMAGe:SAVE:DRIVE	Sets the output destination medium.	5-75
:IMAGe:SAVE:FRAME	Sets or queries whether a white frame is attached to the saved screen capture's image.	5-75
:IMAGe:SAVE:NAME	Sets or queries the name of the file that will be saved.	5-75
:IMAGe:SAVE:PATH?	Queries the current directory.	5-75
:IMAGe:SEND?	Queries the screen capture data.	5-75
:IMAGe:TONE	Sets or queries the color tone of the screen capture data that will be saved.	5-75

INITialize Group

:INITialize:EXECute	Initializes the settings.	5-76
:INITialize:UNDO	Undoes the setting initialization.	5-76

INPut Group

:INPut?	Queries all power measurement element settings.	5-77
[:INPut] :CURRent?	Queries all electric current measurement settings.	5-77
[:INPut] :CURRent:AUTO?	Queries the electric current auto range on/off statuses of all elements.	5-77
[:INPut] :CURRent:AUTO [:ALL]	Collectively sets the electric current auto range on/off status of all elements.	5-77
[:INPut] :CURRent:AUTO: ELEMent<x>	Sets or queries the electric current auto range on/off status of the specified element.	5-77
[:INPut] :CURRent: AUTO: {SIGMA SIGMB}	Collectively sets the electric current auto range on/off status of all the elements that belong to the specified wiring unit (ΣA or ΣB).	5-77
[:INPut] :CURRent:EXTSensor?	Queries all external current sensor range settings.	5-77
[:INPut] :CURRent:EXTSensor: DISPlay	Sets or queries the display mode of the external current sensor range.	5-77
[:INPut] :CURRent:RANGE?	Queries the electric current ranges of all elements.	5-77
[:INPut] :CURRent:RANGE [:ALL]	Collectively sets the electric current range of all elements.	5-77
[:INPut] :CURRent:RANGE: ELEMent<x>	Sets or queries the electric current range of the specified element.	5-77
[:INPut] :CURRent: RANGE: {SIGMA SIGMB}	Collectively sets the electric current range of all the elements that belong to the specified wiring unit (ΣA or ΣB).	5-78
[:INPut] :CURRent:SPReset?	Queries the external current sensor conversion ratio presets of all elements.	5-78
[:INPut] :CURRent:SPReset [:ALL]	Collectively sets the external current sensor conversion ratio presets of all elements.	5-78
[:INPut] :CURRent:SPReset: ELEMent<x>	Sets or queries the external current sensor conversion ratio preset of the specified element.	5-78
[:INPut] :CURRent: SPRReset: {SIGMA SIGMB}	Collectively sets the external current sensor conversion ratio presets of all the elements that belong to the specified wiring unit (ΣA or ΣB).	5-78
[:INPut] :CURRent:SRATio?	Queries the external current sensor conversion ratios of all elements.	5-78
[:INPut] :CURRent:SRATio [:ALL]	Collectively sets the external current sensor conversion ratios of all elements.	5-78
[:INPut] :CURRent:SRATio: ELEMent<x>	Sets or queries the external current sensor conversion ratio of the specified element.	5-78
[:INPut] :CURRent: SRATio: {SIGMA SIGMB}	Collectively sets the external current sensor conversion ratios of all the elements that belong to the specified wiring unit (ΣA or ΣB).	5-78
[:INPut] :DESKew?	Queries all deskew settings.	5-78
[:INPut] :DESKew: {VOLTage CURRent EXTSensor} [:ALL]	Sets the deskew of the voltage, current, or current sensor of all elements at once.	5-78
[:INPut] :DESKew: {VOLTage CURRent EXTSensor}: ELEMent<x>	Sets or queries the deskew of the voltage, current, or current sensor of an element.	5-79
[:INPut] :FILTer?	Queries all input filter settings.	5-79
[:INPut] :FILTer: FREQuency?	Queries the frequency filters of all elements.	5-79

5.1 List of Commands

Command	Function	Page
[:INPut] :FILTer:FREQUency [:ALL]	Collectively sets the frequency filter of all elements.	5-79
[:INPut] :FILTer:FREQUency : ELEMent<x>	Sets or queries the frequency filter of the specified element.	5-79
[:INPut] :FILTer:LINE?	Queries the line filters of all elements.	5-79
[:INPut] :FILTer[:LINE] [:ALL]	Collectively sets the line filter of all elements.	5-79
[:INPut] :FILTer[:LINE] : ELEMent<x>	Sets or queries the line filter of the specified element.	5-79
[:INPut] :FILTer[:LINE] : {SIGMA SIGMB}	Collectively sets the line filter of all the elements that belong to the specified wiring unit (ΣA or ΣB).	5-80
[:INPut] :INdependent	Sets or queries the on/off status of independent power measurement element configuration.	5-80
[:INPut] :POVer?	Queries the peak over-range information.	5-80
[:INPut] :SCALing?	Queries all scaling settings.	5-80
[:INPut] :SCALing:CTPRreset?	Queries the CT ratio presets of all elements.	5-80
[:INPut] :SCALing:CTPRreset[:ALL]	Collectively sets the CT ratio presets of all elements.	5-80
[:INPut] :SCALing:CTPRreset : ELEMent<x>	Sets or queries the CT ratio preset of the specified element.	5-80
[:INPut] :SCALing : CTPRreset: {SIGMA SIGMB}	Collectively sets the CT ratio presets of all the elements that belong to the specified wiring unit (ΣA or ΣB).	5-80
[:INPut] :SCALing:STATE?	Queries the on/off statuses of the scaling of all elements.	5-80
[:INPut] :SCALing[:STATE] [:ALL]	Collectively sets the on/off status of the scaling of all elements.	5-80
[:INPut] :SCALing[:STATE] : ELEMent<x>	Sets or queries the on/off status of the scaling of the specified element.	5-80
[:INPut] : SCALing: {VT CT SFACTOR}?	Queries the VT ratios, CT ratios, or power coefficients of all elements.	5-81
[:INPut] : SCALing: {VT CT SFACTOR} [:ALL]	Collectively sets the VT ratio, CT ratio, or power coefficient of all elements.	5-81
[:INPut] :SCALing : {VT CT SFACTOR} :ELEMent<x>	Sets or queries the VT ratio, CT ratio, or power coefficient of the specified element.	5-81
[:INPut] :SCALing : {VT CT SFACTOR} : {SIGMA SIGMB}	Collectively sets the VT ratio, CT ratio, or power coefficient of all the elements that belong to the specified wiring unit (ΣA or ΣB).	5-81
[:INPut] :SYNChronize?	Queries the synchronization sources of all elements.	5-81
[:INPut] :SYNChronize [:ALL]	Collectively sets the synchronization source of all elements.	5-81
[:INPut] :SYNChronize:ELEMent<x>	Sets or queries the synchronization source of the specified element.	5-81
[:INPut] : SYNChronize: {SIGMA SIGMB}	Collectively sets the synchronization source of all the elements that belong to the specified wiring unit (ΣA or ΣB).	5-81
[:INPut] :VOLTage?	Queries all voltage measurement settings.	5-81
[:INPut] :VOLTage:AUTO?	Queries the voltage auto range on/off statuses of all elements.	5-81
[:INPut] :VOLTage:AUTO [:ALL]	Collectively sets the voltage auto range on/off status of all elements.	5-81
[:INPut] :VOLTage:AUTO : ELEMent<x>	Sets or queries the voltage auto range on/off status of the specified element.	5-82
[:INPut] :VOLTage : AUTO: {SIGMA SIGMB}	Collectively sets the voltage auto range on/off status of all the elements that belong to the specified wiring unit (ΣA or ΣB).	5-82
[:INPut] :VOLTage:RANGE?	Queries the voltage ranges of all elements.	5-82
[:INPut] :VOLTage:RANGE [:ALL]	Collectively sets the voltage range of all elements.	5-82
[:INPut] :VOLTage:RANGE : ELEMent<x>	Sets or queries the voltage range of the specified element.	5-82
[:INPut] :VOLTage : RANGE: {SIGMA SIGMB}	Collectively sets the voltage range of all the elements that belong to the specified wiring unit (ΣA or ΣB).	5-82
[:INPut] :WIRing	Sets or queries the wiring system.	5-82

LStart Group

:LStart (Log Start)	Starts waveform acquisition immediately.	5-83
:LStart?	Starts waveform acquisition immediately, and waits for acquisition to complete.	5-83

MATH Group

:MATH<x>?	Queries all computation settings.	5-84
:MATH<x>:BINary?	Queries all binary computation settings.	5-84
:MATH<x> : BINary: {CHANnel<x> POWer<y> MATH<x>} [:THReshold]	Sets or queries the threshold level of the specified channel for binary computations.	5-84
:MATH<x>:CONSTant<x>	Sets or queries a constant for user-defined computation.	5-84

5.1 List of Commands

Command	Function	Page
:MATH<x>:DEFine	Sets or queries an expression for user-defined computation.	5-84
:MATH<x>:DISPlay	Sets or queries whether computations will be performed.	5-84
:MATH<x>: ESHift: {CHANnel<x> POWer<y> MATH<x>}[:COUNT]	Sets or queries the amount of phase shift in the Shift computation when an external clock is used.	5-85
:MATH<x>:EXPonential?	Queries all exponential window settings.	5-85
:MATH<x>:EXPonential:DRATe	Sets or queries the exponential window's damping rate.	5-85
:MATH<x>:EXPonential:FORCe<x>	Sets or queries the exponential window's FORCe1 or FORCe2 value.	5-85
:MATH<x>:FFT?	Queries all FFT computation settings.	5-85
:MATH<x>:FFT:POINt	Sets or queries the number of FFT points.	5-85
:MATH<x>:FFT:WINDow	Sets or queries the time window for FFT computations.	5-85
:MATH<x>:FILTer<x>?	Queries all digital filter settings.	5-85
:MATH<x>:FILTer<x>:BAND	Sets or queries a digital filter band.	5-85
:MATH<x>:FILTer<x>:CUTOff<x>	Sets or queries a cutoff frequency of a digital filter.	5-86
:MATH<x>:FILTer<x>:TYPE	Sets or queries the type of a digital filter.	5-86
:MATH<x>:LABel	Sets or queries a computed waveform label.	5-86
:MATH<x>:MODE	Sets or queries whether the PX8000 is in computation mode.	5-86
:MATH<x>:MREference	Sets or queries the computation range.	5-86
:MATH<x>:OPERation	Sets or queries the computation type.	5-86
:MATH<x>:SCALE?	Queries all scaling settings.	5-86
:MATH<x>:SCALE:MODE	Sets or queries a scale mode.	5-86
:MATH<x>:SCALE:VALue	Sets or queries a set of upper and lower limits for manual scaling.	5-86
:MATH<x>: SHIFt: {CHANnel<x> POWer<y> MATH<x>}[:TIME]	Sets or queries the amount of phase shift in the Shift computation when the internal clock is used.	5-87
:MATH<x>:SOURce<x>	Sets or queries a channel's computation type.	5-87
:MATH<x>:UNIT	Sets or queries a unit string that is attached to computation results.	5-87

MEASure Group

:MEASure?	Queries all the settings for automated measurement of waveform parameters.	5-88
:MEASure: {CHANnel<x> POWer<y> MATH<x>}?	Sets or queries whether all the waveform parameters of the specified channel are ON or OFF.	5-88
:MEASure: {CHANnel<x> POWer<y> MATH<x>} :ALL	Sets all the measurement items of the specified channel to ON or OFF.	5-88
:MEASure: {CHANnel<x> POWer<y> MATH<x>} :CDEStination (CopyDEStination)	Sets or queries whether the copy destination channel is ON or OFF for when parameter measurement items are copied between channels.	5-88
:MEASure: {CHANnel<x> POWer<y> MATH<x>} :COPY	Copies all the measurement item ON/OFF settings from one specified channel to another specified channel.	5-88
:MEASure: {CHANnel<x> POWer<y> MATH<x>} :DELAy?	Queries all delay settings.	5-88
:MEASure: {CHANnel<x> POWer<y> MATH<x>} :DELAy:COUNT?	Queries the statistics count of the delay between channels.	5-88
:MEASure: {CHANnel<x> POWer<y> MATH<x>} :DELAy: {MAXimum AVERAge MINimum SDEVIation}?	Queries a statistic of the delay between channels.	5-88
:MEASure: {CHANnel<x> POWer<y> MATH<x>} :DELAy:MEASure?	Queries all the settings for a source waveform for measuring the delay between channels of a waveform.	5-89
:MEASure: {CHANnel<x> POWer<y> MATH<x>} :DELAy:MEASure:COUNT	Sets or queries the number of source waveforms at which delay between channels will be measured for a waveform.	5-89
:MEASure: {CHANnel<x> POWer<y> MATH<x>} :DELAy:MEASure:SLOPe	Sets or queries a source waveform slope that will be used to measure delay between channels for a waveform.	5-89
:MEASure: {CHANnel<x> POWer<y> MATH<x>} :DELAy:REFEreNce?	Queries all reference waveform settings used to measure the delay between channels for the specified waveform.	5-89
:MEASure: {CHANnel<x> POWer<y> MATH<x>} :DELAy:REFEreNce:COUNT	Sets or queries the edge detection count of the reference waveform used to measure the delay between channels for the specified waveform.	5-89
:MEASure: {CHANnel<x> POWer<y> MATH<x>} :DELAy:REFEreNce:SLOPe	Sets or queries the edge detection slope of the reference waveform used to measure the delay between channels for the specified waveform.	5-89

5.1 List of Commands

Command	Function	Page
:MEASure:{CHANnel<x> POWer<y> MATH<x>}:DElay:REFeRence:SOURce	Sets or queries whether to set the reference point for measuring the delay between channels for a waveform to a trigger point or to a waveform.	5-90
:MEASure:{CHANnel<x> POWer<y> MATH<x>}:DElay:REFeRence:TRACe	Sets or queries the reference waveform trace used to measure the delay between channels for a waveform.	5-90
:MEASure:{CHANnel<x> POWer<y> MATH<x>}:DElay:STATe	Sets or queries the display format of the delay parameters of the specified channel.	5-90
:MEASure:{CHANnel<x> POWer<y> MATH<x>}:DElay:VALue?	Queries a measured delay value of the specified waveform's parameter.	5-90
:MEASure:{CHANnel<x> POWer<y> MATH<x>}:DPRoximal?	Queries all distal, mesial, and proximal settings.	5-90
:MEASure:{CHANnel<x> POWer<y> MATH<x>}:DPRoximal:MODE	Sets or queries the distal, mesial, and proximal point mode setting.	5-90
:MEASure:{CHANnel<x> POWer<y> MATH<x>}:DPRoximal:PERCent	Sets or queries the distal, mesial, and proximal points as percentages.	5-91
:MEASure:{CHANnel<x> POWer<y> MATH<x>}:DPRoximal:UNIT	Sets or queries the distal, mesial, and proximal points as units.	5-91
:MEASure:{CHANnel<x> POWer<y>}: IMode	Sets or queries the second conversion/hour conversion of integration parameters (TY1Integ, TY2Integ).	5-91
:MEASure:{CHANnel<x> POWer<y> MATH<x>}:METHod	Sets or queries the modes of a set of high and low points (rising-time and falling-time measurement references).	5-91
:MEASure:{CHANnel<x> POWer<y> MATH<x>}:<Parameter>?	Queries the setting of a waveform parameter (measurement item).	5-92
:MEASure:{CHANnel<x> POWer<y> MATH<x>}:<Parameter>:COUNT?	Queries the count of measured values for cyclic statistical processing of a waveform parameter.	5-92
:MEASure:{CHANnel<x> POWer<y> MATH<x>}:<Parameter>:{MAXimum AVERage MINimum SDEViation}?	Queries a cyclic statistical processing value of a waveform parameter.	5-92
:MEASure:{CHANnel<x> POWer<y> MATH<x>}:<Parameter>:STATe	Sets or queries whether the specified waveform's waveform parameter (measurement item) is ON or OFF.	5-92
:MEASure:{CHANnel<x> POWer<y> MATH<x>}:<Parameter>VALue?	Queries the measured value of a waveform parameter.	5-93
:MEASure:CYCLE?	Queries all cycle statistics settings.	5-93
:MEASure:CYCLE:ABORT	Aborts cyclic statistical processing.	5-93
:MEASure:CYCLE:EXECute	Executes cyclic statistical processing.	5-93
:MEASure:CYCLE:TRACe	Sets or queries the cycle trace of cycle statistics.	5-93
:MEASure:MODE	Sets or queries the waveform parameter measurement mode.	5-93
:MEASure:ONECycle	Sets or queries whether 1-cycle mode is ON or OFF.	5-93
:MEASure:TRANge (Time RANge)	Sets or queries the waveform parameter measurement range.	5-93
:MEASure:WAIT?	Waits for the completion of measurement by using a timeout valuer.	5-94
:MEASure:{XY<x>}?	Queries all the settings for automated measurement of XY waveform parameters.	5-94
:MEASure:{XY<x>}:<Parameter>?	Queries all the settings of a waveform parameter (measurement item).	5-94
:MEASure:{XY<x>}:<Parameter>: COUNT?	Queries the count of measured values for cyclic statistical processing of a waveform parameter.	5-94
:MEASure:{XY<x>}:<Parameter>: {MAXimum AVERage MINimum SDEViation}?	Queries a cyclic statistical processing value of a waveform parameter.	5-94
:MEASure:{XY<x>}:<Parameter>: STATe	Sets or queries whether the specified waveform's waveform parameter (measurement item) is ON or OFF.	5-94
:MEASure:{XY<x>}:<Parameter>: VALue?	Queries the measured value of a waveform parameter.	5-94

MOTor Group

:MOTor<x>?	Queries all motor measurement settings.	5-95
:MOTor<x>:MODE	Sets or queries the motor mode on/off status.	5-95
:MOTor<x>:PM?	Queries motor output (Pm) settings for when motor mode is on.	5-95
:MOTor<x>:PM:NAME	Sets or queries the name of motor output function.	5-95
:MOTor<x>:PM:SCALing	Sets or queries the motor output computation scaling factor.	5-95
:MOTor<x>:PM:SYNChronize	Sets or queries the synchronization source of motor measurement.	5-95
:MOTor<x>:PM:UNIT	Sets or queries the unit that is added to the motor output computation result.	5-95

5.1 List of Commands

Command	Function	Page
:MOTor<x>:SPEed?	Queries all rotating speed (Speed) settings.	5-95
:MOTor<x>:SPEed:PULSe	Sets or queries the pulse count of the revolution signal for when motor mode is on.	5-95
:MOTor<x>:SPEed:UNIT	Sets or queries the unit that is added to the rotating speed computation result.	5-96
:MOTor<x>:TORQue?	Queries all torque (Torque) settings.	5-96
:MOTor<x>:TORQue:RATE?	Queries all torque signal rated-value settings.	5-96
:MOTor<x>:TORQue:RATE: {UPPer LOWer}	Sets or queries the upper or lower limit of the rated value of the torque signal (pulse input type).	5-96
:MOTor<x>:TORQue:UNIT	Sets or queries the unit that is added to the torque computation result.	5-96

MTRigger Group

:MTRigger	Manually triggers the PX8000.	5-97
-----------	-------------------------------	------

NMEasure (Numeric MEasure) Group

:NMEasure?	Queries all numeric measurement settings.	5-98
:NMEasure:AVERaging?	Queries all averaging settings.	5-98
:NMEasure:AVERaging:COUNT	Sets or queries the averaging coefficient.	5-98
:NMEasure:AVERaging:TYPE	Sets or queries the averaging type.	5-98
:NMEasure:DMeasure?	Queries all delta computation settings.	5-98
:NMEasure:DMeasure:MODE	Sets or queries the voltage or current mode that is used in delta computation.	5-98
:NMEasure:DMeasure: {SIGMA SIGMB}	Sets or queries the delta computation mode for wiring unit ΣA or ΣB .	5-98
:NMEasure:EFFiciency?	Queries all efficiency computation settings.	5-98
:NMEasure:EFFiciency:ETA<x>	Sets or queries the efficiency equation.	5-99
:NMEasure:EFFiciency:UDEF<x>	Sets or queries the user-defined parameters used in the efficiency equation.	5-99
:NMEasure:FUNCTion<x>?	Queries all the settings of the specified user-defined function.	5-99
:NMEasure:FUNCTion<x>: EXPReSSion	Sets or queries the equation of the specified user-defined function.	5-99
:NMEasure:FUNCTion<x>:NAME	Sets or queries the name of the specified user-defined function.	5-99
:NMEasure:FUNCTion<x>[:STATe]	Sets or queries the on/off status of the specified user-defined function.	5-99
:NMEasure:FUNCTion<x>:UNIT	Sets or queries the unit that is added to the computation result of the specified user-defined function.	5-99
:NMEasure:PC?	Queries all Pc (Corrected Power) computation settings.	5-100
:NMEasure:PC:IEC	Sets or queries the Pc (Corrected Power) equation.	5-100
:NMEasure:PC:P<x>	Sets or queries a Pc (Corrected Power) equation parameter.	5-100
:NMEasure:PERiod?	Queries all settings related to the computation period.	5-100
:NMEasure:PERiod[:MODE]	Sets the method used to specify the computation period or queries the current setting.	5-100
:NMEasure:PERiod:CURSor[:POSition]	Sets or queries the numeric computation cursor position.	5-100
:NMEasure:PERiod:CURSor:SEARch?	Queries all zero-crossing search settings.	5-100
:NMEasure:PERiod:CURSor:SEARch: ABORT	Aborts the zero-crossing search.	5-100
:NMEasure:PERiod:CURSor:SEARch: EDGe	Sets or queries the zero-crossing search edge.	5-100
:NMEasure:PERiod:CURSor:SEARch: NEXT	Searches for the next zero-crossing after the current (start or end) position, and moves the (start or end) position to the found zero-crossing position.	5-100
:NMEasure:PERiod:CURSor:SEARch: PREVIOUS	Searches for the next zero-crossing before the current (start or end) position, and moves the (start or end) position to the found zero-crossing position.	5-100
:NMEasure:PERiod:CURSor:SEARch: SOURce	Sets or queries the zero-crossing search source.	5-101
:NMEasure:PERiod:EGATe[:PATtern]	Sets the pattern that is used when determining the computation period with the external trigger signal or queries the current setting.	5-101
:NMEasure:PHASe	Sets or queries the display format of the phase difference.	5-101
:NMEasure:SFORMula	Sets or queries the equation used to compute S (apparent power).	5-101
:NMEasure:SQFormula	Sets or queries the equation used to compute S (apparent power) and Q (reactive power).	5-101

Command	Function	Page
:NMEasure:STATe	Sets or queries the on/off status of numeric measurement.	5-101
NULL Group		
:NULL?	Queries all NULL feature settings.	5-102
:NULL:AFFect[:ALL]	Enables or disables the NULL feature on all channels at once.	5-102
:NULL:AFFect:CHANnel<x>	Enables or disables the NULL feature on a specified channel.	5-102
:NULL:UPDate[:ALL]	Sets or queries whether the NULL value is updated when NULL is executed on all channels at once.	5-102
:NULL:UPDate:CHANnel<x>	Sets or queries whether the NULL value is updated when NULL is executed on a specified channel.	5-102
:NULL:STATe	Sets or queries NULL.	5-102
NUMer ic Group		
:NUMer ic?	Queries all numeric data output settings.	5-103
:NUMer ic:FORMat	Sets or queries the numeric data format.	5-103
:NUMer ic:HOLD	Sets or queries the on/off (hold/release) status of the numeric data hold feature.	5-103
:NUMer ic:LIST?	Queries all harmonic measurement numeric list data output settings.	5-103
:NUMer ic:LIST:CLEar	Clears harmonic measurement numeric list data output items (sets the items to NONE).	5-103
:NUMer ic:LIST:DELeTe	Deletes harmonic measurement numeric list data output items.	5-103
:NUMer ic:LIST:ITEM<x>	Sets or queries the output item (function and element) of the specified harmonic measurement numeric list data item.	5-104
:NUMer ic:LIST:NUMBER	Sets or queries the number of numeric list data items that are transmitted by :NUMer ic:LIST:VALue?.	5-104
:NUMer ic:LIST:ORDer	Sets or queries the maximum output harmonic order of the harmonic measurement numeric list data.	5-104
:NUMer ic:LIST:PRESet	Presets the harmonic measurement numeric list data output item pattern.	5-104
:NUMer ic:LIST:SELeCt	Sets or queries the output components of the harmonic measurement numeric list data.	5-104
:NUMer ic:LIST:VALue?	Queries the harmonic measurement numeric list data.	5-105
:NUMer ic:NORMal?	Queries all numeric data output settings.	5-105
:NUMer ic[:NORMal]:CLEar	Clears numeric data output items (sets the items to NONE).	5-105
:NUMer ic[:NORMal]:DELeTe	Deletes numeric data output items.	5-105
:NUMer ic[:NORMal]:ITEM<x>	Sets or queries the specified numeric data output item (function, element, and harmonic order).	5-106
:NUMer ic[:NORMal]:NUMBER	Sets or queries the number of numeric data items that are transmitted by the :NUMer ic[:NORMal]:VALue? command.	5-106
:NUMer ic[:NORMal]:PRESet	Presets the numeric data output item pattern.	5-106
:NUMer ic[:NORMal]:VALue?	Queries the numeric data.	5-106
POWer Group		
:POWer<x>?	Queries all vertical axis settings of a power channel.	5-110
:POWer<x>:DISPlay	Sets or queries whether the channel is displayed.	5-110
:POWer<x>:LABel	Sets or queries the waveform label of a channel.	5-110
:POWer<x>:OFFSet	Sets or queries the offset power.	5-110
:POWer<x>:POSition	Sets or queries the vertical position of power.	5-110
:POWer<x>:SCALe	Sets or queries the upper and lower limits of the screen for power.	5-110
:POWer<x>:VARIable	Sets or queries the zoom method (vertical scale) of power.	5-110
:POWer<x>:ZOOM	Sets or queries the vertical zoom factor of power.	5-110
RECall Group		
:RECall:SETup<x>:EXECute	Recalls setup data from an internal memory area.	5-111
SEARCh Group		
:SEARCh?	Queries all search settings.	5-112
:SEARCh:ABORt	Aborts the search.	5-112
:SEARCh:EDGE?	Queries all edge search settings.	5-112

5.1 List of Commands

Command	Function	Page
:SEARCH:EDGE:COUNT	Sets or queries the edge search count.	5-112
:SEARCH:EDGE:HYSteresis	Sets or queries the edge search determination-level hysteresis.	5-112
:SEARCH:EDGE:LEVEL	Sets or queries the edge search determination level.	5-112
:SEARCH:EDGE:SLOPe	Sets or queries the edge polarity for when the edge search is performed on traces other than logic traces.	5-112
:SEARCH:EDGE:SOURce	Sets or queries the trace to perform the edge search on.	5-112
:SEARCH:EPOint (End POint)	Sets or queries the search end position.	5-112
:SEARCH:EXECute	Executes the search.	5-112
:SEARCH:MAG<x>	Sets or queries a zoom waveform magnification.	5-113
:SEARCH:POSition<x>	Sets or queries the position of a zoom box.	5-113
:SEARCH:SElect	Sets the search point that is displayed on the zoom window, and queries the zoom position of that search point.	5-113
:SEARCH:SElect? MAXimum	Queries the maximum save number, which is the number that is attached to the last position that the search retrieved.	5-113
:SEARCH:SPOint (Start POint)	Sets or queries the search start position.	5-113
:SEARCH:TDIV<x>	Sets or queries a zoom waveform T/DIV value.	5-113
:SEARCH:TIME?	Queries all time search settings.	5-113
:SEARCH:TIME:TIME	Sets or queries the time of the time search.	5-113
:SEARCH:TWInDow (Target WInDow)	Sets or queries the window that search results will be displayed in.	5-113
:SEARCH:TYPE	Sets or queries the search type.	5-113

SELFtest Group

:SELFtest:CTEMperature? (Cpu TEMperature)	Returns the CPU temperature.	5-114
:SELFtest:KEYBoard	Controls the front panel key test mode.	5-114
:SELFtest:MEMory:ACQuire: EXECute?	Executes an acquisition memory test.	5-114
:SELFtest:MEMory:SYSTem: EXECute?	Executes an system memory test.	5-114
:SELFtest:MEMory:SRAM:EXECute?	Executes an backup memory test.	5-114

SNAP Group

:SNAP	Takes a snapshot.	5-115
-------	-------------------	-------

SStart Group

:SStart	Executes the single start operation.	5-116
:SStart?	Executes the single start operation and waits for its completion by using a timeout valuer.	5-116

START Group

:START	Starts waveform acquisition.	5-117
--------	------------------------------	-------

STATus Group

:STATus?	Queries all the settings for the communication status feature.	5-118
:STATus:CONDition?	Queries the contents of the condition register.	5-118
:STATus:EESE	Sets or queries the extended event enable register.	5-118
:STATus:EESR?	Queries the contents of the extended event register and clears the register.	5-118
:STATus:ERRor?	Queries the error code and message of the last error that has occurred.	5-118
:STATus:FILTer<x>	Sets or queries the transition filter.	5-118
:STATus:QENable	Sets or queries whether messages other than errors will be stored to the error queue (ON) or not (OFF).	5-118
:STATus:QMESsage	Sets or queries whether message information will be attached to the response to the :STAT:ERR? query (ON) or not (OFF).	5-118

STOP Group

:STOP	Stops waveform acquisition.	5-119
-------	-----------------------------	-------

Command	Function	Page
STORe Group		
:STORe?	Queries all the information related to setup data in the internal memory.	5-120
:STORe:SETUp<x>?	Queries information about the setup data in the specified location of the internal memory.	5-120
:STORe:SETUp<x>:CLear	Clear the setup data that is stored to the specified location in the internal memory.	5-120
:STORe:SETUp<x>:COMMent	Sets or queries the comment for the setup data that is stored to the specified location in the internal memory.	5-120
:STORe:SETUp<x>:DATE?	Queries the date and time of the setup data that is stored to the specified location in the internal memory.	5-120
:STORe:SETUp<x>:EXECute	Saves setup data to the specified location in the internal memory.	5-120
SYSTem Group		
:SYSTem?	Queries all system settings.	5-121
:SYSTem:CLICk	Sets or queries whether click sounds are produced.	5-121
:SYSTem:CLOCk?	Queries all date/time settings.	5-121
:SYSTem:CLOCk:DATE	Sets or queries the date.	5-121
:SYSTem:CLOCk:FORMat	Sets or queries the date format.	5-121
:SYSTem:CLOCk:MODE	Sets or queries whether the date and time are displayed.	5-121
:SYSTem:CLOCk:SNTP?	Queries all SNTP settings.	5-121
:SYSTem:CLOCk:SNTP:EXECute	Uses SNTP to set the date and time.	5-121
:SYSTem:CLOCk:SNTP:GMTTime	Sets or queries the time difference from GMT when SNTP is being used.	5-121
:SYSTem:CLOCk:TIME	Sets or queries the time.	5-121
:SYSTem:CLOCk:TYPE	Sets or queries whether the date and time are set manually or by using SNTP.	5-121
:SYSTem:CRMode (Cursor Read Mode)	Sets or queries the mode used to read vertical, marker, and degree cursor values.	5-122
:SYSTem:DFLow?	Queries all data display settings for low frequency input (no input).	5-122
:SYSTem:DFLow:AUXiliary	Sets or queries the AUX data display method for when the AUX module is not receiving pulse input.	5-122
:SYSTem:DFLow:FREQuency	Sets or queries the AUX data display method for when a power measurement element is receiving low frequency input (no input).	5-122
:SYSTem:IRIG?	Queries all IRIG settings.	5-122
:SYSTem:IRIG:FORMat	Sets or queries the IRIG format for synchronizing the time through IRIG signals.	5-122
:SYSTem:IRIG:IMPedance	Sets or queries the input impedance for synchronizing the time through IRIG signals.	5-122
:SYSTem:IRIG:MODulation	Sets or queries the IRIG modulation type for synchronizing the time through IRIG signals.	5-122
:SYSTem:KEYProtect?	Queries all key lock settings.	5-122
:SYSTem:KEYProtect:EPASSword (Enter PASSword)	Enters the password to release the key lock.	5-122
:SYSTem:KEYProtect:MODE	Sets or queries whether the keys are locked.	5-122
:SYSTem:KEYProtect:RTYPE (Release TYPE)	Sets or queries how to release the key lock.	5-122
:SYSTem:KEYProtect:SPASSword (Set PASSword)	Sets the password that is used to release the key lock.	5-123
:SYSTem:KEYProtect:TYPE	Sets or queries which keys will be locked.	5-123
:SYSTem:KEYResponse	Sets or queries the response time of the START/STOP key.	5-123
:SYSTem:LANGuage	Sets or queries the message language.	5-123
:SYSTem:LCD?	Queries all LCD settings.	5-123
:SYSTem:LCD:AUTO?	Queries all the settings for the feature that automatically turns off the backlight.	5-123
:SYSTem:LCD:AUTO:MODE	Sets or queries whether the feature that automatically turns off the backlight is on.	5-123
:SYSTem:LCD:AUTO:TIME	Sets or queries the amount of time until the backlight is turned off.	5-123
:SYSTem:LCD:BRIGhtness	Sets or queries the LCD brightness.	5-123
:SYSTem:LCD:MODE	Sets or queries whether the backlight is on.	5-123

5.1 List of Commands

Command	Function	Page
:SYSTem:MLANguage	Sets or queries the menu language.	5-123
:SYSTem:OVERview	Displays the system information.	5-123
:SYSTem:PACTION	Sets or queries whether the action mode will be enabled when the PX8000 turns on (ON) or not (OFF).	5-123
:SYSTem:PStart	Sets or queries whether waveform acquisition will be started when the PX8000 turns on (ON) or not (OFF).	5-124
:SYSTem:RCMode (Remote Control Mode)	Sets or queries whether remote signals to stop measurements will be ignored (ON) or not (OFF).	5-124
:SYSTem:SCALEfont	Sets or queries the font size that is used for waveform labels and scale values.	5-124
:SYSTem:SOITem (Scale On ITem)	Sets or queries which scales are displayed.	5-124
:SYSTem:STORage:FORMat:EXECute	Formats the specified medium. This is an overlap command.	5-124
:SYSTem:STORage:MEDIA	Sets or queries the medium that you want to format.	5-124
:SYSTem:TSYNchro (Time SYNchronization)	Sets or queries the time synchronization.	5-124
:SYSTem:USBKeyboard	Sets or queries the USB keyboard type.	5-124

TIMebase Group

:TIMebase?	Queries all time base settings.	5-125
:TIMebase:SOURce	Sets or queries the time base.	5-125
:TIMebase:SRATE	Sets or queries the sample rate.	5-125
:TIMebase:TDIV	Sets or queries the T/DIV value.	5-125

TRIGger Group

:TRIGger?	Queries all trigger settings.	5-126
:TRIGger:ABN? (A->B(N))	Queries all A->B(n) trigger settings.	5-126
:TRIGger:ABN:COUNT	Sets or queries the number of times condition B must be met for A->B(n) triggers.	5-126
:TRIGger:ACTION?	Queries all action settings.	5-126
:TRIGger:ACTION:BUZZer	Sets or queries whether a beep is sounded as an action.	5-126
:TRIGger:ACTION:HCOpy	Sets or queries whether a screen capture is printed from the built-in printer as an action.	5-126
:TRIGger:ACTION:IMAGE?	Queries all settings for saving screen captures as an action.	5-126
:TRIGger:ACTION:IMAGE:CDIRectory	Sets or queries the current directory on the storage medium where screen captures are saved to as an action.	5-126
:TRIGger:ACTION:IMAGE:DRIVE	Sets the storage medium that screen captures are saved to as an action.	5-126
:TRIGger:ACTION:IMAGE[:MODE]	Sets or queries whether a screen capture is saved to the storage medium as an action.	5-126
:TRIGger:ACTION:IMAGE:PATH?	Queries the path on the storage medium where screen captures are saved to as an action.	5-126
:TRIGger:ACTION:MODE	Sets or queries whether action is used.	5-127
:TRIGger:ACTION:NUMeric?	Queries all the settings related to saving numeric data as an action.	5-127
:TRIGger:ACTION:NUMeric:CDIRectory	Sets or queries the current directory on the storage medium that numeric data is saved to as an action.	5-127
:TRIGger:ACTION:NUMeric:DRIVE	Sets the storage medium that numeric data is saved to as an action.	5-127
:TRIGger:ACTION:NUMeric[:MODE]	Sets or queries whether numeric data is saved to the storage medium as an action.	5-127
:TRIGger:ACTION:NUMeric:PATH?	Queries the path on the storage medium that numeric data is saved to as an action.	5-127
:TRIGger:ACTION:SAVE?	Queries all the settings related to saving data as an action.	5-127
:TRIGger:ACTION:SAVE:CDIRectory	Sets or queries the current directory on the storage medium that waveform data is saved to as an action.	5-127
:TRIGger:ACTION:SAVE:DRIVE	Sets the storage medium that waveform data is saved to as an action.	5-127
:TRIGger:ACTION:SAVE[:MODE]	Sets or queries whether waveform data is saved to the storage medium as an action.	5-127
:TRIGger:ACTION:SAVE:PATH?	Queries the path on the storage medium that waveform data is saved to as an action.	5-127
:TRIGger:ACTION:SAVE:TYPE	Sets or queries the type of data to save when waveform data is saved to the storage medium as an action.	5-127

5.1 List of Commands

Command	Function	Page
:TRIGger:ADB? (A Delay B)	Queries all A Delay B trigger settings.	5-128
:TRIGger:ADB:DElay	Sets or queries the delay time for condition B for A Delay B triggers.	5-128
:TRIGger:AND?	Queries all AND trigger settings.	5-128
:TRIGger:AND:{CHANnel<x> POWer<y>}[:CONDition]	Sets or queries the state of the specified channel for AND triggers.	5-128
:TRIGger:ATrigger?	Queries all condition A settings.	5-128
:TRIGger:ATrigger:{CHANnel<x> POWer<y>}[:CONDition]	Sets or queries the state of the specified channel of condition A.	5-128
:TRIGger:ATrigger:CONDition	Sets or queries the achievement condition of condition A.	5-128
:TRIGger:BBETween?	Queries all B Between trigger settings.	5-128
:TRIGger:BBETween:TIME<x>	Sets or queries a pulse width for B Between triggers.	5-128
:TRIGger:BGTime?	Queries all B>Time trigger settings.	5-128
:TRIGger:BGTime:TIME	Sets or queries the pulse width for B>Time triggers.	5-128
:TRIGger:BLTime?	Queries all B<Time trigger settings.	5-128
:TRIGger:BLTime:TIME	Sets or queries the pulse width for B<Time triggers.	5-128
:TRIGger:BTOut?	Queries all B TimeOut trigger settings.	5-129
:TRIGger:BTOut:TIME	Sets or queries the pulse width for B TimeOut triggers.	5-129
:TRIGger:BTRigger?	Queries all condition B settings.	5-129
:TRIGger:BTRigger:{CHANnel<x> POWer<y>}[:CONDition]	Sets or queries the state of the specified channel of condition B.	5-129
:TRIGger:BTRigger:CONDition	Sets or queries the achievement condition of condition B.	5-129
:TRIGger:DElay	Sets or queries the delay.	5-129
:TRIGger:EOA?	Queries all EdgeOnA settings.	5-129
:TRIGger:EOA:{CHANnel<x> POWer<y>}[:CONDition]	Sets or queries the state of the specified channel for EdgeOnA triggers.	5-129
:TRIGger:EOA:CONDition	Sets or queries the achievement condition for EdgeOnA triggers.	5-129
:TRIGger:HOLDoff?	Queries all hold-off settings.	5-129
:TRIGger:HOLDoff:TIME	Sets or queries the hold-off time.	5-130
:TRIGger:MODE	Sets or queries the trigger mode.	5-130
:TRIGger:OR?	Queries all OR trigger settings.	5-130
:TRIGger:OR:{CHANnel<x> POWer<y>}[:CONDition]	Sets or queries the state of the specified channel for OR triggers.	5-130
:TRIGger:OR:EXTernal:TYPE	Sets or queries the type of external trigger that is used with OR triggers.	5-130
:TRIGger:OUT?	Queries all trigger output settings.	5-130
:TRIGger:OUT:TIME	Sets or queries the H-pulse interval that is used when the trigger output terminal output type is 1.	5-130
:TRIGger:OUT:TYPE	Sets or queries the trigger output terminal output type.	5-130
:TRIGger:POSition	Sets or queries the trigger position.	5-130
:TRIGger:SCOUnt (Single(n) COunt)	Sets the number of times the trigger is to be activated when the trigger mode is Single(N) or queries the current setting.	5-130
:TRIGger:SIMple?	Queries all simple trigger settings.	5-131
:TRIGger[:SIMple]:EXTernal: SLOPe	Sets or queries the external trigger slope.	5-131
:TRIGger[:SIMple]:HYSTeresis	Sets or queries the hysteresis for simple triggers.	5-131
:TRIGger[:SIMple]:LEVel	Sets or queries the trigger level of the channel specified by :TRIGger:SIMple:SOURce for simple triggers.	5-131
:TRIGger[:SIMple]:SLOPe	Sets or queries the trigger slope of the channel specified by :TRIGger:SIMple:SOURce for simple triggers.	5-131
:TRIGger:SIMple:SOURce	Sets or queries the source for simple triggers.	5-131
:TRIGger:SOURce?	Queries all the settings of the trigger source for enhanced triggers.	5-131
:TRIGger:SOURce:{CHANnel<x> POWer<y>}?	Queries all the settings of the specified channel's trigger source for enhanced triggers.	5-131
:TRIGger:SOURce:{CHANnel<x> POWer<y>}:CENTer	Sets or queries the center value of the level width of an enhanced trigger (AND or OR trigger).	5-131
:TRIGger:SOURce:{CHANnel<x> POWer<y>}:HYSTeresis	Sets or queries the specified channel's hysteresis for enhanced triggers.	5-132
:TRIGger:SOURce:{CHANnel<x> POWer<y>}:LEVel	Sets or queries the specified channel's level for enhanced triggers.	5-132
:TRIGger:SOURce:{CHANnel<x> POWer<y>}:WIDTh	Sets or queries the level width of an enhanced trigger (AND or OR trigger).	5-132

5.1 List of Commands

Command	Function	Page
:TRIGger:SOURce:{CHANnel<x> POWER<y>}:WWIDth	Sets or queries the width for wave window triggers.	5-132
:TRIGger:TGTime?	Queries all T>Time trigger settings.	5-132
:TRIGger:TGTime:TIME	Sets or queries the pulse width for T>Time triggers.	5-132
:TRIGger:TIMer?	Queries all time trigger settings.	5-132
:TRIGger:TIMer:DATE	Sets or queries the date for time triggers.	5-132
:TRIGger:TIMer:INTerVal	Sets or queries the trigger interval for time triggers.	5-133
:TRIGger:TIMer:TIME	Sets or queries the time for time triggers.	5-133
:TRIGger:TITime?	Queries all T1<T<T2 trigger settings.	5-133
:TRIGger:TITime:TIME<x>	Sets or queries the pulse width for T1<T<T2 triggers.	5-133
:TRIGger:TLTime?	Queries all T<Time trigger settings.	5-133
:TRIGger:TLTime:TIME	Sets or queries the pulse width for T<Time triggers.	5-133
:TRIGger:TOTime?	Queries all T<T1,T2<T trigger settings.	5-133
:TRIGger:TOTime:TIME<x>	Sets or queries the pulse width for T<T1,T2<T triggers.	5-133
:TRIGger:TYPE	Sets or queries the trigger type.	5-133
:TRIGger:WWINdow?	Queries all wave window trigger settings.	5-133
:TRIGger:WWINdow:{CHANnel<x> POWER<y>}	Sets or queries the state of the specified channel for wave window triggers.	5-133
:TRIGger:WWINdow:FREQuency	Sets or queries the cycle frequency for wave window triggers.	5-133
:TRIGger:WWINdow:REFCYcle	Sets or queries the reference cycle for wave window triggers.	5-134
:TRIGger:WWINdow:SYNC?	Queries all synchronization channel settings for wave window triggers.	5-134
:TRIGger:WWINdow:SYNC:HYSteresis	Sets or queries the hysteresis of the synchronization channel for wave window triggers.	5-134
:TRIGger:WWINdow:SYNC:LEVel	Sets or queries the level of the synchronization channel for wave window triggers.	5-134
:TRIGger:WWINdow:SYNC:TRACe	Sets or queries the synchronization channel for wave window triggers.	5-134

WAVeform Group

:WAVeform?	Queries all waveform data output settings.	5-135
:WAVeform:BITS?	Queries the bit length of the waveform data specified by the :WAVeform:TRACe command.	5-135
:WAVeform:BYTeorder	Sets or queries the transmission byte order for data formats that are 2 bytes or longer.	5-135
:WAVeform:DATaselect	Queries whether to query the waveform specified by the :WAVeform:TRACe command using ACQ data or PP data.	5-135
:WAVeform:END	Sets or queries the end data point in the waveform specified by the :WAVeform:TRACe command (the main waveform).	5-135
:WAVeform:FORMat	Sets or queries the transmission data format.	5-135
:WAVeform:LENGth?	Queries the total number of data points in the waveform specified by the :WAVeform:TRACe command (the main waveform).	5-135
:WAVeform:MODule?	Queries the module of the waveform specified by the :WAVeform:TRACe command.	5-135
:WAVeform:OFFSet?	Queries the offset value used to convert the waveform data specified by the :WAVeform:TRACe command to physical values.	5-135
:WAVeform:RANGe?	Queries the measurement range used to convert the waveform data specified by the :WAVeform:TRACe command to physical values.	5-136
:WAVeform:RECOrd	Sets or queries the main waveform record number that WAVeform commands will be applied to.	5-136
:WAVeform:RECOrd? MINimum	Queries the minimum record number in the history memory (for the main waveform).	5-136
:WAVeform:SEND?	Queries the waveform data specified by the :WAVeform:TRACe command (the main waveform data).	5-136
:WAVeform:SIGN?	Queries whether signs are included in the block data of the source waveform data specified by :WAVeform:TRACe when the data is queried.	5-136
:WAVeform:SRATe? (Sample RATE)	Queries the sample rate of the waveform specified by the :WAVeform:TRACe command.	5-137
:WAVeform:START	Sets or queries the start data point in the waveform specified by the :WAVeform:TRACe command (the main waveform).	5-137
:WAVeform:TRACe	Sets or queries the waveform that WAVeform commands will be applied to.	5-137
:WAVeform:TRIGger?	Queries the trigger position of the record specified by the :WAVeform:RECOrd command.	5-137
:WAVeform:TYPE?	Queries the acquisition mode of the source waveform.	5-137

Command	Function	Page
XY Group		
:XY?	Queries all X-Y settings.	5-138
:XY:CDISplay (Combine DISplay)	Sets or queries whether to combine the displays of Window1 and Window2 on the X-Y waveform display.	5-138
:XY:DOTConnect	Sets or queries whether dot connect is ON or OFF for X-Y waveforms.	5-138
:XY:DECimation	Sets or queries the number of dots (after decimation) that X-Y waveforms use.	5-138
:XY:TClear (Trace CLear on start)	Sets or queries whether the X-Y trace-clear-on-start feature is on.	5-138
:XY:WAVeform<x1>?	Queries all settings related to the specified X-Y waveform.	5-138
:XY:WAVeform<x1>:DISPlay	Sets or queries whether the specified X-Y waveform is displayed.	5-138
:XY:WAVeform<x1>:XTRace	Sets or queries the channel that is assigned to the specified X-Y waveform's X-axis.	5-138
:XY:WAVeform<x1>:YTRace	Sets or queries the channel that is assigned to the specified XY- waveform's Y-axis.	5-138
:XY:WINDow<x>?	Queries all settings related to the specified X-Y window.	5-139
:XY:WINDow<x>:MODE	Sets or queries whether the specified X-Y window is displayed.	5-139
:XY:WINDow<x>:TRANge	Sets or queries the T-Y waveform range to display in the XY window.	5-139
ZOOM Group		
:ZOOM?	Queries all zoom settings.	5-140
:ZOOM:ASCRoll?	Queries all auto scroll settings.	5-140
:ZOOM:ASCRoll:JUMP	Moves the center position of the zoom box to the left or right edge of the main window.	5-140
:ZOOM:ASCRoll:SPEEd	Sets or queries the auto scroll speed of the zoom box.	5-140
:ZOOM:ASCRoll:STARt	Starts auto scrolling.	5-140
:ZOOM:ASCRoll:STOP	Stops auto scrolling.	5-140
:ZOOM:ASCRoll:TARGet	Sets or queries the zoom window that will be auto scrolled.	5-140
:ZOOM:FITMeasure	Moves the range on which automated measurement of waveform parameters is performed to the zoom waveform display frame.	5-140
:ZOOM:FORMat<x>	Sets or queries the display format of the specified zoom waveform.	5-140
:ZOOM:MAG<x>	Sets or queries the horizontal magnification of the specified zoom waveform.	5-140
:ZOOM:MAIN	Sets or queries the proportion of the main waveform display area that is used when zooming waveforms.	5-140
:ZOOM:MODE<x>	Sets or queries whether the specified zoom waveform is displayed.	5-141
:ZOOM:MOVE	Moves the zoom box to the start position of the waveform.	5-141
:ZOOM:POSition<x>	Sets or queries the zoom position of the specified zoom waveform.	5-141
:ZOOM:TDIV<x>	Sets or queries the T/DIV value of the specified zoom waveform.	5-141
:ZOOM:WLAYout (Window LAYout)	Sets or queries the window layout that is used when waveforms are zoomed.	5-141
:ZOOM:Z2Target	Sets or queries the source window of Z2 when both Z1 and Z2 are displayed.	5-141
Common Command Group		
*CAL?	Executes calibration and queries the result.	5-142
*CLS	Clears the standard event register, extended event register, and error queue.	5-142
*ESE	Sets or queries the standard event enable register.	5-142
*ESR?	Queries and clears the standard event register.	5-142
*IDN?	Queries the PX8000 model.	5-142
*OPC	Sets bit 0 (the OPC bit) of the standard event register to 1 upon the completion of the specified overlap command.	5-142
*OPC?	Returns ASCII code 1 when the specified overlap command is completed.	5-142
*OPT?	Queries the installed options.	5-143
*RST	Initializes settings.	5-143
*SRE	Sets or queries the service request enable register value.	5-143
*STB?	Queries the status byte register value.	5-143
*TST?	Performs a self-test and queries the result. The self-test consists of tests of each kind of internal memory.	5-143
*WAI	Holds the execution of the subsequent command until the specified overlap command is completed.	5-143

5.2 ACQUIRE Group

The commands in this group deal with waveform acquisition. You can make the same settings and queries that you can by using the ACQUIRE key on the front panel.

:ACQUIRE?

Function Queries all waveform acquisition settings.
Syntax :ACQUIRE?

:ACQUIRE:AVERAGE?

Function Queries all averaging settings.
Syntax :ACQUIRE:AVERAGE?

:ACQUIRE:AVERAGE:COUNT

Function Sets or queries the number of waveform acquisitions to perform during averaging.

Syntax :ACQUIRE:AVERAGE:
COUNT {<NRf>|INFINITY}
:ACQUIRE:AVERAGE:COUNT?

<NRf> = 2 to 65536 (in 2ⁿ steps)

Example :ACQUIRE:AVERAGE:COUNT INFINITY
:ACQUIRE:AVERAGE:COUNT?
-> :ACQUIRE:AVERAGE:COUNT INFINITY

:ACQUIRE:AVERAGE:EWEIGHT (Exponent Weight)

Function Sets or queries the attenuation constant of exponential averaging.

Syntax :ACQUIRE:AVERAGE:EWEIGHT {<NRf>}
:ACQUIRE:AVERAGE:EWEIGHT?

<NRf> = 2 to 256 (in 2ⁿ steps)

Example :ACQUIRE:AVERAGE:EWEIGHT 16
:ACQUIRE:AVERAGE:EWEIGHT?
-> :ACQUIRE:AVERAGE:EWEIGHT 16

:ACQUIRE:CLOCK

Function Sets or queries the time base (internal or external clock).

Syntax :ACQUIRE:CLOCK {INTERNAL|EXTERNAL}
:ACQUIRE:CLOCK?

Example :ACQUIRE:CLOCK INTERNAL
:ACQUIRE:CLOCK?
-> :ACQUIRE:CLOCK INTERNAL

:ACQUIRE:COUNT

Function Sets or queries the number of waveform acquisitions to perform in Normal mode.

Syntax :ACQUIRE:COUNT {<NRf>|INFINITY}
:ACQUIRE:COUNT?
<NRf> = 1 to 65536

Example :ACQUIRE:COUNT INFINITY
:ACQUIRE:COUNT?
-> :ACQUIRE:COUNT INFINITY

:ACQUIRE:LOGGER

Function Executes logger setup.
Syntax :ACQUIRE:LOGGER

:ACQUIRE:MODE

Function Sets or queries the waveform acquisition mode.

Syntax :ACQUIRE:MODE {AVERAGE|ENVELOPE|
NORMAL}
:ACQUIRE:MODE?

Example :ACQUIRE:MODE NORMAL
:ACQUIRE:MODE?
-> :ACQUIRE:MODE NORMAL

:ACQUIRE:PROTATE

Function Sets or queries the pulse/rotate setting to use during external clock input.

Syntax :ACQUIRE:PROTATE {<NRf>}
:ACQUIRE:PROTATE?

<NRf> = 1 to 24000

Example :ACQUIRE:PROTATE 100
:ACQUIRE:PROTATE?
-> :ACQUIRE:PROTATE 100

:ACQUIRE:RLENGTH

Function Sets or queries the record length.

Syntax :ACQUIRE:RLENGTH {<NRf>}
:ACQUIRE:RLENGTH?

<NRf> = 100000 to 100000000

Step: 100000, 250000, 500000, 1000000,
2500000, 5000000, 10000000, 25000000,
50000000, 100000000

Example :ACQUIRE:RLENGTH 100000
:ACQUIRE:RLENGTH?
-> :ACQUIRE:RLENGTH 100000

5.3 CALibrate Group

The commands in this group deal with calibration. You can perform the same operations and make the same settings and queries that you can by using the CAL (SHIFT+DISPLAY MODE) keys on the front panel.

:CALibrate?

Function Queries all calibration settings.

Syntax :CALibrate?

:CALibrate:AUXiliary:MODE

Function Sets or queries the AUX module's auto calibration mode.

Syntax CALibrate:AUXiliary:MODE {AUTO|OFF}

Example :CALIBRATE:AUXILIARY:MODE AUTO

:CALIBRATE:AUXILIARY:MODE?

-> :CALIBRATE:AUXILIARY:MODE AUTO

:CALibrate:ELEMent:MODE

Function Sets or queries the power measurement element's auto calibration mode.

Syntax :CALibrate:ELEMent:MODE {<Boolean>}

Example :CALIBRATE:ELEMENT:MODE ON

:CALIBRATE:ELEMENT:MODE?

-> :CALIBRATE:ELEMENT:MODE ON

:CALibrate[:EXECute]

Function Executes calibration.

This command is different from the common command *CAL? in that this command does not return the results when the calibration is completed.

This is an overlap command.

Syntax :CALibrate[:EXECute]

5.4 CHANnel Group

The commands in this group deal with a channel's vertical axis. You can make the same settings and queries that you can by using the VERTICAL group keys (ELEM, U, I, and P keys) on the front panel.

:CHANnel<x>?

Function Queries all vertical axis settings of a channel.
 Syntax :CHANnel<x>?

:CHANnel<x>:DISPlay

Function Sets or queries whether the channel is displayed.
 Syntax :CHANnel<x>:DISPlay {<Boolean>}
 :CHANnel<x>:DISPlay?

<x> = 1 to 8

Example :CHANNEL1:DISPLAY 1
 :CHANNEL1:DISPLAY?
 -> :CHANNEL1:DISPLAY 1

Description Error 241, "Hardware missing," will occur if there is no module installed in the slot that corresponds to the specified channel.

:CHANnel<x>:LABel

Function Sets or queries the waveform label of a channel.
 Syntax :CHANnel<x>:LABel {<String>}
 :CHANnel<x>:LABel?

<x> = 1 to 8

<String> = Up to 16 characters

Example :CHANNEL5:LABEL "ABC"
 :CHANNEL5:LABEL?
 -> :CHANNEL5:LABEL "ABC"

:CHANnel<x>:MODUle?

Function Queries the module that is installed in the channel.

Syntax :CHANnel<x>:MODUle?
 <x> = 1 to 8

Example :CHANNEL5:LABEL "ABC"
 :CHANNEL1:MODULE?
 -> :CHANNEL1:MODULE M760811

Description Values that are returned from each module

NOMODULE	No module
M760811	Voltage module
M760812	Current module
M760813	Current module
M760851	AUX module

:CHANnel<x>:SENSe

Function Sets or queries the sense type of the AUX module.

Syntax :CHANnel<x>:SENSe {ANALog|PULSe}

Description This command is valid only when the AUX module is installed. You cannot use this command on a voltage or current module.

:CHANnel<x>[:VOLTage]?

Function Queries all settings of voltage, current, and AUX modules.

Syntax :CHANnel<x>[:VOLTage]?

:CHANnel<x>[:VOLTage]:AUTO

Function Sets or queries the auto range on/off status of a channel.

Syntax :CHANnel<x>[:VOLTage]:
 AUTO {<Boolean>}
 :CHANnel<x>[:VOLTage]:AUTO?
 <x> = 1 to 8

Description :CHANNEL1:VOLTAGE:AUTO ON
 :CHANNEL1:VOLTAGE:AUTO?
 ->:CHANNEL1:VOLTAGE:AUTO 1

:CHANnel<x>[:VOLTage]:BWIDth

Function Sets or queries the bandwidth limit of the AUX module.

Syntax :CHANnel<x>[:VOLTage]:
 BWIDth {FULL|<Frequency>}
 :CHANnel<x>[:VOLTage]:BWIDth?
 <x> = 1 to 8
 <Frequency> = 10 kHz, 20 kHz, 40 kHz, 80 kHz,
 160 kHz, 320 kHz, 640 kHz,
 1.28 MHz, 2 MHz

Example :CHANNEL2:VOLTAGE:BWIDTh FULL
 :CHANNEL2:VOLTAGE:BWIDTh?
 -> :CHANNEL2:VOLTAGE:BWIDTh FULL

Description This command is valid only when the AUX module is installed. You cannot use this command on a voltage or current module.

:CHANnel<x>[:VOLTage]:COUPling

Function Sets or queries the input coupling setting of the AUX module.

Syntax :CHANnel<x>[:VOLTage]:
 COUPling {AC|DC|GND}
 :CHANnel<x>[:VOLTage]:COUPling?
 <x> = 1 to 8

Example :CHANNEL3:VOLTAGE:COUPLING DC
 :CHANNEL3:VOLTAGE:COUPLING?
 -> :CHANNEL3:VOLTAGE:COUPLING DC

Description • The input coupling is fixed at DC for voltage or current modules. You cannot change it.
 • On the AUX module, you can use this command only when the sense type is set to ANALog.

:CHANnel<x>[:VOLTage]:LSCale?

Function Queries all linear scaling settings of voltage, current, and AUX modules.

Syntax :CHANnel<x>[:VOLTage]:LSCale?

:CHANnel<x>[:VOLTage]:LSCale:AVALue

Function Sets or queries scaling coefficient A when the linear scaling mode of the AUX module is on.

Syntax :CHANnel<x>[:VOLTage]:LSCale:
AVALue {<Nrf>}
:CHANnel<x>[:VOLTage]:LSCale:AVALue?
<x> = 1 to 8
<Nrf> = -9.9999E+30 to -1E-30,
1E-30 to 9.9999E+30

Example :CHANNEL3:VOLTAGE:LSCALE:
AVALUE 25.0000E+00
:CHANNEL3:VOLTAGE:LSCALE:AVALUE?
-> :CHANNEL3:VOLTAGE:LSCALE:
AVALUE 25.0000E+00

Description • This command is valid only when the AUX module is installed. You cannot use this command on a voltage or current module.
• The coefficient cannot be set to 0.

:CHANnel<x>[:VOLTage]:LSCale:BVALue

Function Sets or queries offset B when the linear scaling mode of the AUX module is on.

Syntax :CHANnel<x>[:VOLTage]:LSCale:
BVALue {<Nrf>}
:CHANnel<x>[:VOLTage]:LSCale:BVALue?
<x> = 1 to 8
<Nrf> = -9.9999E+30 to -1E-30, 0,
1E-30 to 9.9999E+30

Example :CHANNEL3:VOLTAGE:LSCALE:
BVALUE -25.0000E+00
:CHANNEL3:VOLTAGE:LSCALE:BVALUE?
-> :CHANNEL3:VOLTAGE:LSCALE:
BVALUE 25.0000E+00

Description This command is valid only when the AUX module is installed. You cannot use this command on a voltage or current module.

:CHANnel<x>[:VOLTage]:LSCale:DISPlay type?

Function Queries all the linear-scaling display-type settings of the AUX module.

Syntax :CHANnel<x>[:VOLTage]:LSCale:DISPlay
type?

Description This command is valid only when the AUX module is installed. You cannot use this command on a voltage or current module.

:CHANnel<x>[:VOLTage]:LSCale:DISPlay type:DECimalnum

Function Sets or queries the decimal place when the linear scaling mode of the AUX module is on and the display format is Float.

Syntax :CHANnel<x>[:VOLTage]:LSCale:DISPlay
type:DECimalnum {<Nrf>|AUTO}
:CHANnel<x>[:VOLTage]:LSCale:DISPlay
type:DECimalnum?
<x> = 1 to 8
<Nrf> = 0 to 3

Example :CHANNEL3:VOLTAGE:LSCALE:DISPLAYTYPE
:DECIMALNUM AUTO
:CHANNEL3:VOLTAGE:LSCALE:DISPLAYTYPE
:DECIMALNUM?
-> :CHANNEL3:VOLTAGE:LSCALE:DISPLAYT
YPE:DECIMALNUM AUTO

Description This command is valid only when the AUX module is installed. You cannot use this command on a voltage or current module.

:CHANnel<x>[:VOLTage]:LSCale:DISPlay type:MODE

Function Sets or queries the display mode when the linear scaling mode of the AUX module is on.

Syntax :CHANnel<x>[:VOLTage]:LSCale:DISPlay
type:MODE {EXPonent|FLOating}
:CHANnel<x>[:VOLTage]:LSCale:DISPlay
type:MODE?
<x> = 1 to 8

Example :CHANNEL3:VOLTAGE:LSCALE:DISPLAYTYPE
:MODE EXPONENT
:CHANNEL3:VOLTAGE:LSCALE:DISPLAYTYPE
:MODE?
-> :CHANNEL3:VOLTAGE:LSCALE:DISPLA
YTYPE:MODE EXPONENT

Description This command is valid only when the AUX module is installed. You cannot use this command on a voltage or current module.

5.4 CHANnel Group

:CHANnel<x>[:VOLTage]:LSCale:DISPlaytype:SUBUnit

Function Sets or queries the unit prefix when the linear scaling mode of the AUX module is on and the display format is Float.

Syntax :CHANnel<x>[:VOLTage]:LSCale:DISPlaytype:SUBUnit {AUTO|NONE|PICO|NANO|MICRO|MILI|KILO|MEGA|GIGA|TERA}
:CHANnel<x>[:VOLTage]:LSCale:DISPlaytype:SUBUnit?
<x> = 1 to 8

Example :CHANNEL3:VOLTAGE:LSCALE:DISPLAYTYPE
:SUBUNIT AUTO
:CHANNEL3:VOLTAGE:LSCALE:DISPLAYTYPE
:SUBUNIT?
-> :CHANNEL3:VOLTAGE:LSCALE:DISPLAYTYPE:SUBUNIT AUTO

Description This command is valid only when the AUX module is installed. You cannot use this command on a voltage or current module.

:CHANnel<x>[:VOLTage]:LSCale:GETMeasure

Function Executes the measurement of P1:X and P2:X values when the linear scaling mode of the AUX module is on.

Syntax :CHANnel<x>[:VOLTage]:LSCale:GETMeasure {P1X|P2X}
<x> = 1 to 8

Description This command is valid only when the AUX module is installed. You cannot use this command on a voltage or current module.

:CHANnel<x>[:VOLTage]:LSCale:MODE

Function Sets or queries the linear scaling function of the AUX module.

Syntax :CHANnel<x>[:VOLTage]:LSCale:MODE {AXB|OFF|P12}
:CHANnel<x>[:VOLTage]:LSCale:MODE?
<x> = 1 to 8

Example :CHANNEL3:VOLTAGE:LSCALE:MODE AXB
:CHANNEL3:VOLTAGE:LSCALE:MODE?
-> :CHANNEL3:VOLTAGE:LSCALE:MODE OFF

Description This command is valid only when the AUX module is installed. You cannot use this command on a voltage or current module.

:CHANnel<x>[:VOLTage]:LSCale:{P1X|P1Y|P2X|P2Y}

Function Sets or queries the measured values (P1:X and P2:X) and scaling values (P1:Y and P2:Y) when the linear scaling mode of the AUX mode is on.

Syntax :CHANnel<x>[:VOLTage]:LSCale:{P1X|P1Y|P2X|P2Y} {<Nrf>}
:CHANnel<x>[:VOLTage]:LSCale:{P1X|P1Y|P2X|P2Y}?
<x> = 1 to 8
<Nrf> of P1X or P2X
= -9.9999E+30 to -1E-30, 0, 1E-30 to 9.9999E+30
<Nrf> of P1Y or P2Y
= -9.9999E+30 to -1E-30, 0, 1E-30 to 9.9999E+30

Example :CHANNEL3:VOLTAGE:LSCALE:P1X 1
:CHANNEL3:VOLTAGE:LSCALE:P1X?
-> :CHANNEL3:VOLTAGE:LSCALE:P1X 1

Description This command is valid only when the AUX module is installed. You cannot use this command on a voltage or current module.

:CHANnel<x>[:VOLTage]:LSCale:UNIT

Function Sets or queries the linear scaling unit of the AUX module.

Syntax :CHANnel<x>[:VOLTage]:LSCale:UNIT {<String>}
:CHANnel<x>[:VOLTage]:LSCale:UNIT?
<x> = 1 to 8
<String> = Up to 4 characters

Example :CHANNEL3:VOLTAGE:LSCALE:UNIT "UU"
:CHANNEL3:VOLTAGE:LSCALE:UNIT?
-> :CHANNEL3:VOLTAGE:LSCALE:UNIT "UU"

Description This command is valid only when the AUX module is installed. You cannot use this command on a voltage or current module.

:CHANnel<x>[:VOLTage]:OFFSET

Function Sets or queries the offset voltage of a voltage, current, or AUX module.

Syntax :CHANnel<x>[:VOLTage]:OFFSET {<Voltage>|<Current>}
:CHANnel<x>[:VOLTage]:OFFSET?
<x> = 1 to 8
<Voltage> and <Current>
= The selectable range varies depending on the range setting.

Example :CHANNEL3:VOLTAGE:OFFSET 0
:CHANNEL3:VOLTAGE:OFFSET?
-> :CHANNEL3:VOLTAGE:OFFSET 1.00000E+00

:CHANnel<x>[:VOLTage]:POSition

Function Sets or queries the vertical position of a voltage, current, or AUX module.

Syntax :CHANnel<x>[:VOLTage]:
 POSition {<NRf>}
 :CHANnel<x>[:VOLTage]:POSition?
 <x> = 1 to 8
 <NRf> = -5.00 to 5.00 (div; in 0.01 div steps)

Example :CHANNEL3:VOLTAGE:POSITION 1.00
 :CHANNEL3:VOLTAGE:POSITION?
 -> :CHANNEL3:VOLTAGE:POSITION 1.00

:CHANnel<x>[:VOLTage]:PROBE

Function Sets or queries the probe type of the AUX module.

Syntax :CHANnel<x>[:VOLTage]:
 PROBE {<NRf>|C10|C100}
 :CHANnel<x>[:VOLTage]:PROBE?
 <x> = 1 to 8
 <NRf> = 1, 10, 100, 1000

Example :CHANNEL3:VOLTAGE:PROBE 10
 :CHANNEL3:VOLTAGE:PROBE?
 -> :CHANNEL3:VOLTAGE:PROBE 10

Description • You cannot use this command on a voltage or current module.
 • On the AUX module, you can use this command only when the sense type is set to ANALog.

:CHANnel<x>[:VOLTage]:PULSe?

Function Queries all the pulse reference level settings when the sense type of the AUX module is PULSe.

Syntax :CHANnel<x>[:VOLTage]:PULSe?
Description • You cannot use this command on a voltage or current module.
 • On the AUX module, you can use this command only when the sense type is set to PULSe.

:CHANnel<x>[:VOLTage]:PULSe:HIGH

Function Sets or queries the voltage level for the high pulse reference level when the sense type of the AUX module is PULSe.

Syntax :CHANnel<x>[:VOLTage]:PULSe:
 HIGH {<NRf>}
 :CHANnel<x>[:VOLTage]:PULSe:HIGH?
 <x> = 1 to 8
 <NRf> = -10 to 10

Example :CHANNEL3:VOLTAGE:PULSE:HIGH 2.4
 :CHANNEL3:VOLTAGE:PULSE:HIGH?
 -> :CHANNEL3:VOLTAGE:PULSE:HIGH 2.4

Description • You cannot use this command on a voltage or current module.
 • On the AUX module, you can use this command only when the sense type is set to PULSe.

:CHANnel<x>[:VOLTage]:PULSe:LOW

Function Sets or queries the voltage level for the low pulse reference level when the sense type of the AUX module is PULSe.

Syntax :CHANnel<x>[:VOLTage]:PULSe:
 LOW {<NRf>}
 :CHANnel<x>[:VOLTage]:PULSe:LOW?
 <x> = 1 to 8
 <NRf> = -10 to 10

Example :CHANNEL3:VOLTAGE:PULSE:LOW 0.4
 :CHANNEL3:VOLTAGE:PULSE:LOW?
 -> :CHANNEL3:VOLTAGE:PULSE:LOW 0.4

Description • You cannot use this command on a voltage or current module.
 • On the AUX module, you can use this command only when the sense type is set to PULSe.

:CHANnel<x>[:VOLTage]:RANGE

Function Sets or queries the voltage range of the AUX module.

Syntax :CHANnel<x>[:VOLTage]:
 RANGE {<Voltage>}
 :CHANnel<x>[:VOLTage]:RANGE?
 <x> = 1 to 8
 <Voltage> = 50 mV to 100 V (M760851, when probe attenuation is 1:1)

Example :CHANNEL3:VOLTAGE:RANGE 50
 :CHANNEL3:VOLTAGE:RANGE?
 -> :CHANNEL3:VOLTAGE:RANGE 50

Description This command is invalid on a voltage or current module. Use the [:INPut]:{CURRent|VOLTage}:RANGE command.

:CHANnel<x>[:VOLTage]:SCALE

Function Sets or queries the upper and lower limits of the screen for a voltage, current, or AUX module.

Syntax :CHANnel<x>[:VOLTage]:
 SCALE {<Voltage>,<Voltage>|
 <Current>,<Current>|<NRf>,<NRf>}
 :CHANnel<x>[:VOLTage]:SCALE?
 <x> = 1 to 8
 <Voltage>,<Current>, and <NRf>
 = The selectable range varies depending on the range setting.

Example :CHANNEL3:VOLTAGE:SCALE 250,-250
 :CHANNEL3:VOLTAGE:SCALE?
 -> :CHANNEL3:VOLTAGE:
 SCALE 250.000E+00,-250.000E+00

5.4 CHANnel Group

:CHANnel<x>[:VOLTage]:VARIable

Function Sets or queries the zoom method (vertical scale) of a voltage, current, or AUX module.

Syntax :CHANnel<x>[:VOLTage]:
VARIable {<Boolean>}
:CHANnel<x>[:VOLTage]:VARIable?
<x> = 1 to 8

Example :CHANNEL3:VOLTAGE:VARIABLE 0
:CHANNEL3:VOLTAGE:VARIABLE?
-> :CHANNEL3:VOLTAGE:VARIABLE 0

Description On the PX8000, the menu title is "Vertical Scale."
OFF corresponds to the "DIV" setting and ON
corresponds to the "SPAN" setting.

:CHANnel<x>[:VOLTage]:ZOOM

Function Sets or queries the vertical zoom factor of a voltage, current, or AUX module.

Syntax :CHANnel<x>[:VOLTage]:ZOOM {<Nrf>}
:CHANnel<x>[:VOLTage]:ZOOM?
<x> = 1 to 8
<Nrf> = 0.1, 0.111, 0.125, 0.143, 0.167, 0.2, 0.25,
0.33, 0.4, 0.5, 0.556, 0.625, 0.667, 0.714,
0.8, 0.833, 1, 1.11, 1.25, 1.33, 1.43, 1.67,
2, 2.22, 2.5, 3.33, 4, 5, 6.67, 8, 10, 12.5,
16.7, 20, 25, 40, 50, 100

Example :CHANNEL3:VOLTAGE:ZOOM 1
:CHANNEL3:VOLTAGE:ZOOM?
-> :CHANNEL3:VOLTAGE:ZOOM 1

5.5 CLEAr Group

The command in this group deals with executing the clear trace operation. You can execute the same operation that you can execute by using the CLEAR TRACE key on the front panel.

:CLEAr

Function Clears traces.

Syntax :CLEAr

5.6 COMMunicate Group

The commands in this group deal with communications. There are no front panel keys that correspond to the commands in this group.

:COMMunicate?

Function Queries all communication settings.

Syntax :COMMunicate?

:COMMunicate:HEADER

Function Sets or queries whether a header is added to the response to a query.

Syntax :COMMunicate:HEADER {<Boolean>}
:COMMunicate:HEADER?

Example :COMMUNICATE:HEADER ON
:COMMUNICATE:HEADER?
-> :COMMUNICATE:HEADER 1

Description ON: Responses with headers

Example -> :DISPLAY:MODE NUMERIC

OFF: Responses without headers

Example -> NUMERIC

- The default value is ON.

:COMMunicate:LOCKout

Function Sets or clears local lockout.

Syntax :COMMunicate:LOCKout {<Boolean>}
:COMMunicate:LOCKout?

Example :COMMUNICATE:LOCKOUT ON
:COMMUNICATE:LOCKOUT?
-> :COMMUNICATE:LOCKOUT 1

Description This command is designed for use in USB and Ethernet communications.

:COMMunicate:OPSE

Function Sets or queries the overlap command that is used by the *OPC, *OPC?, and *WAI commands.

Syntax :COMMunicate:OPSE <Register>
:COMMunicate:OPSE?
<Register> = 0 to 65535

Example :COMMUNICATE:OPSE 65535
:COMMUNICATE:OPSE?
-> :COMMUNICATE:OPSE 584

Description In the above example, all bits are set to 1 to make all overlap commands applicable. For details on the bits that are set to 1 in response to a query, see the figure for the :COMMunicate:WAIT? command. Bits fixed at zero are not set to 1.

:COMMunicate:OPSR?

Function Queries the operation pending status register.

Syntax :COMMunicate:OPSR?

Example :COMMUNICATE:OPSR? -> 0

:COMMunicate:OVERlap

Function Sets or queries the commands that operate as overlap commands.

Syntax :COMMunicate:OVERlap <Register>
:COMMunicate:OVERlap?
<Register> = 0 to 65535

Description For details on the bits that are set to 1 in response to a query, see the figure for the :COMMunicate:WAIT? command. Bits fixed at zero are not set to 1.

:COMMunicate:REMOte

Function Sets or queries whether the PX8000 is in remote or local mode. ON is remote mode.

Syntax :COMMunicate:REMOte {<Boolean>}
:COMMunicate:REMOte?

Example :COMMUNICATE:REMOTE ON
:COMMUNICATE:REMOTE?
-> :COMMUNICATE:REMOTE 1

Description This command is designed for use in USB and Ethernet communications.

:COMMunicate:VERBose

Function Sets or queries whether the response to a query is returned fully spelled out or in its abbreviated form.

Syntax :COMMunicate:VERBose {<Boolean>}
:COMMunicate:VERBose?

Example :COMMUNICATE:VERBOSE ON
:COMMUNICATE:VERBOSE?
-> :COMMUNICATE:VERBOSE 1

Description ON: Fully spelled out

Example -> :INPUT:VOLTAGE:RANGE:
ELEMENT1 1.000E+03

OFF: Abbreviated form

Example -> :VOLT:RANG:
ELEM 1.000E+03

- The default value is OFF.
- This setting is lost when the PX8000 is turned off.

:COMMunicate:WAIT

Function Waits for a specified extended event to occur.

Syntax :COMMunicate:WAIT <Register>
<Register> = 0 to 65535 (extended event register)
See the figure in section 6.4.

Example :COMMUNICATE:WAIT 65535

:COMMunicate:WAIT?

Function Creates the response that is returned when a specified extended event occurs.

Syntax :COMMunicate:WAIT? <Register>
 <Register> = 0 to 65535 (extended event register)
 See the figure in section 6.4.

Example :COMMUNICATE:WAIT? 65535 -> 1

Description Operation pending status register and overlap enable register

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	0	0	ACS	PRN	0	CAL	0	0	0

When bit 3 (CAL) = 1:

Calibration in progress.

When bit 5 (PRN) = 1:

Printer operation is incomplete.

When bit 6 (ACS) = 1:

Media access is incomplete.

5.7 CURSor Group

The commands in this group deal with cursor measurements. You can make the same settings and queries (of settings and measured values) that you can by using the CURSOR key on the front panel.

If the selectable range of the time axis is “<NRf> = -5 to 5div,” the selectable range varies depending on settings such as the record length. For details, see “Selectable Range of Cursor Positions” under “Notes about Cursor Measurement” in chapter 15 of IM PX8000-01EN.

:CURSor?

Function Queries all cursor measurement settings.

Syntax :CURSor?

:CURSor:FFT?

Function Queries all FFT cursor settings.

Syntax :CURSor:FFT?

:CURSor:FFT:MARKer:FORM

Function Sets or queries the form of an FFT cursor (marker cursor).

Syntax :CURSor:FFT:MARKer:FORM {LINE|MARK}
:CURSor:FFT:MARKer:FORM?

Example :CURSOR:FFT:MARKER:FORM LINE
:CURSOR:FFT:MARKER:FORM?
-> :CURSOR:FFT:MARKER:FORM LINE

:CURSor:FFT:MARKer:M<x>?

Function Queries all settings of an FFT cursor (marker cursor).

Syntax :CURSor:FFT:MARKer:M<x>?
<x> = 1 to 4

:CURSor:FFT:MARKer:M<x>:DF<y>?

Function Queries all ΔF display settings. ΔF is between the FFT cursors (marker cursors).

<x> = 1 to 4
<y> = 1 to 4

:CURSor:FFT:MARKer:M<x>:DF<y>:STATe

Function Sets or queries whether the ΔF value between the FFT cursors (marker cursors) is displayed.

Syntax :CURSor:FFT:MARKer:M<x>:DF<y>:
STATe {<Boolean>}
:CURSor:FFT:MARKer:M<x>:DF<y>:STATe?
<x> = 1 to 4
<y> = 1 to 4

Example :CURSOR:FFT:MARKER:M1:DF2:STATE ON
:CURSOR:FFT:MARKER:M1:DF2:STATE?
-> :CURSOR:FFT:MARKER:M1:DF2:STATE 1

:CURSor:FFT:MARKer:M<x>:DF<y>:VALue?

Function Queries the ΔF value between the FFT cursors (marker cursors).

Syntax :CURSor:FFT:MARKer:M<x>:DF<y>:VALue?
<x> = 1 to 4
<y> = 1 to 4

Example :CURSOR:FFT:MARKER:M1:DF2:VALUE?
-> :CURSOR:FFT:MARKER:M1:DF2:
VALUE 100

:CURSor:FFT:MARKer:M<x>:DY<y>?

Function Queries all ΔY display settings. ΔY is between the FFT cursors (marker cursors).

Syntax :CURSor:FFT:MARKer:M<x>:DY<y>?
<x> = 1 to 4
<y> = 1 to 4

:CURSor:FFT:MARKer:M<x>:DY<y>:STATe

Function Sets or queries whether the ΔY value between the FFT cursors (marker cursors) is displayed.

Syntax :CURSor:FFT:MARKer:M<x>:DY<y>:
STATe {<Boolean>}
:CURSor:FFT:MARKer:M<x>:DY<y>:STATe?
<x> = 1 to 4
<y> = 1 to 4

Example :CURSOR:FFT:MARKER:M1:DY2:STATE ON
:CURSOR:FFT:MARKER:M1:DY2:STATE?
-> :CURSOR:FFT:MARKER:M1:DY2:STATE 1

:CURSor:FFT:MARKer:M<x>:DY<y>:VALue?

Function Queries the ΔY value between the FFT cursors (marker cursors).

Syntax :CURSor:FFT:MARKer:M<x>:DY<y>:VALue?
<x> = 1 to 4
<y> = 1 to 4

Example :CURSOR:FFT:MARKER:M1:DY2:VALUE?
-> :CURSOR:FFT:MARKER:M1:DY2:
VALUE 3.9750000E+00

:CURSOR:FFT:MARKER:M<x>:F?

Function Queries all frequency-axis settings of an FFT cursor (marker cursor).

Syntax :CURSOR:FFT:MARKER:M<x>:F?
<x> = 1 to 4

:CURSOR:FFT:MARKER:M<x>:F:STATE

Function Sets or queries whether the frequency-axis value of an FFT cursor (marker cursor) is displayed.

Syntax :CURSOR:FFT:MARKER:M<x>:F:
STATE {<Boolean>}
:CURSOR:FFT:MARKER:M<x>:F:STATE?
<x> = 1 to 4

Example :CURSOR:FFT:MARKER:M1:F:STATE ON
:CURSOR:FFT:MARKER:M1:F:STATE?
-> :CURSOR:FFT:MARKER:M1:F:STATE 1

:CURSOR:FFT:MARKER:M<x>:F:VALUE?

Function Queries the frequency-axis value of an FFT cursor (marker cursor).

Syntax :CURSOR:FFT:MARKER:M<x>:F:VALUE?
<x> = 1 to 4

Example :CURSOR:FFT:MARKER:M1:F:VALUE?
-> :CURSOR:FFT:MARKER:M1:F:
VALUE 100.00000E+03

:CURSOR:FFT:MARKER:M<x>:POSITION

Function Sets or queries the position of an FFT cursor (marker cursor).

Syntax :CURSOR:FFT:MARKER:M<x>:
POSITION {<NRf>}
:CURSOR:FFT:MARKER:M<x>:POSITION?
<x> = 1 to 4
<NRf> = -5 to 5

Example :CURSOR:FFT:MARKER:M1:POSITION -3.00
:CURSOR:FFT:MARKER:M1:POSITION?
-> :CURSOR:FFT:MARKER:M1:
POSITION -3.00

:CURSOR:FFT:MARKER:M<x>:TRACE

Function Sets or queries the source waveform that you want to measure using the FFT cursor (marker cursor).

Syntax :CURSOR:FFT:MARKER:M<x>:TRACE {OFF|
FFT1|FFT2}
:CURSOR:FFT:MARKER:M<x>:TRACE?
<x> = 1 to 4

Example :CURSOR:FFT:MARKER:M1:TRACE FFT1
:CURSOR:FFT:MARKER:M1:TRACE?
-> :CURSOR:FFT:MARKER:M1:TRACE FFT1

:CURSOR:FFT:MARKER:M<x>:Y?

Function Queries all Y-axis settings of an FFT cursor (marker cursor).

Syntax :CURSOR:FFT:MARKER:M<x>:Y?
<x> = 1 to 4

:CURSOR:FFT:MARKER:M<x>:Y:STATE

Function Sets or queries whether the Y-axis value of an FFT cursor (marker cursor) is displayed.

Syntax :CURSOR:FFT:MARKER:M<x>:Y:
STATE {<Boolean>}
:CURSOR:FFT:MARKER:M<x>:Y:STATE?
<x> = 1 to 4

Example :CURSOR:FFT:MARKER:M1:Y:STATE ON
:CURSOR:FFT:MARKER:M1:Y:STATE?
-> :CURSOR:FFT:MARKER:M1:Y:STATE 1

:CURSOR:FFT:MARKER:M<x>:Y:VALUE?

Function Queries the Y-axis value of an FFT cursor (marker cursor).

Syntax :CURSOR:FFT:MARKER:M<x>:Y:VALUE?
<x> = 1 to 4

Example :CURSOR:FFT:MARKER:M1:Y:VALUE?
-> :CURSOR:FFT:MARKER:M1:Y:
VALUE -46.75000E+00

:CURSOR:FFT:PEAK<x>?

Function Queries all settings of an FFT cursor (peak cursor).

Syntax :CURSOR:FFT:PEAK<x>?
<x> = 1, 2 (cursors 1 and 2)

Description Cursor 1 is dedicated for use as FFT1. Cursor 2 is dedicated for use as FFT2.

:CURSOR:FFT:PEAK<x>:F?

Function Queries all frequency-axis settings of an FFT cursor (peak cursor).

Syntax :CURSOR:FFT:PEAK<x>:F?
<x> = 1, 2 (cursors 1 and 2)

:CURSOR:FFT:PEAK<x>:F:STATE

Function Sets or queries whether the frequency-axis value of an FFT cursor (peak cursor) is displayed.

Syntax :CURSOR:FFT:PEAK<x>:F:
STATE {<Boolean>}
:CURSOR:FFT:PEAK<x>:F:STATE?
<x> = 1, 2 (cursors 1 and 2)

Example :CURSOR:FFT:PEAK1:F:STATE ON
:CURSOR:FFT:PEAK1:F:STATE?
-> :CURSOR:FFT:PEAK1:F:STATE 1

5.7 CURSor Group

:CURSor:FFT:PEAK<x>:F:VALue?

Function Queries the frequency-axis value of an FFT cursor (peak cursor).

Syntax :CURSor:FFT:PEAK<x>:F:VALue?
<x> = 1, 2 (cursors 1 and 2)

Example :CURSOR:FFT:PEAK1:F:VALUE?
-> :CURSOR:FFT:PEAK1:F:
VALUE 2.0000000E+03

:CURSor:FFT:PEAK<x>:RANGe

Function Sets or queries the FFT peak cursor measurement range.

Syntax :CURSor:FFT:PEAK<x>:
RANGe {<NRf>,<NRf>}
:CURSor:FFT:PEAK<x>:RANGe?
<x> = 1, 2 (cursors 1 and 2)
<NRf> = -5 to 5

Example :CURSOR:FFT:PEAK1:RANGE -5.00,5.00
:CURSOR:FFT:PEAK1:RANGE?
-> :CURSOR:FFT:PEAK1:RANGE -5.00,5.00

:CURSor:FFT:PEAK<x>:Y?

Function Queries all Y-axis settings of an FFT cursor (peak cursor).

Syntax :CURSor:FFT:PEAK<x>:Y?
<x> = 1, 2 (cursors 1 and 2)

:CURSor:FFT:PEAK<x>:Y:STATe

Function Sets or queries whether the Y-axis value of an FFT cursor (peak cursor) is displayed.

Syntax :CURSor:FFT:PEAK<x>:Y:
STATe {<Boolean>}
:CURSor:FFT:PEAK<x>:Y:STATe?
<x> = 1, 2 (cursors 1 and 2)

Example :CURSOR:FFT:PEAK2:Y:STATE ON
:CURSOR:FFT:PEAK2:Y:STATE?
-> :CURSOR:FFT:PEAK2:Y:STATE 1

:CURSor:FFT:PEAK<x>:Y:VALue?

Function Queries the Y-axis value of an FFT cursor (peak cursor).

Syntax :CURSor:FFT:PEAK<x>:Y:VALue?
<x> = 1, 2 (cursors 1 and 2)

Example :CURSOR:FFT:PEAK2:Y:VALUE?
-> :CURSOR:FFT:PEAK2:Y:
VALUE 30.933333E+00

:CURSor:FFT:TYPE

Function Sets or queries the FFT cursor type.

Syntax :CURSor:FFT:TYPE {OFF|PEAK|MARKer}
:CURSor:FFT:TYPE?

Example :CURSOR:FFT:TYPE PEAK
:CURSOR:FFT:TYPE?
-> :CURSOR:FFT:TYPE PEAK

:CURSor[:TY]?

Function Queries all cursor settings for the T-Y display.

Syntax :CURSor[:TY]?

:CURSor[:TY]:DEGREE?

Function Queries all angle cursor settings for the T-Y display.

Syntax :CURSor[:TY]:DEGREE?

:CURSor[:TY]:DEGREE:D<x>?

Function Queries all angle (X1 and X2) settings for the angle cursors on the T-Y display.

Syntax :CURSor[:TY]:DEGREE:D<x>?
<x> = 1, 2

:CURSor[:TY]:DEGREE:D<x>:STATe

Function Sets or queries whether the angles (X1 and X2) between the angle cursors on the T-Y display is displayed.

Syntax :CURSor[:TY]:DEGREE:D<x>:
STATe {<Boolean>}
:CURSor[:TY]:DEGREE:D<x>:STATe?
<x> = 1, 2

Example :CURSOR:TY:DEGREE:D1:STATE ON
:CURSOR:TY:DEGREE:D1:STATE?
-> :CURSOR:TY:DEGREE:D1:STATE 1

:CURSor[:TY]:DEGREE:D<x>:VALue?

Function Queries the angles (X1 and X2) between the angle cursors on the T-Y display.

Syntax :CURSor[:TY]:DEGREE:D<x>:VALue?
<x> = 1, 2

Example :CURSOR:TY:DEGREE:D1:VALUE?
-> :CURSOR:TY:DEGREE:D1:
VALUE -179.55000E+00

:CURSor[:TY]:DEGREE:DD?

Function Queries all angle difference (ΔX) settings. The angle difference is between the angle cursors on the T-Y display.

Syntax :CURSor[:TY]:DEGREE:DD?

:CURSor[:TY]:DEGREE:DD:STATe

Function Sets or queries whether the angle difference (ΔX) between the angle cursors on the T-Y display is displayed.

Syntax :CURSor[:TY]:DEGREE:DD:
STATe {<Boolean>}
:CURSor[:TY]:DEGREE:DD:STATe?

Example :CURSOR:TY:DEGREE:DD:STATE ON
:CURSOR:TY:DEGREE:DD:STATE?
-> :CURSOR:TY:DEGREE:DD:STATE 1

:CURSOR[:TY]:DEGREE:DD:VALUE?

Function Queries the angle difference (ΔX) between the angle cursors on the T-Y display.

Syntax :CURSOR[:TY]:DEGREE:DD:VALUE?

Example :CURSOR:TY:DEGREE:DD:VALUE?
-> :CURSOR:TY:DEGREE:DD:
VALUE 719.55000E+00

:CURSOR[:TY]:DEGREE:DY?

Function Queries all measurement difference (ΔY) settings between the angle cursors on the T-Y display.

Syntax :CURSOR[:TY]:DEGREE:DY?

:CURSOR[:TY]:DEGREE:DY:STATE

Function Sets or queries whether the measurement difference (ΔY) value between the angle cursors on the T-Y display is displayed.

Syntax :CURSOR[:TY]:DEGREE:DY:
STATE {<Boolean>}
:CURSOR[:TY]:DEGREE:DY:STATE?

Example :CURSOR:TY:DEGREE:DY:STATE ON
:CURSOR:TY:DEGREE:DY:STATE?
-> :CURSOR:TY:DEGREE:DY:STATE 1

:CURSOR[:TY]:DEGREE:DY:VALUE?

Function Queries the measurement difference (ΔY) between the angle cursors on the T-Y display.

Syntax :CURSOR[:TY]:DEGREE:DY:VALUE?

Example :CURSOR:TY:DEGREE:DY:VALUE?
-> :CURSOR:TY:DEGREE:DY:
VALUE 0.0000000E+00

:CURSOR[:TY]:DEGREE:JUMP

Function Moves the specified angle cursor to the center of the specified zoom window.

Syntax :CURSOR[:TY]:DEGREE:
JUMP {C1_Z1|C1_Z2|C2_Z1|C2_Z2}

Example :CURSOR:TY:DEGREE:JUMP C1_Z1
Description C1 and C2 are used to indicate Cursor1 and Cursor2.

:CURSOR[:TY]:DEGREE:POSITION<x>

Function Sets or queries an angle cursor position on the T-Y display.

Syntax :CURSOR[:TY]:DEGREE:
POSITION<x> {<Nrf>}
:CURSOR[:TY]:DEGREE:POSITION<x>?
<x> = 1, 2
<Nrf> = -5 to 5 (the resolution depends on the measurement length)

Example :CURSOR:TY:DEGREE:POSITION1 1
:CURSOR:TY:DEGREE:POSITION1?
-> :CURSOR:TY:DEGREE:
POSITION1 1.000000000000

:CURSOR[:TY]:DEGREE:REFERENCE<x>

Function Sets or queries the angle reference start (Ref1) or end (Ref2) point on the T-Y display.

Syntax :CURSOR[:TY]:DEGREE:
REFERENCE<x> {<Nrf>}
:CURSOR[:TY]:DEGREE:REFERENCE<x>?
<x> = 1, 2

<Nrf> = -5 to 5 (the resolution depends on the measurement length)

Example :CURSOR:TY:DEGREE:REFERENCE1 -1
:CURSOR:TY:DEGREE:REFERENCE1?
-> :CURSOR:TY:DEGREE:
REFERENCE1 -1.000000000000

:CURSOR[:TY]:DEGREE:RVALUE

Function Sets or queries an angle cursor's reference angle on the T-Y display.

Syntax :CURSOR[:TY]:DEGREE:RVALUE {<Nrf>}
:CURSOR[:TY]:DEGREE:RVALUE?
<Nrf> = 1 to 720 (in steps of 1)

Example :CURSOR:TY:DEGREE:RVALUE 360
:CURSOR:TY:DEGREE:RVALUE?
-> :CURSOR:TY:DEGREE:RVALUE 360

:CURSOR[:TY]:DEGREE:TRACE

Function Sets or queries the source waveform that you want to measure using the angle cursors on the T-Y display.

Syntax :CURSOR[:TY]:DEGREE:
TRACE {<Nrf>|P<y>|MATH<x>|ALL}
:CURSOR[:TY]:DEGREE:TRACE?
<Nrf> = 1 to 8
<y> = 1 to 4
<x> = 1 to 8

Example :CURSOR:TY:DEGREE:TRACE 1
:CURSOR:TY:DEGREE:TRACE?
-> :CURSOR:TY:DEGREE:TRACE 1

:CURSOR[:TY]:DEGREE:Y<x>?

Function Queries all measurement (Y1 and Y2) settings for an angle cursor on the T-Y display.

Syntax :CURSOR[:TY]:DEGREE:Y<x>?
<x> = 1, 2

:CURSOR[:TY]:DEGREE:Y<x>:STATE

Function Sets or queries whether the measurements (Y1 and Y2) of an angle cursor on the T-Y display is displayed.

Syntax :CURSOR[:TY]:DEGREE:Y<x>:
STATE {<Boolean>}
:CURSOR[:TY]:DEGREE:Y<x>:STATE?
<x> = 1, 2

Example :CURSOR:TY:DEGREE:Y1:STATE 1
:CURSOR:TY:DEGREE:Y1:STATE?
-> :CURSOR:TY:DEGREE:Y1:STATE 1

5.7 CURSOR Group

:CURSOR[:TY]:DEGREE:Y<x>:VALUE?

Function Sets or queries the measurements (Y1 and Y2) of an angle cursor on the T-Y display.

Syntax :CURSOR[:TY]:DEGREE:Y<x>:VALUE?
<x> = 1, 2

Example :CURSOR:TY:DEGREE:Y1:VALUE?
-> :CURSOR:TY:DEGREE:Y1:
VALUE 0.0000000E+00

Description

- If you have set the waveform that you want to measure to ALL, all the measured values from the channels, and Math channels of all the installed modules will be returned.
- "NAN" will be returned for any unused channels and channels that do not have modules installed in their corresponding slots.

:CURSOR[:TY]:HORIZONTAL?

Function Queries all horizontal cursor settings for the T-Y display.

Syntax :CURSOR[:TY]:HORIZONTAL?

:CURSOR[:TY]:HORIZONTAL:DY?

Function Queries all Δ Y-axis settings of the horizontal cursors on the T-Y display.

Syntax :CURSOR[:TY]:HORIZONTAL:DY?

:CURSOR[:TY]:HORIZONTAL:DY:STATE

Function Sets or queries whether the Δ Y-axis value between the horizontal cursors on the T-Y display is displayed.

Syntax :CURSOR[:TY]:HORIZONTAL:DY:
STATE {<Boolean>}
:CURSOR[:TY]:HORIZONTAL:DY:STATE?

Example :CURSOR:TY:HORIZONTAL:DY:STATE ON
:CURSOR:TY:HORIZONTAL:DY:STATE?
-> :CURSOR:TY:HORIZONTAL:DY:STATE 1

:CURSOR[:TY]:HORIZONTAL:DY:VALUE?

Function Queries the Δ Y-axis value of the horizontal cursors on the T-Y display.

Syntax :CURSOR[:TY]:HORIZONTAL:DY:VALUE?

Example :CURSOR:TY:HORIZONTAL:DY:VALUE?
-> :CURSOR:TY:HORIZONTAL:DY:
VALUE 300.000000E+00

:CURSOR[:TY]:HORIZONTAL:POSITION<x>

Function Sets or queries a horizontal cursor position on the T-Y display.

Syntax :CURSOR[:TY]:HORIZONTAL:
POSITION<x> {<NRf>}
:CURSOR[:TY]:HORIZONTAL:POSITION<x>?
<x> = 1, 2
<NRf> = -5 to 5 (in steps of 1/100)

Example :CURSOR:TY:HORIZONTAL:POSITION2 -3
:CURSOR:TY:HORIZONTAL:POSITION2?
-> :CURSOR:TY:HORIZONTAL:
POSITION2 -3.00

:CURSOR[:TY]:HORIZONTAL:TRACE

Function Sets or queries the source waveform that you want to measure using the horizontal cursors on the T-Y display.

Syntax :CURSOR[:TY]:HORIZONTAL:
TRACE {<NRf>|P<y>|MATH<x>}
:CURSOR[:TY]:HORIZONTAL:TRACE?
<NRf> = 1 to 8
<y> = 1 to 4
<x> = 1 to 8

Example :CURSOR:TY:HORIZONTAL:TRACE 1
:CURSOR:TY:HORIZONTAL:TRACE?
-> :CURSOR:TY:HORIZONTAL:TRACE 1

:CURSOR[:TY]:HORIZONTAL:Y<x>?

Function Queries all Y-axis settings of the horizontal cursor on the T-Y display.

Syntax :CURSOR[:TY]:HORIZONTAL:Y<x>?
<x> = 1, 2

:CURSOR[:TY]:HORIZONTAL:Y<x>:STATE

Function Sets or queries whether the Y-axis value for a horizontal cursor on the T-Y display is displayed.

Syntax :CURSOR[:TY]:HORIZONTAL:Y<x>:
STATE {<Boolean>}
:CURSOR[:TY]:HORIZONTAL:Y<x>:STATE?
<x> = 1, 2

Example :CURSOR:TY:HORIZONTAL:Y1:STATE ON
:CURSOR:TY:HORIZONTAL:Y1:STATE?
-> :CURSOR:TY:HORIZONTAL:Y1:STATE 1

:CURSOR[:TY]:HORIZONTAL:Y<x>:VALUE?

Function Queries the Y-axis value of a horizontal cursor on the T-Y display.

Syntax :CURSOR[:TY]:HORIZONTAL:Y<x>:VALUE?
<x> = 1, 2

Example :CURSOR:TY:HORIZONTAL:Y1:VALUE?
-> :CURSOR:TY:HORIZONTAL:Y1:
VALUE 150.000000E+00

:CURSOR[:TY]:MARKER?

Function Queries all marker cursor settings for the T-Y display.

Syntax :CURSOR[:TY]:MARKER?

:CURSOR[:TY]:MARKER:FORM

Function Sets or queries the form of the marker cursors on the T-Y display.

Syntax :CURSOR[:TY]:MARKER:FORM {LINE|MARK}
:CURSOR[:TY]:MARKER:FORM?

Example :CURSOR:TY:MARKER:FORM MARK
:CURSOR:TY:MARKER:FORM?
-> :CURSOR:TY:MARKER:FORM MARK

:CURSOR[:TY]:MARKER:M<x>?

Function Queries all settings related to the marker cursor measurement items for the T-Y display.

Syntax :CURSOR[:TY]:MARKER:M<x>?
<x> = 1 to 4

:CURSOR[:TY]:MARKER:M<x>:DX<y>?

Function Queries all DX value settings. DX is between the marker cursors on the T-Y display.

Syntax :CURSOR[:TY]:MARKER:M<x>:DX<y>?
<x> = 1 to 4
<y> = 1 to 4

:CURSOR[:TY]:MARKER:M<x>:DX<y>:STATE

Function Sets or queries whether the DX value between the marker cursors on the T-Y display is displayed.

Syntax :CURSOR[:TY]:MARKER:M<x>:DX<y>:
STATE {<Boolean>}
:CURSOR[:TY]:MARKER:M<x>:DX<y>:STA
Te?
<x> = 1 to 4
<y> = 1 to 4

Example :CURSOR:TY:MARKER:M1:DX2:STATE ON
:CURSOR:TY:MARKER:M1:DX2:STATE?
-> :CURSOR:TY:MARKER:M1:DX2:STATE 1

**:CURSOR[:TY]:MARKER:M<x>:DX<y>:VAL
ue?**

Function Queries the DX value between the marker cursors on the T-Y display.

Syntax :CURSOR[:TY]:MARKER:M<x>:DX<y>:VAL
ue?
<x> = 1 to 4
<y> = 1 to 4

Example :CURSOR:TY:MARKER:M1:DX2:VALUE?
-> :CURSOR:TY:MARKER:M1:DX2:
VALUE 2.0000000E-03

:CURSOR[:TY]:MARKER:M<x>:DY<y>?

Function Queries all DY value settings. DY is between the marker cursors on the T-Y display.

Syntax :CURSOR[:TY]:MARKER:M<x>:DY<y>?
<x> = 1 to 4
<y> = 1 to 4

:CURSOR[:TY]:MARKER:M<x>:DY<y>:STATE

Function Sets or queries whether the DY value between the marker cursors on the T-Y display is displayed.

Syntax :CURSOR[:TY]:MARKER:M<x>:DY<y>:
STATE {<Boolean>}
:CURSOR[:TY]:MARKER:M<x>:DY<y>:STA
Te?
<x> = 1 to 4
<y> = 1 to 4

Example :CURSOR:TY:MARKER:M1:DY2:STATE ON
:CURSOR:TY:MARKER:M1:DY2:STATE?
-> :CURSOR:TY:MARKER:M1:DY2:STATE 1

**:CURSOR[:TY]:MARKER:M<x>:DY<y>:VAL
ue?**

Function Queries the DY value between the marker cursors on the T-Y display.

Syntax :CURSOR[:TY]:MARKER:M<x>:DY<y>:VAL
ue?
<x> = 1 to 4
<y> = 1 to 4

Example :CURSOR:TY:MARKER:M1:DY2:VALUE?
-> :CURSOR:TY:MARKER:M1:DY2:
VALUE 0.0000000E+00

:CURSOR[:TY]:MARKER:M<x>:JUMP

Function Moves the specified marker cursor to the center of the specified zoom window.

Syntax :CURSOR[:TY]:MARKER:M<x>:
JUMP {Z1|Z2}
<x> = 1 to 4

:CURSOR[:TY]:MARKER:M<x>:POSITION

Function Sets or queries a marker cursor position on the T-Y display.

Syntax :CURSOR[:TY]:MARKER:M<x>:
POSITION {<NRf>}
:CURSOR[:TY]:MARKER:M<x>:POSITION?
<x> = 1 to 4
<NRf> = -5 to 5 (in steps of 1/100)

Example :CURSOR:TY:MARKER:M1:POSITION -3
:CURSOR:TY:MARKER:M1:POSITION?
-> :CURSOR:TY:MARKER:M1:
POSITION -3.000000000000

5.7 CURSOR Group

:CURSOR[:TY]:MARKER:M<x>:TRACE

Function Sets or queries the source waveform that you want to measure using the marker cursors on the T-Y display.

Syntax :CURSOR[:TY]:MARKER:M<x>:
TRACE {OFF|<NRF>|P<y>|MATH<x>}
:CURSOR[:TY]:MARKER:M<x>:TRACE?
<x> of M<x> = 1 to 4
<NRF> = 1 to 8
<y> = 1 to 4
<x> of MATH<x> = 1 to 8

Example :CURSOR:TY:MARKER:M1:TRACE 1
:CURSOR:TY:MARKER:M1:TRACE?
-> :CURSOR:TY:MARKER:M1:TRACE 1

:CURSOR[:TY]:MARKER:M<x>:X?

Function Queries all X-axis settings for a marker cursor on the T-Y display.

Syntax :CURSOR[:TY]:MARKER:M<x>:X?
<x> = 1 to 4

:CURSOR[:TY]:MARKER:M<x>:X:STATE

Function Sets or queries whether the X-axis value for a marker cursor on the T-Y display is displayed.

Syntax :CURSOR[:TY]:MARKER:M<x>:X:
STATE {<Boolean>}
:CURSOR[:TY]:MARKER:M<x>:X:STATE?
<x> = 1 to 4

Example :CURSOR:TY:MARKER:M4:X:STATE ON
:CURSOR:TY:MARKER:M4:X:STATE?
-> :CURSOR:TY:MARKER:M4:X:STATE 1

:CURSOR[:TY]:MARKER:M<x>:X:VALUE?

Function Queries the X-axis value of a marker cursor on the T-Y display.

Syntax :CURSOR[:TY]:MARKER:M<x>:X:STATE?
<x> = 1 to 4

Example :CURSOR:TY:MARKER:M4:X:VALUE?
-> :CURSOR:TY:MARKER:M4:X:
VALUE 3.0000000E-03

:CURSOR[:TY]:MARKER:M<x>:Y?

Function Queries all Y-axis settings for a marker cursor on the T-Y display.

Syntax :CURSOR[:TY]:MARKER:M<x>:Y?
<x> = 1 to 4

:CURSOR[:TY]:MARKER:M<x>:Y:STATE

Function Sets or queries whether the Y-axis value for a marker cursor on the T-Y display is displayed.

Syntax :CURSOR[:TY]:MARKER:M<x>:Y:
STATE {<Boolean>}
:CURSOR[:TY]:MARKER:M<x>:Y:STATE?
<x> = 1 to 4

Example :CURSOR:TY:MARKER:M4:Y:STATE ON
:CURSOR:TY:MARKER:M4:Y:STATE?
-> :CURSOR:TY:MARKER:M4:Y:STATE 1

:CURSOR[:TY]:MARKER:M<x>:Y:VALUE?

Function Queries the Y-axis value of a marker cursor on the T-Y display.

Syntax :CURSOR[:TY]:MARKER:M<x>:Y:STATE?
<x> = 1 to 4

Example :CURSOR:TY:MARKER:M4:Y:VALUE?
-> :CURSOR:TY:MARKER:M4:Y:
VALUE 41.666667E-03

:CURSOR[:TY]:TYPE

Function Sets or queries the cursor type on the T-Y display.

Syntax :CURSOR[:TY]:TYPE {OFF|HORIZONTAL|
VERTICAL|MARKER|DEGREE|HAVERTICAL}
:CURSOR[:TY]:TYPE?

Example :CURSOR:TY:TYPE MARKER
:CURSOR:TY:TYPE?
-> :CURSOR:TY:TYPE MARKER

:CURSOR[:TY]:VERTICAL?

Function Queries all vertical cursor settings for the T-Y display.

Syntax :CURSOR[:TY]:VERTICAL?

:CURSOR[:TY]:VERTICAL:DX?

Function Queries all ΔX value settings. ΔX is between the vertical cursors on the T-Y display.

Syntax :CURSOR[:TY]:VERTICAL:DX?

:CURSOR[:TY]:VERTICAL:DX:STATE

Function Sets or queries whether the ΔX value between the vertical cursors on the T-Y display is displayed.

Syntax :CURSOR[:TY]:VERTICAL:DX:
STATE {<Boolean>}
:CURSOR[:TY]:VERTICAL:DX:STATE?

Example :CURSOR:TY:VERTICAL:DX:STATE 1
:CURSOR:TY:VERTICAL:DX:STATE?
-> :CURSOR:TY:VERTICAL:DX:STATE 1

:CURSOR[:TY]:VERTICAL:DX:VALUE?

Function Queries the ΔX value between the vertical cursors on the T-Y display.

Syntax :CURSOR[:TY]:VERTICAL:DX:VALUE?
Example :CURSOR:TY:VERTICAL:DX:VALUE?
-> :CURSOR:TY:VERTICAL:DX:
VALUE 3.0000000E-03

Description • When the Internal Clock Is Being Used as the Time Base

When measurements are performed in the time domain, this queries the time between markers. When measurements are performed in the frequency domain, this queries the frequency between markers.

• When an External Clock is Being Used as the Time Base

This queries the number of points between marker cursors.

:CURSOR[:TY]:VERTICAL:DY?

Function Queries all Y-axis-value settings for vertical cursors on the T-Y display.

Syntax :CURSOR[:TY]:VERTICAL:DY?

:CURSOR[:TY]:VERTICAL:DY:STATE

Function Sets or queries whether the Y-axis value for vertical cursors on the T-Y display is displayed.

Syntax :CURSOR[:TY]:VERTICAL:DY:
STATE {<Boolean>}
:CURSOR[:TY]:VERTICAL:DY:STATE?

Example :CURSOR:TY:VERTICAL:DY:STATE ON
:CURSOR:TY:VERTICAL:DY:STATE?
-> :CURSOR:TY:VERTICAL:DY:STATE 1

:CURSOR[:TY]:VERTICAL:DY:VALUE?

Function Queries the Y-axis value of vertical cursors on the T-Y display.

Syntax :CURSOR[:TY]:VERTICAL:DY:VALUE?

:CURSOR[:TY]:VERTICAL:JUMP

Function Moves the specified vertical cursor to the center of the specified zoom window.

Syntax :CURSOR[:TY]:VERTICAL:
JUMP {C1_Z1|C1_Z2|C2_Z1|C2_Z2}

:CURSOR[:TY]:VERTICAL:PERDt?

Function Queries all settings related to the reciprocal of the time difference between the vertical cursors ($1/\Delta T$) on the T-Y display.

Syntax :CURSOR[:TY]:VERTICAL:PERDt?
Description $1/\Delta T$ is displayed as " $1/\Delta X$ " on the PX8000 screen.

:CURSOR[:TY]:VERTICAL:PERDt:STATE

Function Sets or queries whether the reciprocal of the time difference between the vertical cursors ($1/\Delta T$) on the T-Y display is displayed.

Syntax :CURSOR[:TY]:VERTICAL:PERDt:
STATE {<Boolean>}
:CURSOR[:TY]:VERTICAL:PERDt:STATE?

Example :CURSOR:TY:VERTICAL:PERDt:STATE ON
:CURSOR:TY:VERTICAL:PERDt:STATE?
-> :CURSOR:TY:VERTICAL:PERDt:STATE 1

Description $1/\Delta T$ is displayed as " $1/\Delta X$ " on the PX8000 screen.

:CURSOR[:TY]:VERTICAL:PERDt:VALUE?

Function Queries the reciprocal of the time difference between the vertical cursors ($1/\Delta T$) on the T-Y display.

Syntax :CURSOR[:TY]:VERTICAL:PERDt:VALUE?

Example :CURSOR:TY:VERTICAL:PERDt:
VALUE 250.00000E+00

Description • If the source waveform is being measured in the frequency domain, "NAN" is returned.
• $1/\Delta T$ is displayed as " $1/\Delta X$ " on the PX8000 screen.

:CURSOR[:TY]:VERTICAL:POSITION<x>

Function Sets or queries a vertical cursor position on the T-Y display.

Syntax :CURSOR[:TY]:VERTICAL:
POSITION<x> {<NRf>}
:CURSOR[:TY]:VERTICAL:POSITION<x>?
<x> = 1, 2
<NRf> = -5 to 5 (the resolution depends on the measurement length)

Example :CURSOR:TY:VERTICAL:POSITION2 4
:CURSOR:TY:VERTICAL:POSITION2?
-> :CURSOR:TY:VERTICAL:
POSITION2 4.000000000000

:CURSOR[:TY]:VERTICAL:TRACE

Function Sets or queries the source waveform that you want to measure using the vertical cursors on the T-Y display.

Syntax :CURSOR[:TY]:VERTICAL:
TRACE {<NRf>|P<y>|MATH<x>|ALL}
:CURSOR[:TY]:VERTICAL:TRACE?
<NRf> = 1 to 8
<y> = 1 to 4
<x> = 1 to 8

Example :CURSOR:TY:VERTICAL:TRACE 2
:CURSOR:TY:VERTICAL:TRACE?
-> :CURSOR:TY:VERTICAL:TRACE 2

:CURSOR[:TY]:VERTICAL:X<x>?

Function Queries all X-axis-value settings for a vertical cursor on the T-Y display.

Syntax :CURSOR[:TY]:VERTICAL:X<x>?
<x> = 1, 2

:CURSOR[:TY]:VERTICAL:X<x>:STATE

Function Sets or queries whether the X-axis value for a vertical cursor on the T-Y display is displayed.

Syntax :CURSOR[:TY]:VERTICAL:X<x>:
STATE {<Boolean>}
:CURSOR[:TY]:VERTICAL:X<x>:STATE?
<x> = 1, 2

Example :CURSOR:TY:VERTICAL:X1:STATE 1
:CURSOR:TY:VERTICAL:X1:STATE?
-> :CURSOR:TY:VERTICAL:X1:STATE 1

5.7 CURSOR Group

:CURSOR[:TY]:VERTICAL:X<x>:VALUE?

Function Queries the X-axis value of a vertical cursor on the T-Y display.

Syntax :CURSOR[:TY]:VERTICAL:X<x>:VALUE?
<x> = 1, 2

Example :CURSOR:TY:VERTICAL:X1:VALUE?
-> :CURSOR:TY:VERTICAL:X1:
VALUE 0.0000000E+00

Description

- When the Internal Clock Is Being Used as the Time Base
When measurements are performed in the time domain, this queries the time. When measurements are performed in the frequency domain, this queries the frequency.
- When an External Clock Is Being Used as the Time Base
When measurements are performed in the time domain, this queries the number of points using the trigger point as the reference. When measurements are performed in the frequency domain, this queries the number of points using the front of the waveform as the reference.

:CURSOR[:TY]:VERTICAL:Y<x>?

Function Queries all Y-axis-value settings for a vertical cursor on the T-Y display.

Syntax :CURSOR[:TY]:VERTICAL:Y<x>?
<x> = 1, 2

:CURSOR[:TY]:VERTICAL:Y<x>:STATE

Function Sets or queries whether the Y-axis value for a vertical cursor on the T-Y display is displayed.

Syntax :CURSOR[:TY]:VERTICAL:Y<x>:
STATE {<Boolean>}
:CURSOR[:TY]:VERTICAL:Y<x>?
<x> = 1, 2

Example :CURSOR:TY:VERTICAL:Y1:STATE 1
:CURSOR:TY:VERTICAL:Y1:STATE?
-> :CURSOR:TY:VERTICAL:Y1:STATE 1

:CURSOR[:TY]:VERTICAL:Y<x>:VALUE?

Function Queries the Y-axis value (measured value) of a vertical cursor on the T-Y display.

Syntax :CURSOR[:TY]:VERTICAL:Y<x>:VALUE?
<x> = 1, 2

Example :CURSOR:TY:VERTICAL:Y2:VALUE?
-> :CURSOR:TY:VERTICAL:Y2:
VALUE -333.33333E-03

Description

- If you have set the waveform that you want to measure to ALL, all the measured values from the channels, and Math channels of all the installed modules will be returned.
- "NAN" will be returned for any unused channels and channels that do not have modules installed in their corresponding slots.

:CURSOR:WAIT?

Function While the PX8000 is waiting for the specified CURSOR command to finish, it will wait the time specified by the :CURSOR:WAIT? timeout value until it begins processing the subsequent command.

Syntax :CURSOR:WAIT? {<Nrf>}
<Nrf> = 1 to 36000 (timeout value, in units of 100 msec)

Example :CURSOR:WAIT? 100 -> 1

Description If the CURSOR command that is being processed finishes within the specified timeout, this command will return 0. 1 is returned if the CURSOR command does not finish within the specified timeout or if no CURSOR command is being processed. Even if you make the timeout value long, 0 is returned as soon as the CURSOR command finishes.

:CURSOR:XY?

Function Queries all cursor settings for the X-Y display.

Syntax :CURSOR:XY?

:CURSOR:XY:HORIZONTAL?

Function Queries all horizontal cursor settings for the X-Y display.

Syntax :CURSOR:XY:HORIZONTAL?

:CURSOR:XY:HORIZONTAL:DY?

Function Queries all ΔY -axis-value settings. The ΔY -axis value is between the horizontal cursors on the X-Y display.

Syntax :CURSOR:XY:HORIZONTAL:DY?

:CURSOR:XY:HORIZONTAL:DY:STATE

Function Sets or queries whether the ΔY -axis value between the horizontal cursors on the X-Y display is displayed.

Syntax :CURSOR:XY:HORIZONTAL:DY:
STATE {<Boolean>}
:CURSOR:XY:HORIZONTAL:DY:STATE?

Example :CURSOR:XY:HORIZONTAL:DY:STATE ON
:CURSOR:XY:HORIZONTAL:DY:STATE?
-> :CURSOR:XY:HORIZONTAL:DY:STATE 1

:CURSOR:XY:HORIZONTAL:DY:VALUE?

Function Queries the ΔY -axis value between the horizontal cursors on the X-Y display.

Syntax :CURSOR:XY:HORIZONTAL:DY:VALUE?

Example :CURSOR:XY:HORIZONTAL:DY:VALUE?
-> :CURSOR:XY:HORIZONTAL:DY:
VALUE 300.00000E+00

:CURSOR:XY:HORIZONTAL:POSITION<x>

Function Sets or queries horizontal cursor positions on the X-Y display.

Syntax :CURSOR:XY:HORIZONTAL:
POSITION<x> {<NRf>}
:CURSOR:XY:HORIZONTAL:POSITION<x>?
<x> = 1, 2
<NRf> = -5 to 5 (in steps of 1/100)

Example :CURSOR:XY:HORIZONTAL:POSITION1 3
:CURSOR:XY:HORIZONTAL:POSITION1?
-> :CURSOR:XY:HORIZONTAL:
POSITION1 3.00

Description You can query cursor position information for cursors XY1 to XY8. Use the :CURSOR:XY:HORIZONTAL:TRACE command to specify the waveform that you want to query.

:CURSOR:XY:HORIZONTAL:TRACE

Function Sets or queries the source waveform that you want to measure using the horizontal cursors on the X-Y display.

Syntax :CURSOR:XY:HORIZONTAL:TRACE {XY1|
XY2|XY3|XY4|XY5|XY6|XY7|XY8}
:CURSOR:XY:HORIZONTAL:TRACE?

Example :CURSOR:XY:HORIZONTAL:TRACE XY2
:CURSOR:XY:HORIZONTAL:TRACE?
-> :CURSOR:XY:HORIZONTAL:TRACE XY2

:CURSOR:XY:HORIZONTAL:Y<x>?

Function Queries all Y-axis-value settings for an horizontal cursor on the X-Y display.

Syntax :CURSOR:XY:HORIZONTAL:Y<x>?

:CURSOR:XY:HORIZONTAL:Y<x>:STATE

Function Sets or queries whether the Y-axis value for an horizontal cursor on the X-Y display is displayed.

Syntax :CURSOR:XY:HORIZONTAL:Y<x>:
STATE {<Boolean>}
:CURSOR:XY:HORIZONTAL:Y<x>:STATE?
<x> = 1, 2

Example :CURSOR:XY:HORIZONTAL:Y1:STATE ON
:CURSOR:XY:HORIZONTAL:Y1:STATE?
-> :CURSOR:XY:HORIZONTAL:Y1:STATE 1

:CURSOR:XY:HORIZONTAL:Y<x>:VALUE?

Function Queries the Y-axis value of an horizontal cursor on the X-Y display.

Syntax :CURSOR:XY:HORIZONTAL:Y<x>:VALUE?
<x> = 1, 2

Example :CURSOR:XY:HORIZONTAL:Y1:VALUE?
-> :CURSOR:XY:HORIZONTAL:Y1:
VALUE 150.00000E+00

:CURSOR:XY:MARKER?

Function Queries all marker cursor settings for the X-Y display.

Syntax :CURSOR:XY:MARKER?

:CURSOR:XY:MARKER:FORM

Function Sets or queries the form of the marker cursors on the X-Y display.

Syntax :CURSOR:XY:MARKER:FORM {LINE|MARK}
:CURSOR:XY:MARKER:FORM?

Example :CURSOR:XY:MARKER:FORM LINE
:CURSOR:XY:MARKER:FORM?
-> :CURSOR:XY:MARKER:FORM LINE

:CURSOR:XY:MARKER:M<x>?

Function Queries all measurement parameter settings for the specified marker cursor of the X-Y display.

Syntax :CURSOR:XY:MARKER:M<x>?
<x> = 1 to 4

:CURSOR:XY:MARKER:M<x>:DT<y>?

Function Queries all settings related to the time difference between the specified marker cursors (ΔT) on the X-Y display.

Syntax :CURSOR:XY:MARKER:M<x>:DT<y>?
<x> = 1 to 4
<y> = 1 to 4

:CURSOR:XY:MARKER:M<x>:DT<y>:STATE

Function Sets or queries whether the time difference between the specified marker cursors (ΔT) on the X-Y display is displayed.

Syntax :CURSOR:XY:MARKER:M<x>:DT<y>
:STATE {<Boolean>}
:CURSOR:XY:MARKER:M<x>:DT<y>:STATE?
<x> = 1 to 4
<y> = 1 to 4

:CURSOR:XY:MARKER:M<x>:DT<y>:VALUE?

Function Queries the time difference between the specified marker cursors (ΔT) on the X-Y display.

Syntax :CURSOR:XY:MARKER:M<x>:DT<y>:VALUE?
<x> = 1 to 4
<y> = 1 to 4

5.7 CURSOR Group

:CURSOR:XY:MARKER:M<x>:POSITION

Function Sets or queries a marker cursor's time-axis-equivalent position on the X-Y display.

Syntax :CURSOR:XY:MARKER:M<x>:
POSITION {<NRf>}
:CURSOR:XY:MARKER:M<x>:POSITION?
<x> = 1 to 4
<NRf> = -5 to 5div (the resolution depends on
the measurement length)

Example :CURSOR:XY:MARKER:M1:POSITION -3
:CURSOR:XY:MARKER:M1:POSITION?
-> :CURSOR:XY:MARKER:M1:
POSITION -3.000000000000

:CURSOR:XY:MARKER:M<x>:T?

Function Queries all time value settings for a marker cursor on the X-Y display.

Syntax :CURSOR:XY:MARKER:M<x>:T?
<x> = 1 to 4

:CURSOR:XY:MARKER:M<x>:T:STATE

Function Sets or queries whether the time value for a marker cursor on the X-Y display is displayed.

Syntax :CURSOR:XY:MARKER:M<x>:T:
STATE {<Boolean>}
:CURSOR:XY:MARKER:M<x>:T:STATE?
<x> = 1 to 4

Example :CURSOR:XY:MARKER:M1:T:STATE ON
:CURSOR:XY:MARKER:M1:T:STATE?
-> :CURSOR:XY:MARKER:M1:T:STATE 1

:CURSOR:XY:MARKER:M<x>:T:VALUE?

Function Queries the time value of a marker cursor on the X-Y display.

Syntax :CURSOR:XY:MARKER:M<x>:T:VALUE?
<x> = 1 to 4

Example :CURSOR:XY:MARKER:M1:T:VALUE?
-> :CURSOR:XY:MARKER:M1:T:
VALUE -3.0000000E-03

:CURSOR:XY:MARKER:M<x>:TRACE

Function Sets or queries the source waveform that you want to measure using the marker cursors on the X-Y display.

Syntax :CURSOR:XY:MARKER:M<x>:TRACE {OFF |
XY1 | XY2 | XY3 | XY4 | XY5 | XY6 | XY7 | XY8}
:CURSOR:XY:MARKER:M<x>:TRACE?
<x> = 1 to 4

Example :CURSOR:XY:MARKER:M1:TRACE XY1
:CURSOR:XY:MARKER:M1:TRACE?
-> :CURSOR:XY:MARKER:M1:TRACE XY1

:CURSOR:XY:MARKER:M<x>:X?

Function Queries all X-axis-value settings for a marker cursor on the X-Y display.

Syntax :CURSOR:XY:MARKER:M<x>:X?
<x> = 1 to 4

:CURSOR:XY:MARKER:M<x>:X:STATE

Function Sets or queries whether the X-axis value for a marker cursor on the X-Y display is displayed.

Syntax :CURSOR:XY:MARKER:M<x>:X:
STATE {<Boolean>}
:CURSOR:XY:MARKER:M<x>:X:STATE?
<x> = 1 to 4

Example :CURSOR:XY:MARKER:M1:X:STATE 1
:CURSOR:XY:MARKER:M1:X:STATE?
-> :CURSOR:XY:MARKER:M1:X:STATE 1

:CURSOR:XY:MARKER:M<x>:X:VALUE?

Function Queries the X-axis value of a marker cursor on the X-Y display.

Syntax :CURSOR:XY:MARKER:M<x>:X:VALUE?
<x> = 1 to 4

Example :CURSOR:XY:MARKER:M1:X:VALUE?
-> :CURSOR:XY:MARKER:M1:X:
VALUE 333.33333E-03

:CURSOR:XY:MARKER:M<x>:Y?

Function Queries all Y-axis-value settings for a marker cursor on the X-Y display.

Syntax :CURSOR:XY:MARKER:M<x>:Y?
<x> = 1 to 4

:CURSOR:XY:MARKER:M<x>:Y:STATE

Function Sets or queries whether the Y-axis value for a marker cursor on the X-Y display is displayed.

Syntax :CURSOR:XY:MARKER:M<x>:Y:
STATE {<Boolean>}
:CURSOR:XY:MARKER:M<x>:Y:STATE?
<x> = 1 to 4

Example :CURSOR:XY:MARKER:M1:Y:STATE ON
:CURSOR:XY:MARKER:M1:Y:STATE?
-> :CURSOR:XY:MARKER:M1:Y:STATE 1

:CURSOR:XY:MARKER:M<x>:Y:VALUE?

Function Queries the Y-axis value of a marker cursor on the X-Y display.

Syntax :CURSOR:XY:MARKER:M<x>:Y:VALUE?
<x> = 1 to 4

Example :CURSOR:XY:MARKER:M1:Y:VALUE?
-> :CURSOR:XY:MARKER:M1:Y:
VALUE 0.0000000E+00

:CURSOR:XY:TYPE

Function Sets or queries the cursor type on the X-Y display.

Syntax :CURSOR:XY:TYPE {OFF|HORIZONTAL|VERTICAL|MARKER|HAVERTICAL}
:CURSOR:XY:TYPE?

Example :CURSOR:XY:TYPE MARKER
:CURSOR:XY:TYPE?
-> :CURSOR:XY:TYPE MARKER

:CURSOR:XY:VERTICAL?

Function Queries all vertical cursor settings for the X-Y display.

Syntax :CURSOR:XY:VERTICAL?

:CURSOR:XY:VERTICAL:DX?

Function Queries all ΔX -axis settings. ΔX is between the vertical cursors on the X-Y display.

Syntax :CURSOR:XY:VERTICAL:DX?

:CURSOR:XY:VERTICAL:DX:STATE

Function Sets or queries whether the ΔX -axis value between the vertical cursors on the X-Y display is displayed.

Syntax :CURSOR:XY:VERTICAL:DX:
STATE {<Boolean>}
:CURSOR:XY:VERTICAL:DX:STATE?

Example :CURSOR:XY:VERTICAL:DX:STATE ON
:CURSOR:XY:VERTICAL:DX:STATE?
-> :CURSOR:XY:VERTICAL:DX:STATE 1

:CURSOR:XY:VERTICAL:DX:VALUE?

Function Queries the ΔX -axis value between the vertical cursors on the X-Y display

Syntax :CURSOR:XY:VERTICAL:DX:VALUE?

Example :CURSOR:XY:VERTICAL:DX:VALUE?
-> :CURSOR:XY:VERTICAL:DX:
VALUE 300.00000E+00

:CURSOR:XY:VERTICAL:POSITION<x>

Function Sets or queries a vertical cursor position on the X-Y display.

Syntax :CURSOR:XY:VERTICAL:
POSITION<x> {<Nrf>}
:CURSOR:XY:VERTICAL:POSITION<x>?
<x> = 1, 2

Example :CURSOR:XY:VERTICAL:POSITION1 -3
:CURSOR:XY:VERTICAL:POSITION1?
-> :CURSOR:XY:VERTICAL:
POSITION1 -3.00

Description You can query cursor position information for cursors XY1 to XY8. Use the :CURSOR:XY:VERTICAL:TRACE command to specify the waveform that you want to query.

:CURSOR:XY:VERTICAL:TRACE

Function Sets or queries the source waveform that you want to measure using the vertical cursors on the X-Y display.

Syntax :CURSOR:XY:VERTICAL:TRACE {XY1|XY2|XY3|XY4|XY5|XY6|XY7|XY8}
:CURSOR:XY:VERTICAL:TRACE?

Example :CURSOR:XY:VERTICAL:TRACE XY2
:CURSOR:XY:VERTICAL:TRACE?
-> :CURSOR:XY:VERTICAL:TRACE XY2

:CURSOR:XY:VERTICAL:X<x>?

Function Queries all X-axis-value settings for a vertical cursor on the X-Y display.

Syntax :CURSOR:XY:VERTICAL:X<x>?

:CURSOR:XY:VERTICAL:X<x>:STATE

Function Sets or queries whether the X-axis value for a vertical cursor on the X-Y display is displayed.

Syntax :CURSOR:XY:VERTICAL:X<x>:
STATE {<Boolean>}
:CURSOR:XY:VERTICAL:X<x>:STATE?
<x> = 1, 2

Example :CURSOR:XY:VERTICAL:X1:STATE ON
:CURSOR:XY:VERTICAL:X1:STATE?
-> :CURSOR:XY:VERTICAL:X1:STATE 1

:CURSOR:XY:VERTICAL:X<x>:VALUE?

Function Queries the X-axis value of a vertical cursor on the X-Y display.

Syntax :CURSOR:XY:VERTICAL:X<x>:VALUE?
<x> = 1, 2

Example :CURSOR:XY:VERTICAL:X1:VALUE?
-> :CURSOR:XY:VERTICAL:X1:
VALUE -150.00000E+00

5.8 Display Group

The commands in this group deal with the screen display. You can make the same settings and queries that you can by using keys such as the DISPLAY MODE, DISPLAY SETTING and UTILITY keys on the front panel.

:DISPlay?

Function Queries all display settings.
Syntax :DISPlay?
Description Returns all settings that correspond to the current display mode (:DISPlay:DMODE).

:DISPlay:BAR?

Function Queries all bar graph display settings.
Syntax :DISPlay:BAR?
Description This command is valid only when the harmonic measurement (/G5) option is installed.

:DISPlay:BAR:FORMat

Function Sets or queries the bar graph display format.
Syntax :DISPlay:BAR:
FORMat {SINGLE|DUAL|TRIad}
:DISPlay:BAR:FORMat?
Example :DISPLAY:BAR:FORMAT SINGLE
:DISPLAY:BAR:FORMAT?
-> :DISPLAY:BAR:FORMAT SINGLE
Description This command is valid only when the harmonic measurement (/G5) option is installed.

:DISPlay:BAR:ITEM<x>?

Function Queries all the display settings of the specified bar graph.
Syntax :DISPlay:BAR:ITEM<x>?
<x> = 1 to 3 (bar graph number)
Description This command is valid only when the harmonic measurement (/G5) option is installed.

:DISPlay:BAR:ITEM<x>[:FUNCTION]

Function Sets or queries the function and element of the specified bar graph item.
Syntax :DISPlay:BAR:ITEM<x>[:
FUNCTION] {<Function>,<Element>}
:DISPlay:BAR:ITEM<x>:FUNCTION?
<x> = 1 to 3 (bar graph number)
<Function> = {U|I|P|S|Q|LAMBda|PHI|
PHIU|PHII|Z|RS|XS|RP|XP}
<Element> = 1 to 4
Example :DISPLAY:BAR:ITEM1 U,1
:DISPLAY:BAR:ITEM1?
-> :DISPLAY:BAR:ITEM1 U,1
Description • For information about the options available for <Function>, see "Function Option List" on page 5-57.
• This command is valid only when the harmonic measurement (/G5) option is installed.

:DISPlay:BAR:NUMeric:STATe

Function Sets or queries the on/off status of the numeric data display on the bar graph.
Syntax :DISPlay:BAR:NUMeric:STATe {<Boolean>}
:DISPlay:BAR:NUMeric:STATe?
Example :DISPLAY:BAR:NUMERIC:STATE 1
:DISPLAY:BAR:NUMERIC:STATE?
-> :DISPLAY:BAR:NUMERIC:STATE 1
Description This command is valid only when the harmonic measurement (/G5) option is installed.

:DISPlay:BAR:NUMeric:ORDER<x>

Function Sets or queries the harmonic order indicating the cursor 1 (x) and cursor 2 (+) positions when the bar graph numeric data display is on.
Syntax :DISPlay:BAR:NUMeric:ORDER<x> {<NRf>}
:DISPlay:BAR:NUMeric:ORDER<x>?
<x> = 1, 2 (cursor 1 (x), cursor 2 (+))
<NRf> = 0 to 500 (displayed order)
Example :DISPLAY:BAR:NUMERIC:ORDER1 1
:DISPLAY:BAR:NUMERIC:ORDER1?
-> :DISPLAY:BAR:NUMERIC:ORDER1 1
Description This command is valid only when the harmonic measurement (/G5) option is installed.

:DISPlay:BAR:ORDER

Function Sets or queries the bar graph display range.
Syntax :DISPlay:BAR:ORDER {<NRf>,<NRf>}
:DISPlay:BAR:ORDER?
First <NRf> = 0 to 490 (Starting Harmonic Order)
Second <NRf> = 10 to 500 (Ending Harmonic Order)
Example :DISPLAY:BAR:ORDER 1,100
:DISPLAY:BAR:ORDER?
-> :DISPLAY:BAR:ORDER 1,100
Description • Set the displayed starting harmonic order and then the displayed ending harmonic order.
• Set the displayed ending harmonic order to a value greater than or equal to that of the displayed starting harmonic order + 10.
• This command is valid only when the harmonic measurement (/G5) option is installed.

:DISPlay:COLor:BASEcolor

Function Sets or queries the base color of the screen.
Syntax :DISPlay:COLor:BASEcolor {BLUE|GRAY}
:DISPlay:COLor:BASEcolor?
Example :DISPLAY:COLOR:BASECOLOR GRAY
:DISPLAY:COLOR:BASECOLOR?
-> :DISPLAY:COLOR:BASECOLOR GRAY

:DISPlay:DECimation

Function Sets or queries the number of dots (after decimation) that are used on the dot display.

Syntax :DISPlay:DECimation {<Nrf>}
:DISPlay:DECimation?
<Nrf> = 2000, 100000

Example :DISPLAY:DECIMATION 2000
:DISPLAY:DECIMATION?
-> :DISPLAY:DECIMATION 2000

:DISPlay:DMODE

Function Sets or queries the display mode.

Syntax :DISPlay:DMODE {NUMeric|WAVE|BAR|VECTor|NWAVE|NBAR|NVECTor|WNUMeric|WBAR|WVECTor}
:DISPlay:DMODE?
NUMeric = Numeric data display
WAVE = Waveform display
BAR = Waveform display*
VECTor = Vector display*
NWAVE = Split display of numeric data and waveform
NBAR = Split display of numeric data and bar graph*
NVECTor = Split display of numeric data and vector*
WNUMeric = Split display of waveform and numeric data
WBAR = Split display of waveform and bar graph*
WVECTor = Split display of waveform and vector*
* Valid only when the harmonic measurement (/G5) option is installed.

Example :DISPLAY:DMODE NUMERIC
:DISPLAY:DMODE?
-> :DISPLAY:DMODE NUMERIC

:DISPlay:INTENSity?

Function Queries all intensity settings.

Syntax :DISPlay:INTENSity?

:DISPlay:INTENSity: {CURSOR|GRID|MARKer}

Function Sets or queries the intensity of a display item.

Syntax :DISPlay:INTENSity: {CURSOR|GRID|MARKer} {<Nrf>}
:DISPlay:INTENSity: {CURSOR|GRID|MARKer}?
<Nrf> = 1 to 8

Example :DISPLAY:INTENSITY:CURSOR 8
:DISPLAY:INTENSITY:CURSOR?
-> :DISPLAY:INTENSITY:CURSOR 8

:DISPlay:NUMeric?

Function Queries all numeric display settings.

Syntax :DISPlay:NUMeric?

:DISPlay:NUMeric:ALL?

Function Queries all settings of the numeric data display in All Items display mode.

Syntax :DISPlay:NUMeric:ALL?

:DISPlay:NUMeric:ALL:ORDER

Function Sets or queries the displayed harmonic order on the harmonic measurement function display page of the numeric data display in All Items display mode.

Syntax :DISPlay:NUMeric:ALL:ORDER {<Order>}
:DISPlay:NUMeric:ALL:ORDER?

Example :DISPLAY:NUMERIC:ALL:ORDER 1
:DISPLAY:NUMERIC:ALL:ORDER?
-> :DISPLAY:NUMERIC:ALL:ORDER 1

Description • This command is valid when the displayed page number (:DISPlay:NUMeric:ALL:PAGE) of the numeric data display in All Items display mode is 9 or 10.
• This command is valid only when the harmonic measurement (/G5) option is installed.

:DISPlay:NUMeric:ALL:PAGE

Function Sets or queries the displayed page of the numeric data display in All Items display mode.

Syntax :DISPlay:NUMeric:ALL:PAGE {<Nrf>}
:DISPlay:NUMeric:ALL:PAGE?
<Nrf> = 1 to 10

Example :DISPLAY:NUMERIC:ALL:PAGE 1
:DISPLAY:NUMERIC:ALL:PAGE?
-> :DISPLAY:NUMERIC:ALL:PAGE 1

Description When the page number is set, the cursor position moves to the beginning of the page.

5.8 DISPLAY Group

:DISPlay:NUMeric:CUSTom?

Function Queries all numeric data display settings in custom display mode.

Syntax :DISPlay:NUMeric:CUSTom?

:DISPlay:NUMeric:CUSTom:FILE:CDIRectory

Function Changes the directory that files are loaded from or saved to for the numeric data display in custom display mode.

Syntax :DISPlay:NUMeric:CUSTom:FILE:CDIRectory {<String>}
<String> = Directory name

Example :DISPlay:NUMeric:CUSTom:FILE:CDIRECTORY "CUSTOM"

Description Specify ". ." to move up to the parent directory.

:DISPlay:NUMeric:CUSTom:FILE:DRIVE

Function Sets the drive that files are loaded from or saved to for the numeric data display in custom display mode.

Syntax :DISPlay:NUMeric:CUSTom:FILE:DRIVE {SD|USB[,<NRf>]|NETWork}
SD = SD memory card
USB = USB memory device drive,
<NRf> = 0 or 1 (drive number)
NETWork = Network drive

Example :DISPlay:NUMeric:CUSTom:FILE:DRIVE USB,0

:DISPlay:NUMeric:CUSTom:FILE:FREE?

Function Queries the amount of free space (in bytes) on the drive that files are loaded from or saved to for the numeric data display in custom display mode.

Syntax :DISPlay:NUMeric:CUSTom:FILE:FREE?

Example :DISPlay:NUMeric:CUSTom:FILE:FREE?
-> 20912128

:DISPlay:NUMeric:CUSTom:FILE:LOAD:ABORT

Function Aborts a file loading operation for the numeric data display in custom display mode.

Syntax :DISPlay:NUMeric:CUSTom:FILE:LOAD:ABORT

Example :DISPlay:NUMeric:CUSTom:FILE:LOAD:ABORT

:DISPlay:NUMeric:CUSTom:FILE:LOAD:BACKGROUND

Function Loads the specified background file for the numeric data display in custom display mode.

Syntax :DISPlay:NUMeric:CUSTom:FILE:LOAD:BACKGROUND {<String>}
<String> = File name

Example :DISPlay:NUMeric:CUSTom:FILE:LOAD:BACKGROUND "CUSTOM1"

Description

- Specify the file name without its extension (.bmp).
- This command is an overlap command.

:DISPlay:NUMeric:CUSTom:FILE:LOAD:BACKGROUND

Function Loads the specified display configuration and background files for the numeric data display in custom display mode.

Syntax :DISPlay:NUMeric:CUSTom:FILE:LOAD:BACKGROUND {<String>}
<String> = File name

Example :DISPlay:NUMeric:CUSTom:FILE:LOAD:BACKGROUND "CUSTOM1"

Description

- Specify the file name without an extension.
- This command is an overlap command.

:DISPlay:NUMeric:CUSTom:FILE:LOAD:ITEM

Function Loads the specified display configuration file for the numeric data display in custom display mode.

Syntax :DISPlay:NUMeric:CUSTom:FILE:LOAD:ITEM {<String>}
<String> = File name

Example :DISPlay:NUMeric:CUSTom:FILE:LOAD:ITEM "CUSTOM1"

Description

- Specify the file name without its extension (.txt).
- This command is an overlap command.

:DISPlay:NUMeric:CUSTom:FILE:PATH?

Function Queries the absolute path of the directory that files are loaded from or saved to for the numeric data display in custom display mode.

Syntax :DISPlay:NUMeric:CUSTom:FILE:PATH?

Example :DISPlay:NUMeric:CUSTom:FILE:PATH?
-> "USB-0/CUSTOM"

:DISPlay:NUMeric:CUSTom:FILE:SAVE:ANAMing

Function Sets or queries the automatic file name generation feature for saving display configuration files of the numeric data display in custom display mode.

Syntax :DISPlay:NUMeric:CUSTom:FILE:SAVE:ANAMing {OFF|NUMBERing|DATE}
:DISPlay:NUMeric:CUSTom:FILE:SAVE:ANAMing?

Example :DISPLAY:NUMERIC:CUSTOM:FILE:SAVE:ANAMING NUMBERING
:DISPLAY:NUMERIC:CUSTOM:FILE:SAVE:ANAMING?
-> :DISPLAY:NUMERIC:CUSTOM:FILE:SAVE:ANAMING NUMBERING

:DISPlay:NUMeric:CUSTom:FILE:SAVE:ITEM

Function Saves the specified display configuration file for the numeric data display in custom display mode.

Syntax :DISPlay:NUMeric:CUSTom:FILE:SAVE:ITEMEM {<String>}
<String> = File name

Example :DISPLAY:NUMERIC:CUSTOM:FILE:SAVE:ITEMEM "CUSTOM1"

Description

- Specify the file name without its extension (.txt).
- This command is an overlap command.

:DISPlay:NUMeric:CUSTom:ITEM<x>?

Function Queries all the settings of the specified display item of the numeric data display in custom display mode.

Syntax :DISPlay:NUMeric:CUSTom:ITEM<x>?
<x> = 1 to 192 (item number)

:DISPlay:NUMeric:CUSTom:ITEM<x>:COLor

Function Sets or queries the font color of the specified display item of the numeric data display in custom display mode.

Syntax :DISPlay:NUMeric:CUSTom:ITEM<x>:COLor {YELLow|GREen|MAGenta|CYAN|RED|ORANge|LBLue|PURPle|BLUE|PINK|LGRreen|DBLue|BGRreen|SPINK|MGRreen|GRAY|WHITE|DGRAY|BGRAY|BLACK}
:DISPlay:NUMeric:CUSTom:ITEM<x>:COLor?

<x> = 1 to 192 (item number)

YELLow = Yellow

GREen = Green

MAGenta = Magenta

CYAN = Cyan

RED = Red

ORANge = Orange

LBLue = Light blue

PURPle = Purple

BLUE = Blue

PINK = Pink

LGRreen = Light green

DBLue = Dark blue

BGRreen = Blue green

SPINK = Salmon pink

MGRreen = Mild green

GRAY = Gray

WHITE = White

DGRAY = Dark gray

BGRAY = Blue gray

BLACK = Black

Example :DISPLAY:NUMERIC:CUSTOM:ITEM1:

COLOR WHITE

:DISPLAY:NUMERIC:CUSTOM:ITEM1:COLOR?

-> :DISPLAY:NUMERIC:CUSTOM:ITEM1:

COLOR WHITE

5.8 DISPLAY Group

:DISPlay:NUMeric:CUSTom:ITEM<x>[:FUNcTion]

Function Sets or queries the display item (numeric item or string) of the numeric data display in custom display mode.

Syntax :DISPlay:NUMeric:CUSTom:ITEM<x>[:FUNcTion] {<Function>[, <Element>][, <Order>]|<String>}
:DISPlay:NUMeric:CUSTom:ITEM<x>[:FUNcTion]?

- <x> = 1 to 192 (item number)
- When setting a numeric item
 - <Function> = {URMS|IRMS|P|S|Q|...}
 - <Element> = {<NRf>|SIGMa|SIGMB}
 - (<NRf> = 1 to 6)
 - <Order> = {TOTal|DC|<NRf>}
 - (<NRf> = 1 to 500)

- When setting a string
 - <String> = Up to 16 characters

Example

- When setting a numeric item


```
:DISPlay:NUMeric:CUSTom:ITEM1:FUnCTION URMS,1
:DISPlay:NUMeric:CUSTom:ITEM1:FUnCTION?
-> :DISPlay:NUMeric:CUSTom:ITEM1:FUnCTION URMS,1
:DISPlay:NUMeric:CUSTom:ITEM1:FUnCTION UK,1,1
:DISPlay:NUMeric:CUSTom:ITEM1:FUnCTION?
-> :DISPlay:NUMeric:CUSTom:ITEM1:FUnCTION UK,1,1
```
- When setting a string


```
:DISPlay:NUMeric:CUSTom:ITEM1:FUnCTION "YOKOGAWA"
:DISPlay:NUMeric:CUSTom:ITEM1:FUnCTION?
-> :DISPlay:NUMeric:CUSTom:ITEM1:FUnCTION "YOKOGAWA"
```

Description Set a numeric item or a string as a display item.

- When setting a numeric item
 - For information about the options available for <Function>, see "Function Option List" on page 5-57.
 - If <Element> is omitted, the element is set to 1.
 - If <Order> is omitted, the order is set to TOTal.
 - <Element> and <Order> are omitted from responses to functions that do not need them.
- When setting a string
 - You can display any string that you want, for example, the header or unit of a numeric item.

:DISPlay:NUMeric:CUSTom:ITEM<x>:POSi tion

Function Sets or queries the display position of the specified display item of the numeric data display in custom display mode.

Syntax :DISPlay:NUMeric:CUSTom:ITEM<x>:POSi tion {<NRf>,<NRf>}
:DISPlay:NUMeric:CUSTom:ITEM<x>:POSi tion?

- <x> = 1 to 192 (item number)
- First <NRf> = 0 to 800 (X coordinate)
- Second <NRf> = 0 to 654 (Y coordinate)

Example

```
:DISPlay:NUMeric:CUSTom:ITEM1:POSITiON 0,0
:DISPlay:NUMeric:CUSTom:ITEM1:POSITiON?
-> :DISPlay:NUMeric:CUSTom:ITEM1:POSITiON 0,0
```

Description The upper-left corner of the numeric data display area is the origin, and the specified coordinate refers to the upper left of the display item.

:DISPlay:NUMeric:CUSTom:ITEM<x>:SIZE

Function Sets or queries the font size of the specified display item of the numeric data display in custom display mode.

Syntax :DISPlay:NUMeric:CUSTom:ITEM<x>:SIZE {<NRf>}
:DISPlay:NUMeric:CUSTom:ITEM<x>:SIZE?

- <x> = 1 to 192 (item number)
- <NRf> = 14, 16, 20, 24, 32, 48, 64, 96, 128

Example

```
:DISPlay:NUMeric:CUSTom:ITEM1:SIZE 20
:DISPlay:NUMeric:CUSTom:ITEM1:SIZE?
-> :DISPlay:NUMeric:CUSTom:ITEM1:SIZE 20
```

:DISPlay:NUMeric:CUSTom:PAGE

Function Sets or queries the displayed page of the numeric data display in custom display mode.

Syntax :DISPlay:NUMeric:CUSTom:PAGE {<NRf>}
:DISPlay:NUMeric:CUSTom:PAGE?

- <NRf> = 1 to 12 (page number)

Example

```
:DISPlay:NUMeric:CUSTom:PAGE 1
:DISPlay:NUMeric:CUSTom:PAGE?
-> :DISPlay:NUMeric:CUSTom:PAGE 1
```

Description The maximum page number that can be displayed is determined by the total number of display items and the number of items per page.

:DISPlay:NUMeric:CUSTom:PERPage

Function Sets or queries the number of items displayed per page of the numeric data display in custom display mode.

Syntax :DISPlay:NUMeric:CUSTom:PERPage {<NRf>}
 PERPage {<NRf>}
 :DISPlay:NUMeric:CUSTom:PERPage?
 <NRf> = 1 to the total number of display items

Example :DISPLAY:NUMERIC:CUSTOM:PERPAGE 5
 :DISPLAY:NUMERIC:CUSTOM:PERPAGE?
 -> :DISPLAY:NUMERIC:CUSTOM:PERPAGE 5

Description The minimum number of items that can be displayed per page is "total number of display items (:DISPlay:NUMeric:CUSTom:TOTal)/12."

:DISPlay:NUMeric:CUSTom:TOTal

Function Sets or queries the total number of display items of the numeric data display in custom display mode.

Syntax :DISPlay:NUMeric:CUSTom:TOTal {<NRf>}
 :DISPlay:NUMeric:CUSTom:TOTal?
 <NRf> = 1 to 192 (number of items)

Example :DISPLAY:NUMERIC:CUSTOM:TOTAL 20
 :DISPLAY:NUMERIC:CUSTOM:TOTAL?
 -> :DISPLAY:NUMERIC:CUSTOM:TOTAL 20

Description The maximum number of total display items is "number of display items per page (:DISPlay:NUMeric:CUSTom:PERPage) × 12."

:DISPlay:NUMeric:FRAMe

Function Sets or queries the on/off status of the numeric data display's data section frame.

Syntax :DISPlay:NUMeric:FRAMe {<Boolean>}
 :DISPlay:NUMeric:FRAMe?

Example :DISPLAY:NUMERIC:FRAME ON
 :DISPLAY:NUMERIC:FRAME?
 -> :DISPLAY:NUMERIC:FRAME 1

:DISPlay:NUMeric:FORMat

Function Sets or queries the numeric data display format.

Syntax :DISPlay:NUMeric:FORMat {VAL4|VAL8|VAL16|MATRIX|ALL|SINGLE|DUAL|CUSTom}
 :DISPlay:NUMeric:FORMat?

Example :DISPLAY:NUMERIC:FORMAT VAL4
 :DISPLAY:NUMERIC:FORMAT?
 -> :DISPLAY:NUMERIC:FORMAT VAL4

Description The numeric data is displayed in the following ways for each format:

- VAL4, VAL8, and VAL16 = Numeric display items are displayed in order by their item numbers. (The numbers in these options indicate the number of items that are displayed on a single screen/page.)
- MATRIX = Selected functions are displayed in order by element.
- ALL = All functions are displayed in order by element.
- SINGLE = The harmonic data of one measurement function is listed in even and odd rows.
- DUAL = The harmonic data of two measurement functions is listed in order by harmonic order.
- CUSTom = The specified numeric display items are displayed on the specified bitmap background.

:DISPlay:NUMeric:LIST?

Function Queries all numeric data display (harmonic single and dual list display) settings.

Syntax :DISPlay:NUMeric:LIST?

Description This command is valid only when the harmonic measurement (/G5) option is installed.

:DISPlay:NUMeric:LIST:CURSor

Function Sets or queries the page position of the numeric data displays (harmonic single and dual list display).

Syntax :DISPlay:NUMeric:LIST:CURSor {HEADer|ORDer}
 :DISPlay:NUMeric:LIST:CURSor?
 HEADer = Measurement function display area (data concerning all the harmonics; left side of the screen).
 ORDer = Harmonic order data display area (numeric data of each harmonic; right side of the screen).

Example :DISPLAY:NUMERIC:LIST:CURSOR ORDER
 :DISPLAY:NUMERIC:LIST:CURSOR?
 -> :DISPLAY:NUMERIC:LIST:CURSOR ORDER

Description This command is valid only when the harmonic measurement (/G5) option is installed.

5.8 DISPLAY Group

:DISPlay:NUMeric:LIST:HEADer

Function Sets or queries the page position of the measurement function display area in the numeric data displays (harmonic single and dual list displays).

Syntax :DISPlay:NUMeric:LIST:HEADer {<NRf>}
:DISPlay:NUMeric:LIST:HEADer?
<NRf> = 1 to 37 (page of the measurement function display area)

Example :DISPLAY:NUMERIC:LIST:HEADER 1
:DISPLAY:NUMERIC:LIST:HEADER?
-> :DISPLAY:NUMERIC:LIST:HEADER 1

Description • This command is valid when the page position in the numeric data display (harmonic single and dual list displays) (:DISPlay:NUMeric:LIST:CURSor) is set to HEADer.
• This command is valid only when the harmonic measurement (/G5) option is installed.

:DISPlay:NUMeric:LIST:ITEM<x>

Function Sets or queries the displayed item (function element) of the numeric data displays (harmonic single and dual list displays).

Syntax :DISPlay:NUMeric:LIST:ITEM<x> {<Function>,<Element>}
:DISPlay:NUMeric:LIST:ITEM<x>?
<x> = 1 or 2 (list item number)
<Function> = {U|I|P|S|Q|LAMBda|PHI|PHIU|PHII|Z|RS|XS|RP|XP}
<Element> = {<NRf>|SIGMa|SIGMB} (<NRf> = 1 to 4)

Example :DISPLAY:NUMERIC:LIST:ITEM1 U,1
:DISPLAY:NUMERIC:LIST:ITEM1?
-> :DISPLAY:NUMERIC:LIST:ITEM1 U,1

Description • For information about the options available for <Function>, see "Function Option List" on page 5-57.
• This command is valid only when the harmonic measurement (/G5) option is installed.

:DISPlay:NUMeric:LIST:ORDER

Function Sets or queries the cursor position of the harmonic data display area in the numeric data displays (harmonic single and dual list displays).

Syntax :DISPlay:NUMeric:LIST:ORDER {<NRf>}
:DISPlay:NUMeric:LIST:ORDER?
<NRf> = 1 to 500 (harmonic order)

Example :DISPLAY:NUMERIC:LIST:ORDER 1
:DISPLAY:NUMERIC:LIST:ORDER?
-> :DISPLAY:NUMERIC:LIST:ORDER 1

Description • This command is valid when the cursor position (:DISPlay:NUMeric:LIST:CURSor) on the numeric data display in the list display modes is set to ORDER.
• This command is valid only when the harmonic measurement (/G5) option is installed.

:DISPlay:NUMeric:MATRix?

Function Queries all numeric data display settings in matrix display mode.

Syntax :DISPlay:NUMeric:MATRix?

:DISPlay:NUMeric:MATRix:COLumn?

Function Queries all column settings of the numeric data display in matrix display mode.

Syntax :DISPlay:NUMeric:MATRix:COLumn?

:DISPlay:NUMeric:MATRix:COLumn:ITEM<x>

Function Sets or queries the specified column display item of the numeric data display in matrix display mode.

Syntax :DISPlay:NUMeric::MATRix:COLumn:ITEM<x> {NONE|<Element>}
:DISPlay:NUMeric::MATRix:COLumn:ITEM<x>?
<x> = 1 to 6 (column number)
<Element> = {<NRf>|SIGMa|SIGMB} (<NRf> = 1 to 4)

Example :DISPLAY:NUMERIC:MATRIX:COLUMN:ITEM1 1
:DISPLAY:NUMERIC:MATRIX:COLUMN:ITEM1?
-> :DISPLAY:NUMERIC:MATRIX:COLUMN:ITEM1 1

:DISPlay:NUMeric:MATRix:COLumn:NUMBER

Function Sets or queries the number of columns of the numeric data display in matrix display mode.

Syntax :DISPlay:NUMeric:MATRix:COLumn:NUMBER {<NRf>}
:DISPlay:NUMeric:MATRix:COLumn:NUMBER?
<NRf> = 4, 6

Example :DISPLAY:NUMERIC:MATRIX:COLUMN:NUMBER 4
:DISPLAY:NUMERIC:MATRIX:COLUMN:NUMBER?
-> :DISPLAY:NUMERIC:MATRIX:COLUMN:NUMBER 4

:DISPlay:NUMeric:MATRix:COLumn:RESet

Function Resets the column display items to their default values on the numeric data display in matrix display mode.

Syntax :DISPlay:NUMeric:MATRix:COLumn:RESet

Example :DISPLAY:NUMERIC:MATRIX:COLUMN:RESET

:DISPlay:NUMeric:MATRIX:CURSor

Function Sets or queries the cursor position on the numeric data display in matrix display mode.

Syntax :DISPlay:NUMeric:MATRIX:CURSor {<NRf>}
:DISPlay:NUMeric:MATRIX:CURSor?
<NRf> = 1 to 81 (item number)

Example :DISPLAY:NUMERIC:MATRIX:CURSOR 1
:DISPLAY:NUMERIC:MATRIX:CURSOR?
-> :DISPLAY:NUMERIC:MATRIX:CURSOR 1

Description Use an item number to specify the cursor position.

:DISPlay:NUMeric:MATRIX:ITEM<x>

Function Sets or queries the specified display item (function and harmonic order) on the numeric data display in matrix display mode.

Syntax :DISPlay:NUMeric:MATRIX:ITEM<x> {NONE|<Function>[,<Element>][,<Order>]}
:DISPlay:NUMeric:MATRIX:ITEM<x>?
<x> = 1 to 81 (item number)
NONE = No display item
<Function> = {URMS|IRMS|P|S|Q|...}
<Element> = {<NRf>|SIGMa|SIGMB}
(<NRf> = 1 to 4)
<Order> = {TOTal|DC|<NRf>}
(<NRf> = 1 to 500)

Example :DISPLAY:NUMERIC:MATRIX:ITEM1 URMS
:DISPLAY:NUMERIC:MATRIX:ITEM1?
-> :DISPLAY:NUMERIC:MATRIX:
ITEM1 URMS,1
:DISPLAY:NUMERIC:MATRIX:ITEM1 UK,1,1
:DISPLAY:NUMERIC:MATRIX:ITEM1?
-> :DISPLAY:NUMERIC:MATRIX:
ITEM1 UK,1,1

Description

- For information about the options available for <Function>, see "Function Option List" on page 5-57.
- The <Element> setting has no effect on the display. If <Element> is omitted, the element is set to 1.
- If <Order> is omitted, the order is set to TOTal.
- <Element> and <Order> are omitted from responses to functions that do not need them.

:DISPlay:NUMeric:MATRIX:PAGE

Function Sets or queries the displayed page of the numeric data display in matrix display mode.

Syntax :DISPlay:NUMeric:MATRIX:PAGE {<NRf>}
:DISPlay:NUMeric:MATRIX:PAGE?
<NRf> = 1 to 9 (page number)

Example :DISPLAY:NUMERIC:MATRIX:PAGE 1
:DISPLAY:NUMERIC:MATRIX:PAGE?
-> :DISPLAY:NUMERIC:MATRIX:PAGE 1

Description When the page number is set, the cursor position moves to the beginning of the page.

:DISPlay:NUMeric:MATRIX:PRESet

Function Presets the display order pattern of displayed items on the numeric data display in matrix display mode.

Syntax :DISPlay:NUMeric:MATRIX:
PRESet {<NRf>|EORigin||CLRPage|CLRAll}
<NRf> = 1 or EORigin (element reference reset pattern; Element Origin)
<NRf> = 3 or CLRPage (clear the display items of the current page; Clear Current Page)
<NRf> = 4 or CLRAll (clear the display items of all pages; Clear All Pages)

Example :DISPLAY:NUMERIC:MATRIX:PRESET 1
:DISPLAY:NUMERIC:MATRIX:
PRESET EORIGIN

Description The numeric data display item display pattern (order) will be the same as the order when the displayed items are reset using the Reset Items menu that is displayed on the PX8000 screen (Reset Items Exec). For details on the display pattern that appears when the displayed items are reset, see the getting started guide, IM PX8000-03EN.

:DISPlay:NUMeric:{VAL4|VAL8|VAL16}?

Function Queries all numeric data display settings in 4 Items, 8 Items, or 16 Items display mode.

Syntax :DISPlay:NUMeric:{VAL4|VAL8|VAL16}?
VAL4 = 4 items display
VAL8 = 8 items display
VAL16 = 16 items display

:DISPlay:NUMeric:{VAL4|VAL8|VAL16}:CURSor

Function Sets or queries the cursor position on the numeric data display in 4 Items, 8 Items, or 16 Items display mode.

Syntax :DISPlay:NUMeric:{VAL4|VAL8|VAL16}:CURSor {<NRf>}
:DISPlay:NUMeric:{VAL4|VAL8|VAL16}:CURSor?
<NRf> = 1 to 48 (item number; when VAL4 is specified)
<NRf> = 1 to 96 (item number; when VAL8 is specified)
<NRf> = 1 to 192 (item number; when VAL16 is specified)

Example :DISPLAY:NUMERIC:VAL4:CURSOR 1
:DISPLAY:NUMERIC:VAL4:CURSOR?
-> :DISPLAY:NUMERIC:VAL4:CURSOR 1

Description Use an item number to specify the cursor position.

5.8 DISPLAY Group

:DISPlay:NUMeric: {VAL4 | VAL8 | VAL16} : ITEM<x>

Function Sets or queries the function, element, and harmonic order of the specified numeric data display item in 4 Items, 8 Items, or 16 Items display mode.

Syntax :DISPlay:NUMeric: {VAL4 | VAL8 | VAL16} : ITEM<x> {NONE | <Function> [, <Element>] [, <Order>] }
:DISPlay:NUMeric: {VAL4 | VAL8 | VAL16} : ITEM<x>?

<x> = 1 to 48 (item number; when VAL4 is specified)

<x> = 1 to 96 (item number; when VAL8 is specified)

<x> = 1 to 192 (item number; when VAL16 is specified)

NONE = No display item

<Function> = {URMS | IRMS | P | S | Q | ...}

<Element> = {<NRf> | SIGMa | SIGMB} (
<NRf> = 1 to 4)

<Order> = {TOTal | DC | <NRf>} (
<NRf> = 1 to 500)

Example :DISPlay:NUMeric:VAL4:ITEM1 URMS,1
:DISPlay:NUMeric:VAL4:ITEM1?
-> :DISPlay:NUMeric:VAL4:
ITEM1 URMS,1
:DISPlay:NUMeric:VAL4:ITEM1 UK,1,1
:DISPlay:NUMeric:VAL4:ITEM1?
-> :DISPlay:NUMeric:VAL4:
ITEM1 UK,1,1

Description • For information about the options available for <Function>, see "Function Option List" on page 5-57.

- If <Element> is omitted, the element is set to 1.
- If <Order> is omitted, the order is set to TOTal.
- <Element> and <Order> are omitted from responses to functions that do not need them.

:DISPlay:NUMeric: {VAL4 | VAL8 | VAL16} : PAGE

Function Sets or queries the displayed page of the numeric data display in 4 Items, 8 Items, or 16 Items display mode.

Syntax DISPlay:NUMeric: {VAL4 | VAL8 | VAL16} : PAGE {<NRf>}
:DISPlay:NUMeric: {VAL4 | VAL8 | VAL16} : PAGE?

<NRf> = 1 to 12 (page number)

Example :DISPlay:NUMeric:VAL4:PAGE 1
:DISPlay:NUMeric:VAL4:PAGE?
-> :DISPlay:NUMeric:VAL4:PAGE 1

Description When the page number is set, the cursor position moves to the beginning of the page.

:DISPlay:NUMeric: {VAL4 | VAL8 | VAL16} : PRESet

Function Presets the display order pattern of displayed items on the numeric data display in 4 Items, 8 Items, or 16 Items display mode.

Syntax :DISPlay:NUMeric: {VAL4 | VAL8 | VAL16} : PRESet {<NRf> | EORigin | CLRPage | CLRAll}
<NRf> = 1 or EORigin (element reference reset pattern; Element Origin)
<NRf> = 3 or CLRPage (clear the display items of the current page; Clear Current Page)
<NRf> = 4 or CLRAll (clear the display items of all pages; Clear All Pages)

Example :DISPlay:NUMeric:VAL4:PRESet 1
:DISPlay:NUMeric:VAL4:PRESet EORIGIN

Description The numeric data display item display pattern (order) will be the same as the order when the displayed items are reset using the Reset Items menu that is displayed on the PX8000 screen (Reset Items Exec). For details on the display pattern that appears when the displayed items are reset, see the features guide, IM PX8000-01EN.

:DISPlay:NUMeric: RESolution

Function Sets or queries the numeric data display resolution.

Syntax :DISPlay:NUMeric:RESolution {<NRf>}
:DISPlay:NUMeric:RESolution?
<NRf> = 5 or 6 (digit)

Example :DISPlay:RESolution 5
:DISPlay:RESolution?
-> :DISPlay:RESolution 5

:DISPlay:VECTor?

Function Queries all vector display settings.

Syntax :DISPlay:VECTor?

Description This command is valid only when the harmonic measurement (/G5) option is installed.

:DISPlay:VECTor: FORMat

Function Sets or queries the display format of all vectors.

Syntax :DISPlay:VECTor:FORMat {SINgle | DUAL}
:DISPlay:VECTor:FORMat?

Example :DISPlay:VECTor:FORMat SINgle
:DISPlay:VECTor:FORMat? ->
:DISPlay:VECTor:FORMat SINgle

Description This command is valid only when the harmonic measurement (/G5) option is installed.

:DISPlay:VECTor: ITEM<x>?

Function Queries all settings for the specified vector.

Syntax :DISPlay:VECTor:ITEM<x>?

<x> = 1 or 2 (vector number)

Description This command is valid only when the harmonic measurement (/G5) option is installed.

:DISPlay:VECTor:ITEM<x>:OBJect

Function Sets or queries the wiring unit that is displayed using the specified vector.

Syntax :DISPlay:VECTor:ITEM<x>:
OBJect {<Element>}
:DISPlay:VECTor:ITEM<x>:OBJect?
<x> = 1 or 2 (vector number)
<Element> = {<NRf>|SIGMa|SIGMB}
(<NRf> = 1 to 4)

Example :DISPLAY:VECTOR:ITEM1:OBJECT SIGMA
:DISPLAY:VECTOR:ITEM1:OBJECT?
-> :DISPLAY:VECTOR:ITEM1:
OBJECT SIGMA

Description This command is valid only when the harmonic measurement (/G5) option is installed.

:DISPlay:VECTor:ITEM<x>:{UMAG|IMAG}

Function Sets or queries the voltage or current zoom factor for the vector display.

Syntax :DISPlay:VECTor:ITEM<x>:
{UMAG|IMAG} {<NRf>}
:DISPlay:VECTor:ITEM<x>:{UMAG|IMAG}?
<x> = 1 or 2 (vector number)
<NRf> = 0.100 to 100.000

Example :DISPLAY:VECTOR:ITEM1:UMAG 1
:DISPLAY:VECTOR:ITEM1:UMAG?
-> :DISPLAY:VECTOR:ITEM1:UMAG 1.000

Description This command is valid only when the harmonic measurement (/G5) option is installed.

:DISPlay:VECTor:NUMeric

Function Sets or queries the on/off status of the numeric data display on the vector display.

Syntax :DISPlay:VECTor:NUMeric {<Boolean>}
:DISPlay:VECTor:NUMeric?

Example :DISPLAY:VECTOR:NUMERIC ON
:DISPLAY:VECTOR:NUMERIC?
-> :DISPLAY:VECTOR:NUMERIC 1

Description This command is valid only when the harmonic measurement (/G5) option is installed.

:DISPlay:WAVE?

Function Queries all waveform display settings.

Syntax :DISPlay:WAVE?

:DISPlay[:WAVE]:{CHANnel<x>|POWer<y>|MATH<x>}:COLor

Function Sets or queries a waveform color.

Syntax :DISPlay:{CHANnel<x>|POWer<y>|
MATH<x>}:COLor {BLUE|BGReen|CYAN|
DBLue|GRAY|GREen|LBLue|LGReen|
MAGenta|MGRreen|ORANGE|PINK|PURPLE|
RED|SPINK|YELLOW}
:DISPlay:{CHANnel<x>|POWer<y>|
MATH<x>}:COLor?
<x> = 1 to 8
<y> = 1 to 4

Example :DISPLAY:CHANNEL1:COLOR YELLOW
:DISPLAY:CHANNEL1:COLOR?
-> :DISPLAY:CHANNEL1:COLOR YELLOW

Description The FFT1 and FFT2 waveforms are the same color as the MATH7 and MATH8 waveforms, respectively.

:DISPlay[:WAVE]:ESize (Extra window Size)

Function Sets or queries the size of the extra window.

Syntax :DISPlay[:WAVE]:ESize {<NRf>|AUTO}
:DISPlay[:WAVE]:ESize?
<NRf> = 0 to 8

Example :DISPLAY:ESIZE AUTO
:DISPLAY:ESIZE?
-> :DISPLAY:ESIZE AUTO

:DISPlay[:WAVE]:FORMat

Function Sets or queries the display format (the number of divisions in the vertical direction).

Syntax :DISPlay[:WAVE]:FORMat {<NRf>}
:DISPlay[:WAVE]:FORMat?
<NRf> = 1, 2, 3, 4, 6, 8, 12, 16

Example :DISPLAY:FORMAT 4
:DISPLAY:FORMAT?
-> :DISPLAY:FORMAT 4

Description To maintain compatibility with the conventional DL750 series, the following parameters can be used in a set command.
{SINGLE|DUAL|TRIad|QUAD|OCTal|DHEXa}

:DISPlay[:WAVE]:GRATicule

Function Sets or queries the grid type.

Syntax :DISPlay[:WAVE]:
GRATicule {CROSShair|FRAME|GRID}
:DISPlay[:WAVE]:GRATicule?

Example :DISPLAY:GRATICULE GRID
:DISPLAY:GRATICULE?
-> :DISPLAY:GRATICULE GRID

5.8 DISPLAY Group

:DISPlay[:WAVE]:INTERpolate

Function Sets or queries the waveform interpolation method.

Syntax :DISPlay[:WAVE]:INTERpolate {LINE|
OFF|PULSE|SINE}
:DISPlay[:WAVE]:INTERpolate?

Example :DISPLAY:INTERPOLATE LINE
:DISPLAY:INTERPOLATE?
-> :DISPLAY:INTERPOLATE LINE

:DISPlay[:WAVE]:LINDicator (Level INDicator)

Function Sets or queries whether the right indicator on the TY waveform display is displayed.

Syntax :DISPlay[:WAVE]:LINDicator {<Boolean>}
:DISPlay[:WAVE]:LINDicator?

Example :DISPLAY:LINDICATOR ON
:DISPLAY:LINDICATOR?
-> :DISPLAY:LINDICATOR 1

:DISPlay[:WAVE]:MAPPING

Function Sets or queries the waveform mapping mode for when the display format is set to an option other than 1.

Syntax :DISPlay[:WAVE]:MAPPING {AUTO|
USERdefine}
:DISPlay[:WAVE]:MAPPING?

Example :DISPLAY:MAPPING USERDEFINE
:DISPLAY:MAPPING?
-> :DISPLAY:MAPPING USERDEFINE

:DISPlay[:WAVE]:SVALue (Scale VALue)

Function Sets or queries whether scale values are displayed.

Syntax :DISPlay[:WAVE]:SVALue {<Boolean>}
:DISPlay[:WAVE]:SVALue?

Example :DISPLAY:SVALUE ON
:DISPLAY:SVALUE?
-> :DISPLAY:SVALUE 1

:DISPlay[:WAVE]:TLABEL (Trace LABEL)

Function Sets or queries whether waveform labels are displayed.

Syntax :DISPlay[:WAVE]:TLABEL {<Boolean>}
:DISPlay[:WAVE]:TLABEL?

Example :DISPLAY:TLABEL ON
:DISPLAY:TLABEL?
-> :DISPLAY:TLABEL 1

Function Option List (Settings That Can Be Used for <Function>)

Applicable commands

```

:DISPlay:BAR:ITEM<x>[:FUNCTION] {<Function>,<Element>}
:DISPlay:NUMeric:CUSTom:ITEM<x>[:FUNCTION] {<Function>[,<Element>][,
<Order>]|<String>}
:DISPlay:NUMeric:LIST:ITEM<x> {<Function>,<Element>}
:DISPlay:NUMeric:MATRix:ITEM<x> {NONE|<Function>[,<Element>][, <Order>]}
:DISPlay:NUMeric:{VAL4|VAL8|VAL16}:ITEM<x> {NONE|<Function>[,<Element>][,
<Order>]}
:FILE:SAVE:NUMeric:<Function> {<Boolean>}
:NUMeric:LIST:ITEM<x> {NONE|<Function>,<Element>}
:NUMeric[:NORMal]:ITEM<x> {NONE|<Function>[,<Element>][, <Order>]}

```

- **Numeric data function of the voltage module (760811)/current module (760812/760813)**

Measurement Functions Used in Normal Measurement

<Function>	Function Name Used on the Menu (Numeric display header name)	<Element>	<Order>
URMS	Urms	Required	Not required
UMN	Umn	Required	Not required
UDC	Udc	Required	Not required
URMN	Urmn	Required	Not required
UAC	Uac	Required	Not required
IRMS	Irms	Required	Not required
IMN	Imn	Required	Not required
IDC	Idc	Required	Not required
IRMN	Irmn	Required	Not required
IAC	Iac	Required	Not required
P	P	Required	Not required
S	S	Required	Not required
Q	Q	Required	Not required
LAMBda	λ	Required	Not required
PHI	φ	Required	Not required
FU	FreqU(fU)	Required	Not required
FI	FreqI(fI)	Required	Not required
UPPeak	U+peak(U+pk)	Required	Not required
UMPeak	U-peak(U-pk)	Required	Not required
IPPeak	I+peak(I+pk)	Required	Not required
IMPeak	I-peak(I-pk)	Required	Not required
CFU	CfU	Required	Not required
CFI	CfI	Required	Not required
PC	Pc	Required	Not required
PPPeak	P+peak(P+pk)	Required	Not required
PMPeak	P-peak(P-pk)	Required	Not required
ETA1 to ETA4	η 1 to η 4	Not required	Not required
F1 to F20	F1 to F20	Not required	Not required

Functions That Require the Delta Computation

<Function>	Function Name Used on the Menu (Numeric display header name)	<Element>	<Order>
DU1	Δ U1	Required (only Σ)	Not required
DU2	Δ U2	Required (only Σ)	Not required
DU3	Δ U3	Required (only Σ)	Not required
DUS	Δ U Σ	Required (only Σ)	Not required
DI	Δ I	Required (only Σ)	Not required
DP1	Δ P1	Required (only Σ)	Not required
DP2	Δ P2	Required (only Σ)	Not required
DP3	Δ P3	Required (only Σ)	Not required
DPS	Δ P Σ	Required (only Σ)	Not required

Functions That Require the Harmonic Measurement (/G5) Option

<Function>	Function Name Used on the Menu (Numeric display header name)	<Element>	<Order>
UK	U(k)	Required	Required
IK	I(k)	Required	Required
PK	P(k)	Required	Required
SK	S(k)	Required	Required
QK	Q(k)	Required	Required
LAMBDAK	$\lambda(k)$	Required	Required
PHIK	$\phi(k)$	Required	Required
PHIUk	$\phi U(k)$	Required	Required
PHIIk	$\phi I(k)$	Required	Required
Zk	Z(k)	Required	Required
RSk	Rs(k)	Required	Required
XSk	Xs(k)	Required	Required
RPk	Rp(k)	Required	Required
XPk	Xp(k)	Required	Required
UHDFk	Uhdf(k)	Required	Required
IHDFk	Ihdf(k)	Required	Required
PHDFk	Phdf(k)	Required	Required
UTHD	Uthd	Required	Not required
ITHD	Ithd	Required	Not required
PTHD	Pthd	Required	Not required
UTHF	Uthf	Required	Not required
ITHF	Ithf	Required	Not required
UTIF	Utif	Required	Not required
ITIF	Itif	Required	Not required
HVF	hvf	Required	Not required
HCF	hcf	Required	Not required
KFACTOR	K-factor	Required	Not required
PHI_U1U2	ϕU_i-U_j	Required	Not required
PHI_U1U3	ϕU_i-U_k	Required	Not required
PHI_U1I1	ϕU_i-I_i	Required	Not required
PHI_U2I2	ϕU_j-I_j	Required	Not required
PHI_U3I3	ϕU_k-I_k	Required	Not required
PHI_I1I2	ϕI_i-I_j	Required	Not required
PHI_I2I3	ϕI_j-I_k	Required	Not required
PHI_I1I3	ϕI_i-I_k	Required	Not required
FPLL	FreqPLL	Not required	Not required

- **Numeric data function of the AUX module (760851)**

<Function>	Function Name Used on the Menu (Numeric display header name)	<Element>	<Order>
AUX3	AUX3	Not required	Not required
AUX4	AUX4	Not required	Not required
AUX5	AUX5	Not required	Not required
AUX6	AUX6	Not required	Not required
AUX7	AUX7	Not required	Not required
AUX8	AUX5	Not required	Not required
PM2	Pm2	Not required	Not required
PM3	Pm3	Not required	Not required
PM4	Pm4	Not required	Not required

Note

- For functions in the list above that do not require the element to be specified but whose commands have a parameter for specifying the element (<Element>), omit the parameter or set it to 1.
- Likewise, for functions in the list above that do not require the harmonic order to be specified but whose commands have a parameter for specifying the harmonic order (<Order>), omit the parameter or set it to TOTAL.

5.9 FFT Group

The commands in this group deal with FFT analysis. You can make the same settings and queries that you can by using the FFT (SHIFT+MATH) keys on the front panel.

:FFT?

Function Queries all FFT settings.

Syntax :FFT?

:FFT:POINT

Function Sets or queries the number of analysis source points of the FFT windows.

Syntax :FFT:POINT {<NRf>}
:FFT:POINT?
<NRf> = 1000, 2000, 5000, 10000, 20000, 50000, 100000

Example :FFT:POINT 1000
:FFT:POINT? -> :FFT:POINT 1000

Description The setting is the same for Window 1 and Window 2. (The settings are the same as with the number of FFT points of the Math group.)

:FFT:START

Function Sets or queries the analysis-source start point of the FFT windows.

Syntax :FFT:START {<NRf>}
:FFT:START?
<NRf> = -5 to 5

Example :FFT:START -5
:FFT:START?
-> :FFT:START -5.0000000000000

Description The setting is the same for Window 1 and Window 2. (The settings are the same as with the number of FFT points of the Math group.)

:FFT:WAVEform<x>?

Function Queries all FFT window settings.

<x> = 1, 2

:FFT:WAVEform<x>:HAXis

Function Sets or queries an FFT window's horizontal-axis display method.

Syntax :FFT:WAVEform<x>:HAXis {LINear|LOG}
:FFT:WAVEform<x>:HAXis?
<x> = 1, 2

Example :FFT:WAVEFORM1:HAXIS LOG
:FFT:WAVEFORM1:HAXIS?
-> :FFT:WAVEFORM1:HAXIS LOG

:FFT:WAVEform<x>:HORizontal?

Function Queries all horizontal axis settings for FFT analysis.

Syntax FFT:WAVEform<x>:HORizontal?
<x> = 1, 2

:FFT:WAVEform<x>:HORizontal:CSPan?

Function Queries all center and span settings for the horizontal axis for FFT analysis.

Syntax :FFT:WAVEform<x>:HORizontal:CSPan?
<x> = 1, 2

:FFT:WAVEform<x>:HORizontal:CSPan:CENTer

Function Sets or queries the center value of the horizontal axis for FFT analysis.

Syntax :FFT:WAVEform<x>:HORizontal:CSPan:CENTer {<Frequency>}
:FFT:WAVEform<x>:HORizontal:CSPan:CENTer?
<x> = 1, 2
<Frequency> = 0 Hz to (the sampling rate)/2 Hz

Example :FFT:WAVEFORM1:HORIZONTAL:CSPAN:CENTER 250.00000E+03
:FFT:WAVEFORM1:HORIZONTAL:CSPAN:CENTER?
-> :FFT:WAVEFORM1:HORIZONTAL:CSPAN:CENTER 250.00000E+03

:FFT:WAVEform<x>:HORizontal:CSPan:SPAN

Function Sets or queries the span value of the horizontal axis for FFT analysis.

Syntax :FFT:WAVEform<x>:HORizontal:CSPan:SPAN {<Frequency>}
:FFT:WAVEform<x>:HORizontal:CSPan:SPAN?
<x> = 1, 2
<Frequency>

= (the sampling rate)/(FFT Points) * 10 Hz to (the sampling rate)/2 Hz
Example :FFT:WAVEFORM1:HORIZONTAL:CSPAN:SPAN 500.00000E+03
:FFT:WAVEFORM1:HORIZONTAL:CSPAN:SPAN?
-> :FFT:WAVEFORM1:HORIZONTAL:CSPAN:SPAN 500.00000E+03

5.9 FFT Group

:FFT:WAVEform<x>:HORizontal:LRIGHT?

Function Queries all the settings for the left and right ends of the horizontal axis for FFT analysis.

Syntax :FFT:WAVEform<x>:HORizontal:LRIGHT?
<x> = 1, 2

:FFT:WAVEform<x>:HORizontal:LRIGHT:RANGE

Function Sets or queries the range for the left and right ends of the horizontal axis for FFT analysis.

Syntax :FFT:WAVEform<x>:HORizontal:LRIGHT:RANGE {<Frequency>,<Frequency>}
:FFT:WAVEform<x>:HORizontal:LRIGHT:RANGE?
<x> = 1, 2
<Frequency> = 0 Hz to (the sampling rate)/2 Hz

Example :FFT:WAVEFORM1:HORIZONTAL:LRIGHT:RANGE 0.0000000E+00,500.00000E+03
:FFT:WAVEFORM1:HORIZONTAL:LRIGHT:RANGE?
-> :FFT:WAVEFORM1:HORIZONTAL:LRIGHT:RANGE 0.0000000E+00,500.00000E+03

:FFT:WAVEform<x>:HORizontal:MODE

Function Sets or queries the FFT analysis horizontal axis mode.

Syntax :FFT:WAVEform<x>:HORizontal:MODE {AUTO|CSPan|LRIGHT}
:FFT:WAVEform<x>:HORizontal:MODE?
<x> = 1, 2

Example :FFT:WAVEFORM1:HORIZONTAL:MODE AUTO
:FFT:WAVEFORM1:HORIZONTAL:MODE?
-> :FFT:WAVEFORM1:HORIZONTAL:MODE AUTO

:FFT:WAVEform<x>:MODE

Function Sets or queries whether an FFT window is displayed.

Syntax :FFT:WAVEform<x>:MODE {<Boolean>}
:FFT:WAVEform<x>:MODE?
<x> = 1, 2

Example :FFT:WAVEFORM1:MODE ON
:FFT:WAVEFORM1:MODE?
-> :FFT:WAVEFORM1:MODE 0

:FFT:WAVEform<x>:SOURCE<x>

Function Sets or queries an FFT window's FFT source channel.

Syntax :FFT:WAVEform<x>:SOURCE<x> {MATH<x>|<NRf>|P<y>}
:FFT:WAVEform<x>:SOURCE<x>?
<x> of WAVEform<x> = 1, 2
<x> of SOURCE<x> = 1, 2
<x> of MATH<x> = 1 to 8
<NRf> = 1 to 8
<y> = 1 to 4

Example :FFT:WAVEFORM1:SOURCE1 1
:FFT:WAVEFORM1:SOURCE1?
-> :FFT:WAVEFORM1:SOURCE1 1

Description This command returns "Math1" if no modules are installed.

:FFT:WAVEform<x>:SType (Sub TYPe)

Function Sets or queries an FFT window's analysis sub type.

Syntax :FFT:WAVEform<x>:SType {REAL|IMAG|MAG|PHASe|LOGMag}
:FFT:WAVEform<x>:SType?
<x> = 1, 2

Example :FFT:WAVEFORM1:SType LOGMAG
:FFT:WAVEFORM1:SType?
-> :FFT:WAVEFORM1:SType LOGMAG

:FFT:WAVEform<x>:TYPE

Function Sets or queries an FFT window's analysis type.

Syntax :FFT:WAVEform<x>:TYPE {LS|PS|PSD|CS|TF|CH}
:FFT:WAVEform<x>:TYPE?
<x> = 1, 2

Example :FFT:WAVEFORM1:TYPE PS
:FFT:WAVEFORM1:TYPE?
-> :FFT:WAVEFORM1:TYPE PS

:FFT:WAVEform<x>:UNIT

Function Sets or queries a unit string that is attached to FFT computation results.

Syntax :FFT:WAVEform<x>:UNIT {<String>}
:FFT:WAVEform<x>:UNIT?
<x> = 1, 2
<String> = Up to 4 characters

Example :FFT:WAVEFORM1:UNIT "UU"
:FFT:WAVEFORM1:UNIT?
-> :FFT:WAVEFORM1:UNIT "UU"

Description In the default settings, the unit string is blank.

:FFT:WAVeform<x>:VSCale?

Function Queries all FFT vertical scale settings.

Syntax :FFT:WAVeform<x>:VSCale?
<x> = 1, 2

:FFT:WAVeform<x>:VSCale:CENTer

Function Sets or queries the center value of an FFT window's vertical scale.

Syntax :FFT:WAVeform<x>:VSCale:
CENTer {<NRf>}
:FFT:WAVeform<x>:VSCale:CENTer?
<x> = 1, 2
<NRf> = -1E+30 to 1E+30

Example :FFT:WAVEFORM1:VSCALE:CENTER -40
:FFT:WAVEFORM1:VSCALE:CENTER?
-> :FFT:WAVEFORM1:VSCALE:
CENTER -40.0000E+00

**:FFT:WAVeform<x>:VSCale:MODE
(Vertical Scale MODE)**

Function Sets or queries an FFT window's vertical scale mode.

Syntax :FFT:WAVeform<x>:VSCale:
MODE {AUTO|MANual}
:FFT:WAVeform<x>:VSCale:MODE?

Example :FFT:WAVEFORM1:VSCALE:MODE AUTO
:FFT:WAVEFORM1:VSCALE:MODE?
-> :FFT:WAVEFORM1:VSCALE:MODE AUTO

:FFT:WAVeform<x>:VSCale:SENSitivity

Function Sets or queries the sensitivity of an FFT window's vertical scale.

Syntax :FFT:WAVeform<x>:VSCale:
SENSitivity {<NRf>}
:FFT:WAVeform<x>:VSCALE:SENSitivity?
<x> = 1, 2
<NRf> = 0 to 1E+30

Example :FFT:WAVEFORM1:VSCALE:
SENSITIVITY 20.0000E+00
:FFT:WAVEFORM1:VSCALE:SENSITIVITY?
-> :FFT:WAVEFORM1:VSCALE:
SENSITIVITY 20.0000E+00

:FFT:WINDow?

Function Queries all FFT analysis settings.

Syntax :FFT:WINDow?

:FFT:WINDow:EXPonential?

Function Queries all FFT exponential window settings.

Syntax :FFT:WINDow:EXPonential?

:FFT:WINDow:EXPonential:DRATe

Function Sets or queries the FFT exponential window's damping rate.

Syntax :FFT:WINDow:EXPonential:
DRATe {<NRf>}
:FFT:WINDow:EXPonential:DRATe?
<NRf> = 1 to 100

Example :FFT:WINDow:EXPonential:DRATE 100
:FFT:WINDow:EXPonential:DRATE?
-> :FFT:WINDow:EXPonential:DRATE 100

Description The setting is the same for Window 1 and Window 2. (The settings are the same as with the number of FFT points of the Math group.)

:FFT:WINDow:EXPonential:FORCe<x>

Function Sets or queries the FFT exponential window's Force1 or Force2 value.

Syntax :FFT:WINDow:EXPonential:
FORCe<x> {<NRf>}
:FFT:WINDow:EXPonential:FORCe<x>?
<NRf> = 1 to 100

Example :FFT:WINDow:EXPonential:FORCE1 100
:FFT:WINDow:EXPonential:FORCE1?
-> :FFT:WINDow:EXPonential:
FORCE1 100

Description The setting is the same for Window 1 and Window 2. (The settings are the same as with the number of FFT points of the Math group.)

:FFT:WINDow:TYPE

Function Sets or queries the computation window type for FFT analysis.

Syntax :FFT:WINDow:TYPE {HANNing|RECTangle|
FLATtop|EXPonential|HAMMING}
:FFT:WINDow:TYPE?

Example :FFT:WINDow:TYPE HANNING
:FFT:WINDow:TYPE?
-> :FFT:WINDow:TYPE HANNING

Description The setting is the same for Window 1 and Window 2. (The settings are the same as with the number of FFT points of the Math group.)

5.10 FILE Group

The commands in this group deal with file operations. You can perform the same operations and make the same settings and queries that you can by using the FILE key on the front panel.

:FILE?

Function Queries all storage media settings.
Syntax :FILE?

:FILE:COPY:ABORT

Function Aborts file copying.
Syntax :FILE:COPY:ABORT
Example :FILE:COPY:ABORT

:FILE:COPY:CDIRectory

Function Changes the file copy destination directory.
Syntax :FILE:COPY:CDIRectory {<String>}
<String> = Directory name
Example :FILE:COPY:CDIRECTORY "NO_1"
Description <String> specifies a relative path.

:FILE:COPY[:EXECute]

Function Executes file copying. This is an overlap command.
Syntax :FILE:COPY[:EXECute] {<String>}
<String> = The file name, including its extension.
Example :FILE:COPY:EXECUTE "DATA.PNG"

:FILE:COPY:PATH?

Function Queries the file copy destination directory.
Example :FILE:COPY:PATH?
-> :FILE:COPY:PATH "PATH=USB/UTIL"

:FILE:DELeTe

Function Deletes files. This is an overlap command.
Syntax :FILE:DELeTe {<String>}
Example :FILE:DELETE"CASE1.WDF"
Description

- Use the :FILE[:DIRectory]:DRIVE command to select the target medium.
- Use the :FILE[:DIRectory]:CDIRectory command to select the directory that contains the file that you want to delete.
- Include the extension when you specify the file name.
- If you specify a directory, the directory will be deleted.

:FILE[:DIRectory]:CDIRectory (Change DIRectory)

Function Changes the current directory on the storage medium.
Syntax :FILE[:DIRectory]:
CDIRectory {<String>}
<String> = Up to 16 characters
Example :FILE:DIRECTORY:CDIRECTORY "NO_1"

:FILE[:DIRectory]:DRIVE

Function Sets the storage medium to perform file operations on.
Syntax :FILE[:DIRectory]:
DRIVE {NETWork|SD|USB,<NRf>}
Example :FILE:DIRECTORY:DRIVE USB,0
Description

- Specify NETWork for a network drive.
- Specify SD for the SD memory card.
- Specify USB for a USB storage medium.
<NRf> = 0 to LUN or the partition number (can be omitted)
On the PX8000, this number is decided by the order that USB storage media are inserted into the device.
Partition numbers: 0 to 3

:FILE[:DIRectory]:FREE?

Function Queries the free space on the medium that is being operated on in bytes.
Syntax :FILE[:DIRectory]:FREE?
Example :FILE:DIRECTORY:FREE?
-> :FILE:DIRECTORY:FREE 3.7567939E+09

:FILE[:DIRectory]:MDIRectory (Make DIRectory)

Function Creates a directory in the current directory.
Syntax :FILE[:DIRectory]:
MDIRectory {<String>}
Example :FILE:DIRECTORY:MDIRECTORY "NO_1"
Description <String> specifies a relative path.

:FILE[:DIRectory]:PATH?

Function Queries the current directory.
Syntax :FILE[:DIRectory]:PATH?
Example :FILE:DIRECTORY:PATH?
-> :FILR:PATH "Path=USB,0"

:FILE:LOAD:BINary:ABORT

Function Aborts the loading of binary data.
Syntax :FILE:LOAD:BINary:ABORT
Example :FILE:LOAD:BINARY:ABORT

:FILE:LOAD:{BINary|SETup|SNAP}[:EXECute]

Function Executes the loading of various types of data. This is an overlap command.

Syntax :FILE:LOAD:{BINary|SETup|SNAP}[:EXECute] <Filename>

Example :FILE:LOAD:SETUP "CASE1"

Description Do not include the extension when you specify <Filename>.

:FILE:SAVE?

Function Queries all file save settings.

Syntax :FILE:SAVE?

:FILE:SAVE:ANAMing

Function Sets or queries the auto naming mode for saving files.

Syntax :FILE:SAVE:ANAMing {DATE|NUMBering|OFF}

Example :FILE:SAVE:ANAMING DATE

-> :FILE:SAVE:ANAMING DATE

Description DATE = Date and time
NUMBering = Numbering
OFF = The file name that you saved with the :FILE:SAVE:NAME command

:FILE:SAVE:{ASCIi|BINary|FLOat|WDFBin}?

Function Queries all the settings related to the saving of a specific type of file.

Syntax :FILE:SAVE:{ASCIi|BINary|FLOat|WDFBin}?

:FILE:SAVE:{ASCIi|BINary|FLOat|WDFBin}:ABORt

Function Aborts the saving of a specific type of file.

Syntax :FILE:SAVE:{ASCIi|BINary|FLOat|WDFBin}:ABORt

Example :FILE:SAVE:ASCIi:ABORt

:FILE:SAVE:{ASCIi|BINary|FLOat|WDFBin}:CRANge<x>

Function Sets or queries the cursor position for when data is to be saved using a cursor range.

Syntax :FILE:SAVE:{ASCIi|BINary|FLOat|WDFBin}:CRANge<x> {<NRf>}

<x> = 1, 2
<NRf> = Resolution (depends on the measurement length)

Example :FILE:SAVE:ASCIi:CRANge1 -3
:FILE:SAVE:ASCIi:CRANge1?
-> :FILE:SAVE:ASCIi:CRANge1 -3.000000000000

:FILE:SAVE:{ASCIi|FFT|MEASure}:DPOi nt

Function Sets or queries the type of decimal point that is used when saving specified type.

Syntax :FILE:SAVE:{ASCIi|FFT|MEASure}:DPOi nt {POINT|COMMa}

Example :FILE:SAVE:ASCIi:DPOINT POINT
:FILE:SAVE:ASCIi:DPOINT?
-> :FILE:SAVE:ASCIi:DPOINT POINT

:FILE:SAVE:{ASCIi|BINary|FFT|FLOat|MEASure|NUMeric|SETup|SNAP|WDFBin}[:EXECute]

Function Executes the saving of a specific type of file. This is an overlap command.

Syntax :FILE:SAVE:{ASCIi|BINary|FFT|FLOat|MEASure|NUMeric|SETup|SNAP|WDFBin}[:EXECute]

Example :FILE:SAVE:ASCIi:EXECUTE

Description FFT waveforms are saved in ASCII format.

:FILE:SAVE:ASCIi:EXTension

Function Sets or queries the file name extension that is used when saving data in ASCII format.

Syntax :FILE:SAVE:ASCIi:EXTension {CSV|MATLab}

Example :FILE:SAVE:ASCIi:EXTENSION CSV
:FILE:SAVE:ASCIi:EXTENSION?
-> :FILE:SAVE:ASCIi:EXTENSION CSV

:FILE:SAVE:{ASCIi|BINary|FLOat|WDFBin}:HISTory

Function Sets or queries what waveforms the history memory feature will save for a specific type of data.

Syntax :FILE:SAVE:{ASCIi|BINary|FLOat|WDFBin}:HISTory {ONE|ALL}

Example :FILE:SAVE:BINary:HISTory ALL
:FILE:SAVE:BINary:HISTory?
-> :FILE:SAVE:BINary:HISTory ALL

:FILE:SAVE:ASCIi:INTerval

Function Sets or queries the data removal interval that is used when saving data in ASCII format.

Syntax :FILE:SAVE:ASCIi:INTerval {<NRf>|OFF}

Example :FILE:SAVE:ASCIi:INTerval 5
:FILE:SAVE:ASCIi:INTerval?
-> :FILE:SAVE:ASCIi:INTerval 5

5.10 FILE Group

:FILE:SAVE:{ASCIi|BINary|FLOat|WDFBin}:RANGe

Function Sets or queries the save range for a specific type of data.

Syntax :FILE:SAVE:{ASCIi|BINary|FLOat|WDFBin}:RANGe {MAIN|Z1|Z2|CURSor}
:FILE:SAVE:{ASCIi|BINary|FLOat|WDFBin}:RANGe?

Example :FILE:SAVE:BINary:RANGe CURSOR
:FILE:SAVE:BINary:RANGe?
-> :FILE:SAVE:BINary:RANGe CURSOR

:FILE:SAVE:{ASCIi|BINary|FLOat|WDFBin}:STRace:{CHANnel<x>|POWer<y>|MATH<x>}

Function Sets or queries the waveform that will be saved for a specific type of data.

Syntax :FILE:SAVE:{ASCIi|BINary|FLOat|WDFBin}:STRace:{CHANnel<x>|POWer<y>|MATH<x>} {<Boolean>}
:FILE:SAVE:{ASCIi|BINary|FLOat|WDFBin}:STRace:{CHANnel<x>|POWer<y>|MATH<x>}?

Example :FILE:SAVE:BINary:STRace:CHANnel1 ON
:FILE:SAVE:BINary:STRace:CHANnel1?
-> :FILE:SAVE:BINary:STRace:CHANnel1

Description When the Trace All setting is set to OFF, the source waveforms of waveforms that are displayed and that have this setting set to ON will be saved.
You cannot specify waveforms by sub channel.

:FILE:SAVE:{ASCIi|BINary|FLOat|WDFBin}:TALL (Trace ALL)

Function Sets or queries the selection method for the waveforms that will be saved for a specific type of data.

Syntax :FILE:SAVE:{ASCIi|BINary|FLOat|WDFBin}:TALL {<Boolean>}
:FILE:SAVE:{ASCIi|BINary|FLOat|WDFBin}:TALL?

Example :FILE:SAVE:BINary:TALL ON
:FILE:SAVE:BINary:TALL?
-> :FILE:SAVE:BINary:TALL 1

Description ON: All channels whose waveforms are displayed will be saved.
OFF: The channels whose waveforms are displayed and whose waveforms are set to be saved will be saved.

:FILE:SAVE:{ASCIi|MEASure}:TINFormat ion

Function Sets or queries whether time information is included when saving data in ASCII format or CSV format.

Syntax :FILE:SAVE:{ASCIi|MEASure}:TINFormat ion {<Boolean>}
:FILE:SAVE:{ASCIi|MEASure}:TINFormat ion?

Example :FILE:SAVE:ASCIi:TINFORMATION ON
:FILE:SAVE:ASCIi:TINFORMATION?
-> :FILE:SAVE:ASCIi:TINFORMATION 1

:FILE:SAVE:COMMENT

Function Sets or queries the comment that will be saved.

Syntax :FILE:SAVE:COMMENT {<String>}
:FILE:SAVE:COMMENT?
<String> = Up to 120 characters

Example :FILE:SAVE:COMMENT "WAVEFORM_1"
:FILE:SAVE:COMMENT?
-> :FILE:SAVE:COMMENT "WAVEFORM_1"

Description Characters that cannot be used: /, ¥, ?, *, :, |, ", <, >.
You can only use the characters and symbols on the keyboard that appears on the PX8000 screen.
"Q" is "1EH" and "µ" is "1FH" expressed in ASCII code.

:FILE:SAVE:FFT:FINFormation

Function Sets or queries whether frequency information is included when FFT waveforms are saved in ASCII format.

Syntax :FILE:SAVE:FFT:FINFormation {<Boolean>}
:FILE:SAVE:FFT:FINFormation?

Example :FILE:SAVE:FFT:FINFORMATION ON
:FILE:SAVE:FFT:FINFORMATION?
-> :FILE:SAVE:FFT:FINFORMATION ON

: FILE : SAVE : MEASure : UNIT

Function Sets or queries whether a unit is included in each cell when the waveform parameter measurement results are saved.

Syntax :FILE:SAVE:MEASure:UNIT {<Boolean>}
:FILE:SAVE:MEASure:UNIT?

Example :FILE:SAVE:MEASURE:UNIT ON
:FILE:SAVE:MEASURE:UNIT?
-> :FILE:SAVE:MEASURE:UNIT ON

Description The default value is OFF.

: FILE : SAVE : NAME

Function Sets or queries the name of the file that will be saved.

Syntax :FILE:SAVE:NAME <Filename>
:FILE:SAVE:NAME?

Example :FILE:SAVE:NAME "CASE1"
:FILE:SAVE:NAME?
-> :FILE:SAVE:NAME "CASE1"

Description File names that cannot be used: aux, con, prn, nul, clock, com1, com2, com3, com4, com5, com6, com7, com8, com9, lpt1, lpt2, lpt3, lpt4, lpt5, lpt6, lpt7, lpt8, lpt9.

: FILE : SAVE : NUMeric ?

Function Queries all settings related to the saving of numeric data files.

Syntax :FILE:SAVE:NUMeric?

: FILE : SAVE : NUMeric : ITEM

Function Sets or queries the method that is used to select which items are saved when numeric data is saved to a file.

Syntax :FILE:SAVE:NUMeric:ITEM {DISplayed|SElected}
:FILE:SAVE:NUMeric:ITEM?

DISplayed = Automatic selection method in which all the items that are displayed on the screen are selected

SElected = Manual selection method

Example :FILE:SAVE:NUMERIC:ITEM SELECTED
:FILE:SAVE:NUMERIC:ITEM?
-> :FILE:SAVE:NUMERIC:ITEM SELECTED

Description The available options are explained below.
DISplayed: The numeric items that are displayed on the screen are saved to the file.
SElected: The numeric items that are specified with the commands that start with :FILE:SAVE:NUMeric:NORMal:... are saved to the file.

: FILE : SAVE : NUMeric : ALL

Function Collectively sets the on/off status of the output of all element functions when numeric data is saved to a file.

Syntax :FILE:SAVE:NUMeric:ALL {<Boolean>}
Example :FILE:SAVE:NUMERIC:ALL ON

: FILE : SAVE : NUMeric : {ELEMEnt<x> | SIGMA | SIGMB}

Function Sets or queries the on/off status of the output of the specified element or wiring unit ΣA or ΣB when numeric data is saved to a file.

Syntax :FILE:SAVE:NUMeric:
{ELEMEnt<x>|SIGMA|SIGMB} {<Boolean>}
:FILE:SAVE:NUMeric:
{ELEMEnt<x>|SIGMA|SIGMB}?
<x> = 1 to 4

Example :FILE:SAVE:NUMERIC:ELEMENT1 ON
:FILE:SAVE:NUMERIC:ELEMENT1?
-> :FILE:SAVE:NUMERIC:ELEMENT1 1

: FILE : SAVE : NUMeric : <Function>

Function Sets or queries the on/off status of the specified function's output when numeric data is saved to a file.

Syntax :FILE:SAVE:NUMeric:
<Function> {<Boolean>}
:FILE:SAVE:NUMeric:<Function>?
<Function> = {URMS|IRMS|P|S|Q|...}

Example :FILE:SAVE:NUMERIC:URMS ON
:FILE:SAVE:NUMERIC:URMS?
-> :FILE:SAVE:NUMERIC:URMS 1

Description For information about the options available for <Function>, see "Function Option List", in the DISPLAY Group section on page 5-57.

: FILE : SAVE : NUMeric : PRESet

Function Presets the output on/off pattern of the element functions to be used when numeric data is saved to a file.

Syntax :FILE:SAVE:NUMeric:PRESet
Example :FILE:SAVE:NUMERIC:PRESET

Description For details on the output setting patterns that result when the pattern is reset, see the features guide, IM PX8000-01EN.

5.11 GONogo Group

The commands in this group deal with GO/NO-GO determination. You can make the same settings and queries (of settings and measured values) that you can by using the GO/NO-GO (SHIFT+MEASURE) keys on the front panel. If the selectable range of the time axis is "<NRF> = -5 to 5div," the selectable range varies depending on settings such as the record length. For details, see "Notes about Cursor Measurement" in chapter 15 of IM PX8000-01EN.

:GONogo?

Function Queries all GO/NO-GO determination settings.
Syntax :GONogo?

:GONogo:ACONdition

Function Sets or queries the GO/NO-GO determination-action condition.

Syntax :GONogo:ACONdition {ALWAYS|FAILure|SUCCEss}
:GONogo:ACONdition?

Example :GONOGO:ACONDITION ALWAYS
:GONOGO:ACONDITION?
-> :GONOGO:ACONDITION ALWAYS

:GONogo:ACTion?

Function Queries all settings for the action that is performed when the condition is met and the settings for the condition itself.

Syntax :GONogo:ACTion?

:GONogo:ACTion:BUZZer

Function Sets or queries whether a beep is sounded when the condition is met.

Syntax :GONogo:ACTion:BUZZer {<Boolean>}
:GONogo:ACTion:BUZZer?

Example :GONOGO:ACTION:BUZZER ON
:GONOGO:ACTION:BUZZER?
-> :GONOGO:ACTION:BUZZER 1

:GONogo:ACTion:HCOpy (HardCOpy)

Function Sets or queries whether a screen capture is printed from the built-in printer when the condition is met.

Syntax :GONogo:ACTion:HCOpy {<Boolean>}
:GONogo:ACTion:HCOpy?

Example :GONOGO:ACTION:HCOPIY ON
:GONOGO:ACTION:HCOPIY?
-> :GONOGO:ACTION:HCOPIY 1

Description This command is valid only when the built-in printer (/B5 option) is installed.

:GONogo:ACTion:IMAGe?

Function Queries all settings for the screen capture that is saved when the condition is met.

Syntax :GONogo:ACTion:IMAGe?

:GONogo:ACTion:IMAGe:CDIRectory

Function Sets the current directory where the screen capture is saved to when the condition is met.

Syntax :GONogo:ACTion:IMAGe:
CDIRectory {<String>}
:GONogo:ACTion:IMAGe:CDIRectory?
<String> = Directory name

Example :GONOGO:ACTION:IMAGE:
CDIRECTORY "CASE1"
:GONOGO:ACTION:IMAGE:CDIRECTORY?
-> :GONOGO:ACTION:IMAGE:
CDIRECTORY "CASE1"

:GONogo:ACTion:IMAGe:DRIVE

Function Sets or queries the medium that the screen capture is saved to when the condition is met.

Syntax :GONogo:ACTion:IMAGe:
DRIVE {NETWork|SD|USB,<NRF>}
:GONogo:ACTion:IMAGe:DRIVE?

Example :GONOGO:ACTION:IMAGE:DRIVE USB,0
:GONOGO:ACTION:IMAGE:DRIVE?
-> :GONOGO:ACTION:IMAGE:DRIVE USB,0

Description

- Specify NETWork for a network drive.
- Specify SD for the SD memory card.
- Specify USB for a USB storage medium.
<NRF> = 0 to LUN or the partition number (can be omitted)
On the PX8000, this number is decided by the order that USB storage media are inserted into the device.
Partition numbers: 0 to 3

:GONogo:ACTion:IMAGe[:MODE]

Function Sets or queries whether a screen capture is saved when the condition is met.

Syntax :GONogo:ACTion:
IMAGe[:MODE] {<Boolean>}
:GONogo:ACTion:IMAGe:MODE?

Example :GONOGO:ACTION:IMAGE:MODE ON
:GONOGO:ACTION:IMAGE:MODE?
-> :GONOGO:ACTION:IMAGE:MODE 1

:GONogo:ACTion:IMAGe:PATH?

Function Queries the path on the storage medium that a screen capture is saved to when the condition is met.

Syntax :GONogo:ACTion:IMAGe:PATH?

Example :GONOGO:ACTION:IMAGe:PATH?

```
-> :GONOGO:ACTION:IMAGe:
PATH "Path=SD"
```

:GONogo:ACTion:SAVE?

Function Queries all settings related to the storage medium that waveform data is saved to when the condition is met.

Syntax :GONogo:ACTion:SAVE?

:GONogo:ACTion:SAVE:CDIRectory

Function Sets the current directory on the storage medium where waveform data is saved to when the condition is met.

Syntax :GONogo:ACTion:SAVE:

```
CDIRectory {<String>}
:GONogo:ACTion:SAVE:CDIRectory?
```

Example :GONOGO:ACTION:SAVE:

```
CDIRECTORY "CASE1"
:GONOGO:ACTION:SAVE:CDIRECTORY?
-> :GONOGO:ACTION:SAVE:
CDIRECTORY "CASE1"
```

:GONogo:ACTion:SAVE:DRIVE

Function Sets or queries the storage medium that waveform data is saved to when the condition is met.

Syntax :GONogo:ACTion:SAVE:
DRIVE {NETWork|SD|USB,<Nrf>}
:GONogo:ACTion:SAVE:DRIVE?

Example :GONOGO:ACTION:SAVE:DRIVE USB,0
:GONOGO:ACTION:SAVE:DRIVE?
-> :GONOGO:ACTION:SAVE:DRIVE USB,0

Description

- Specify NETWork for a network drive.
- Specify SD for the SD memory card.
- Specify USB for a USB storage medium.

<Nrf> = 0 to LUN or the partition number (can be omitted)
On the PX8000, this number is decided by the order that USB storage media are inserted into the device.
Partition numbers: 0 to 3

:GONogo:ACTion:SAVE[:MODE]

Function Sets or queries whether waveforms are saved to the storage medium when the condition is met.

Syntax :GONogo:ACTion:SAVE:MODE {<Boolean>}
:GONogo:ACTion:SAVE:MODE?

Example :GONOGO:ACTION:SAVE:MODE ON
:GONOGO:ACTION:SAVE:MODE?
-> :GONOGO:ACTION:SAVE:MODE 1

:GONogo:ACTion:SAVE:PATH?

Function Queries the path on the storage medium that waveform data is saved to when the condition is met.

Syntax :GONogo:ACTion:SAVE:PATH?

Example :GONOGO:ACTION:SAVE:PATH?

```
-> :GONOGO:ACTION:SAVE:
PATH "Path=USB,0/WAVE"
```

:GONogo:ACTion:SAVE:TYPE

Function Sets or queries the file format that waveforms are saved as on the storage medium when the condition is met.

Syntax :GONogo:ACTion:SAVE:
TYPE {ASCIi|BINary|FLOat|WDFBin}
:GONogo:ACTion:SAVE:TYPE?

Example :GONOGO:ACTION:SAVE:TYPE BINARY
:GONOGO:ACTION:SAVE:TYPE?
-> :GONOGO:ACTION:SAVE:TYPE BINARY

:GONogo:COUNT?

Function Queries the number of GO/NO-GO determinations that were performed.

Syntax :GONogo:COUNT?

Example :GONOGO:COUNT? -> :GONOGO:COUNT 10

:GONogo:LOGic

Function Sets or queries the GO/NO-GO determination logic.

Syntax :GONogo:LOGic {AND|OR}
:GONogo:LOGic?

Example :GONOGO:LOGIC AND
:GONOGO:LOGIC? -> :GONOGO:LOGIC AND

:GONogo:MODE

Function Sets or queries the GO/NO-GO determination mode.

Syntax :GONogo:MODE {OFF|PARAMeter|ZONE}
:GONogo:MODE?

Example :GONOGO:MODE ZONE
:GONOGO:MODE? -> :GONOGO:MODE ZONE

:GONogo:NGCount?

Function Queries the GO/NO-GO determination NO-GO count.

Syntax :GONogo:NGCount?

Example :GONOGO:NGCOUNT?
-> :GONOGO:NGCOUNT 10

5.11 GONogo Group

:GONogo:PARAmeter?

Function Queries all parameter determination settings.
 Syntax :GONogo:PARAmeter?

:GONogo:PARAmeter:ITEM<x>?

Function Queries all settings for the specified waveform parameter for parameter determination.
 Syntax :GONogo:PARAmeter:ITEM<x>?
 <x> = 1 to 16

:GONogo:PARAmeter:ITEM<x>:CAUSE?

Function Queries whether the specified waveform parameter for parameter determination is the cause of a NO-GO judgment.
 Syntax :GONogo:PARAmeter:ITEM<x>:CAUSE?
 <x> = 1 to 16
 Example :GONOGO:PARAMETER:ITEM1:CAUSE?
 -> :GONOGO:PARAMETER:ITEM1:CAUSE 1
 Description When the parameter is the cause of a NO-GO result, the PX8000 returns 1. Otherwise, the PX8000 returns 0.

:GONogo:PARAmeter:ITEM<x>:MODE

Function Sets or queries the specified waveform parameter's reference condition for parameter determination.
 Syntax :GONogo:PARAmeter:ITEM<x>:
 MODE {OFF|IN|OUT}
 :GONogo:PARAmeter:ITEM<x>:MODE?
 <x> = 1 to 16
 Example :GONOGO:PARAMETER:ITEM1:MODE IN
 :GONOGO:PARAMETER:ITEM1:MODE?
 -> :GONOGO:PARAMETER:ITEM1:MODE IN

:GONogo:PARAmeter:ITEM<x>:TRACe

Function Sets or queries the specified waveform parameter's source waveform for parameter determination.
 Syntax :GONogo:PARAmeter:ITEM<x>:
 TRACe {<Nrf>|P<y>|MATH<x>}
 :GONogo:PARAmeter:ITEM<x>:TRACe?
 <x> = 1 to 16
 <Nrf> = 1 to 8
 <x> of MATH<x> = 1 to 8
 <y> = 1 to 4
 Example :GONOGO:PARAMETER:ITEM1:TRACE 1
 :GONOGO:PARAMETER:ITEM1:TRACE?
 -> :GONOGO:PARAMETER:ITEM1:TRACE 1

:GONogo:PARAmeter:ITEM<x>:TYPE?

Function Queries, for parameter determination, the specified waveform parameter's measurement item and upper and lower limits.
 Syntax :GONogo:PARAmeter:ITEM<x>:TYPE?
 <x> = 1 to 16
 Example :GONOGO:PARAMETER:ITEM1:TYPE?
 -> :GONOGO:PARAMETER:ITEM1:TYPE:
 MAXIMUM 1.10000E+00,1.00000E+00

:GONogo:PARAmeter:ITEM<x>:TYPE:<Parameter>

Function Sets or queries the upper and lower limits of the measurement item for the specified waveform parameter.
 Syntax :GONogo:PARAmeter:ITEM<x>:TYPE:
 <Parameter> {<Voltage>,<Voltage>|
 <Current>,<Current>|<Time>,<Time>|
 <Frequency>,<Frequency>|<Nrf>,<Nrf>}
 <x> = 1 to 16
 <Parameter> = {AMPLitude|AVERage|
 AVGFreq|AVGPeriod|
 BWIDth1|BWIDth2|
 DELay|DUTYcycle|FALL|
 FREQuency|HIGH|LOW|
 MAXimum|MIDDLE|MINimum|
 NOVershoot|NWIDth|
 PERiod|PNUMBER|
 POVershoot|PTOPeak|
 PWIDth|RISE|RMS|
 SDEVIation|TY1Integ|
 TY2Integ}

:GONogo:PARAmeter:ITEM<x>:VALue?

Function Queries the measured value of the specified waveform parameter.
 Syntax :GONogo:PARAmeter:ITEM<x>:VALue?
 <x> = 1 to 16

:GONogo:REMOte

Function Sets or queries the remote mode of GO/NO-GO determination.
 Syntax :GONogo:REMOte {<Boolean>}
 :GONogo:REMOte?
 Example :GONOGO:REMOTE ON
 :GONOGO:REMOTE? -> :GONOGO:REMOTE 1

:GONogo:SEQuence

Function Sets or queries the action mode of GO/NO-GO determination.
 Syntax :GONogo:SEQuence {CONTInue|SINGle}
 :GONogo:SEQuence?
 Example :GONOGO:SEQUENCE CONTINUE
 :GONOGO:SEQUENCE?
 -> :GONOGO:SEQUENCE CONTINUE

:GONogo:TRANge

Function Sets or queries the determination range of GO/NO-GO determination.

Syntax :GONogo:TRANge {<NRf>,<NRf>}
:GONogo:TRANge?
<NRf> = -5 to 5 div

Example :GONOGO:TRANGE -5, 5
:GONOGO:TRANGE?
-> :GONOGO:TRANGE -5.000000000000,
5.000000000000

:GONogo:WAIT?

Function Waits for the completion of GO/NO-GO determination by using a timeout value.

Syntax :GONogo:WAIT? {<NRf>}
<NRf> = 1 to 864000 (in units of 100 ms)

Example Setting the timeout value to 5 seconds
:GONOGO:WAIT? 50 -> 0

Description The PX8000 returns 0 if the operation finishes before the timer expires and returns 1 if the timer expires.

:GONogo:ZONE?

Function Queries all waveform zone determination settings.

Syntax :GONogo:ZONE?

:GONogo:ZONE:PATtern<x>?

Function Queries all settings for the specified determination pattern for waveform zone determination.

Syntax :GONogo:ZONE:PATtern<x>?

:GONogo:ZONE:PATtern<x>:CAUSE?

Function Queries whether the specified determination pattern for waveform zone determination is the cause of a NO-GO judgment.

Syntax :GONogo:ZONE:PATtern<x>:CAUSE?
<x> = 1 to 16

Example :GONOGO:ZONE:PATTERN1 CAUSE?
-> :GONOGO:ZONE:PATTERN1 CAUSE 0

Description When the determination pattern is the cause of a NO-GO result, the PX8000 returns 1. Otherwise, the PX8000 returns 0.

:GONogo:ZONE:PATtern<x>:MODE

Function Sets or queries the specified determination pattern's reference condition for waveform zone determination.

Syntax :GONogo:ZONE:PATtern<x>:MODE {IN|OUT|OFF}
:GONogo:ZONE:PATtern<x>:MODE?
<x> = 1 to 16

Example :GONOGO:ZONE:PATTERN1:MODE IN
:GONOGO:ZONE:PATTERN1:MODE?
-> :GONOGO:ZONE:PATTERN1:MODE IN

:GONogo:ZONE:PATtern<x>:TRACe

Function Sets or queries the specified determination pattern's determination waveform for waveform zone determination.

Syntax :GONogo:ZONE:PATtern<x>:
TRACe {MATH<x>|<NRf>|P<y>}
:GONogo:ZONE:PATtern<x>:TRACe?
<x> = 1 to 16
<x> of MATH<x> = 1 to 8
<NRf> = 1 to 8
<y> = 1 to 4

Example :GONOGO:ZONE:PATTERN1:TRACE 1
:GONOGO:ZONE:PATTERN1:TRACE?
-> :GONOGO:ZONE:PATTERN1:TRACE 1

:GONogo:ZONE:PATtern<x>:ZONE

Function Sets or queries the specified determination pattern's source waveform zone data for waveform zone determination.

Syntax :GONogo:ZONE:PATtern<x>:ZONE {<NRf>}
:GONogo:ZONE:PATtern<x>:ZONE?
<x> = 1 to 16
<NRf> = 0 to 5

Example :GONOGO:ZONE:PATTERN1:ZONE 1
:GONOGO:ZONE:PATTERN1:ZONE?
-> :GONOGO:ZONE:PATTERN1:ZONE 1

5.12 HARMonics Group

The commands in this group deal with harmonic measurement. You can make the same settings and queries that you can by pressing the NUMERIC key on the front panel, and then using the Harmonics menu.

The commands in this group are only valid on models with the harmonic measurement (/G5) option.

:HARMonics?

Function Queries all harmonic measurement settings.

Syntax :HARMonics?

:HARMonics:MODE

Function Sets or queries the on/off status of harmonic measurement.

Syntax :HARMonics:MODE {<Boolean>}
:HARMonics:MODE?

Example :HARMONICS:MODE ON
:HARMONICS:MODE?

-> :HARMONICS:MODE 1

:HARMonics:ORDER

Function Sets or queries the maximum and minimum harmonic orders that are analyzed.

Syntax :HARMonics:ORDer {<NRf>,<NRf>}
:HARMonics:ORDer?
First <NRf> = 0 or 1 (minimum harmonic order that is analyzed)
Second <NRf> = 1 to 500 (maximum harmonic order that is analyzed)

Example :HARMONICS:ORDER 1,100
:HARMONICS:ORDER?
-> :HARMONICS:ORDER 1,100

:HARMonics:PLLSource

Function Sets or queries the PLL source.

Syntax :HARMonics:PLLSource {U<x>|I<x>|EXTErnal}
:HARMonics<x>:PLLSource?
<x> = 1 to 4 (element)
EXTErnal = External clock input (Ext Trigger in)

Example :HARMONICS:PLLSOURCE U1
:HARMONICS:PLLSOURCE?
-> :HARMONICS:PLLSOURCE U1

:HARMonics:POSition[:START]

Function Sets or queries the computation start position of harmonic measurement.

Syntax :HARMonics:POSition[:START] <NRf>
:HARMonics:POSition[:START]?
<NRf> = -5 to 5

Example :HARMONICS:POSITION:START -2
:HARMONICS:POSITION:START?
-> :HARMONICS:POSITION
-2.000000000000

:HARMonics:POSition:NCOPY (NumericCOPY)

Function Copies the cursor start position of numeric measurement to the computation start position of harmonic measurement.

Syntax :HARMonics:POSition:NCOPY

Example :HARMONICS:POSITION:NCOPY

:HARMonics:THD

Function Sets or queries the equation used to compute the THD (total harmonic distortion).

Syntax :HARMonics:THD {TOTal|FUNDamental}
:HARMonics:THD?

Example :HARMONICS:THD TOTAL
:HARMONICS:THD?
-> :HARMONICS:THD TOTAL

5.13 HCOPY Group

The commands in this group deal with printing screen captures from the internal printer and other devices. You can perform the same operations and make the same settings and queries that you can by using the PRINT, MENU (SHIFT+PRINT) key on the front panel.

The commands in this group are only valid on models with the built-in printer (/B5) option.

:HCOPY?

Function Queries all screen capture data output settings.

Syntax :HCOPY?

:HCOPY:COMMeNt

Function Sets or queries the screen comment.

Syntax :HCOPY:COMMeNt {<String>}

:HCOPY:COMMeNt?

<String> = Up to 26 characters

Example :HCOPY:COMMeNt "ABC"

:HCOPY:COMMeNt?

-> :HCOPY:COMMeNt "ABC"

:HCOPY:EXECute

Function Executes data output.

Syntax :HCOPY:EXECute

5.14 HISTory Group

The commands in this group deal with loading data from history waveforms. You can perform the same operations and make the same settings and queries that you can by using the HISTORY (SHIFT+NUMERIC) key on the front panel.

:HISTory?

Function Queries all of the settings for the history feature.
Syntax :HISTory?

:HISTory:ABORT

Function Aborts the history search.
Syntax :HISTory:ABORT
Example :HISTORY:ABORT

:HISTory:CLEAr

Function Clears the data of all history waveforms.
Syntax :HISTory:CLEAr
Example :HISTORY:CLEAR

:HISTory:DATE?

Function Queries the trigger date of the data at the specified record number.
Syntax :HISTory:DATE? {<NRf>|MINimum}
<NRf> = 0 to -4999
Example :HIST:DATE? -1
-> :HIST:DATE "-0001 2014/01/01"
Description If you specify a record number that is lower than MINimum, this command will return "----- --."

:HISTory:DISPlay

Function Sets or queries the history start and end numbers that will be displayed.
Syntax :HISTory:DISPlay {<NRf>,<NRf>}
:HISTory:DISPlay?
<NRf> = 0 to -4999
Example :HISTORY:DISPLAY -1,-2
:HISTORY:DISPLAY?
-> :HISTORY:DISPLAY -1,-2
Description The settable values vary depending on the memory model and the acquisition conditions.

:HISTory:DMODE (Display MODE)

Function Sets or queries the history waveform display mode.
Syntax :HISTory:DMODE {ONE|ALL|AVE}
:HISTory:DMODE?
Example :HISTORY:DMODE ONE
:HISTORY:DMODE?
-> :HISTORY:DMODE ONE

:HISTory:EXECute

Function Executes the history waveform search.
Syntax :HISTory:EXECute

:HISTory:PARAmeter?

Function Queries all history-waveform parameter-search settings.
Syntax :HISTory:PARAmeter?

:HISTory:PARAmeter:ITEM<x>?

Function Queries all the specified parameter's settings for history-waveform parameter searches.
Syntax :HISTory:PARAmeter:ITEM<x>?
<x> = 1 to 4
Example :HISTORY:PARAMETER:ITEM1?

:HISTory:PARAmeter:ITEM<x>:CONDition

Function Sets or queries the specified parameter's reference condition for history-waveform parameter searches.
Syntax :HISTory:PARAmeter:ITEM<x>:
CONDition {OFF|IN|OUT}
<x> = 1 to 4
Example :HISTORY:PARAMETER:ITEM1:
CONDITION IN
:HISTORY:PARAMETER:ITEM1:CONDITION?
-> :HISTORY:PARAMETER:ITEM1:
CONDITION IN

:HISTory:PARAmeter:ITEM<x>:SOURce

Function Sets or queries the specified parameter's source trace for history-waveform parameter searches.
Syntax :HISTory:PARAmeter:ITEM<x>:
SOURce {<NRf>|P<y>}
:HISTory:PARAmeter:ITEM<x>:SOURce?
<x> = 1 to 4
<NRf> = 1 to 8
<y> = 1 to 4
Example :HISTORY:PARAMETER:ITEM1:SOURCE 1
:HISTORY:PARAMETER:ITEM1:SOURCE?
-> :HISTORY:PARAMETER:ITEM1:SOURCE 1

:HISTory:PARAmeter:ITEM<x>:TYPE?

Function Queries, for history-waveform parameter searches, the specified parameter's automatically measured item and upper and lower limits.

Syntax :HISTory:PARAmeter:ITEM<x>:TYPE?
<x> = 1 to 4

:HISTory:PARAmeter:ITEM<x>:TYPE:<Parameter>

Function Sets or queries the specified parameter's upper and lower limits for history-waveform parameter searches.

Syntax :HISTory:PARAmeter:ITEM<x>:TYPE:
<Parameter> {<Voltage>,<Voltage>|
<Current>,<Current>|<Time>,<Time>|
<Frequency>,<Frequency>|<Nrf>,<Nrf>}
<x> = 1 to 4
<Parameter> = {AMPLitude|AVERage|
AVGFreq|AVGPeriod|
BWIDth1|BWIDth2|
DELay|DUTYcycle|FALL|
FREQuency|HIGH|LOW|
MAXimum|MIDDLE|MINimum|
NOVershoot|NWIDth|
PERiod|PNUMBER|
POVershoot|PTOPeak|
PWIDth|RISE|RMS|
SDEVIation|TY1Integ|
TY2Integ}

:HISTory:PARAmeter:ITEM<x>:VALue?

Function Queries the specified parameter's measured value for history-waveform parameter searches.

Syntax :HISTory:PARAmeter:ITEM<x>:VALue?
<x> = 1 to 4

Example :HISTory:PARAmeter:ITEM:VALue?
-> :HISTory:PARAmeter:ITEM1:
VALUE 150.25000E+00

:HISTory:PARAmeter:LOGic

Function Sets or queries the logic to apply to history waveform searches.

Syntax :HISTory:PARAmeter:LOGic {AND|OR}
:HISTory:PARAmeter:LOGic?

Example :HISTory:PARAmeter:LOGic AND
:HISTory:PARAmeter:LOGic?
-> :HISTory:PARAmeter:LOGic AND

:HISTory:PARAmeter:TRANge

Function Sets or queries the determination range of history waveform parameter searches.

Syntax :HISTory:PARAmeter:
TRANge {<Nrf>,<Nrf>}
:HISTory:PARAmeter:TRANge?
<Nrf> = -5 to 5 div

Example :HISTory:PARAmeter:TRANge -5,5
:HISTory:PARAmeter:TRANge?
-> :HISTory:PARAmeter:
TRANge -5.000000000000,
5.000000000000

:HISTory:RECOrd

Function Sets or queries the source record.

Syntax :HISTory:RECOrd {<Nrf>|MINimum}
:HISTory:RECOrd?
<Nrf> = 0 to -4999

Specify "MINimum" to specify the minimum record number.

Example :HISTory:RECOrd -1
:HISTory:RECOrd?
-> :HISTory:RECOrd -1

:HISTory:RECOrd? MINimum

Function Queries the minimum record number.

Syntax :HISTory:RECOrd? MINimum

Example :HISTory:RECOrd? MINimum
-> :HISTory:RECOrd -4

Description This command returns the record number of the oldest data in the history function. During measurements, this value is fixed to 0. Use this command when the PX8000 is not performing measurements.

:HISTory:SMODE

Function Sets or queries the history waveform search mode.

Syntax :HISTory:SMODE {OFF|ZONE|PARAmeter}
:HISTory:SMODE?

Example :HISTory:SMODE ZONE
:HISTory:SMODE?
-> :HISTory:SMODE ZONE

:HISTory:TIME?

Function Queries the trigger time of the data at the specified record number.

Syntax :HISTory:TIME? {<Nrf>|MINimum}
<Nrf> = 0 to -4999

Example :HIST:TIME? -1
-> :HIST:TIME "-0001 10:20:30.04"

Description If you specify a record number that is lower than MINimum, this command will return "-----
--."

5.14 HISTory Group

:HISTory:ZONE?

Function Queries all history-waveform zone-search settings.

Syntax :HISTory:ZONE?

:HISTory:ZONE:EDIT<x>?

Function Queries all settings for the specified search zone.

Syntax :HISTory:ZONE:EDIT<x>?
<x> = 1 to 4

:HISTory:ZONE:EDIT<x>:CONDition

Function Sets or queries the specified search zone's search condition.

Syntax :HISTory:ZONE:EDIT<x>:
CONDition {OFF|IN|OUT}
:HISTory:ZONE:EDIT<x>:CONDition?

Example :HISTORY:ZONE:EDIT1:CONDITION IN
:HISTORY:ZONE:EDIT1:CONDITION?
-> :HISTORY:ZONE:EDIT1:CONDITION IN

:HISTory:ZONE:EDIT<x>:SOURce

Function Sets or queries the specified search zone's source waveform.

Syntax :HISTory:ZONE:EDIT<x>:SOURce {<NRF>|
P<y>}
:HISTory:ZONE:EDIT<x>:SOURce?
<x> = 1 to 4
<NRF> = 1 to 8
<y> = 1 to 4

Example :HISTORY:ZONE:EDIT1:SOURCE 1
:HISTORY:ZONE:EDIT1:SOURCE?
-> :HISTORY:ZONE:EDIT1:SOURCE 1

:HISTory:ZONE:LOGic

Function Sets or queries the logic condition of history-waveform zone searches.

Syntax :HISTory:ZONE:LOGic {AND|OR}
:HISTory:ZONE:LOGic?

Example :HISTORY:ZONE:LOGIC AND
:HISTORY:ZONE:LOGIC?
-> :HISTORY:ZONE:LOGIC AND

5.15 IMAGE Group

The commands in this group deal with saving screen capture data. You can perform the same operations and make the same settings and queries that you can by using the MENU (SHIFT+SAVE) keys or PRINT MENU (SHIFT+PRINT) keys on the front panel.

: IMAGE?

Function Queries all screen capture data output settings.
Syntax : IMAGE?

: IMAGE:BACKground

Function Sets or queries the screen capture background (png).
Syntax : IMAGE:

BACKground {NORMal|TRANSPARENT}
: IMAGE:BACKground?

Example : IMAGE:BACKGROUND NORMAL
: IMAGE:BACKGROUND?
-> : IMAGE:BACKGROUND NORMAL

: IMAGE:COMMENT

Function Sets or queries the screen comment.
Syntax : IMAGE:COMMENT {<String>}
: IMAGE:COMMENT?

<String> = Up to 26 characters

Example : IMAGE:COMMENT "ABC"
: IMAGE:COMMENT?
-> : IMAGE:COMMENT "ABC"

: IMAGE:EXECute

Function Saves the screen capture data.
Syntax : IMAGE:EXECute
Example : IMAGE:EXECUTE

: IMAGE:FORMat

Function Sets or queries the screen capture output format.
Syntax : IMAGE:FORMat {BMP|JPEG|PNG}
: IMAGE:FORMat?

Example : IMAGE:FORMAT PNG
: IMAGE:FORMAT? -> : IMAGE:FORMAT PNG

: IMAGE:SAVE?

Function Queries all file output settings.
Syntax : IMAGE:SAVE?

: IMAGE:SAVE:ANAMing

Function Sets or queries the setting of the auto naming feature for saving files.
Syntax : IMAGE:SAVE:ANAMing {DATE|NUMBERing|OFF}

: IMAGE:SAVE:ANAMing?

Example : IMAGE:SAVE:ANAMING NUMBERING
: IMAGE:SAVE:ANAMING?
-> : IMAGE:SAVE:ANAMING NUMBERING

: IMAGE:SAVE:CDIRECTory

Function Changes the output destination directory.
Syntax : IMAGE:SAVE:CDIRECTory {<String>}
<String> = Up to 16 characters

Example : IMAGW:SAVE:
CDIRECTORY "20100318_000"

: IMAGE:SAVE:DRIVE

Function Sets the output destination medium.
Syntax : IMAGE:SAVE:DRIVE {NETWork|SD|USB,<NRF>}

Example : IMAGE:SAVE:DRIVE USB,0

Description See the description of the
: FILE[:DIRECTory]:DRIVE command.

: IMAGE:SAVE:FRAME

Function Sets or queries whether a white frame is attached to the saved screen capture's image.

Syntax : IMAGE:SAVE:FRAME {<Boolean>}
: IMAGE:SAVE:FRAME?

Example : IMAGE:SAVE:FRAME 1
: IMAGE:SAVE:FRAME?
-> : IMAGE:SAVE:FRAME 1

Description This command is valid only when the image data output format is JPEG.

: IMAGE:SAVE:NAME

Function Sets or queries the name of the file that will be saved.

Syntax : IMAGE:SAVE:NAME {<Filename>}
: IMAGE:SAVE:NAME?

Example : IMAGE:SAVE:NAME "ABC"
: IMAGE:SAVE:NAME?
-> : IMAGE:SAVE:NAME "ABC"

: IMAGE:SAVE:PATH?

Function Queries the current directory.

Syntax : IMAGE:SAVE:PATH?

Example : IMAGE:SAVE:PATH?
-> : IMAGE:SAVE:PATH "Path=USB,0"

: IMAGE:SEND?

Function Queries the screen capture data.

Syntax : IMAGE:SEND?

Description The screen capture data is returned as block data.

: IMAGE:TONE

Function Sets or queries the color tone of the screen capture data that will be saved.

Description : IMAGE:TONE {COLor|GRAY|OFF|REVERSE}
: IMAGE:TONE?

Example : IMAGE:TONE REVERSE
: IMAGE:TONE? -> : IMAGE:TONE REVERSE

5.16 INITialize Group

The commands in this group deal with initializing the PX8000 settings. You can perform the same operations that you can by pressing the UTILITY key on the front panel, and then using the System Config All Setup menu.

:INITialize:EXECute

Function Initializes the settings.

Syntax :INITialize:EXECute {[NStart]}

Description

- If NStart is omitted, measurement will start after initialization is finished. If NStart is specified, measurement will not start after initialization is finished.
- The following settings cannot be reset.
 - Date and time settings
 - Communication settings
 - The language setting (English or Japanese)
 - Environment settings
- History data is cleared.

:INITialize:UNDO

Function Undoes the setting initialization.

Syntax :INITialize:UNDO

Description The cleared history data will not be restored.

5.17 INPut Group

The commands in this group deal with the measurement conditions of the power measurement elements. You can perform the same operations and make the same settings and queries that you can by using the ELEM1 to ELEM4, CH1 to CH8, WIRING, NULL, and NULL SET (SHIFT+NULL) keys on the front panel.

:INPut?

Function Queries all power measurement element settings.
Syntax :INPut?

[:INPut] :CURRent?

Function Queries all electric current measurement settings.
Syntax [:INPut] :CURRent?

[:INPut] :CURRent :AUTO?

Function Queries the electric current auto range on/off statuses of all elements.
Syntax [:INPut] :CURRent :AUTO?

[:INPut] :CURRent :AUTO [:ALL]

Function Collectively sets the electric current auto range on/off status of all elements.
Syntax [:INPut] :CURRent :AUTO [:ALL] {<Boolean>}
Example :INPUT:CURRENT:AUTO:ALL ON

[:INPut] :CURRent :AUTO :ELEMENT<x>

Function Sets or queries the electric current auto range on/off status of the specified element.
Syntax [:INPut] :CURRent :AUTO :ELEMENT<x> {<Boolean>}
[:INPut] :CURRent :AUTO :ELEMENT<x>? <x> = 1 to 4 (element)
Example :INPUT:CURRENT:AUTO:ELEMENT1 ON
:INPUT:CURRENT:AUTO:ELEMENT1?
-> :INPUT:CURRENT:AUTO:ELEMENT1 1

[:INPut] :CURRent :AUTO : { SIGMA | SIGMB }

Function Collectively sets the electric current auto range on/off status of all the elements that belong to the specified wiring unit (ΣA or ΣB).
Syntax [:INPut] :CURRent :AUTO : {SIGMA|SIGMB} {<Boolean>}
Example :INPUT:CURRENT:AUTO:SIGMA ON
Description SIGMA or SIGMB is invalid if the wiring system setting ([:INPut] :WIRing) is made in such a way that the corresponding wiring unit (ΣA or ΣB) does not exist.

[:INPut] :CURRent :EXTSensor?

Function Queries all external current sensor range settings.
Syntax [:INPut] :CURRent :EXTSensor?

[:INPut] :CURRent :EXTSensor :DISPlay

Function Sets or queries the display mode of the external current sensor range.
Syntax [:INPut] :CURRent :EXTSensor :DISPlay {DIRECT|MEASure}
[:INPut] :CURRent :EXTSensor :DISPlay?
Example :INPUT:CURRENT:EXTSENSOR:DISPLAY DIRECT
:INPUT:CURRENT:EXTSENSOR:DISPLAY?
-> :INPUT:CURRENT:EXTSENSOR:DISPLAY DIRECT

[:INPut] :CURRent :RANGE?

Function Queries the electric current ranges of all elements.
Syntax [:INPut] :CURRent :RANGE?

[:INPut] :CURRent :RANGE [:ALL]

Function Collectively sets the electric current range of all elements.
Syntax [:INPut] :CURRent :RANGE [:ALL] {<Current>| (EXTernal, <Voltage>)}
<Current> = 10 mA, 20 mA, 50 mA, 100 mA, 200 mA, 500 mA, 1 A, 2 A, 5 A (for direct current input)
<Voltage> = 50 mV, 100 mV, 200 mV, 500 mV, 1 V, 2 V, 5 V, 10 V (for external current sensor input)
Example :INPUT:CURRENT:RANGE:ALL 5A
:INPUT:CURRENT:RANGE:ALL EXTERNAL, 10V

[:INPut] :CURRent :RANGE :ELEMENT<x>

Function Sets or queries the electric current range of the specified element.
Syntax [:INPut] :CURRent :RANGE :ELEMENT<x> {<Current>| (EXTernal, <Voltage>)}
[:INPut] :CURRent :RANGE :ELEMENT<x>? <x> = 1 to 4 (element)
<Current>, <Voltage> = See [:INPut] :CURRent :RANGE [:ALL]
Example :INPUT:CURRENT:RANGE:ELEMENT1 5A
:INPUT:CURRENT:RANGE:ELEMENT1?
-> :INPUT:CURRENT:RANGE:ELEMENT1 5.00E+00
:INPUT:CURRENT:RANGE:ELEMENT1 EXTERNAL, 10V
:INPUT:CURRENT:RANGE:ELEMENT1?
-> :INPUT:CURRENT:RANGE:ELEMENT1 EXTERNAL, 10.00E+00

5.17 INPut Group

[: INPut] : CURRent : RANGe : { SIGMA | SIGMB }

Function Collectively sets the electric current range of all the elements that belong to the specified wiring unit (Σ A or Σ B).

Syntax [: INPut] : CURRent : RANGe : { SIGMA | SIGMB }
{ <Current> | (EXTernal , <Voltage>) }
<Current> , <Voltage>
= See [: INPut] : CURRent : RANGe [: ALL]

Example : INPUT:CURRENT:RANGE:SIGMA 5A
: INPUT:CURRENT:RANGE:
SIGMA EXTERNAL,10V

Description SIGMA or SIGMB is invalid if the wiring system setting ([: INPut] : WIRing) is made in such a way that the corresponding wiring unit (Σ A or Σ B) does not exist.

[: INPut] : CURRent : SPReset ?

Function Queries the external current sensor conversion ratio presets of all elements.

Syntax [: INPut] : CURRent : SPReset ?

[: INPut] : CURRent : SPReset [: ALL]

Function Collectively sets the external current sensor conversion ratio presets of all elements.

Syntax [: INPut] : CURRent : SPReset [: ALL]
{ OTHERS | SHUNT20 | SHUNT10 | SHUNT5 }

Example : INPUT:CURRENT:SPRESET:ALL SHUNT20

[: INPut] : CURRent : SPReset : ELEMeNt <x>

Function Sets or queries the external current sensor conversion ratio preset of the specified element.

Syntax [: INPut] : CURRent : SPReset : ELEMeNt <x>
{ OTHERS | SHUNT20 | SHUNT10 | SHUNT5 }
[: INPut] : CURRent : SPReset : ELEMeNt <x> ?
<x> = 1 to 4 (element)

Example : INPUT:CURRENT:SPRESET:ELEMENT1
SHUNT20
: INPUT:CURRENT:SPRESET:ELEMENT1?
-> : INPUT:CURRENT:SPRESET:ELEMENT1
SHUNT20

Description If a preset is queried when the preset value and the external current sensor conversion ratio value are different, "A" is added to the preset name.

[: INPut] : CURRent : SPReset : { SIGMA | SIGMB }

Function Collectively sets the external current sensor conversion ratio presets of all the elements that belong to the specified wiring unit (Σ A or Σ B).

Syntax [: INPut] : CURRent : SPReset : { SIGMA | SIGMB }
{ OTHERS | SHUNT20 | SHUNT10 | SHUNT5 }

Example : INPUT:CURRENT:SPRESET:SIGMA SHUNT20

Description SIGMA or SIGMB is invalid if the wiring system setting ([: INPut] : WIRing) is made in such a way that the corresponding wiring unit (Σ A or Σ B) does not exist.

[: INPut] : CURRent : SRATio ?

Function Queries the external current sensor conversion ratios of all elements.

Syntax [: INPut] : CURRent : SRATio ?

[: INPut] : CURRent : SRATio [: ALL]

Function Collectively sets the external current sensor conversion ratios of all elements.

Syntax [: INPut] : CURRent :
SRATio [: ALL] { <Nrf> }
<Nrf> = 0.0001 to 99999.9999

Example : INPUT:CURRENT:SRATIO:ALL 10

[: INPut] : CURRent : SRATio : ELEMeNt <x>

Function Sets or queries the external current sensor conversion ratio of the specified element.

Syntax [: INPut] : CURRent : SRATio :
ELEMeNt <x> { <Nrf> }
[: INPut] : CURRent : SRATio :
ELEMeNt <x> ?
<x> = 1 to 4 (element)
<Nrf> = 0.0001 to 99999.9999

Example : INPUT:CURRENT:SRATIO:ELEMENT1 10
: INPUT:CURRENT:SRATIO:ELEMENT1?
-> : INPUT:CURRENT:SRATIO:
ELEMENT1 10.0000

[: INPut] : CURRent : SRATio : { SIGMA | SIGMB }

Function Collectively sets the external current sensor conversion ratios of all the elements that belong to the specified wiring unit (Σ A or Σ B).

Syntax [: INPut] : CURRent : SRATio : { SIGMA |
SIGMB } { <Nrf> }
<Nrf> = 0.0001 to 99999.9999

Example : INPUT:CURRENT:SRATIO:SIGMA 10

Description SIGMA or SIGMB is invalid if the wiring system setting ([: INPut] : WIRing) is made in such a way that the corresponding wiring unit (Σ A or Σ B) does not exist.

[: INPut] : DESKew ?

Function Queries all deskew settings.

Syntax [: INPut] : DESKew ?

[: INPut] : DESKew : { VOLTage | CURRent | EXT Sensor } [: ALL]

Function Sets the deskew of the voltage, current, or current sensor of all elements at once.

Syntax [: INPut] : DESKew : { VOLTage | CURRent |
EXTSensor } [: ALL] { <Time> }
<Time> = -20000.000 to 20000.000 ns
(in 0.625-ns steps)

Example : INPUT:DESKEW:CURRENT:ALL 10

[: INPut] : DESKew : { VOLTage | CURRent | EXTSeNsor } : ELEMEnt <x>

Function Sets or queries the deskew of the voltage, current, or current sensor of an element.

Syntax [: INPut] : DESKew : { VOLTage | CURRent | EXTSeNsor } : ELEMEnt <x> { <Time> }
[: INPut] : DESKew : { VOLTage | CURRent | EXTSeNsor } : ELEMEnt <x> ?
<x> = 1 to 4
<Time> = -20000.000 to 20000.000ns
(in 0.625-ns steps)

Example : INPUT:DESKEW:CURRENT:ELEMENT1 10
: INPUT:DESKEW:CURRENT:ELEMENT1?
-> : INPUT:DESKEW:CURRENT:
ELEMENT1 10.000

[: INPut] : FILTEr ?

Function Queries all input filter settings.

Syntax [: INPut] : FILTEr ?

[: INPut] : FILTEr : FREQuency ?

Function Queries the frequency filters of all elements.

Syntax [: INPut] : FILTEr : FREQuency ?

[: INPut] : FILTEr : FREQuency [: ALL]

Function Collectively sets the frequency filter of all elements.

Syntax [: INPut] : FILTEr : FREQuency [: ALL] { OFF | <Frequency> }
OFF = Frequency filter off
<Frequency> = 100 Hz, 500 Hz, 2 kHz, 20 kHz
(when the line filter is on; cutoff frequency)

Example : INPUT:FILTER:FREQUENCY:ALL OFF

[: INPut] : FILTEr : FREQuency : ELEMEnt <x>

Function Sets or queries the frequency filter of the specified element.

Syntax [: INPut] : FILTEr : FREQuency : ELEMEnt <x> { OFF | <Frequency> }
[: INPut] : FILTEr : FREQuency : ELEMEnt <x> ?
<x> = 1 to 4 (element)
OFF = Frequency filter off
<Frequency> = 100 Hz, 500 Hz, 2 kHz, 20 kHz
(when the line filter is on; cutoff frequency)

Example : INPUT:FILTER:FREQUENCY:
ELEMENT1 100HZ
: INPUT:FILTER:FREQUENCY:ELEMENT1?
-> : INPUT:FILTER:FREQUENCY:
ELEMENT1 100.00E+00

[: INPut] : FILTEr : LINE ?

Function Queries the line filters of all elements.

Syntax [: INPut] : FILTEr : LINE ?

[: INPut] : FILTEr [: LINE] [: ALL]

Function Collectively sets the line filter of all elements.

Syntax [: INPut] : FILTEr [: LINE] [: ALL] { OFF | <Frequency> }
OFF = Line filter off
<Frequency> = 500 Hz, 2 kHz, 20 kHz, 1 MHz
(when the line filter is on; cutoff frequency)

Example : INPUT:FILTER:LINE:ALL OFF

[: INPut] : FILTEr [: LINE] : ELEMEnt <x>

Function Sets or queries the line filter of the specified element.

Syntax [: INPut] : FILTEr [: LINE] : ELEMEnt <x> { OFF | <Frequency> }
[: INPut] : FILTEr [: LINE] : ELEMEnt <x> ?
<x> = 1 to 4 (element)
OFF = Line filter off
<Frequency> = 500 Hz, 2 kHz, 20 kHz, 1 MHz
(when the line filter is on; cutoff frequency)

Example : INPUT:FILTER:LINE:ELEMENT1 0.5KHZ
: INPUT:FILTER:LINE:ELEMENT1?
-> : INPUT:FILTER:LINE:
ELEMENT1 500.00E+00

5.17 INPut Group

[: INPut] : FILTer [: LINE] : { SIGMA | SIGMB }
 Function Collectively sets the line filter of all the elements that belong to the specified wiring unit (ΣA or ΣB).

Syntax `[: INPut] : FILTer [: LINE] : { SIGMA | SIGMB } { OFF | <Frequency> }`
 OFF = Line filter off
 <Frequency> = 500 Hz, 2 kHz, 20 kHz, 1 MHz
 (when the line filter is on; cutoff frequency)

Example `: INPUT: FILTER: LINE: SIGMA 20KHZ`

[: INPut] : INDePeNdeNt

Function Sets or queries the on/off status of independent power measurement element configuration.

Syntax `[: INPut] : INDePeNdeNt { <Boolean> }`
`[: INPut] : INDePeNdeNt ?`

Example `: INPUT: INDEPENDENT OFF`
`: INPUT: INDEPENDENT ?`
`-> : INPUT: INDEPENDENT 0`

Description This command is valid only when the number of power measurement elements are two to four and all the current modules are of the same type.

[: INPut] : POVeR?

Function Queries the peak over-range information.

Syntax `[: INPut] : POVeR?`

Example `: INPUT: POVER? -> 0`

Description • With the numeric measurement result, the peak over-range information of each element is mapped as shown below. For the response, the sum of the values of each bit is returned in decimal format.

For example, a response of 16 indicates that a peak over-range is occurring at U3 or A5 (AUX5).

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
								I4	U4	I3	U3	I2	U2	I1	U1

I 4: Current of element 4 or AUX8
 U4: Voltage of element 4 or AUX7
 I 3: Current of element 3 or AUX6
 U3: Voltage of element 3 or AUX5
 I 2: Current of element 2 or AUX4
 U2: Voltage of element 2 or AUX3
 I 1: Current of element 1
 U1: Voltage of element 1

[: INPut] : SCALIng?

Function Queries all scaling settings.

Syntax `[: INPut] : SCALIng?`

[: INPut] : SCALIng: CTPReSet?

Function Queries the CT ratio presets of all elements.

Syntax `[: INPut] : SCALIng: CTPReSet?`

[: INPut] : SCALIng: CTPReSet [: ALL]

Function Collectively sets the CT ratio presets of all elements.

Syntax `[: INPut] : SCALIng: CTPReSet`
`[: ALL] { OTHERS | CT2000A | CT1000 | CT200 | CT60 }`

Example `: INPUT: SCALING: CTPRESET: ALL CT1000`

[: INPut] : SCALIng: CTPReSet: ELEMeNt<x>

Function Sets or queries the CT ratio preset of the specified element.

Syntax `[: INPut] : SCALIng: CTPReSet: ELEMeNt<x>`
`{ OTHERS | CT2000A | CT1000 | CT200 | CT60 }`
`[: INPut] : SCALIng: CTPReSet: ELEMeNt<x>?`
 <x> = 1 to 4 (element)

Example `: INPUT: SCALING: CTPRESET: ELEMENT1`
`CT1000`
`: INPUT: SCALING: CTPRESET: ELEMENT1?`
`-> : INPUT: SCALING: CTPRESET: ELEMENT1`
`CT1000`

Description If a preset is queried when the preset value and the CT ratio value are different, "A" is added to the preset name.

[: INPut] : SCALIng: CTPReSet: { SIGMA | SIGMB }

Function Collectively sets the CT ratio presets of all the elements that belong to the specified wiring unit (ΣA or ΣB).

Syntax `[: INPut] : SCALIng: CTPReSet: { SIGMA | SIGMB } { OTHERS | CT2000A | CT1000 | CT200 | CT60 }`

Example `: INPUT: SCALING: CTPRESET: SIGMA CT1000`

Description SIGMA or SIGMB is invalid if the wiring system setting (`[: INPut] : WIRing`) is made in such a way that the corresponding wiring unit (ΣA or ΣB) does not exist.

[: INPut] : SCALIng: STATE?

Function Queries the on/off statuses of the scaling of all elements.

Syntax `[: INPut] : SCALIng: STATE?`

[: INPut] : SCALIng [: STATE] [: ALL]

Function Collectively sets the on/off status of the scaling of all elements.

Syntax `[: INPut] : SCALIng [: STATE] [: ALL] { <Boolean> }`

Example `: INPUT: SCALING: STATE: ALL OFF`

[: INPut] : SCALIng [: STATE] : ELEMeNt<x>

Function Sets or queries the on/off status of the scaling of the specified element.

Syntax `[: INPut] : SCALIng [: STATE] :`
`ELEMeNt<x> { <Boolean> }`
`[: INPut] : SCALIng [: STATE] : ELEMeNt<x>?`
 <x> = 1 to 4 (element)

Example `: INPUT: SCALING: STATE: ELEMENT1 OFF`
`: INPUT: SCALING: STATE: ELEMENT1?`
`-> : INPUT: SCALING: STATE: ELEMENT1 0`

[: INPut] : SCALing : { VT | CT | SFACtor } ?

Function Queries the VT ratios, CT ratios, or power coefficients of all elements.

Syntax [: INPut] : SCALing : { VT | CT | SFACtor } ?

[: INPut] : SCALing : { VT | CT | SFACtor }**[: ALL]**

Function Collectively sets the VT ratio, CT ratio, or power coefficient of all elements.

Syntax [: INPut] : SCALing : { VT | CT | SFACtor }
[: ALL] { <Nrf> }

<Nrf> = 0.0001 to 99999.9999

Example : INPUT:SCALING:VT:ALL 1

[: INPut] : SCALing : { VT | CT | SFACtor } : ELE MEnt<x>

Function Sets or queries the VT ratio, CT ratio, or power coefficient of the specified element.

Syntax [: INPut] : SCALing : { VT | CT | SFACtor } : ELE MEnt<x> { <Nrf> }
[: INPut] : SCALing : { VT | CT | SFACtor } : ELE MEnt<x> ?

<x> = 1 to 4 (element)

<Nrf> = 0.0001 to 99999.9999

Example : INPUT:SCALING:VT:ELEMENT1 1

: INPUT:SCALING:VT:ELEMENT1 ?

-> : INPUT:SCALING:VT:ELEMENT1 1.0000

[: INPut] : SCALing : { VT | CT | SFACtor } : { SI GMA | SIGMB }

Function Collectively sets the VT ratio, CT ratio, or power coefficient of all the elements that belong to the specified wiring unit (Σ A or Σ B).

Syntax [: INPut] : SCALing : { VT | CT | SFACtor } : { SIGMA | SIGMB } { <Nrf> }

<Nrf> = 0.0001 to 99999.9999

Example : INPUT:SCALING:VT:SIGMA 1

Description SIGMA or SIGMB is invalid if the wiring system setting ([: INPut] : WIRing) is made in such a way that the corresponding wiring unit (Σ A or Σ B) does not exist.

[: INPut] : SYNChronize ?

Function Queries the synchronization sources of all elements.

Syntax [: INPut] : SYNChronize ?

[: INPut] : SYNChronize [: ALL]

Function Collectively sets the synchronization source of all elements.

Syntax [: INPut] : SYNChronize [: ALL] { U<x> | I<x> | EXTErnal | NONE }

<x> = 1 to 4 (element)

EXTErnal = External trigger input (Ext Trigger In)

NONE = No synchronization source

Example : INPUT:SYNCHRONIZE:ALL I1

[: INPut] : SYNChronize : ELE MEnt<x>

Function Sets or queries the synchronization source of the specified element.

Syntax [: INPut] : SYNChronize : ELE MEnt<x> { U<x> | I<x> | EXTErnal | NONE }
[: INPut] : SYNChronize : ELE MEnt<x> ?
<x> = 1 to 4 (element)

EXTErnal = External trigger input (Ext Trigger In)

NONE = No synchronization source

Example : INPUT:SYNCHRONIZE:ELEMENT1 I1

: INPUT:SYNCHRONIZE:ELEMENT1 ?

-> : INPUT:SYNCHRONIZE:ELEMENT1 I1

[: INPut] : SYNChronize : { SIGMA | SIGMB }

Function Collectively sets the synchronization source of all the elements that belong to the specified wiring unit (Σ A or Σ B).

Syntax [: INPut] : SYNChronize : { SIGMA | SIGMB } { U<x> | I<x> | EXTErnal | NONE }
<x> = 1 to 4 (element)

EXTErnal = External trigger input (Ext Trigger In)

NONE = No synchronization source

Example : INPUT:SYNCHRONIZE:SIGMA I1

Description SIGMA or SIGMB is invalid if the wiring system setting ([: INPut] : WIRing) is made in such a way that the corresponding wiring unit (Σ A or Σ B) does not exist.

[: INPut] : VOLTage ?

Function Queries all voltage measurement settings.

Syntax [: INPut] : VOLTage ?

[: INPut] : VOLTage : AUTO ?

Function Queries the voltage auto range on/off statuses of all elements.

Syntax [: INPut] : VOLTage : AUTO ?

[: INPut] : VOLTage : AUTO [: ALL]

Function Collectively sets the voltage auto range on/off status of all elements.

Syntax [: INPut] : VOLTage : AUTO [: ALL] { <Boolean> }

Example : INPUT:VOLTAGE:AUTO:ALL ON

[: INPut] : VOLTage : AUTO : ELE MEnt<x>

Function Sets or queries the voltage auto range on/off status of the specified element.

Syntax [: INPut] : VOLTage : AUTO : ELE MEnt<x> { <Boolean> }
[: INPut] : VOLTage : AUTO : ELE MEnt<x> ?
<x> = 1 to 4 (element)

Example : INPUT:VOLTAGE:AUTO:ELEMENT1 ON

: INPUT:VOLTAGE:AUTO:ELEMENT1 ?

-> : INPUT:VOLTAGE:AUTO:ELEMENT1 1

5.17 INPut Group

[: INPut] : VOLTage : AUTO : { SIGMA | SIGMB }

Function Collectively sets the voltage auto range on/off status of all the elements that belong to the specified wiring unit (Σ A or Σ B).

Syntax [: INPut] : VOLTage : AUTO : { SIGMA | SIGMB } { <Boolean> }

Example : INPUT : VOLTAGE : AUTO : SIGMA ON

Description SIGMA or SIGMB, is invalid if the wiring system setting ([: INPut] : WIRing) is made in such a way that the corresponding wiring unit (Σ A or Σ B) does not exist.

[: INPut] : VOLTage : RANGE ?

Function Queries the voltage ranges of all elements.

Syntax [: INPut] : VOLTage : RANGE ?

[: INPut] : VOLTage : RANGE [: ALL]

Function Collectively sets the voltage range of all elements.

Syntax [: INPut] : VOLTage : RANGE [: ALL] { <Voltage> }

<Voltage> = 1.5 V, 3 V, 6 V, 10 V, 15 V, 30 V, 60 V, 100 V, 150 V, 300 V, 600 V, 1000 V

Example : INPUT : VOLTAGE : RANGE : ALL 1000V

[: INPut] : VOLTage : RANGE : ELEMEnt <x>

Function Sets or queries the voltage range of the specified element.

Syntax [: INPut] : VOLTage : RANGE : ELEMEnt <x> { <Voltage> }

[: INPut] : VOLTage : RANGE : ELEMEnt <x> ?

<x> = 1 to 4 (element)

<Voltage> = See [: INPut] : VOLTage : RANGE [: ALL]

Example : INPUT : VOLTAGE : RANGE : ELEMENT1 1000V

: INPUT : VOLTAGE : RANGE : ELEMENT1 ?

-> : INPUT : VOLTAGE : RANGE : ELEMENT1 1.000E+03

[: INPut] : VOLTage : RANGE : { SIGMA | SIGMB }

Function Collectively sets the voltage range of all the elements that belong to the specified wiring unit (Σ A or Σ B).

Syntax [: INPut] : VOLTage : RANGE : { SIGMA | SIGMB } { <Voltage> }

<Voltage> = See [: INPut] : VOLTage : RANGE [: ALL]

Example : INPUT : VOLTAGE : RANGE : SIGMA 1000V

Description SIGMA or SIGMB is invalid if the wiring system setting ([: INPut] : WIRing) is made in such a way that the corresponding wiring unit (Σ A or Σ B) does not exist.

[: INPut] : WIRing

Function Sets or queries the wiring system.

Syntax [: INPut] : WIRing { (P1W2 | P1W3 | P3W3 | P3W4 | V3A3) [, (P1W2 | P1W3 | P3W3 | P3W4 | V3A3 | NONE)] }

[: INPut] : WIRing ?

P1W2 = Single-phase, two-wire system [1P2W]
P1W3 = Single-phase, three-wire system [1P3W]
P3W3 = Three-phase, three-wire system [3P3W]
P3W4 = Three-phase, four-wire system [3P4W]
V3A3 = Three-phase, three-wire system with a three-voltage, three-current method [3P3W(3V3A)]

NONE = No wiring

Example Example when there are three power measurement elements

```
: INPUT : WIRING P1W2, P3W3
: INPUT : WIRING ?
-> : INPUT : WIRING P1W2, P3W3
: INPUT : WIRING P3W4
: INPUT : WIRING ?
-> : INPUT : WIRING P3W4
```

Description

- Set the wiring system pattern in order starting from the element with the smallest number.
- Some wiring system patterns are not selectable depending on the number of power measurement elements that are installed. For details on the available wiring system patterns, see the features guide, IM PX8000-01EN.
- The pattern is fixed to P1W2 when there is one power measurement element. No other setting is allowed.

5.18 LStart Group

The commands in this group deal with immediately starting the log operation. These commands set the trigger mode to On Start and start waveform acquisition.

:LStart (Log Start)

Function Starts waveform acquisition immediately.

Syntax :LStart

:LStart?

Function Starts waveform acquisition immediately, and waits for acquisition to complete.

Syntax :LStart?

Example :LStart? -> 0

Description When acquisition is complete, this command returns 0.

5.19 MATH Group

The commands in this group deal with computations. You can make the same settings and queries that you can by using the MATH key on the front panel.

If the selectable range of the time axis is “<NRf> = -5 to 5div,” the selectable range varies depending on settings such as the record length. For details, see “Selectable Range of Cursor Positions” under “Notes about Cursor Measurement” in chapter 15 of IM PX8000-01EN.

:MATH<x>?

Function Queries all computation settings.

Syntax :MATH<x>?
<x> = 1 to 8

:MATH<x>:BINary?

Function Queries all binary computation settings.

Syntax :MATH<x>:BINary?
<x> = 1 to 8

:MATH<x>:BINary:{CHANnel<x>|POWer<y>|MATH<x>}[:THReshold]

Function Sets or queries the threshold level of the specified channel for binary computations.

Syntax :MATH<x>:BINary:
{CHANnel<x>|POWer<y>|MATH<x>}
[:THReshold] {<Voltage>,<Voltage>|
<Current>,<Current>|<NRf>,<NRf>}
:MATH<x>:BINary:{CHANnel<x>|POWer<y>|
MATH<x>}[:THReshold]?
<x> of MATH<x> = 1 to 8
<x> of CHANnel<x> = 1 to 8
<y> = 1 to 4
<Voltage>, <Current>, and <NRf>

= The selectable range varies depending on settings such as the range and offset. For details, see the features guide, IM PX8000-01EN.

- For settings other than MATH<x>
<NRf> = -10 to 10 div (or equivalent values)
- For MATH<x>
<NRf> = -5 to 5 (div; in 0.01 div steps)

Example :MATH1:BINARY:CHANNEL1:THRESHOLD 1,0
:MATH1:BINARY:CHANNEL1:THRESHOLD?
-> :MATH1:BINARY:CHANNEL1:
THRESHOLD 1.000000E+00,
0.000000E+00

:MATH<x>:CONSTant<x>

Function Sets or queries a constant for user-defined computation.

Syntax :MATH<x>:CONSTant<x> {<NRf>}
:MATH<x>:CONSTant<x>?
<x> of MATH<x> = 1 to 8
(this command performs the same no matter what value you specify)
<x> of CONSTant<x> = 1 to 8
<NRf> = -9.9999E+30 to +9.9999E+30

Example :MATH1:CONSTANT1 1
:MATH1:CONSTANT1?
-> :MATH1:CONSTANT1 1

:MATH<x>:DEFine

Function Sets or queries an expression for user-defined computation.

Syntax :MATH<x>:DEFine {<String>}
:MATH<x>:DEFine?
<x> = 1 to 8
<String> = Up to 80 characters

Example :MATH1:DEFINE "PS (C1) "
:MATH1:DEFINE?
-> :MATH1:DEFINE "PS (C1) "

Description If OPERation is set to a value other than USERdefine, this query will return the OPERation setting.

:MATH<x>:DISPlay

Function Sets or queries whether computations will be performed.

Syntax :MATH<x>:DISPlay {<Boolean>}
:MATH<x>:DISPlay?
<x> = 1 to 8

Example :MATH1:DISPLAY ON
:MATH1:DISPLAY? -> :MATH1:DISPLAY 1

:MATH<x>:ESHift:{CHANnel<x>|POWER<y>|MATH<x>}[:COUNT]

Function Sets or queries the amount of phase shift in the Shift computation when an external clock is used.

Syntax :MATH<x>:ESHift:{CHANnel<x>|POWER<y>|MATH<x>}[:COUNT] {<Nrf>}
:MATH<x>:ESHift:{CHANnel<x>|POWER<y>|MATH<x>}[:COUNT]?

<x> of MATH<x> = 1 to 8

<x> of CHANnel<x> = 1 to 8

<y> = 1 to 4

<Nrf> = \pm (record length/2). The resolution is 1.

Example :MATH1:ESHIFT:CHANNEL1:COUNT 10
:MATH1:ESHIFT:CHANNEL1:COUNT?
-> :MATH1:ESHIFT:CHANNEL1:COUNT 10

:MATH<x>:EXponential?

Function Queries all exponential window settings.

Syntax :MATH<x>:EXponential?

<x> = 1 to 8 (this command performs the same no matter what value you specify)

:MATH<x>:EXponential:DRATE

Function Sets or queries the exponential window's damping rate.

Syntax :MATH<x>:EXponential:DRATE {<Nrf>}
:MATH<x>:EXponential:DRATE?
<x> = 1 to 8 (this command performs the same no matter what value you specify)
<Nrf> = 1 to 100

Example :MATH1:EXPONENTIAL:DRATE 100
:MATH1:EXPONENTIAL:DRATE?
-> :MATH1:EXPONENTIAL:DRATE 100

:MATH<x>:EXponential:FORCe<x>

Function Sets or queries the exponential window's FORCE1 or FORCE2 value.

Syntax :MATH<x>:EXponential:
FORCe<x> {<Nrf>}
:MATH<x>:EXponential:FORCe<x>?

<x> of MATH<x> = 1 to 8

(this command performs the same no matter what value you specify)

<x> of FORCe<x> = 1, 2

<Nrf> = 1 to 100

Example :MATH1:EXPONENTIAL:FORCE1 100
:MATH1:EXPONENTIAL:FORCE1?
-> :MATH1:EXPONENTIAL:FORCE1 100

:MATH<x>:FFT?

Function Queries all FFT computation settings.

Syntax :MATH<x>:FFT?

<x> = 1 to 8 (this command performs the same no matter what value you specify)

:MATH<x>:FFT:POINT

Function Sets or queries the number of FFT points.

Syntax :MATH<x>:FFT:POINT {<Nrf>}
:MATH<x>:FFT:POINT?

<x> = 1 to 8 (this command performs the same no matter what value you specify)

<Nrf> = 1000, 2000, 5000, 10000, 20000, 50000, 100000

Example :MATH1:FFT:POINT 1000
:MATH1:FFT:POINT?
-> :MATH1:FFT:POINT 1000

:MATH<x>:FFT:WINDOW

Function Sets or queries the time window for FFT computations.

Syntax :MATH<x>:FFT:WINDOW {HANNing|RECTangle|FLATtop|EXponential|HAMming}
:MATH<x>:FFT:WINDOW?

<x> = 1 to 8 (this command performs the same no matter what value you specify)

Example :MATH1:FFT:WINDOW HANNING
:MATH1:FFT:WINDOW?
-> :MATH1:FFT:WINDOW HANNING

:MATH<x>:FILTER<x>?

Function Queries all digital filter settings.

Syntax :MATH<x>:FILTER<x>?
<x> of MATH<x> = 1 to 8
(this command performs the same no matter what value you specify)
<x> of FILTER<x> = 1, 2

Description This command is valid on models with the /G2 option.

:MATH<x>:FILTER<x>:BAND

Function Sets or queries a digital filter band.

Syntax :MATH<x>:FILTER<x>:BAND {BPASs|HPASs|LPASs}
:MATH<x>:FILTER<x>:BAND?

<x> of MATH<x> = 1 to 8

(this command performs the same no matter what value you specify)

<x> of FILTER<x> = 1, 2

Example :MATH1:FILTER1:BAND LPASS
:MATH1:FILTER1:BAND?
-> :MATH1:FILTER1:BAND LPASS

Description You can only specify the GAUSS parameter when the band is set to LPASSs.

5.19 MATH Group

:MATH<x>:FILTER<x>:CUTOFF<x>

Function Sets or queries a cutoff frequency of a digital filter.

Syntax :MATH<x>:FILTER<x>:CUTOFF<x> {<NRf>}
:MATH<x>:FILTER<x>:CUTOFF<x>?
<x> of MATH<x> = 1 to 8
(this command performs the same no matter what value you specify)
<x> of FILTER<x> = 1, 2
<x> of CUTOFF<x> = 1, 2
<NRf> = 2 to 30% (in 0.2% steps)

Example :MATH1:FILTER1:CUTOFF1 10.0
:MATH1:FILTER1:CUTOFF1?
-> :MATH1:FILTER1:CUTOFF1 10.0

:MATH<x>:FILTER<x>:TYPE

Function Sets or queries the type of a digital filter.

Syntax :MATH<x>:FILTER<x>:TYPE {GAUSS|IIR|SHARp}
:MATH<x>:FILTER<x>:TYPE?
<x> of MATH<x> = 1 to 8
(this command performs the same no matter what value you specify)
<x> of FILTER<x> = 1, 2

Example :MATH1:FILTER1:TYPE GAUSS
:MATH1:FILTER1:TYPE?
-> :MATH1:FILTER1:TYPE GAUSS

:MATH<x>:LABEL

Function Sets or queries a computed waveform label.

Syntax :MATH<x>:LABEL {<String>}
:MATH<x>:LABEL?
<x> = 1 to 8 (this command performs the same no matter what value you specify)
<String> = Up to 16 characters

Example :MATH1:LABEL "ABC"
:MATH1:LABEL? -> :MATH1:LABEL "ABC"

:MATH<x>:MODE

Function Sets or queries whether the PX8000 is in computation mode.

Syntax :MATH<x>:MODE {<Boolean>}
:MATH<x>:MODE?
<x> = 1 to 8 (this command performs the same no matter what value you specify)

Example :MATH1:MODE ON
:MATH1:MODE? -> :MATH1:MODE 1

:MATH<x>:MREFERENCE

Function Sets or queries the computation range.

Syntax :MATH<x>:MREFERENCE {<NRf>,<Nrf>}
:MATH<x>:MREFERENCE?
<x> = 1 to 8 (this command performs the same no matter what value you specify)
<Nrf> = -5 to 5 div

Example :MATH1:MREFERENCE -5,5
:MATH1:MREFERENCE?
-> :MATH1:MREFERENCE -5.000000000000,
5.000000000000

:MATH<x>:OPERATION

Function Sets or queries the computation type.

Syntax :MATH<x>:OPERATION {PLUS|MINus|MULTiple|BINary|DIVIde|SHIFt|PS|OFF|USERdefine}
:MATH<x>:OPERATION?
<x> = 1 to 8

Example :MATH1:OPERATION PS
:MATH1:OPERATION?
-> :MATH1:OPERATION PS

:MATH<x>:SCALE?

Function Queries all scaling settings.

Syntax :MATH<x>:SCALE?
<x> = 1 to 8

:MATH<x>:SCALE:MODE

Function Sets or queries a scale mode.

Syntax :MATH<x>:SCALE:MODE {AUTO|MANual}
:MATH<x>:SCALE:MODE?
<x> = 1 to 8

Example :MATH1:SCALE:MODE AUTO
:MATH1:SCALE:MODE?
-> :MATH1:SCALE:MODE AUTO

:MATH<x>:SCALE:VALue

Function Sets or queries a set of upper and lower limits for manual scaling.

Syntax :MATH<x>:SCALE:VALue {<NRf>,<Nrf>}
:MATH<x>:SCALE:VALue?
<x> = 1 to 8
<NRf> = -9.9999E+30 to +9.9999E+30

Example :MATH1:SCALE:VALue 1,-1
:MATH1:SCALE:VALue?
-> :MATH1:SCALE:VALue 1.00000E+00,
-1.00000E+00

**:MATH<x>:SHIFT:{CHANnel<x>|POWER<y>|
MATH<x>}[:TIME]**

Function Sets or queries the amount of phase shift in the Shift computation when the internal clock is used.

Syntax :MATH<x>:SHIFT:{CHANnel<x>|POWER<y>|
MATH<x>}[:TIME] {<Time>}
:MATH<x>:SHIFT:{CHANnel<x>|POWER<y>|
MATH<x>}[:TIME]?
<x> of MATH<x> = 1 to 8
<x> of CHANnel<x> = 1 to 8
<y> = 1 to 4
<Time> = ± (T/Div × 5)
Step = 1/sample rate

Example :MATH1:SHIFT:CHANNEL1:TIME -0.001
:MATH1:SHIFT:CHANNEL1:TIME?
-> :MATH1:SHIFT:CHANNEL1:
TIME -1.000000000E-03

:MATH<x>:SOURCE<x>

Function Sets or queries a channel's computation type.

Syntax :MATH<x>:SOURCE<x> {<NRf>|P<y>|
MATH<x>}
:MATH<x>:SOURCE<x>?
<x> of MATH<x> = 1 to 8
<x> of SOURCE<x> = 1, 2
<NRf> = 1 to 8
<y> = 1 to 4

Description You cannot use this command when no modules are installed.

:MATH<x>:UNIT

Function Sets or queries a unit string that is attached to computation results.

Syntax :MATH<x>:UNIT {<String>}
:MATH<x>:UNIT?
<x> = 1 to 8
<String> = Up to 8 characters

Example :MATH1:UNIT "UU"
:MATH1:UNIT? -> :MATH1:UNIT "UU"

5.20 MEASure Group

The commands in this group deal with the automated measurement of waveform parameters. You can make the same settings and queries (of settings and measured values) that you can by using the MEASURE key on the front panel. If the selectable range of the time axis is “<NRf> = -5 to 5div,” the selectable range varies depending on settings such as the record length. For details, see “Selectable Range of Cursor Positions” under “Notes about Cursor Measurement” in chapter 15 of IM PX8000-01EN.

:MEASure?

Function Queries all the settings for automated measurement of waveform parameters.

Syntax :MEASure?

:MEASure: {CHANnel<x> | POWer<y> | MATH<x>}?

Function Sets or queries whether all the waveform parameters of the specified channel are ON or OFF.

Syntax :MEASure: {CHANnel<x> | POWer<y> | MATH<x>}?
 <x> of CHANnel<x> = 1 to 8
 <y> = 1 to 4
 <x> of MATH<x> = 1 to 8

:MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :ALL

Function Sets all the measurement items of the specified channel to ON or OFF.

Syntax :MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :ALL {<Boolean>}
 <x> of CHANnel<x> = 1 to 8
 <y> = 1 to 4
 <x> of MATH<x> = 1 to 8

Example :MEASURE:CHANNEL1:ALL ON

:MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :CDEStination (CopyDEStination)

Function Sets or queries whether the copy destination channel is ON or OFF for when parameter measurement items are copied between channels.

Syntax :MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :CDEStination {<Boolean>}
 <x> of CHANnel<x> = 1 to 8
 <y> = 1 to 4
 <x> of MATH<x> = 1 to 8

Example :MEASURE:CHANNEL2:CDESTINATION ON
 :MEASURE:CHANNEL2:CDESTINATION?
 -> :MEASURE:CHANNEL2:CDESTINATION 1

:MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :COPY

Function Copies all the measurement item ON/OFF settings from one specified channel to another specified channel.

Syntax :MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :COPY
 <x> of CHANnel<x> = 1 to 8
 <y> = 1 to 4
 <x> of MATH<x> = 1 to 8

Example :MEASURE:CHANNEL1:COPY

:MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :DELAy?

Function Queries all delay settings.

Syntax :MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :DELAy?
 <x> of CHANnel<x> = 1 to 8
 <y> = 1 to 4
 <x> of MATH<x> = 1 to 8

:MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :DELAy:COUNT?

Function Queries the statistics count of the delay between channels.

Syntax :MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :DELAy:COUNT?
 <x> of CHANnel<x> = 1 to 8
 <y> = 1 to 4
 <x> of MATH<x> = 1 to 8

Example :MEASURE:CHANNEL1:DELAy:COUNT?
 -> :MEASURE:CHANNEL1:DELAy:COUNT 3

:MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :DELAy: {MAXimum | AVERAge | MINimum | SD EViation}?

Function Queries a statistic of the delay between channels.

Syntax :MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :DELAy: {MAXimum | AVERAge | MINimum | SDEViation}?
 <x> of CHANnel<x> = 1 to 8
 <y> = 1 to 4
 <x> of MATH<x> = 1 to 8

Example :MEASURE:CHANNEL1:DELAy:AVERAGE?
 -> :MEASURE:CHANNEL1:DELAy:AVERAGE 6.6666667E-06

:MEASure: {CHANnel<x> | POWer<y> | MATH<x>} : DELay: MEASure?

Function Queries all the settings for a source waveform for measuring the delay between channels of a waveform.

Syntax :MEASure: {CHANnel<x> | POWer<y> | MATH<x>} : DELay: MEASure?
 <x> of CHANnel<x> = 1 to 8
 <y> = 1 to 4
 <x> of MATH<x> = 1 to 8

:MEASure: {CHANnel<x> | POWer<y> | MATH<x>} : DELay: MEASure: COUNT

Function Sets or queries the number of source waveforms at which delay between channels will be measured for a waveform.

Syntax :MEASure: {CHANnel<x> | POWer<y> | MATH<x>} : DELay: MEASure: COUNT {<NRf>}
 :MEASure: {CHANnel<x> | POWer<y> | MATH<x>} : DELay: MEASure: COUNT?
 <x> of CHANnel<x> = 1 to 8
 <y> = 1 to 4
 <x> of MATH<x> = 1 to 8
 <NRf> = 1 to 9

Example :MEASURE: CHANNEL1: DELAY: MEASURE: COUNT 2
 :MEASURE: CHANNEL1: DELAY: MEASURE: COUNT?
 -> :MEASURE: CHANNEL1: DELAY: MEASURE: COUNT 2

:MEASure: {CHANnel<x> | POWer<y> | MATH<x>} : DELay: MEASure: SLOPe

Function Sets or queries a source waveform slope that will be used to measure delay between channels for a waveform.

Syntax :MEASure: {CHANnel<x> | POWer<y> | MATH<x>} : DELay: MEASure: SLOPe {RISE|FALL}
 :MEASure: {CHANnel<x> | POWer<y> | MATH<x>} : DELay: MEASure: SLOPe?
 <x> of CHANnel<x> = 1 to 8
 <y> = 1 to 4
 <x> of MATH<x> = 1 to 8

Example :MEASURE: CHANNEL1: DELAY: MEASURE: SLOPE RISE
 :MEASURE: CHANNEL1: DELAY: MEASURE: SLOPE?
 -> :MEASURE: CHANNEL1: DELAY: MEASURE: SLOPE RISE

:MEASure: {CHANnel<x> | POWer<y> | MATH<x>} : DELay: REFerence?

Function Queries all reference waveform settings used to measure the delay between channels for the specified waveform.

Syntax :MEASure: {CHANnel<x> | POWer<y> | MATH<x>} : DELay: REFerence?
 <x> of CHANnel<x> = 1 to 8
 <y> = 1 to 4
 <x> of MATH<x> = 1 to 8

:MEASure: {CHANnel<x> | POWer<y> | MATH<x>} : DELay: REFerence: COUNT

Function Sets or queries the edge detection count of the reference waveform used to measure the delay between channels for the specified waveform.

Syntax :MEASure: {CHANnel<x> | POWer<y> | MATH<x>} : DELay: REFerence: COUNT {<NRf>}
 :MEASure: {CHANnel<x> | POWer<y> | MATH<x>} : DELay: REFerence: COUNT {<NRf>}?
 <x> of CHANnel<x> = 1 to 8
 <y> = 1 to 4
 <x> of MATH<x> = 1 to 8
 <NRf> = 1 to 9

Example :MEASURE: CHANNEL1: DELAY: REFERENCE: COUNT 1
 :MEASURE: CHANNEL1: DELAY: REFERENCE: COUNT?
 -> :MEASURE: CHANNEL1: DELAY: REFERENCE: COUNT 1

:MEASure: {CHANnel<x> | POWer<y> | MATH<x>} : DELay: REFerence: SLOPe

Function Sets or queries the edge detection slope of the reference waveform used to measure the delay between channels for the specified waveform.

Syntax :MEASure: {CHANnel<x> | POWer<y> | MATH<x>} : DELay: REFerence: SLOPe {RISE|FALL}
 :MEASure: {CHANnel<x> | POWer<y> | MATH<x>} : DELay: REFerence: SLOPe?
 <x> of CHANnel<x> = 1 to 8
 <y> = 1 to 4
 <x> of MATH<x> = 1 to 8

Example :MEASURE: CHANNEL1: DELAY: REFERENCE: SLOPE RISE
 :MEASURE: CHANNEL1: DELAY: REFERENCE: SLOPE?
 -> :MEASURE: CHANNEL1: DELAY: REFERENCE: SLOPE RISE

5.20 MEASure Group

:MEASure: {CHANnel<x>|POWER<y>|MATH<x>} :DELay:REFEreNce:SOURce

Function Sets or queries whether to set the reference point for measuring the delay between channels for a waveform to a trigger point or to a waveform.

Syntax
 :MEASure: {CHANnel<x>|POWER<y>|
 MATH<x>} :DELay:REFEreNce:
 SOURce {TRACe|TRIGger}
 :MEASure: {CHANnel<x>|POWER<y>|
 MATH<x>} :DELay:REFEreNce:SOURce?
 <x> of CHANnel<x> = 1 to 8
 <y> = 1 to 4
 <x> of MATH<x> = 1 to 8

Example
 :MEASURE:CHANNEL1:DELAY:REFERENCE:SO
 URCE TRACE
 :MEASURE:CHANNEL1:DELAY:REFERENCE:SO
 URCE?
 -> :MEASURE:CHANNEL1:DELAY:REFERENCE
 :SOURCE TRACE

:MEASure: {CHANnel<x>|POWER<y>|MATH<x>} :DELay:REFEreNce:TRACe

Function Sets or queries the reference waveform trace used to measure the delay between channels for a waveform.

Syntax
 :MEASure: {CHANnel<x>|POWER<y>|
 MATH<x>} :DELay:REFEreNce:
 TRACe {<Nrf> [, <Nrf>] |MATH<x>}
 :MEASure: {CHANnel<x>|POWER<y>|
 MATH<x>} :DELay:REFEreNce:TRACe?
 <x> of CHANnel<x> = 1 to 8
 <y> = 1 to 4
 <x> of MATH<x> = 1 to 8

Example
 :MEASURE:CHANNEL1:DELAY:REFERENCE:TR
 ACE 1
 :MEASURE:CHANNEL1:DELAY:REFERENCE:TR
 ACE?
 -> :MEASURE:CHANNEL1:DELAY:REFERENCE
 :TRACE 1

:MEASure: {CHANnel<x>|POWER<y>|MATH<x>} :DELay:STATe

Function Sets or queries the display format of the delay parameters of the specified channel.

Syntax
 :MEASure: {CHANnel<x>|POWER<y>|
 MATH<x>} :DELay:
 STATe {TIME|OFF|DEGREE}
 :MEASure: {CHANnel<x>|POWER<y>|
 MATH<x>} :DELay:STATe?
 <x> of CHANnel<x> = 1 to 8
 <y> = 1 to 4
 <x> of MATH<x> = 1 to 8

Example
 :MEASURE:CHANNEL1:DELAY:STATE TIME
 :MEASURE:CHANNEL1:DELAY:STATE?
 -> :MEASURE:CHANNEL1:DELAY:
 STATE TIME

:MEASure: {CHANnel<x>|POWER<y>|MATH<x>} :DELay:VALue?

Function Queries a measured delay value of the specified waveform's parameter.

Syntax
 :MEASure: {CHANnel<x>|POWER<y>|
 MATH<x>} :DELay:VALue? {<Nrf>}
 <x> of CHANnel<x> = 1 to 8
 <y> = 1 to 4
 <x> of MATH<x> = 1 to 8

Example
 :MEASURE:CHANNEL1:DELAY:VALUE?
 -> :MEASURE:CHANNEL1:DELAY:
 VALUE 0.0000000E+00

Description

- This command returns "NAN" if the value cannot be measured.
- <Nrf> is used to specify which iteration of statistical processing to query the parameter value from. This command returns "NAN" if the specified value does not exist.
- <Nrf> can be omitted. If it is omitted, the measured values of the newest waveform in history memory are queried. If you include <Nrf>, the measured value of the waveform <Nrf> times before the newest history waveform will be queried.

:MEASure: {CHANnel<x>|POWER<y>|MATH<x>} :DPRoximal?

Function Queries all distal, mesial, and proximal settings.

Syntax
 :MEASure: {CHANnel<x>|POWER<y>|
 MATH<x>} :DPRoximal?
 <x> of CHANnel<x> = 1 to 8
 <y> = 1 to 4
 <x> of MATH<x> = 1 to 8

:MEASure: {CHANnel<x>|POWER<y>|MATH<x>} :DPRoximal:MODE

Function Sets or queries the distal, mesial, and proximal point mode setting.

Syntax
 :MEASure: {CHANnel<x>|POWER<y>|
 MATH<x>} :DPRoximal:
 MODE {PERCent|UNIT}
 :MEASure: {CHANnel<x>|POWER<y>|
 MATH<x>} :DPRoximal:MODE?
 <x> of CHANnel<x> = 1 to 8
 <y> = 1 to 4
 <x> of MATH<x> = 1 to 8

Example
 :MEASURE:CHANNEL1:DPROXIMAL:
 MODE PERCENT
 :MEASURE:CHANNEL1:DPROXIMAL:MODE?
 -> :MEASURE:CHANNEL1:DPROXIMAL:
 MODE PERCENT

:MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :DPRoximal:PERCent

Function Sets or queries the distal, mesial, and proximal points as percentages.

Syntax :MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :DPRoximal: PERCent {<NRf>, <NRf>, <NRf>}
:MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :DPRoximal: PERCent?
<x> of CHANnel<x> = 1 to 8
<y> = 1 to 4
<x> of MATH<x> = 1 to 8
<NRf> = 0 to 100 (%; in 0.1% steps) The order is <Proximal><Mesial><Distal>.

Example :MEASURE: CHANNEL1: DPROXIMAL: PERCENT 20, 50, 80
:MEASURE: CHANNEL1: DPROXIMAL: PERCENT?
-> :MEASURE: CHANNEL1: DPROXIMAL: PERCENT 20.0, 50.0, 80.0

:MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :DPRoximal:UNIT

Function Sets or queries the distal, mesial, and proximal points as units.

Syntax :MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :DPRoximal: UNIT {<Voltage>, <Voltage>, <Voltage> | <Current>, <Current>, <Current> | <NRf>, <NRf>, <NRf>}
:MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :DPRoximal: UNIT?
<x> of CHANnel<x> = 1 to 8
<y> = 1 to 4
<x> of MATH<x> = 1 to 8
<Voltage>, <Current>, and <NRf>

= The selectable range varies depending on settings such as the range and offset. For details, see the features guide, IM PX8000-01EN. The order is <Proximal><Mesial><Distal>.

Selectable range of the

:MEAS: {CHAN<x>} :DPR: UNIT command

- For <Voltage>, <Voltage>, <Voltage>, the selectable range is \pm the measurement range, and the resolution is the same as the resolution of the zoom method (DIV/SPAN) that has been set by the V Scale of the vertical axis.
- For Math channels: ± 5 div

Example :MEASURE: CHANNEL1: DPROXIMAL: UNIT -10, 0, 10
:MEASURE: CHANNEL1: DPROXIMAL: UNIT?
-> :MEASURE: CHANNEL1: DPROXIMAL: UNIT -10.0000E+00, 0.00000E+00, 10.0000E+00

Description Depending on the settings that were in use before you sent this command, the values may not be set according to the parameters.

:MEASure: {CHANnel<x> | POWer<y>} :IMode

Function Sets or queries the second conversion/hour conversion of integration parameters (TY1Integ, TY2Integ).

Syntax :MEASure: {CHANnel<x> | POWer<y>} : IMode {NORMAL | HOUR}
:MEASure: {CHANnel<x> | POWer<y>} : IMode?
<x> = 1 to 8
<y> = 1 to 4

Example :MEASURE: CHANNEL2: IMODE NORMAL
:MEASURE: CHANNEL2: IMODE?
-> :MEASURE: CHANNEL2: IMODE NORMAL

Description When CHANnel<x> is a current source channel, ampere (A)/ampere hour (Ah) conversion is performed. When CHANnel<x> is a power source channel (POWer<y>), watt (W)/watt hour (Wh) conversion is performed.

:MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :METHod

Function Sets or queries the modes of a set of high and low points (rising-time and falling-time measurement references).

Syntax :MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :METHod {AUTO | MAXMin}
:MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :METHod?
<x> of CHANnel<x> = 1 to 8
<y> = 1 to 4
<x> of MATH<x> = 1 to 8

Example :MEASURE: CHANNEL1: METHOD AUTO
:MEASURE: CHANNEL1: METHOD?
-> :MEASURE: CHANNEL1: METHOD AUTO

5.20 MEASure Group

:MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :<Parameter>?

Function Queries the setting of a waveform parameter (measurement item).

Syntax :MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :<Parameter>?
 <x> of CHANnel<x> = 1 to 8
 <y> = 1 to 4
 <x> of MATH<x> = 1 to 8
 <Parameter> = {AMPLitude | AVERage | AVGFreq | AVGPeriod | BWIDth1 | BWIDth2 | DUTYcycle | FALL | FREQuency | HIGH | LOW | MAXimum | MIDDLE | MINimum | NOVershoot | NWIDth | PERiod | PNUMBER | POVershoot | PTOPeak | PWIDth | RISE | RMS | SDEViation | TY1Integ | TY2Integ}

Example :MEASURE:CHANNEL1:PTOPEAK?
 -> :MEASURE:CHANNEL1:PTOPEAK:STATE 0

Description This command returns the same response as the :MEAS:CHAN:<Parameter>:STAT? command.

:MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :<Parameter>:COUNT?

Function Queries the count of measured values for cyclic statistical processing of a waveform parameter.

Syntax :MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :<Parameter>:COUNT?
 <x> of CHANnel<x> = 1 to 8
 <y> = 1 to 4
 <x> of MATH<x> = 1 to 8
 <Parameter> = {AMPLitude | AVERage | AVGFreq | AVGPeriod | BWIDth1 | BWIDth2 | DUTYcycle | FALL | FREQuency | HIGH | LOW | MAXimum | MIDDLE | MINimum | NOVershoot | NWIDth | PERiod | PNUMBER | POVershoot | PTOPeak | PWIDth | RISE | RMS | SDEViation | TY1Integ | TY2Integ}

Example :MEASURE:CHANNEL1:PTOPEAK:COUNT?
 -> :MEASURE:CHANNEL1:PTOPEAK:COUNT 3

:MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :<Parameter>: {MAXimum | AVERage | MINimum | SDEViation}?

Function Queries a cyclic statistical processing value of a waveform parameter.

Syntax :MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :<Parameter>: {MAXimum | AVERage | MINimum | SDEViation}?
 <x> of CHANnel<x> = 1 to 8
 <y> = 1 to 4
 <x> of MATH<x> = 1 to 8
 <Parameter> = {AMPLitude | AVERage | AVGFreq | AVGPeriod | BWIDth1 | BWIDth2 | DUTYcycle | FALL | FREQuency | HIGH | LOW | MAXimum | MIDDLE | MINimum | NOVershoot | NWIDth | PERiod | PNUMBER | POVershoot | PTOPeak | PWIDth | RISE | RMS | SDEViation | TY1Integ | TY2Integ}

Example :MEASURE:CHANNEL1:PTOPEAK:MAXIMUM?
 -> :MEASURE:CHANNEL1:PTOPEAK:MAXIMUM 30.633333E+00

Description This command returns "NaN" for any statistics that cannot be processed.

:MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :<Parameter>:STATE

Function Sets or queries whether the specified waveform's waveform parameter (measurement item) is ON or OFF.

Syntax :MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :<Parameter>:STATE
 <x> of CHANnel<x> = 1 to 8
 <y> = 1 to 4
 <x> of MATH<x> = 1 to 8
 <Parameter> = {AMPLitude | AVERage | AVGFreq | AVGPeriod | BWIDth1 | BWIDth2 | DUTYcycle | FALL | FREQuency | HIGH | LOW | MAXimum | MIDDLE | MINimum | NOVershoot | NWIDth | PERiod | PNUMBER | POVershoot | PTOPeak | PWIDth | RISE | RMS | SDEViation | TY1Integ | TY2Integ}

Example :MEASURE:CHANNEL1:PTOPEAK:STATE ON
 :MEASURE:CHANNEL1:PTOPEAK:STATE?
 -> :MEASURE:CHANNEL1:PTOPEAK:STATE 1

:MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :<Parameter>VALue?

Function Queries the measured value of a waveform parameter.

Syntax :MEASure: {CHANnel<x> | POWer<y> | MATH<x>} :<Parameter>VALue? {<Nrf>}
 <x> of CHANnel<x> = 1 to 8
 <y> = 1 to 4
 <x> of MATH<x> = 1 to 8
 <Parameter> = {AMPLitude | AVERage | AVGFreq | AVGPeriod | BWIDth1 | BWIDth2 | DUTYcycle | FALL | FREQuency | HIGH | LOW | MAXimum | MIDDLE | MINimum | NOVershoot | NWIDth | PERiod | PNUMBER | POVershoot | PTOPeak | PWIDth | RISE | RMS | SDEVIation | TY1Integ | TY2Integ}

<Nrf> = 1 to 48000
 Example :MEASURE:CHANNEL1:PTOPEAK:VALUE?
 -> :MEASURE:CHANNEL1:PTOPEAK:VALUE 30.516667E+00

- Description
- This command returns "NAN" if the value cannot be measured. Parameters cannot be measured if the measurement has not been performed or if the measurement was performed, but computations were not performed because the specified range exceeded 10 Mpoint.
 - The <Nrf> at the end is used to specify which iteration of statistical processing to query the parameter value from. This command returns "NAN" (Not A Number) if the specified value does not exist.
 - For non-cyclic statistical processing. <Nrf> can be omitted. If you omit <Nrf>, the most recent history parameter value will be queried. If you include <Nrf>, the history parameter value of the waveform <Nrf> times before the newest history waveform will be queried.
 - After cyclic statistical processing has been completed. <Nrf> can be omitted. If you omit <Nrf>, the parameter value within the cycle that was measured last will be queried. If you include <Nrf>, the parameter value within the cycle that was measured <Nrf> times after the measurement shown on the screen's left edge will be queried.
 - When you execute a normal measurement, without cyclic statistical processing, even if you include <Nrf> in the command, you cannot query the waveform parameters in the history memory.

:MEASure:CYCLE?

Function Queries all cycle statistics settings.

Syntax :MEASure:CYCLE?

:MEASure:CYCLE:ABORT

Function Aborts cyclic statistical processing.

Syntax :MEASure:CYCLE:ABORT

Example :MEASURE:CYCLE:ABORT

:MEASure:CYCLE:EXECute

Function Executes cyclic statistical processing.

Syntax :MEASure:CYCLE:EXECute

Example :MEASURE:CYCLE:EXECUTE

:MEASure:CYCLE:TRACe

Function Sets or queries the cycle trace of cycle statistics.

Syntax :MEASure:CYCLE:

TRACe {OWN | <Nrf> | P<y> | MATH<x>}

:MEASure:CYCLE:TRACe?

<Nrf> = 1 to 8

<y> = 1 to 4

<x> = 1 to 8

Example :MEASURE:CYCLE:TRACE OWN

:MEASURE:CYCLE:TRACE?

-> :MEASURE:CYCLE:TRACE OWN

:MEASure:MODE

Function Sets or queries the waveform parameter measurement mode.

Syntax :MEASure:MODE {OFF | ON | CYCLE | STATistics}

:MEASure:MODE?

Example :MEASURE:MODE ON

:MEASURE:MODE? -> :MEASURE:MODE ON

:MEASure:ONECycle

Function Sets or queries whether 1-cycle mode is ON or OFF.

Syntax :MEASure:ONECycle {<Boolean>}

:MEASure:ONECycle?

Example :MEASURE:ONECYCLE ON

:MEASURE:ONECYCLE?

-> :MEASURE:ONECYCLE 1

:MEASure:TRANge (Time RANGE)

Function Sets or queries the waveform parameter measurement range.

Syntax :MEASure:TRANge {<Nrf>, <Nrf>}

:MEASure:TRANge?

<Nrf> = -5 to 5 (div; in 10 div/display record length steps)

Example :MEASURE:TRANGE -5, 5

:MEASURE:TRANGE?

-> :MEASURE:TRANGE -5.000000000000, 5.000000000000

5.20 MEASure Group

:MEASure:WAIT?

Function Waits for the completion of measurement by using a timeout value.

Syntax :MEASure:WAIT? {<NRf>}
<NRf> = 1 to 36000 (timeout value, in units of 100 msec)

Example :MEASure:WAIT? 100 -> 1

Description The command returns 0 if the measurement finishes within the specified timeout. If measurement does not finish, or if it was never taking place to begin with, the command returns 1. Even if you make the timeout value long, 0 is returned as soon as the measurement finishes.

:MEASure:{XY<x>}?

Function Queries all the settings for automated measurement of XY waveform parameters.
<x> = 1 to 8

Syntax :MEASure:{XY<x>}?

:MEASure:{XY<x>}:<Parameter>?

Function Queries all the settings of a waveform parameter (measurement item).

Syntax :MEASure:{XY<x>}:<Parameter>?
<x> = 1 to 8
<Parameter> = {XY1Integ|XY2Integ}

:MEASure:{XY<x>}:<Parameter>:COUNT?

Function Queries the count of measured values for cyclic statistical processing of a waveform parameter.

Syntax :MEASure:{XY<x>}:<Parameter>:COUNT?
<x> = 1 to 8
<Parameter> = {XY1Integ|XY2Integ}

Example :MEASURE:XY1:XY1INTEG:COUNT?
-> :MEASURE:XY1:XY1INTEG:COUNT 1

:MEASure:{XY<x>}:<Parameter>:{MAXimum|AVERage|MINimum|SDEViation}?

Function Queries a cyclic statistical processing value of a waveform parameter.

Syntax :MEASure:{XY<x>}:<Parameter>:
{MAXimum|AVERage|MINimum|SDEViation}?
<x> = 1 to 8
<Parameter> = {XY1Integ|XY2Integ}

Example :MEASURE:XY1:XY1INTEG:MAXIMUM?
-> :MEASURE:XY1:XY1INTEG:MAXIMUM NAN

Description This command returns "NAN" for any statistics that cannot be processed.

:MEASure:{XY<x>}:<Parameter>:STATE

Function Sets or queries whether the specified waveform's waveform parameter (measurement item) is ON or OFF.

Syntax :MEASure:{XY<x>}:<Parameter>:
STATe {<Boolean>}
:MEASure:{XY<x>}:<Parameter>:STATe?
<x> = 1 to 8
<Parameter> = {XY1Integ|XY2Integ}

Example :MEASURE:XY1:XY1INTEG:STATE ON
:MEASURE:XY1:XY1INTEG:STATE?
-> :MEASURE:XY1:XY1INTEG:STATE 1

:MEASure:{XY<x>}:<Parameter>:VALue?

Function Queries the measured value of a waveform parameter.

Syntax :MEASure:{XY<x>}:<Parameter>:
VALue? {<NRf>}
<x> = 1 to 8
<Parameter> = {XY1Integ|XY2Integ}
<NRf> = 1 to 48000

Description

- This command returns "NAN" if the value cannot be measured. Parameters cannot be measured if the measurement has not been performed or if the measurement was performed, but computations were not performed because the specified range exceeded 10 Mpoint.
- The <NRf> is used to specify which iteration of statistical processing to query the parameter value from. This command returns "NAN" (Not A Number) if the specified value does not exist.
- For non-cyclic statistical processing: <NRf> can be omitted. If you omit <NRf>, the most recent history parameter value will be queried. If you include <NRf>, the history parameter value of the waveform <NRf> times before the newest history waveform will be queried.
- After cyclic statistical processing has been completed: <NRf> can be omitted. If you omit <NRf>, the parameter value within the cycle that was measured last will be queried. If you include <NRf>, the parameter value within the cycle that was measured <NRf> times after the measurement shown on the screen's left edge will be queried.

5.21 MOTor Group

The commands in this group deal with the motor measurement. You can make the same settings and queries that you can by pressing the ELEM2 to ELEM4, U2 to U4, and I2 to I4 keys on the front panel for elements that AUX modules are installed in.

:MOTor<x>?

Function Queries all motor measurement settings.
Syntax :MOTor<x>?
<x> = 2 to 4

:MOTor<x>:MODE

Function Sets or queries the motor mode on/off status.
Syntax :MOTor<x>:MODE {Boolean}
:MOTor<x>:MODE?
<x> = 2 to 4
Example :MOTOR2:MODE ON
:MOTOR2:MODE? -> :MOTOR2:MODE1

:MOTor<x>:PM?

Function Queries motor output (Pm) settings for when motor mode is on.
Syntax :MOTor<x>:PM?
<x> = 2 to 4
Description This command is valid only when motor mode of the relevant channel is set to on.

:MOTor<x>:PM:NAME

Function Sets or queries the name of motor output function.
Syntax :MOTor<x>:PM:NAME {<String>}
:MOTor<x>:PM:NAME?
<x> = 2 to 4
<String> = Up to 16 characters
Example :MOTOR2:PM:NAME "Pm2"
:MOTOR2:PM:NAME?
-> :MOTOR2:PM:NAME "Pm2"
Description This command is valid only when motor mode of the relevant channel is set to on.

:MOTor<x>:PM:SCALing

Function Sets or queries the motor output computation scaling factor.
Syntax :MOTor<x>:PM:SCALing <NRf>
:MOTor<x>:PM:SCALing?
<x> = 2 to 4
<NRf> = 0.0001 to 99999.9999
Example :MOTOR2:PM:SCALING 2.0000
:MOTOR2:PM:SCALING?
-> :MOTOR2:PM:SCALING 2.0000
Description This command is valid only when motor mode of the relevant channel is set to on.

:MOTor<x>:PM:SYNChronize

Function Sets or queries the synchronization source of motor measurement.
Syntax :MOTor<x>:PM:SYNChronize
{U<x>|I<x>|EXTErnal|NONE}
<x> of MOTor<x> = 2 to 4
<x> = 1 to 4 (element)
EXTErnal = External trigger input (Ext Trigger In)
NONE = No synchronization source
Example :MOTOR2:PM:SYNCHRONIZE U1
:MOTOR2:PM:SYNCHRONIZE?
-> :MOTOR2:PM:SYNCHRONIZE U1
Description This command is valid only when motor mode of the relevant channel is set to on.

:MOTor<x>:PM:UNIT

Function Sets or queries the unit that is added to the motor output computation result.
Syntax :MOTor<x>:PM:UNIT {<String>}
:MOTor<x>:PM:UNIT?
<x> = 2 to 4
<String> = Up to 8 characters
Example :MOTOR2:PM:UNIT "w"
:MOTOR2:PM:UNIT?
-> :MOTOR2:PM:UNIT "w"
Description This command is valid only when motor mode of the relevant channel is set to on.

:MOTor<x>:SPEEd?

Function Queries all rotating speed (Speed) settings.
Syntax :MOTor<x>:SPEEd?
Description This command is valid only when motor mode of the relevant channel is set to on.

:MOTor<x>:SPEEd:PULSe

Function Sets or queries the pulse count of the revolution signal for when motor mode is on.
Syntax :MOTor<x>:SPEEd:PULSe {<NRf>}
:MOTor<x>:SPEEd:PULSe?
<x> = 2 to 4
<NRf> = 1 to 9999
Example :MOTOR2:SPEED:PLUSE 120
:MOTOR2:SPEED:PULSE?
-> :MOTOR2:SPEED:PULSE 120
Description This command is valid only when motor mode of the relevant channel is set to on.

5.21 MOTor Group

:MOTor<x>:SPEEd:UNIT

Function Sets or queries the unit that is added to the rotating speed computation result.

Syntax :MOTor<x>:SPEEd:UNIT {RPS|RPM|RPH}
:MOTor<x>:SPEEd:UNIT?

<x> = 2 to 4

RPS = round/sec

RPM = round/minutes

RPH = round/hour

Example :MOTOR2:SPEED:UNIT RPM

:MOTOR2:SPEED:UNIT?

-> :MOTOR2:SPEED:UNIT RPM

Description This command is valid only when motor mode of the relevant channel is set to on.

:MOTor<x>:TORQue?

Function Queries all torque (Torque) settings.

Syntax :MOTor<x>:TORQue?

<x> = 2 to 4

Description This command is valid only when motor mode of the relevant channel is set to on.

:MOTor<x>:TORQue:RATE?

Function Queries all torque signal rated-value settings.

Syntax :MOTor<x>:TORQue:RATE?

<x> = 2 to 4

Description This command is valid only when motor mode of the relevant channel is set to on and the measurement function is set to torque.

:MOTor<x>:TORQue:RATE:{UPPer|LOWer}

Function Sets or queries the upper or lower limit of the rated value of the torque signal (pulse input type).

Syntax :MOTor<x>:TORQue:RATE:{UPPer|LOWer}
{<NRf>,<Frequency>}
:MOTor<x>:TORQue:RATE:{UPPer|LOWer}?

<x> = 2 to 4

<NRf> = -10000.0000 to 10000.0000

<Frequency> = 1 Hz to 100 MHz

Example :MOTOR2:TORQUE:RATE:UPPER 50,15kHz

:MOTOR2:TORQUE:RATE:UPPER?

-> :MOTOR2:TORQUE:RATE:UPPER

50.0000,15.000E+03

Description This command is valid only when motor mode of the relevant channel is set to on and the measurement function is set to torque.

:MOTor<x>:TORQue:UNIT

Function Sets or queries the unit that is added to the torque computation result.

Syntax :MOTor<x>:TORQue:UNIT {<String>}
:MOTor<x>:TORQue:UNIT?

<x> = 2 to 4

<String> = Up to 8 characters

Example :MOTOR2:TORQUE:UNIT "Nm"

:MOTOR2:TORQUE:UNIT?

-> :MOTOR2:TORQUE:UNIT "Nm"

Description This command is valid only when motor mode of the relevant channel is set to on.

5.22 MTRigger Group

The command in this group deals with manual triggers.

:MTRigger

Function Manually triggers the PX8000.

Syntax :MTRigger

Example :MTRIGGER

Discription This trigger operates in the same manner as when the MANUAL TRIG key on the front panel is pressed.

5.23 NMEasure (Numeric MEasure) Group

The commands in this group deal with the numeric measurement. You can make the same settings and queries that you can by using the NUMERIC key on the front panel.

:NMEasure?

Function Queries all numeric measurement settings.
Syntax :NMEasure?

:NMEasure:AVERaging?

Function Queries all averaging settings.
Syntax :NMEasure:AVERaging?

:NMEasure:AVERaging:COUNT

Function Sets or queries the averaging coefficient.
Syntax :NMEasure:AVERaging:COUNT {<NRf>}
:NMEasure:AVERaging:COUNT?
<NRf> = 2 to 64 (attenuation constant when
TYPE = EXPonent)
<NRf> = 8 to 64 (moving average count when
TYPE = LINear)
Example :NMEASURE:AVERAGING:COUNT 2
:NMEASURE:AVERAGING:COUNT?
-> :NMEASURE:AVERAGING:COUNT 2
Description The averaging of harmonic measurement functions (option) is only valid when TYPE is set to EXPonent (attenuation constant). For details, see the features guide, IM PX8000-01EN.

:NMEasure:AVERaging:TYPE

Function Sets or queries the averaging type.
Syntax :NMEasure:AVERaging:
TYPE {EXPonent|LINear|OFF}
:NMEasure:AVERaging:TYPE?
Example :NMEASURE:AVERAGING:TYPE EXPONENT
:NMEASURE:AVERAGING:TYPE?
-> :NMEASURE:AVERAGING:TYPE EXPONENT
Description The averaging of harmonic measurement functions (option) is only valid when the type is set to EXPonent. For details, see the features guide, IM PX8000-01EN.

:NMEasure:DMeasure?

Function Queries all delta computation settings.
Syntax :NMEasure:DMeasure?

:NMEasure:DMeasure:MODE

Function Sets or queries the voltage or current mode that is used in delta computation.
Syntax :NMEasure:DMeasure:
MODE {RMS|MEAN|DC|RMEAN|AC}
:NMEasure:DMeasure:MODE?
Example :NMEASURE:DMEASURE:MODE RMS
:NMEASURE:DMEASURE:MODE?
-> :NMEASURE:DMEASURE:MODE RMS

:NMEasure:DMeasure:{SIGMA|SIGMB}

Function Sets or queries the delta computation mode for wiring unit ΣA or ΣB .
Syntax :NMEasure:DMeasure:
{SIGMA|SIGMB} {OFF|DIFFerence|
P3W3_V3A3|ST_DT|DT_ST}
:NMEasure:DMeasure:{SIGMA|SIGMB}?
Example :NMEASURE:DMEASURE:SIGMA OFF
:NMEASURE:DMEASURE:SIGMA?
-> :NMEASURE:DMEASURE:SIGMA OFF
Description The available options are explained below. The modes that can be selected vary depending on the wiring system of the specified wiring unit (ΣA or ΣB).
OFF = No delta computation (only selectable with a single-phase, two-wire system—1P2W)
DIFFerence
= Differential voltage, differential current (only selectable with a single-phase, three-wire system—1P3W—or a three-phase, three-wire system—3P3W)
P3W3_V3A3
= 3P3W-to-3V3A conversion (only selectable with a single-phase, three-wire system—1P3W—or a three-phase, three-wire system—3P3W)
ST_DT = Star-to-delta conversion (only selectable with a three-phase, four-wire system—3P4W)
DT_ST = Delta-to-star conversion (only selectable with a three-phase, three-wire system that uses the three-voltage, three current method—3P3W (3V3A))

:NMEasure:EFFiciency?

Function Queries all efficiency computation settings.
Syntax :NMEasure:EFFiciency?

:NMEasure:EFFiciency:ETA<x>

Function Sets or queries the efficiency equation.

Syntax :NMEasure:EFFiciency:
 ETA<x> { (OFF|P<x>|PA|PB|UDEF<x>) [, (OFF|P<x>|PA|PB|UDEF<x>)] }
 :NMEasure:EFFiciency:ETA<x>?
 <x> of ETA<x> = 1 to 4 (η_1 to η_4)
 OFF = No computation
 <x> of P<x> = 1 to 6 (element)
 PA, PB = P Σ A, P Σ B (the available options vary depending on the number of elements)
 <x> of UDEF<x> = 1 or 2 (Udef1 or Udef2)

Example :NMEASURE:EFFICIENCY:ETA1 P3,PA
 :NMEASURE:EFFICIENCY:ETA1?
 -> :NMEASURE:EFFICIENCY:ETA1 P3,PA

Description

- Set the numerator and then the denominator.
- The denominator can be omitted. The denominator is set to OFF when it is omitted.
- The denominator is omitted from the response to a query when it is OFF.

:NMEasure:EFFiciency:UDEF<x>

Function Sets or queries the user-defined parameters used in the efficiency equation.

Syntax :NMEasure:EFFiciency:UDEF<x>
 { (NONE|P<x>|PA|PB) [, (NONE|P<x>|PA|PB)] [, (NONE|P<x>|PA|PB)] [, (NONE|P<x>|PA|PB)] }
 :NMEasure:EFFiciency:UDEF<x>?
 <x> of UDEF<x> = 1 or 2 (Udef1 or Udef2)
 NONE = No operand
 <x> of P<x> = 1 to 4 (element)
 PA, PB = P Σ A, P Σ B (the available options vary depending on the number of elements)

Example :NMEASURE:EFFICIENCY:UDEF1 P1,P2,P3
 :NMEASURE:EFFICIENCY:UDEF1?
 -> :NMEASURE:EFFICIENCY:UDEF1 P1,P2,P3

Description

- Set the parameters in ascending order.
- Parameters 2 to 4 can be omitted. Omitted parameters are set to NONE.
- Parameters 2 to 4 are omitted from the response to a query if all the subsequent parameters are NONE.

:NMEasure:FUNCTION<x>?

Function Queries all the settings of the specified user-defined function.

Syntax :NMEasure:FUNCTION<x>?
 <x> = 1 to 20 (F1 to F20)

:NMEasure:FUNCTION<x>:EXPRESSION

Function Sets or queries the equation of the specified user-defined function.

Syntax :NMEasure:FUNCTION<x>:
 EXPRESSION {<String>}
 :NMEasure:FUNCTION<x>:EXPRESSION?
 <x> = 1 to 20 (F1 to F20)
 <String> = Up to 50 characters

Example :NMEASURE:FUNCTION1:
 EXPRESSION "WH(E1)/TI(E1)*3600"
 :NMEASURE:FUNCTION1:EXPRESSION?
 -> :NMEASURE:FUNCTION1:
 EXPRESSION "WH(E1)/TI(E1)*3600"

:NMEasure:FUNCTION<x>:NAME

Function Sets or queries the name of the specified user-defined function.

Syntax :NMEasure:FUNCTION<x>:
 NAME {<String>}
 :NMEasure:FUNCTION<x>:NAME?
 <x> = 1 to 20 (F1 to F20)
 <String> = Up to 8 characters

Example :NMEASURE:FUNCTION1:NAME "F1"
 :NMEASURE:FUNCTION1:NAME?
 -> :NMEASURE:FUNCTION1:NAME "F1"

:NMEasure:FUNCTION<x>[:STATE]

Function Sets or queries the on/off status of the specified user-defined function.

Syntax :NMEasure:FUNCTION<x>[:
 STATE] {<Boolean>}
 :NMEasure:FUNCTION<x>:STATE?
 <x> = 1 to 20 (F1 to F20)

Example :NMEASURE:FUNCTION1:STATE ON
 :NMEASURE:FUNCTION1:STATE?
 -> :NMEASURE:FUNCTION1:STATE 1

:NMEasure:FUNCTION<x>:UNIT

Function Sets or queries the unit that is added to the computation result of the specified user-defined function.

Syntax :NMEasure:FUNCTION<x>:
 UNIT {<String>}
 :NMEasure:FUNCTION<x>:UNIT?
 <x> = 1 to 20 (F1 to F20)
 <String> = Up to 8 characters

Example :NMEASURE:FUNCTION1:UNIT "W"
 :NMEASURE:FUNCTION1:UNIT?
 -> :NMEASURE:FUNCTION1:UNIT "W"

Description This command has no effect on the computation result.

5.23 NMEasure (Numeric MEasure) Group

:NMEasure:PC?

Function Queries all Pc (Corrected Power) computation settings.

Syntax :NMEasure:PC?

:NMEasure:PC:IEC

Function Sets or queries the Pc (Corrected Power) equation.

Syntax :NMEasure:PC:IEC {<Nrf>}

:NMEasure:PC:IEC?

<Nrf> = 1976, 1993

Example :NMEASURE:PC:IEC 1976

:NMEASURE:PC:IEC?

-> :NMEASURE:PC:IEC 1976

Description Specify the publication year of the IEC76-1 in which the Pc equation that you want to use was written.

:NMEasure:PC:P<x>

Function Sets or queries a Pc (Corrected Power) equation parameter.

Syntax :NMEasure:PC:P<x> {<Nrf>}

:NMEasure:PC:P<x>?

<x> = 1, 2 (P1, P2)

<Nrf> = 0.0001 to 9.9999

Example :NMEASURE:PC:P1 0.5

:NMEASURE:PC:P1?

-> :NMEASURE:PC:P1 0.5000

Description These parameters are used when :NMEasure:PC:IEC is set to 1976 (IEC76-1 1976).

:NMEasure:PERiod?

Function Queries all settings related to the computation period.

Syntax :NMEasure:PERiod?

:NMEasure:PERiod[:MODE]

Function Sets the method used to specify the computation period or queries the current setting.

Syntax :NMEasure:PERiod[:MODE] {ZCRoss|

EGATe|CURSor}

:NMEasure:PERiod:MODE?

Example :NMEASURE:PERIOD:MODE ZCROSS

:NMEASURE:PERIOD:MODE?

-> :NMEASURE:PERIOD:MODE ZCROSS

:NMEasure:PERiod:CURSor[:POSition]

Function Sets or queries the numeric computation cursor position.

Syntax :NMEasure:PERiod:CURSor[:POSition]

{<Nrf>, <Nrf>}

:NMEasure:PERiod:CURSor:POSition?

<Nrf> = -5 to 5 (div; in 10 div/display record length steps)

Example :NMEasure:PERiod:CURSor:

POSition -5,5

:NMEASURE:PERIOD:CURSOR:POSITION?

-> :NMEASURE:PERIOD:CURSOR:POSITION

-5.000000000000,5.000000000000

:NMEasure:PERiod:CURSor:SEARch?

Function Queries all zero-crossing search settings.

Syntax :NMEasure:PERiod:CURSor:SEARch?

:NMEasure:PERiod:CURSor:SEARch:ABORT

Function Aborts the zero-crossing search.

Syntax :NMEasure:PERiod:CURSor:SEARch:ABORT

:NMEasure:PERiod:CURSor:SEARch:EDGE

Function Sets or queries the zero-crossing search edge.

Syntax :NMEasure:PERiod:CURSor:SEARch:EDGE

{BISLope|FALL|RISE}

:NMEasure:PERiod:CURSor:SEARch:EDGE?

Example :NMEASURE:PERIOD:CURSOR:SEARCH:

EDGE RISE

:NMEASURE:PERIOD:CURSOR:SEARCH:EDGE?

-> :NMEASURE:PERIOD:CURSOR:SEARCH:

EDGE RISE

:NMEasure:PERiod:CURSor:SEARch:NEXT

Function Searches for the next zero-crossing after the current (start or end) position, and moves the (start or end) position to the found zero-crossing position.

Syntax :NMEasure:PERiod:CURSor:SEARch:

NEXT {START|END}

START = Start Position

END = End Position

:NMEasure:PERiod:CURSor:SEARch:PREVi ous

Function Searches for the next zero-crossing before the current (start or end) position, and moves the (start or end) position to the found zero-crossing position.

Syntax :NMEasure:PERiod:CURSor:SEARch:

PREVIOUS {START|END}

START = Start Position

END = End Position

:NMEasure:PERiod:CURSor:SEARch:SOURCE

Function Sets or queries the zero-crossing search source.

Syntax :NMEasure:PERiod:CURSor:SEARch:SOURCE {U<x>|I<x>|EXTernal}
:NMEasure:PERiod:CURSor:SEARch:SOURCE?

<x> of U<x>, I<x> = 1 to 4 (element)
EXTernal = External trigger input (Ext Trigger In)

Example :NMEASURE:PERIOD:CURSOR:SEARCH:SOURCE U1
:NMEASURE:PERIOD:CURSOR:SEARCH:SOURCE?
-> :NMEASURE:PERIOD:CURSOR:SEARCH:SOURCE U1

:NMEasure:PERiod:EGATe[:PATTern]

Function Sets the pattern that is used when determining the computation period with the external trigger signal or queries the current setting.

Syntax :NMEasure:PERiod:EGATe[:PATTern] {LOW|HIGH}
:NMEasure:PERiod:EGATe:PATTern?

Example :NMEASURE:PERIOD:EGATE:PATTERN LOW
:NMEASURE:PERIOD:EGATE:PATTERN?
-> :NMEASURE:PERIOD:EGATE:PATTERN LOW

:NMEasure:PHASe

Function Sets or queries the display format of the phase difference.

Syntax :NMEasure:PHASe {<NRf>}
:NMEasure:PHASe?
<NRf> = 180, 360

Example :NMEASURE:PHASE 180
:NMEASURE:PHASE?
-> :NMEASURE:PHASE 180

Description When 180 is selected, the phase is displayed using 0 to $\pm 180^\circ$ (Lead/Lag). When 360 is selected, the phase is displayed using 0° to 360° .

:NMEasure:SFORmula

Function Sets or queries the equation used to compute S (apparent power).

Syntax :NMEasure:SFORmula {RMS|MEAN|DC|MRMS|RMEAN}
:NMEasure:SFORmula?

Example :NMEASURE:SFORMULA RMS
:NMEASURE:SFORMULA?
-> :NMEASURE:SFORMULA RMS

Description The equations that correspond to each option are as follows:

RMS: $S = U_{rms} * I_{rms}$

MEAN: $S = U_{mean} * I_{mean}$

DC: $S = U_{dc} * I_{dc}$

MRMS: $S = U_{mean} * I_{rms}$

RMEAN: $S = U_{mean} * I_{mean}$

:NMEasure:SQFORmula

Function Sets or queries the equation used to compute S (apparent power) and Q (reactive power).

Syntax :NMEasure:SQFORmula {TYPE1|TYPE2|TYPE3}
:NMEasure:SQFORmula?

Example :NMEASURE:SQFORMULA TYPE1
:NMEASURE:SQFORMULA?
-> :NMEASURE:SQFORMULA TYPE1

Description For details on the equations available for TYPE1, TYPE2, or TYPE3, see the features guide, IM PX8000-01EN.

:NMEasure:STATe

Function Sets or queries the on/off status of numeric measurement.

Syntax :NMEasure:STATe {Boolean}
:NMEasure:STATe?

Example :NMEASURE:STATE 1
:NMEASURE:STATE? ->:NMEASURE:STATE 1

5.24 NULL Group

The commands in the NULL Group deal with the NULL function. These commands can be used to make the same settings and inquiries as when the NULL key on the front panel is pressed.

:NULL?

Function Queries all NULL feature settings.

Syntax :NULL?

:NULL:AFFect[:ALL]

Function Enables or disables the NULL feature on all channels at once.

Syntax :NULL:AFFect[:All] {<Boolean>}

Example :NULL:AFFECT:ALL OFF

:NULL:AFFect:CHANnel<x>

Function Enables or disables the NULL feature on a specified channel.

Syntax :NULL:AFFect:CHANnel<x> {<Boolean>}

:NULL:AFFect:CHANnel<x>?

Example :NULL:AFFECT:CHANNEL1 ON

:NULL:AFFECT:CHANNEL1?

-> :NULL:AFFECT:CHANNEL1 1

:NULL:UPDate[:ALL]

Function Sets or queries whether the NULL value is updated when NULL is executed on all channels at once.

Syntax :NULL:UPDate[:ALL] {<Boolean>}

Example :NULL:UPDATE:ALL ON

:NULL:UPDate:CHANnel<x>

Function Sets or queries whether the NULL value is updated when NULL is executed on a specified channel.

Syntax :NULL:UPDate:CHANnel<x> {<Boolean>}

:NULL:UPDate:CHANnel<x>?

Example :NULL:UPDATE:CHANNEL1 ON

:NULL:UPDATE:CHANNEL1?

-> :NULL:UPDATE:CHANNEL1 1

:NULL:STate

Function Sets or queries NULL.

Syntax :NULL:STate {<Boolean>}

:NULL:STate?

Example :NULL:STATE ON

:NULL:STATE? -> :NULL:STATE 1

5.25 NUMeric Group

The command in this group deal with numeric data output.

There are no front panel keys that correspond to the commands in this group. The commands in the DISPLAY group are used to make the same settings and queries as the NUMERIC key on the front panel.

:NUMeric?

Function Queries all numeric data output settings.
Syntax :NUMeric?

:NUMeric:FORMat

Function Sets or queries the numeric data format.
Syntax :NUMeric:FORMat {ASCIi|FLOat}
:NUMeric:FORMat?

Example :NUMERIC:FORMAT ASCII
:NUMERIC:FORMAT?
-> :NUMERIC:FORMAT ASCII

Description The format of the numeric data that is output varies depending on how this command is set. The different formats are explained below.

- When the format is set to ASCII:
Physical values are output in <NR3> format. (Only the elapsed integration time—TIME—is output in <NR1> format.)
The data items are separated by commas.
- When the format is set to FLOat:
A header (for example, “#260” or “#3208”) is added in front of each numeric data block. A physical value in IEEE single-precision floating point (4-byte) format follows the header.
The byte order of the data of each item is MSB First.
For the formats of each individual numeric data item, see “Numeric Data Formats” at the end of this group of commands (page 5-107).

:NUMeric:HOLD

Function Sets or queries the on/off (hold/release) status of the numeric data hold feature.
Syntax :NUMeric:HOLD {<Boolean>}
:NUMeric:HOLD?
Example :NUMERIC:HOLD ON
:NUMERIC:HOLD?
-> :NUMERIC:HOLD 1

:NUMeric:LIST?

Function Queries all harmonic measurement numeric list data output settings.
Syntax :NUMeric:LIST?
Description • This is only valid on models with the harmonic measurement (/G5) option.
• The number of numeric list data items output by :NUMeric:LIST:ITEM<x> is determined by :NUMeric:LIST:NUMBER.

:NUMeric:LIST:CLEAr

Function Clears harmonic measurement numeric list data output items (sets the items to NONE).
Syntax :NUMeric:LIST:CLEAr {ALL|<NRf>[, <NRf>]}
ALL = Clear all items
First <NRf> = 1 to 64 (the number of the first item to clear)
Second <NRf> = 1 to 64 (the number of the last item to clear)
Example :NUMERIC:LIST:CLEAr ALL
Description • This is only valid on models with the harmonic measurement (/G5) option.
• If the second <NRf> is omitted, the output item specified by the first <NRf> and all following output items (up to number 64) are cleared.

:NUMeric:LIST:DELEte

Function Deletes harmonic measurement numeric list data output items.
Syntax :NUMeric:LIST:DELEte {<NRf>[, <NRf>]}
First <NRf> = 1 to 64 (the number of the first item to delete)
Second <NRf> = 1 to 64 (the number of the last item to delete)
Example :NUMERIC:LIST:DELETE 1
(Deletes ITEM1 and shifts ITEM2 and subsequent items forward)
:NUMERIC:LIST:DELETE 1,3
(Deletes ITEM1 to ITEM3 and shifts ITEM4 and subsequent items forward)
Description • This is only valid on models with the harmonic measurement (/G5) option.
• The positions of deleted output items are filled by the items that follow them, and empty sections at the end are set to NONE.
• If the second <NRf> is omitted, only the output item specified by the first <NRf> is deleted.

5.25 NUMERIC Group

:NUMERIC:LIST:ITEM<x>

Function Sets or queries the output item (function and element) of the specified harmonic measurement numeric list data item.

Syntax :NUMERIC:LIST:ITEM<x>{NONE|<Function>,<Element>}
:NUMERIC:LIST:ITEM<x>?
<x> = 1 to 64 (item number)
NONE = No output item
<Function> = {U|I|P|S|Q|LAMBda|PHI|PHIU|PHII|Z|RS|XS|RP|XP|UHDF|IHDF|PHDF}
<Element> = {<NRf>|SIGMa|SIGMB}
(<NRf> = 1 to 4)

Example :NUMERIC:LIST:ITEM1 U,1
:NUMERIC:LIST:ITEM1?
-> :NUMERIC:LIST:ITEM1 U,1

Description • This is only valid on models with the harmonic measurement (/G5) option.
• For information about the options available for <Function>, see "Function Option List", in the DISPLAY Group section on page 5-57.

:NUMERIC:LIST:NUMBER

Function Sets or queries the number of numeric list data items that are transmitted by :NUMERIC:LIST:VALue?.

Syntax :NUMERIC:LIST:NUMBER {<NRf>|ALL}
:NUMERIC:LIST:NUMBER?
<NRf> = 1 to 64 (ALL)

Example :NUMERIC:LIST:NUMBER 5
:NUMERIC:LIST:NUMBER
-> :NUMERIC:LIST:NUMBER 5

Description • This is only valid on models with the harmonic measurement (/G5) option.
• If the parameter is omitted from the :NUMERIC:LIST:VALue? command, the numeric list data items from 1 to the specified value are output in order.
• By default, the number of numeric list data items is set to 1.

:NUMERIC:LIST:ORDER

Function Sets or queries the maximum output harmonic order of the harmonic measurement numeric list data.

Syntax :NUMERIC:LIST:ORDER {<NRf>|ALL}
:NUMERIC:LIST:ORDER?
<NRf> = 1 to 500 (ALL)

Example :NUMERIC:LIST:ORDER 100
:NUMERIC:LIST:ORDER?
-> :NUMERIC:LIST:ORDER 100

Description This is only valid on models with the harmonic measurement (/G5) option.

:NUMERIC:LIST:PRESet

Function Presets the harmonic measurement numeric list data output item pattern.

Syntax :NUMERIC:LIST:PRESet {<NRf>}
<NRf> = 1 to 4

Example :NUMERIC:LIST:PRESET 1

Description • This is only valid on models with the harmonic measurement (/G5) option.
• For information about the output items that are preset, see "Preset Patterns for Harmonic Measurement Numeric List Data Output Items" on page 5-109 at the end of the commands for this group.
• By default, the output items of Pattern 2 are selected.

:NUMERIC:LIST:SELEct

Function Sets or queries the output components of the harmonic measurement numeric list data.

Syntax :NUMERIC:LIST:SELEct {EVEN|ODD|ALL}
:NUMERIC:LIST:SELEct?
EVEN = Outputs the components of TOTal, DC, and even-order harmonics
ODD = Outputs the components of TOTal, DC, and odd-order harmonics
ALL = Outputs all components

Example :NUMERIC:LIST:SELEct ALL
:NUMERIC:LIST:SELEct?
-> :NUMERIC:LIST:SELEct ALL

Description This is only valid on models with the harmonic measurement (/G5) option.

:NUMERIC:LIST:VALUE?

Function Queries the harmonic measurement numeric list data.

Syntax :NUMERIC:LIST:VALUE? {<NRf>}
<NRf> = 1 to 64 (item number)

Example When <NRf> is specified:

```
:NUMERIC:LIST:VALUE? 1
-> 103.58E+00,0.00E+00,103.53E+00,
0.09E+00,2.07E+00,0.04E+00,
... (omitted) ...,0.01E+00,0.01E+00
(502 data items max)
```

When <NRf> is omitted:
 (When :NUMERIC:LIST:NUMBER is set to 5)

```
:NUMERIC:LIST:VALUE?
-> 103.58E+00,0.00E+00,103.53E+00,
0.09E+00,2.07E+00,0.04E+00,
... (omitted) ...,0.00E+00,0.00E+00
(502*5 = 2510 data items max)
```

When :NUMERIC:FORMAT is set to FLOat:

```
:NUMERIC:LIST:VALUE?
-> #N<N-digit byte number><Data byte
sequence>
```

- Description**
- This is only valid on models with the harmonic measurement (/G5) option.
 - A single numeric list data item consists of up to 502 items of numeric data in the following order: TOTal, DC, 1st order, ..., :NUMERIC:LIST:ORDER.
 - If <NRf> is specified, only the numeric list data of the specified item number is output (up to 502 items of data).
 - If <NRf> is omitted, the numeric list data of item numbers from 1 to :NUMERIC:LIST:NUMBER is output in order (up to 502 times the number specified by :NUMERIC:LIST:NUMBER).
 - For the formats of the individual numeric data items that are output, see "Numeric Data Formats" at the end of this group of commands (page 5-107).

:NUMERIC:NORMAL?

Function Queries all numeric data output settings.

Syntax :NUMERIC:NORMAL?

Description The number of numeric data items output by :NUMERIC[:NORMAL]:ITEM<x> is determined by :NUMERIC[:NORMAL]NUMBER.

:NUMERIC[:NORMAL]:CLEAR

Function Clears numeric data output items (sets the items to NONE).

Syntax :NUMERIC[:NORMAL]:CLEAR {ALL|<NRf>[,<NRf>]}

ALL = Clear all items

First <NRf> = 1 to 255 (the number of the first item to clear)

Second <NRf> = 1 to 255 (the number of the last item to clear)

Example :NUMERIC:NORMAL:CLEAR ALL

Description If the 2nd <NRf> is omitted, the output item specified by the first <NRf> and all following output items (up to number 255) are cleared.

:NUMERIC[:NORMAL]:DELETE

Function Deletes numeric data output items.

Syntax :NUMERIC[:NORMAL]:DELETE {<NRf>[,<NRf>]}

First <NRf> = 1 to 255 (the number of the first item to delete)

Second <NRf> = 1 to 255 (the number of the last item to delete)

Example :NUMERIC:NORMAL:DELETE 1

(Deletes ITEM1 and shifts ITEM2 and subsequent items forward)

```
:NUMERIC:NORMAL:DELETE 1,3
```

(Deletes ITEM1 to ITEM3 and shifts ITEM4 and subsequent items forward)

- Description**
- The positions of deleted output items are filled by the items that follow them, and empty sections at the end are set to NONE.
 - If the second <NRf> is omitted, only the output item specified by the first <NRf> is deleted.

5.25 NUMERIC Group

:NUMERIC[:NORMAL]:ITEM<x>

Function Sets or queries the specified numeric data output item (function, element, and harmonic order).

Syntax :NUMERIC[:NORMAL]:ITEM<x> {NONE|<Function>[,<Element>][,<Order>]}
:NUMERIC[:NORMAL]:ITEM<x>?
<x> = 1 to 255 (item number)
NONE = No output item
<Function> = {URMS|IRMS|P|S|Q|...}
<Element> = {<Nrf>|SIGMA|SIGMB}
(<Nrf> = 1 to 4)
<Order> = {TOTAL|DC|<Nrf>}
(<Nrf> = 1 to 500)

Example :NUMERIC:NORMAL:ITEM1 URMS,1
:NUMERIC:NORMAL:ITEM1?
-> :NUMERIC:NORMAL:ITEM1 URMS,1
:NUMERIC:NORMAL:ITEM1 UK,1,1
:NUMERIC:NORMAL:ITEM1?
-> :NUMERIC:NORMAL:ITEM1 UK,1,1

Description

- For information about the options available for <Function>, see "Function Option List", in the DISPLAY Group section on page 5-57.
- If <Element> is omitted, the element is set to 1.
- If <Order> is omitted, the order is set to TOTAL.
- <Element> and <Order> are omitted from responses to functions that do not need them.

:NUMERIC[:NORMAL]:NUMBER

Function Sets or queries the number of numeric data items that are transmitted by the :NUMERIC[:NORMAL]:VALUE? command.

Syntax :NUMERIC[:NORMAL]:NUMBER {<Nrf>|ALL}
:NUMERIC[:NORMAL]:NUMBER?
<Nrf> = 1 to 255 (ALL)

Example :NUMERIC:NORMAL:NUMBER 15
:NUMERIC:NORMAL:NUMBER
-> :NUMERIC:NORMAL:NUMBER 15

Description

- If the parameter is omitted from the :NUMERIC[:NORMAL]:VALUE? command, the numeric data items from 1 to the specified value are output in order.
- By default, the number of numeric data items is set to 15.

:NUMERIC[:NORMAL]:PRESET

Function Presets the numeric data output item pattern.

Syntax :NUMERIC[:NORMAL]:PRESET {<Nrf>}
<Nrf> = 1 to 4

Example :NUMERIC:NORMAL:PRESET 1

Description

- For information about the output items that are preset, see "Preset Patterns for Numeric Data Items" on page 5-108 at the end of the commands for this group.
- By default, the output items of Pattern 2 are selected.

:NUMERIC[:NORMAL]:VALUE?

Function Queries the numeric data.

Syntax :NUMERIC[:NORMAL]:VALUE? {<Nrf>}
<Nrf> = 1 to 255 (item number)

Example When <Nrf> is specified:
:NUMERIC:NORMAL:VALUE? 1
-> 103.79E+00
When <Nrf> is omitted:
:NUMERIC:NORMAL:VALUE?
-> 103.79E+00,1.0143E+00,
105.27E+00,... (omitted) ...,1.428E+00

When :NUMERIC:FORMAT is set to FLOAT:

:NUMERIC:NORMAL:VALUE?
-> #N<N-digit byte number><Data byte sequence>

Description

- If <Nrf> is specified, only the numeric data for the specified item is output.
- If <Nrf> is omitted, the numeric data items from 1 to the number specified by the :NUMERIC[:NORMAL]:NUMBER command are output in order.
- For the formats of the individual numeric data items that are output, see "Numeric Data Formats" at the end of this group of commands (page 5-107).

Numeric Data Formats

Normal Data

- The Σ of electric power values P, S, and Q
- Efficiency values ETA1, ETA2, ETA3, and ETA4; harmonic distortion factor values UHDFk, IHDFk, and PHDFk; and distortion factor values UTHD, ITHD, and PTHD.
ASCII: <NR3> format (mantissa: up to 6 digits, exponent: 2 digits. Example: [-]123.456E+00)
FLOAT: IEEE single-precision floating point (4-byte) format
- No items (NONE)
ASCII: NAN (Not A Number)
FLOAT: 0x7E951BEE (9.91E+37)
- Other
ASCII: <NR3> format (mantissa: up to 5 digits, exponent: 2 digits. Example: [-]123.45.456E+00)
FLOAT: IEEE single-precision floating point (4-byte) format

Error Data

- Data does not exist (the display shows "-----")
ASCII: NAN (Not A Number)
FLOAT: 0x7E951BEE (9.91E+37)
- Over-range (the display shows "---O L---")
- Overflow (the display shows "---O F---")
- Data over (the display shows " Error ")
ASCII: INF (INFinity)
FLOAT: 0x7E94F56A (9.9E+37)

Note

- In 180° (Lead/Lag) display, the phase differences Φ (PHI) of elements 1 to 4 are output in the range between -180.00 to 180.00 with lead (D) and lag (G) set to negative and positive values, respectively.
- There may be up to six digits in the mantissa of the Σ of power values P, S, and Q depending on the combination of the voltage range and current range (e.g. the power range). For the table of power ranges, see appendix 3, "Power Range" in the features guide, IM PX8000-01EN.
- The following values always have three decimal places: efficiency values ETA1, ETA2, ETA3, and ETA4; harmonic distortion factor values UHDFk, IHDFk, and PHDFk; and distortion factor values UTHD, ITHD, and PTHD. If the values exceed 100 %, the mantissa will have six digits.

Preset Patterns for Numeric Data Items

The Function Option List in the DISPLAY Group section on page 5-57 contains a list of the function names <Function> used in commands (where the command syntax contains) and the function names in the PX8000 display menus that correspond to them.

Preset Patterns for Numeric Data Items

These patterns apply to the :NUMeric[:NORMal]:PRESet command.

Pattern 1			Pattern 2		
ITEM<x>	<Function>	<Element>	ITEM<x>	<Function>	<Element>
1	URMS	1	1	URMS	1
2	IRMS	1	2	UMN	1
3	P	1	3	UDC	1
4	S	1	4	UAC	1
5	Q	1	5	IRMS	1
6	LAMBda	1	6	IMN	1
7	PHI	1	7	IDC	1
8	FU	1	8	IAC	1
9	FI	1	9	P	1
10	NONE		10	S	1
11 to 19	URMS to FI	2	11	Q	1
20	NONE		12	LAMBda	1
21 to 29	URMS to FI	3	13	PHI	1
30	NONE		14	FU	1
31 to 39	URMS to FI	4	15	FI	1
40	NONE		16 to 30	URMS to FI	2
41 to 49	URMS to FI	SIGMa	31 to 45	URMS to FI	3
50	NONE		46 to 60	URMS to FI	4
51 to 59	URMS to FI	SIGMB	61 to 75	URMS to FI	SIGMa
60	NONE		76 to 90	URMS to FI	SIGMB
61 to 255	NONE		91 to 255	NONE	

Pattern 3			Pattern 4		
ITEM<x>	<Function>	<Element>	ITEM<x>	<Function>	<Element>
1	URMS	1	1	URMS	1
2	UMN	1	2	UMN	1
3	UDC	1	3	UDC	1
4	UAC	1	4	UAC	1
5	IRMS	1	5	IRMS	1
6	IMN	1	6	IMN	1
7	IDC	1	7	IDC	1
8	IAC	1	8	IAC	1
9	P	1	9	P	1
10	S	1	10	S	1
11	Q	1	11	Q	1
12	LAMBda	1	12	LAMBda	1
13	PHI	1	13	PMI	1
14	FU	1	14	FU	1
15	FI	1	15	FI	1
16	UPPeak	1	16	CFU	1
17	UMPeak	1	17	CFI	1
18	IPPeak	1	18	PC	1
19	IMPeak	1	19	PPPeak	1
20	NONE		20	PMPeak	1
21 to 39	URMS to IMPeak	2	21 to 40	URMS to PMPeak	2
40	NONE		41 to 60	URMS to PMPeak	3
41 to 59	URMS to IMPeak	3	61 to 80	URMS to PMPeak	4
60	NONE		81 to 100	URMS to PMPeak	SIGMa
61 to 79	URMS to IMPeak	4	101 to 120	URMS to PMPeak	SIGMB
80	NONE		121 to 255	NONE	
81 to 99	URMS to IMPeak	SIGMa			
100	NONE				
101 to 119	URMS to IMPeak	SIGMB			
120	NONE				
121 to 255	NONE				

Preset Patterns for Harmonic Measurement Numeric List Data Output Items

These patterns apply to the :NUMERIC:LIST:PRESet command.

Pattern 1

ITEM<x>	<Function>	<Element>
1	U	1
2	I	1
3	P	1
4 to 6	U to P	2
7 to 9	U to P	3
10 to 12	U to P	4
13 to 64	NONE	

Pattern 2

ITEM<x>	<Function>	<Element>
1	U	1
2	I	1
3	P	1
4	PHIU	1
5	PHII	1
6 to 10	U to PHII	2
11 to 15	U to PHII	3
16 to 20	U to PHII	4
21 to 64	NONE	

Pattern 3

ITEM<x>	<Function>	<Element>
1	U	1
2	I	1
3	P	1
4	S	1
5	Q	1
6	LAMBda	1
7	PHI	1
8	PHIU	1
9	PHII	1
10 to 18	U to PHII	2
19 to 27	U to PHII	3
28 to 36	U to PHII	4
37 to 64	NONE	

Pattern 4

ITEM<x>	<Function>	<Element>
1	U	1
2	I	1
3	P	1
4	Q	1
5	Z	1
6	RS	1
7	XS	1
8	RP	1
9	XP	1
10 to 18	U to XP	2
19 to 27	U to XP	3
28 to 36	U to XP	4
37 to 64	NONE	

5.26 POWER Group

The commands in this group deal with a power channel's vertical axis. You can make the same settings and queries that you can by using the P1 to P4 keys and the POSITION knob on the front panel.

:POWER<x>?

Function Queries all vertical axis settings of a power channel.

Syntax :POWER<x>?

:POWER<x>:DISPLAY

Function Sets or queries whether the channel is displayed.

Syntax :POWER<x>:DISPLAY {<Boolean>}
:POWER<x>:DISPLAY?
<x> = 1 to 4

Example :POWER1:DISPLAY ON
:POWER1:DISPLAY?
-> :POWER1:DISPLAY 1

Description Error 241, "Hardware missing," will occur if there is no module installed in the slot that corresponds to the specified channel.

:POWER<x>:LABEL

Function Sets or queries the waveform label of a channel.

Syntax :POWER<x>:LABEL {<String>}
:POWER<x>:LABEL?
<x> = 1 to 4
<String> = Up to 16 characters

Example :POWER1:LABEL "ABC"
:POWER1:LABEL?
-> :POWER1:LABEL "ABC"

:POWER<x>:OFFSET

Function Sets or queries the offset power.

Syntax :POWER<x>:OFFSET {<Power>}
:POWER<x>:OFFSET?
<x> = 1 to 4

<Power> = The selectable range varies depending on the range setting.

Example :POWER1:OFFSET 0
:POWER1:OFFSET?
-> :POWER1:OFFSET 1.00000E+00

:POWER<x>:POSITION

Function Sets or queries the vertical position of power.

Syntax :POWER<x>:POSITION {<NRf>}
:POWER<x>:POSITION?
<x> = 1 to 4
<NRf> = -5.00 to 5.00 (div; in 0.01 div steps)

Example :POWER1:POSITION 1.00
:POWER1:POSITION?
-> :POWER1:POSITION 1.00

:POWER<x>:SCALE

Function Sets or queries the upper and lower limits of the screen for power.

Syntax :POWER<x>:SCALE {<NRf>,<NRf>}
:POWER<x>:SCALE?
<x> = 1 to 4
<NRf> = The selectable range varies depending on the range setting.

Example :POWER1:SCALE 250,-250
:POWER1:SCALE?
-> :POWER1:SCALE 250.000E+00,
-250.000E+00

:POWER<x>:VARIABLE

Function Sets or queries the zoom method (vertical scale) of power.

Syntax :POWER<x>:VARIABLE {<Boolean>}
:POWER<x>:VARIABLE?
<x> = 1 to 4

Example :POWER1:VARIABLE 0
:POWER1:VARIABLE?
-> :POWER1:VARIABLE 0

:POWER<x>:ZOOM

Function Sets or queries the vertical zoom factor of power.

Syntax :POWER<x>:ZOOM {<NRf>}
:POWER<x>:ZOOM?
<x> = 1 to 4
<NRf> = 0.1, 0.111, 0.125, 0.143, 0.167, 0.2, 0.25, 0.33, 0.4, 0.5, 0.556, 0.625, 0.667, 0.714, 0.8, 0.833, 1, 1.11, 1.25, 1.33, 1.43, 1.67, 2, 2.22, 2.5, 3.33, 4, 5, 6.67, 8, 10, 12.5, 16.7, 20, 25, 40, 50, 100

Example :POWER1:ZOOM 2
:POWER1:ZOOM? -> :POWER1:ZOOM 2

5.27 RECall Group

The command in this group deal with storing and recalling of settings. You can perform the same operations and make the same settings and queries that you can by pressing the UTILITY key on the front panel and then using Recall Exec on the Setup Data Store/Recall menu.

:RECall:SETup<x>:EXECute

Function Recalls setup data from an internal memory area.

Syntax :RECall:SETup<x>:EXECute
<x> = 1 to 16

Example :RECALL:SETUP1:EXECUTE

Description If you specify an area that does not contain setup data, an error occurs.

5.28 SEARCh Group

The commands in this group deal with searching for and extracting patterns from acquired waveforms. You can perform the same operations and make the same settings and queries that you can by using the SHIFT+ZOOM keys on the front panel.

If the selectable range of the time axis is “<NRf> = –5 to 5div,” the selectable range varies depending on settings such as the record length. For details, see “Selectable Range of Cursor Positions” under “Notes about Cursor Measurement” in chapter 15 of IM PX8000-01EN.

:SEARCh?

Function Queries all search settings.
Syntax :SEARCh?

:SEARCh:ABORT

Function Aborts the search.
Syntax :SEARCh:ABORT
Example :SEARCH:ABORT

:SEARCh:EDGE?

Function Queries all edge search settings.
Syntax :SEARCh:EDGE?

:SEARCh:EDGE:COUNT

Function Sets or queries the edge search count.
Syntax :SEARCh:EDGE:COUNT {<NRf>}
:SEARCh:EDGE:COUNT?
<NRf> = 1 to 1000000
Example :SEARCH:EDGE:COUNT 100
:SEARCH:EDGE:COUNT?
-> :SEARCH:EDGE:COUNT 100

:SEARCh:EDGE:HYSTeresis

Function Sets or queries the edge search determination-level hysteresis.
Syntax :SEARCh:EDGE:HYSTeresis {HIGH|LOW|MIDDLE}
:SEARCh:EDGE:HYSTeresis?
Example :SEARCH:EDGE:HYSTERESIS LOW
:SEARCH:EDGE:HYSTERESIS?
-> :SEARCH:EDGE:HYSTERESIS LOW
Description This setting is valid if the channel that is being searched is not a logic channel.

:SEARCh:EDGE:LEVEL

Function Sets or queries the edge search determination level.
Syntax :SEARCh:EDGE:LEVEL {<Voltage>|<Current>|<NRf>}
:SEARCh:EDGE:LEVEL?
Example :SEARCH:EDGE:LEVEL 2
:SEARCH:EDGE:LEVEL?
-> :SEARCH:EDGE:LEVEL 2.00000E+00

:SEARCh:EDGE:SLOPe

Function Sets or queries the edge polarity for when the edge search is performed on traces other than logic traces.
Syntax :SEARCh:EDGE:SLOPe {BISLOPe|FALL|RISE}
:SEARCh:EDGE:SLOPe?
Example :SEARCH:EDGE:SLOPE RISE
:SEARCH:EDGE:SLOPE?
-> :SEARCH:EDGE:SLOPE RISE

:SEARCh:EDGE:SOURce

Function Sets or queries the trace to perform the edge search on.
Syntax :SEARCh:EDGE:SOURce {<NRf>|P<y>}
:SEARCh:EDGE:SOURce?
<NRf> = 1 to 8
<y> = 1 to 4
Example :SEARCH:EDGE:SOURCE 1
:SEARCH:EDGE:SOURCE?
-> :SEARCH:EDGE:SOURCE 1

Description If no module is installed, you cannot select the edge search.

:SEARCh:EPOint (End Point)

Function Sets or queries the search end position.
Syntax :SEARCh:EPOint {<NRf>}
:SEARCh:EPOint?
<NRf> = –5 to 5div (the resolution depends on the measurement length)
Example :SEARCH:EPOINT 3
:SEARCH:EPOINT?
-> :SEARCH:EPOINT 3.000000000000

:SEARCh:EXECute

Function Executes the search.
Syntax :SEARCh:EXECute

:SEARCh:MAG<x>

Function Sets or queries a zoom waveform magnification.

Syntax :SEARCh:MAG<x> {<NRf>}

:SEARCh:MAG<x>?

<x> = 1, 2

<NRf> = 2 to 200000000

Example :SEARCH:MAG1 1000

:SEARCH:MAG1? -> :SEARCH:MAG1 1000.0

Description This command is valid when the PX8000 is using an external clock. When the PX8000 is using the internal clock, use the :SEARCh:TDIV<x> command to set the magnification.

:SEARCh:POStion<x>

Function Sets or queries the position of a zoom box.

Syntax :SEARCh:POStion<x> {<NRf>}

:SEARCh:POStion<x>?

<x> = 1, 2

<NRf> = -5 to +5 div

Example :SEARCH:POSITION1 -0.7219

:SEARCH:POSITION1?

-> :SEARCH:POSITION1 -0.721900000000

:SEARCh:SElect

Function Sets the search point that is displayed on the zoom window, and queries the zoom position of that search point.

Syntax :SEARCh:SElect {<NRf>|MAXimum}

:SEARCh:SElect?

<NRf> = 1 to 5000

Example :SEARCH:SELECT 4

:SEARCH:SELECT?

-> :SEARCH:SELECT -0.721900000000

Description The string "NAN" is returned if the search could not retrieve a position.

:SEARCh:SElect? MAXimum

Function Queries the maximum save number, which is the number that is attached to the last position that the search retrieved.

Syntax :SEARCh:SElect? MAXimum

Example :SEARCH:SELECT? MAXIMUM

-> :SEARCH:SELECT 5

Description The string "NAN" is returned if the search could not retrieve a position.

:SEARCh:SPOint (Start Point)

Function Sets or queries the search start position.

Syntax :SEARCh:SPOint {<NRf>}

:SEARCh:SPOint?

<NRf> = -5 to 5div (the resolution depends on the measurement length)

Example :SEARCH:SPOINT -5

:SEARCH:SPOINT?

-> :SEARCH:SPOINT -5.000000000000

:SEARCh:TDIV<x>

Function Sets or queries a zoom waveform T/DIV value.

Syntax :SEARCh:TDIV<x> {<Time>|HOUR1|HOUR2|

HOUR3|HOUR4|HOUR5|HOUR6|HOUR7|HOUR8|

HOUR9|HOUR10|HOUR12|DAY1|DAY2|DAY3}

:SEARCh:TDIV<x>?

<x> = 1, 2 (sets the target zoom box)

<Time> = the same as the T/Div setting

Example :SEARCH:TDIV1 0.01

:SEARCH:TDIV1?

-> :SEARCH:TDIV1 10.00E-03

Description This command is valid when the PX8000 is using the internal clock. When the PX8000 is using an external clock, use the :SEARCh:MAG<x> command to set the magnification.

:SEARCh:TIME?

Function Queries all time search settings.

Syntax :SEARCh:TIME?

:SEARCh:TIME:TIME

Function Sets or queries the time of the time search.

Syntax :SEARCh:TIME:TIME {<NRf>,<NRf>,<NRf>,<NRf>,<NRf>,<NRf>,<NRf>}

:SEARCh:TIME:TIME?

<NRf> = 2000 or greater (year)

<NRf> = 1 to 12 (month)

<NRf> = 1 to 31 (day)

<NRf> = 0 to 23 (hour)

<NRf> = 0 to 59 (minute)

<NRf> = 0 to 59 (second)

<NRf> = 0 to 999999 (microsecond)

Example :SEARCH:TIME:TIME 2010,1,1,0,0,0,0

:SEARCH:TIME:TIME?

-> :SEARCH:TIME:TIME 2010,1,1,0,0,0,0

Description The initial value is the reference time of the waveform that is displayed when you open the menu. If there are no history waveforms or if the menu is not open, the initial value is 00:00:00:00 on January 1, 2010.

:SEARCh:TWINDow (Target WINDow)

Function Sets or queries the window that search results will be displayed in.

Syntax SEARCh:TWINDow {Z1|Z2}

SEARCh:TWINDow?

Example :SEARCH:TWINDOW Z1

:SEARCH:TWINDOW?

-> :SEARCH:TWINDOW Z1

:SEARCh:TYPE

Function Sets or queries the search type.

Syntax :SEARCh:TYPE {EDGE|TIME}

:SEARCh:TYPE?

Example :SEARCH:TYPE EDGE

:SEARCH:TYPE? -> :SEARCH:TYPE EDGE

5.29 SELFtest Group

The commands in this group deal with self-test. You can perform the same operations that you can by pressing the UTILITY key on the front panel and using the Self Test menu.

:SELFtest:CTEMperature? **(Cpu TEMperature)**

Function Returns the CPU temperature.

Syntax :SELFtest:CTEMperature?

Example :SELFtest:CTEMperature?

-> :SELFtest:CTEMperature 40.0

:SELFtest:KEYBoard

Function Controls the front panel key test mode.

Syntax :SELFtest:KEYBoard {<Boolean>}

Description 1: Switches to key test mode.

0: Exits from key test mode.

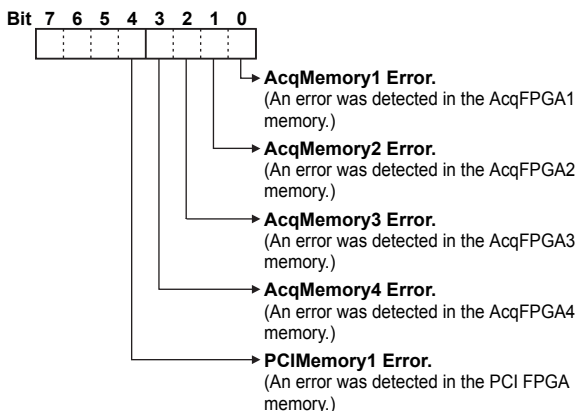
:SELFtest:MEMory:ACquire:EXECute?

Function Executes an acquisition memory test.

Syntax :SELFtest:MEMory:ACquire:EXECute?

Description Executes a memory tests and returns the results.

Return value



:SELFtest:MEMory:SYSTEM:EXECute?

Function Executes a system memory test.

Syntax :SELFtest:MEMory:SYSTEM:EXECute?

Description Executes a memory tests and returns the results.

Return value 0: Test OK

A value other than 0: Not OK

:SELFtest:MEMory:SRAM:EXECute?

Function Executes a backup memory test.

Syntax :SELFtest:MEMory:SRAM:EXECute?

Description Executes a memory tests and returns the results.

Return value 0: Test OK

A value other than 0: Not OK

5.30 SNAP Group

The command in this group is used to take snapshots. You can execute the same operation that you can by using the SNAPSHOT key on the front panel.

: SNAP

Function Takes a snapshot.

Syntax : SNAP

Example : SNAP

5.31 SStart Group

The commands in this group deal with executing the single start operation. These commands set the trigger mode to Single and start waveform acquisition.

:SStart

Function Executes the single start operation.

Syntax :SStart

Example :SSTART

:SStart?

Function Executes the single start operation and waits for its completion by using a timeout value.

Syntax :SStart? {<NRf>}

Example :SStart? 100

Description <NRf> = 1 to 36000 (timeout value in 100 ms steps; start and wait)
-36000 to -1 (timeout value in 100 ms steps; wait without starting)

5.32 START Group

The command in this group is used to start waveform acquisition. You can execute the same operation that you can by using the START/STOP key on the front panel.

:START

Function Starts waveform acquisition.

Syntax :START

Example :START

5.33 STATUS Group

The commands in this group are used to make settings and queries related to the status report. There are no front panel keys that correspond to the commands in this group. For information about status reports, see chapter 6.

:STATUS?

Function Queries all the settings for the communication status feature.

Syntax :STATUS?

:STATUS:CONDition?

Function Queries the contents of the condition register.

Syntax :STATUS:CONDition?

Example :STATUS:CONDition? -> 16

Description For details on how to use the :STATUS:CONDition? command to synchronize the PX8000, see page 4-9.

:STATUS:EESE

Function Sets or queries the extended event enable register.

Syntax :STATUS:EESE <Register>

:STATUS:EESE?

<Register> = 0 to 65535

Example :STATUS:EESE #B00000000

:STATUS:EESE? -> :STATUS:EESE 0

:STATUS:EESR?

Function Queries the contents of the extended event register and clears the register.

Syntax :STATUS:EESR?

Example :STATUS:EESR? -> 0

:STATUS:ERRor?

Function Queries the error code and message of the last error that has occurred.

Syntax :STATUS:ERRor?

Description

- If no errors have occurred, 0, "No error" is returned.
- You can use the :STATUS:QMESSAGE command to specify whether the message is included.

:STATUS:FILTer<x>

Function Sets or queries the transition filter.

Syntax :STATUS:FILTer<x> {RISE|FALL|BOTH|NEVer}

:STATUS:FILTer<x>?

<x> = 1 to 16

Description Set how each bit in the condition register must change to trigger the setting of an event. If you specify RISE, a change from 0 to 1 triggers the setting of an event.

:STATUS:QENable

Function Sets or queries whether messages other than errors will be stored to the error queue (ON) or not (OFF).

Syntax :STATUS:QENable {<Boolean>}

:STATUS:QENable?

Example :STATUS:QENABLE ON

:STATUS:QENABLE?

-> :STATUS:QENABLE 1

:STATUS:QMESSage

Function Sets or queries whether message information will be attached to the response to the :STAT:ERR? query (ON) or not (OFF).

Syntax :STATUS:QMESSage {<Boolean>}

:STATUS:QMESSage?

Example :STATUS:QMESSAGE ON

:STATUS:QMESSAGE?

-> :STATUS:QMESSAGE 1

5.34 STOP Group

The command in this group is used to stop waveform acquisition. You can execute the same operation that you can by using the START/STOP key on the front panel.

:STOP

Function Stops waveform acquisition.

Syntax :STOP

5.35 STORE Group

The commands in this group deal with saving setup data. You can perform the same operations and make the same settings that you can by using the UTILITY key on the front panel and then using the Setup Data Store/Recall menu.

:STORE?

Function Queries all the information related to setup data in the internal memory.

Syntax :STORE?

:STORE:SETup<x>?

Function Queries information about the setup data in the specified location of the internal memory.

Syntax :STORE:SETup<x>?
<x> = 1 to 16

:STORE:SETup<x>:CLEAr

Function Clear the setup data that is stored to the specified location in the internal memory.

Syntax :STORE:SETup<x>:CLEAr
<x> = 1 to 16

Example :STORE:SETUP1:CLEAr

:STORE:SETup<x>:COMMeNt

Function Sets or queries the comment for the setup data that is stored to the specified location in the internal memory.

Syntax :STORE:SETup<x>:COMMeNt {<String>}
:STORE:SETup<x>:COMMeNt?
<x> = 1 to 16
<String> = Up to 14 characters

Example :STORE:SETUP1:COMMeNt "ABCD"
:STORE:SETUP1:COMMeNt?
-> :STORE:SETUP1:COMMeNt "ABCD"

:STORE:SETup<x>:DATE?

Function Queries the date and time of the setup data that is stored to the specified location in the internal memory.

Syntax :STORE:SETup<x>:DATE?
<x> = 1 to 16

Example :STORE:SETUP1:DATE?
-> :STORE:SETUP1:
DATE "2014/01/01 09:44:02"

Description This command returns "No Valid Data" if no setup data is stored in the specified location.

:STORE:SETup<x>:EXECute

Function Saves setup data to the specified location in the internal memory.

Syntax :STORE:SETup<x>:EXECute
<x> = 1 to 16

Example :STORE:SETUP1:EXECUTE

5.36 SYSTEM Group

The commands in this group deal with the system. You can execute the same operation that you can by using the UTILITY key on the front panel.

: SYSTEM?

Function Queries all system settings.
Syntax :SYSTEM?

: SYSTEM: CLICk

Function Sets or queries whether click sounds are produced.

Syntax :SYSTEM:CLICk {<Boolean>}
:SYSTEM:CLICk?

Example :SYSTEM:CLICk ON
:SYSTEM:CLICk? -> :SYSTEM:CLICk 1

: SYSTEM: CLOCk?

Function Queries all date/time settings.
Syntax :SYSTEM:CLOCk?

: SYSTEM: CLOCk: DATE

Function Sets or queries the date.
Syntax :SYSTEM:CLOCk:DATE <String>
:SYSTEM:CLOCk:DATE?

<String> = YYYY/MM/DD
Specify the year according to the Gregorian calendar.
YYYY: 2000 to 2099

Example :SYSTEM:CLOCk:DATE "2014/01/01"
:SYSTEM:CLOCk:DATE?
-> :SYSTEM:CLOCk:DATE "2014/01/01"

Description Regardless of the setting that you have made using the :SYSTEM:CLOCk:FORMAt command, this command returns responses in the format shown above.

: SYSTEM: CLOCk: FORMAt

Function Sets or queries the date format.
Syntax :SYSTEM:CLOCk:FORMAt {<NRf>}
:SYSTEM:CLOCk:FORMAt?

<NRf> = 1 to 4

Example :SYSTEM:CLOCk:FORMAt 1
:SYSTEM:CLOCk:FORMAt?
-> :SYSTEM:CLOCk:FORMAt 1

Description This command specifies the display format of the date. (The communication response format of the date is fixed.)

- 1: Year/month (number)/day
- 2: Day/month (number)/year
- 3: Day-month (English abbreviation)-year (last two digits)
- 4: Day month (English abbreviation) year

: SYSTEM: CLOCk: MODE

Function Sets or queries whether the date and time are displayed.

Syntax :SYSTEM:CLOCk:MODE {<Boolean>}
:SYSTEM:CLOCk:MODE?

Example :SYSTEM:CLOCk:MODE ON
:SYSTEM:CLOCk:MODE?
-> :SYSTEM:CLOCk:MODE 1

: SYSTEM: CLOCk: SNTP?

Function Queries all SNTP settings.
Syntax :SYSTEM:CLOCk:SNTP?

: SYSTEM: CLOCk: SNTP: EXECute

Function Uses SNTP to set the date and time.
Syntax :SYSTEM:CLOCk:SNTP:EXECute
Example :SYSTEM:CLOCk:SNTP:EXECUTE

: SYSTEM: CLOCk: SNTP: GMTTime

Function Sets or queries the time difference from GMT when SNTP is being used.

Syntax :SYSTEM:CLOCk:SNTP:
GMTTime {<String>}
:SYSTEM:CLOCk:SNTP:GMTTime?

Example :SYSTEM:CLOCk:SNTP:GMTTime "09:00"
:SYSTEM:CLOCk:SNTP:GMTTime?
-> :SYSTEM:CLOCk:SNTP:
GMTTime "09:00"

: SYSTEM: CLOCk: TIME

Function Sets or queries the time.
Syntax :SYSTEM:CLOCk:TIME <String>
:SYSTEM:CLOCk:TIME?
<String> = HH:MM:SS

HH can be set to a value from 0 to 23.

Example :SYSTEM:CLOCk:TIME "10:00:00"
:SYSTEM:CLOCk:TIME?
-> :SYSTEM:CLOCk:TIME "10:00:00"

: SYSTEM: CLOCk: TYPE

Function Sets or queries whether the date and time are set manually or by using SNTP.

Syntax :SYSTEM:CLOCk:TYPE {MANual|SNTP}
:SYSTEM:CLOCk:TYPE?

Example :SYSTEM:CLOCk:TYPE MANUAL
:SYSTEM:CLOCk:TYPE?
-> :SYSTEM:CLOCk:TYPE MANUAL

5.36 SYSTem Group

:SYSTem:CRMode (Cursor Read Mode)

Function Sets or queries the mode used to read vertical, marker, and degree cursor values.

Syntax :SYSTem:CRMode {DISPlay|ACQuisition}
:SYSTem:CRMode?

Example :SYSTEM:CRMMode DISPLAY
:SYSTEM:CRMMode?
-> :SYSTEM:CRMMode DISPLAY

:SYSTem:DFlow?

Function Queries all data display settings for low frequency input (no input).

Syntax :SYSTem:DFlow?

:SYSTem:DFlow:AUXiliary

Function Sets or queries the AUX data display method for when the AUX module is not receiving pulse input.

Syntax :SYSTem:DFlow:AUXiliary {ZERO|ERRor}
:SYSTem:DFlow:AUXiliary?

Example :SYSTEM:DFlow:AUXiliary ERROR
:SYSTEM:DFlow:AUXiliary?
-> :SYSTEM:DFlow:AUXiliary ERROR

:SYSTem:DFlow:FREquency

Function Sets or queries the AUX data display method for when a power measurement element is receiving low frequency input (no input).

Syntax :SYSTem:DFlow:FREquency {ZERO|ERRor}
:SYSTem:DFlow:FREquency?

Example :SYSTEM:DFlow:FREquency ERROR
:SYSTEM:DFlow:FREquency?
-> :SYSTEM:DFlow:FREquency ERROR

:SYSTem:IRIG?

Function Queries all IRIG settings.

Syntax :SYSTem:IRIG?

:SYSTem:IRIG:FORMat

Function Sets or queries the IRIG format for synchronizing the time through IRIG signals.

Syntax :SYSTem:IRIG:FORMat {A|B}
:SYSTem:IRIG:FORMat?

Example :SYSTEM:IRIG:FORMAT A
:SYSTEM:IRIG:FORMAT?
-> :SYSTEM:IRIG:FORMAT A

Description This command is valid on models with the /C20 option.

:SYSTem:IRIG:IMPedance

Function Sets or queries the input impedance for synchronizing the time through IRIG signals.

Syntax :SYSTem:IRIG:IMPedance {<NRf>}
:SYSTem:IRIG:IMPedance?
<NRf> = 50 or 5000

Example :SYSTEM:IRIG:IMPEDANCE 50
:SYSTEM:IRIG:IMPEDANCE?
-> :SYSTEM:IRIG:IMPEDANCE 50

Description This command is valid on models with the /C20 option.

:SYSTem:IRIG:MODulation

Function Sets or queries the IRIG modulation type for synchronizing the time through IRIG signals.

Syntax :SYSTem:IRIG:MODulation {AM|PWCode}
:SYSTem:IRIG:MODulation?

Example :SYSTEM:IRIG:MODULATION AM
:SYSTEM:IRIG:MODULATION?
-> :SYSTEM:IRIG:MODULATION AM

Description This command is valid on models with the /C20 option.

:SYSTem:KEYProtect?

Function Queries all key lock settings.

Syntax :SYSTem:KEYProtect?

:SYSTem:KEYProtect:EPASSword (Enter PASSword)

Function Enters the password to release the key lock.

Syntax :SYSTem:KEYProtect:
EPASSword {<String>}
<String> = Up to 8 characters

Example :SYSTEM:KEYPROTECT:EPASSWORD "ABC"

Description This command is valid when the keys are locked, a password is required to release the key lock, and a password has been set.

:SYSTem:KEYProtect:MODE

Function Sets or queries whether the keys are locked.

Syntax :SYSTem:KEYProtect:MODE {<Boolean>}
:SYSTem:KEYProtect:MODE?

Example :SYSTEM:KEYPROTECT:MODE ON
:SYSTEM:KEYPROTECT:MODE?
-> :SYSTEM:KEYPROTECT:MODE 1

Description The key lock status is retained even when the PX8000 is restarted.

:SYSTem:KEYProtect:RTYPE (Release TYPE)

Function Sets or queries how to release the key lock.

Syntax :SYSTem:KEYProtect:RTYPE {KEY|
PASSword}
:SYSTem:KEYProtect:RTYPE?

Example :SYSTEM:KEYPROTECT:RTYPE PASSWORD
:SYSTEM:KEYPROTECT:RTYPE?
-> :SYSTEM:KEYPROTECT:RTYPE PASSWORD

: SYSTem:KEYProtect:SPASsword (Set PASsword)

Function Sets the password that is used to release the key lock.

Syntax :SYSTem:KEYProtect:
SPASsword {<String>}
<String> = Up to 8 characters

Example :SYSTEM:KEYPROTECT:SPASSWORD "ABC"

Description Send the command
:SYSTem:KEYProtect:SPASsword "" to
reset the password.

: SYSTem:KEYProtect:TYPE

Function Sets or queries which keys will be locked.

Syntax :SYSTem:KEYProtect:TYPE {ALL|ESTart}
:SYSTem:KEYProtect:TYPE?

Example :SYSTEM:KEYPROTECT:TYPE ESTART

:SYSTEM:KEYPROTECT:TYPE?
-> :SYSTEM:KEYPROTECT:TYPE ESTART

: SYSTem:KEYResponse

Function Sets or queries the response time of the START/ STOP key.

Syntax :SYSTem:KEYResponse {QUICK|SEC1}
:SYSTem:KEYResponse?

Example :SYSTEM:KEYRESPONSE SEC1

:SYSTEM:KEYRESPONSE?
-> :SYSTEM:KEYRESPONSE SEC1

: SYSTem:LANGUage

Function Sets or queries the message language.

Syntax :SYSTem:LANGUage {JAPANese|ENGLish|
GERMan}
:SYSTem:LANGUage?

Example :SYSTEM:LANGUAGE ENGLISH

:SYSTEM:LANGUAGE?
-> :SYSTEM:LANGUAGE ENGLISH

: SYSTem:LCD?

Function Queries all LCD settings.

Syntax :SYSTem:LCD?

: SYSTem:LCD:AUTO?

Function Queries all the settings for the feature that automatically turns off the backlight.

Syntax :SYSTem:LCD:AUTO?

: SYSTem:LCD:AUTO:MODE

Function Sets or queries whether the feature that automatically turns off the backlight is on.

Syntax :SYSTem:LCD:AUTO:MODE {<Boolean>}
:SYSTem:LCD:AUTO:MODE?

Example :SYSTEM:LCD:AUTO:MODE ON

:SYSTEM:LCD:AUTO:MODE?
-> :SYSTEM:LCD:AUTO:MODE 1

: SYSTem:LCD:AUTO:TIME

Function Sets or queries the amount of time until the backlight is turned off.

Syntax :SYSTem:LCD:AUTO:TIME {<Nrf>}
:SYSTem:LCD:AUTO:TIME?
<Nrf> = 1 to 60 (minute)

Example :SYSTEM:LCD:AUTO:TIME 10

:SYSTEM:LCD:AUTO:TIME?
-> :SYSTEM:LCD:AUTO:TIME 10

: SYSTem:LCD:BRIGHtness

Function Sets or queries the LCD brightness.

Syntax :SYSTem:LCD:BRIGHtness {<Nrf>}
:SYSTem:LCD:BRIGHtness?
<Nrf> = 1 to 10

Example :SYSTEM:LCD:BRIGHTNESS 3

:SYSTEM:LCD:BRIGHTNESS?
-> :SYSTEM:LCD:BRIGHTNESS 3

: SYSTem:LCD:MODE

Function Sets or queries whether the backlight is on.

Syntax :SYSTem:LCD:MODE {<Boolean>}
:SYSTem:LCD:MODE?

Example :SYSTEM:LCD:MODE ON

:SYSTEM:LCD:MODE?
-> :SYSTEM:LCD:MODE 1

: SYSTem:MLANGUage

Function Sets or queries the menu language.

Syntax :SYSTem:MLANGUage {JAPANese|ENGLish|
GERMan}
:SYSTem:MLANGUage?

Example :SYSTEM:MLANGUAGE ENGLISH

:SYSTEM:MLANGUAGE?
-> :SYSTEM:MLANGUAGE ENGLISH

: SYSTem:OVERview

Function Displays the system information.

Syntax :SYSTem:OVERview

Example :SYSTEM:OVERVIEW

: SYSTem:PACTion

Function Sets or queries whether the action mode will be enabled when the PX8000 turns on (ON) or not (OFF).

Syntax :SYSTem:PACTion {<Boolean>}
:SYSTem:PACTion?

Example :SYSTEM:PACTION ON

:SYSTEM:PACTION?
-> :SYSTEM:PACTION 1

5.36 SYSTem Group

:SYSTem:PSTart

Function Sets or queries whether waveform acquisition will be started when the PX8000 turns on (ON) or not (OFF).

Syntax :SYSTem:PSTart {<Boolean>
:SYSTem:PSTart?

Example :SYSTEM:PSTART ON
:SYSTEM:PSTART? -> :SYSTEM:PSTART 1

:SYSTem:RCMode (Remote Control Mode)

Function Sets or queries whether remote signals to stop measurements will be ignored (ON) or not (OFF).

Syntax :SYSTem:RCMode {<Boolean>
:SYSTem:RCMode?

Example :SYSTEM:RCMODE ON
:SYSTEM:RCMODE? -> :SYSTEM:RCMODE 1

:SYSTem:SCALEfont

Function Sets or queries the font size that is used for waveform labels and scale values.

Syntax :SYSTem:SCALEfont {SMALL|LARGE}
:SYSTem:SCALEfont?

Example :SYSTEM:SCALEFONT SMALL
:SYSTEM:SCALEFONT?
-> :SYSTEM:SCALEFONT SMALL

Description Even if you specify LARGE with this command, depending on the display conditions, the SMALL font may be displayed.

:SYSTem:SOITem (Scale On ITem)

Function Sets or queries which scales are displayed.

Syntax :SYSTem:SOITem {ALL|TScale}
:SYSTem:SOITem?

Example :SYSTEM:SOITEM ALL
:SYSTEM:SOITEM?
-> :SYSTEM:SOITEM ALL

:SYSTem:STORage:FORMat:EXECute

Function Formats the specified medium. This is an overlap command.

Syntax :SYSTem:STORage:FORMat:EXECute

Example :SYSTEM:STORAGE:FORMAT:EXECUTE

:SYSTem:STORage:MEDia

Function Sets or queries the medium that you want to format.

Syntax :SYSTem:STORage:MEDia {SD|UUSB|LUSB}
:SYSTem:STORage:MEDia?

Example :SYSTEM:STORAGE:MEDIA SD
:SYSTEM:STORAGE:MEDIA?
-> :SYSTEM:STORAGE:MEDIA SD

Description SD: SD memory card
UUSB, LUSB: USB storage medium

:SYSTem:TSYNchro (Time SYNchronization)

Function Sets or queries the time synchronization.

Syntax :SYSTem:TSYNchro {IRIG|OFF}
:SYSTem:TSYNchro?

Example :SYSTEM*TSYNCHRO IRIG
:SYSTEM*TSYNCHRO?
-> :SYSTEM*TSYNCHRO IRIG

Description This command is valid on models with the /C20 option.

:SYSTem:USBKeyboard

Function Sets or queries the USB keyboard type.

Syntax :SYSTem:USBKeyboard {ENGLISH|
JAPANESE}
:SYSTem:USBKeyboard?

Example :SYSTEM:USBKEYBOARD ENGLISH
:SYSTEM:USBKEYBOARD?
-> :SYSTEM:USBKEYBOARD ENGLISH

5.37 TIMEbase Group

The commands in this group deal with time bases. You can make the same settings and queries that you can by using the TIME/DIV knob on the front panel.

:TIMEbase?

Function Queries all time base settings.

Syntax :TIMEbase?

:TIMEbase:SOURCE

Function Sets or queries the time base.

Syntax :TIMEbase:SOURCE {EXternal|INTERNAL}
:TIMEbase:SOURCE?

Example :TIMEBASE:SOURCE INTERNAL
:TIMEBASE:SOURCE?
-> :TIMEBASE:SOURCE INTERNAL

:TIMEbase:SRATE

Function Sets or queries the sample rate.

Syntax :TIMEbase:SRATE {<Frequency>}
:TIMEbase:SRATE?
<Frequency> = 50 Hz, 100 Hz, ... 20 MHz,
50 MHz, 100 MHz

Example :TIMEBASE:SRATE 500kHz
:TIMEBASE:SRATE?
-> :TIMEBASE:SRATE 500.00000E+03

:TIMEbase:TDIV

Function Sets or queries the T/DIV value.

Syntax :TIMEbase:TDIV {<Time>}
:TIMEbase:TDIV?

<Time> = 100ns to 120s (2 min)
Example :TIMEBASE:TDIV 1ms
:TIMEBASE:TDIV?
-> :TIMEBASE:TDIV 1.000E-03

5.38 TRIGger Group

The commands in this group deal with triggers. You can make the same settings and queries that you can by using the TRIGGER group keys (MODE, SIMPLE, ENHANCED, POSITION, and DELAY keys) on the front panel.

:TRIGger?

Function Queries all trigger settings.

Syntax :TRIGger?

:TRIGger:ABN? (A->B(N))

Function Queries all A->B(n) trigger settings.

Syntax :TRIGger:ABN?

:TRIGger:ABN:COUNT

Function Sets or queries the number of times condition B must be met for A->B(n) triggers.

Syntax :TRIGger:ABN:COUNT {<NRf>}
:TRIGger:ABN:COUNT?

<NRf> = 1 to 10000

Example :TRIGGER:ABN:COUNT 100

:TRIGGER:ABN:COUNT?

-> :TRIGGER:ABN:COUNT 100

:TRIGger:ACTion?

Function Queries all action settings.

Syntax :TRIGger:ACTion?

:TRIGger:ACTion:BUZZer

Function Sets or queries whether a beep is sounded as an action.

Syntax :TRIGger:ACTion:BUZZer {<Boolean>}
:TRIGger:ACTion:BUZZer?

Example :TRIGGER:ACTION:BUZZER ON

:TRIGGER:ACTION:BUZZER?

-> :TRIGGER:ACTION:BUZZER 1

:TRIGger:ACTion:HCOPY

Function Sets or queries whether a screen capture is printed from the built-in printer as an action.

Syntax :TRIGger:ACTion:HCOPY {<Boolean>}
:TRIGger:ACTion:HCOPY?

Example :TRIGGER:ACTION:HCOPI ON

:TRIGGER:ACTION:HCOPI?

-> :TRIGGER:ACTION:HCOPI 1

Description This command is valid only when the built-in printer (/B5 option) is installed.

:TRIGger:ACTion:IMAGe?

Function Queries all settings for saving screen captures as an action.

Syntax :TRIGger:ACTion:IMAGe?

:TRIGger:ACTion:IMAGe:CDIRECTory

Function Sets or queries the current directory on the storage medium where screen captures are saved to as an action.

Syntax :TRIGger:ACTion:IMAGe:
CDIRECTory {<String>}
:TRIGger:ACTion:IMAGe:CDIRECTory?

Example :TRIGGER:ACTION:IMAGe:

CDIRECTORY "NO_1"

:TRIGGER:ACTION:IMAGe:CDIRECTORY?

-> :TRIGGER:ACTION:IMAGe:

CDIRECTORY "NO_1"

:TRIGger:ACTion:IMAGe:DRIVE

Function Sets the storage medium that screen captures are saved to as an action.

Syntax :TRIGger:ACTion:IMAGe:
DRIVE {NETWork|SD|USB,<NRf>}

Example :TRIGGER:ACTION:IMAGe:DRIVE SD

:TRIGger:ACTion:IMAGe[:MODE]

Function Sets or queries whether a screen capture is saved to the storage medium as an action.

Syntax :TRIGger:ACTion:IMAGe[:
MODE] {<Boolean>}
:TRIGger:ACTion:IMAGe?

Example :TRIGGER:ACTION:IMAGe:MODE ON

:TRIGGER:ACTION:IMAGe:MODE?

-> :TRIGGER:ACTION:IMAGe:MODE 1

:TRIGger:ACTion:IMAGe:PATH?

Function Queries the path on the storage medium where screen captures are saved to as an action.

Syntax :TRIGger:ACTion:IMAGe:PATH?

Example :TRIGGER:ACTION:IMAGe:PATH?

-> :TRIGGER:ACTION:IMAGe:

PATH "Path=USB,0"

:TRIGger:ACTion:MODE

Function Sets or queries whether action is used.
 Syntax :TRIGger:ACTion:MODE {<Boolean>}
 :TRIGger:ACTion:MODE?
 Example :TRIGGER:ACTION:MODE ON
 :TRIGGER:ACTION:MODE?
 -> :TRIGGER:ACTION:MODE 1

:TRIGger:ACTion:NUMeric?

Function Queries all the settings related to saving numeric data as an action.
 Syntax :TRIGger:ACTion:NUMeric?

:TRIGger:ACTion:NUMeric:CDIRectory

Function Sets or queries the current directory on the storage medium that numeric data is saved to as an action.
 Syntax :TRIGger:ACTion:NUMeric:CDIRectory {<String>}
 Example :TRIGGER:ACTION:NUMERIC:CDIRECTORY "NO_1"
 :TRIGGER:ACTION:NUMERIC:CDIRECTORY?
 -> :TRIGGER:ACTION:NUMERIC:CDIRECTORY "NO_1"

:TRIGger:ACTion:NUMeric:DRIVE

Function Sets the storage medium that numeric data is saved to as an action.
 Syntax :TRIGger:ACTion:NUMeric:DRIVE {NETWork|SD|USB,<Nrf>}
 Example :TRIGGER:ACTION:NUMERIC:DRIVE SD

:TRIGger:ACTion:NUMeric[:MODE]

Function Sets or queries whether numeric data is saved to the storage medium as an action.
 Syntax :TRIGger:ACTion:NUMeric[:MODE] {<Boolean>}
 :TRIGger:ACTion:NUMeric:MODE?
 Example :TRIGGER:ACTION:NUMERIC:MODE ON
 :TRIGGER:ACTION:NUMERIC:MODE?
 -> :TRIGGER:ACTION:NUMERIC:MODE 1

:TRIGger:ACTion:NUMeric:PATH?

Function Queries the path on the storage medium that numeric data is saved to as an action.
 Syntax :TRIGger:ACTion:NUMeric:PATH?
 Example :TRIGGER:ACTION:NUMERIC:PATH?
 -> :TRIGGER:ACTION:NUMERIC:PATH "Path=USB,0"

:TRIGger:ACTion:SAVE?

Function Queries all the settings related to saving data as an action.
 Syntax :TRIGger:ACTion:SAVE?

:TRIGger:ACTion:SAVE:CDIRectory

Function Sets or queries the current directory on the storage medium that waveform data is saved to as an action.
 Syntax :TRIGger:ACTion:SAVE:CDIRectory {<String>}
 Example :TRIGGER:ACTION:SAVE:CDIRECTORY "NO_1"
 :TRIGGER:ACTION:SAVE:CDIRECTORY?
 -> :TRIGGER:ACTION:SAVE:CDIRECTORY "NO_1"

:TRIGger:ACTion:SAVE:DRIVE

Function Sets the storage medium that waveform data is saved to as an action.
 Syntax :TRIGger:ACTion:SAVE:DRIVE {NETWork|SD|USB,<Nrf>}
 Example :TRIGGER:ACTION:SAVE:DRIVE SD

:TRIGger:ACTion:SAVE[:MODE]

Function Sets or queries whether waveform data is saved to the storage medium as an action.
 Syntax :TRIGger:ACTion:SAVE[:MODE] {<Boolean>}
 :TRIGger:ACTion:SAVE:MODE?
 Example :TRIGGER:ACTION:SAVE:MODE ON
 :TRIGGER:ACTION:SAVE:MODE?
 -> :TRIGGER:ACTION:SAVE:MODE 1

:TRIGger:ACTion:SAVE:PATH?

Function Queries the path on the storage medium that waveform data is saved to as an action.
 Syntax :TRIGger:ACTion:SAVE:PATH?
 Example :TRIGGER:ACTION:SAVE:PATH?
 -> :TRIGGER:ACTION:SAVE:PATH "Path=USB,0"

:TRIGger:ACTion:SAVE:TYPE

Function Sets or queries the type of data to save when waveform data is saved to the storage medium as an action.
 Syntax :TRIGger:ACTion:SAVE:TYPE {AScii|BINary|FLOat|WDFBin}
 :TRIGger:ACTion:SAVE:TYPE?
 Example :TRIGGER:ACTION:SAVE:TYPE BINARY
 :TRIGGER:ACTION:SAVE:TYPE?
 -> :TRIGGER:ACTION:SAVE:TYPE BINARY

5.38 TRIGger Group

:TRIGger:ADB? (A Delay B)

Function Queries all A Delay B trigger settings.
Syntax :TRIGger:ADB?

:TRIGger:ADB:DElay

Function Sets or queries the delay time for condition B for A Delay B triggers.

Syntax :TRIGger:ADB:DElay {<Time>}
:TRIGger:ADB:DElay?
<Time> = 0 ns to 10 s

Example :TRIGGER:ADB:DEL 0.001
:TRIGGER:ADB:DEL?
-> :TRIGGER:ADB:DELAY 1.0000000E-03

Description The resolution is 10 ns.

:TRIGger:AND?

Function Queries all AND trigger settings.
Syntax :TRIGger:AND?

:TRIGger:AND:{CHANnel<x>|POWER<y>}[:CONDition]

Function Sets or queries the state of the specified channel for AND triggers.

Syntax :TRIGger:AND:{CHANnel<x>
>|POWER<y>}[:CONDition]
{DONTcare|HIGH|LOW|WLIn|
WLOut}
:TRIGger:AND:{CHANnel<x>|POWER<y>}
[:CONDition]?
<x> = 1 to 8
<y> = 1 to 4

Example :TRIGGER:AND:CHANNEL2:CONDITION HIGH
:TRIGGER:AND:CHANNEL2:CONDITION?
-> :TRIGGER:AND:CHANNEL2:
CONDITION HIGH

:TRIGger:ATrigger?

Function Queries all condition A settings.
Syntax :TRIGger:ATrigger?

:TRIGger:ATrigger:{CHANnel<x>|POWER<y>}[:CONDition]

Function Sets or queries the state of the specified channel of condition A.

Syntax :TRIGger:ATrigger:{CHANnel<x>|
POWER<y>}[:CONDition] {DONTcare|
HIGH|LOW}
:TRIGger:ATrigger:{CHANnel<x>|
POWER<y>}[:CONDition]?
<x> = 1 to 8
<y> = 1 to 4

Example :TRIGGER:ATRIGGER:CHANNEL1:
CONDITION HIGH
:TRIGGER:ATRIGGER:CHANNEL1:CONDITI
ON?
-> :TRIGGER:ATRIGGER:CHANNEL1:CONDIT
ION HIGH

:TRIGger:ATrigger:CONDition

Function Sets or queries the achievement condition of condition A.

Syntax :TRIGger:ATrigger:CONDition {ENTER|
EXIT|FALSE|TRUE}
:TRIGger:ATrigger:CONDition?

Example :TRIGGER:ATRIGGER:CONDITION ENTER
:TRIGGER:ATRIGGER:CONDITION?
-> :TRIGGER:ATRIGGER:CONDITION ENTER

Description This command is valid when the trigger type is ABN or ADB.

:TRIGger:BBETween?

Function Queries all B Between trigger settings.
Syntax :TRIGger:BBETween?

:TRIGger:BBETween:TIME<x>

Function Sets or queries a pulse width for B Between triggers.

Syntax :TRIGger:BBETween:TIME<x> {<Time>}
:TRIGger:BBETween:TIME<x>?
<x> = 1, 2
<Time> = 10 ns to 10 s

Example :TRIGger:BBET:TIME1 0.001
:TRIGGER:BBETWEEN:TIME1?
-> :TRIGGER:BBETWEEN:
TIME1 1.0000000E-03

:TRIGger:BGTime?

Function Queries all B>Time trigger settings.
Syntax :TRIGger:BGTime?

:TRIGger:BGTime:TIME

Function Sets or queries the pulse width for B>Time triggers.

Syntax :TRIGger:BGTime:TIME {<Time>}
:TRIGger:BGTime:TIME?
<Time> = 10 ns to 10 s

Example :TRIGGER:BGTIME:TIME 0.001
:TRIGGER:BGTIME:TIME?
-> :TRIGGER:BGTIME:
TIME 1.0000000E-03

:TRIGger:BLTime?

Function Queries all B<Time trigger settings.
Syntax :TRIGger:BLTime?

:TRIGger:BLTime:TIME

Function Sets or queries the pulse width for B<Time triggers.

Syntax :TRIGger:BLTime:TIME {<Time>}
:TRIGger:BLTime:TIME?
<Time> = 10 ns to 10 s

Example :TRIGGER:BLTIME:TIME 0.001
:TRIGGER:BLTIME:TIME?
-> :TRIGGER:BLTIME:
TIME 1.0000000E-03

:TRIGger:BTOut?

Function Queries all B TimeOut trigger settings.

Syntax :TRIGger:BTOut?

:TRIGger:BTOut:TIME

Function Sets or queries the pulse width for B TimeOut triggers.

Syntax :TRIGger:BTOut:TIME {<Time>}

:TRIGger:BTOut:TIME?

<Time> = 10 ns to 10 s

Example :TRIGGER:BTOUT:TIME 0.001

:TRIGGER:BTOUT:TIME?

-> :TRIGGER:BTOUT:TIME 1.00000000E-03

:TRIGger:BTRigger?

Function Queries all condition B settings.

Syntax :TRIGger:BTRigger?

:TRIGger:BTRigger:{CHANnel<x>|POWER<y>}[:CONDition]

Function Sets or queries the state of the specified channel of condition B.

Syntax :TRIGger:BTRigger:{CHANnel<x>|POWER<y>}[:CONDition] {DONTcare|HIGH|LOW}

:TRIGger:BTRigger:{CHANnel<x>|

POWER<y>}[:CONDition]?

<x> = 1 to 8

<y> = 1 to 4

Example :TRIGGER:BTRIGGER:CHANNEL2:

CONDITION HIGH

:TRIGGER:BTRIGGER:CHANNEL2:CONDITI

ON?

-> :TRIGGER:BTRIGGER:CHANNEL2:CONDIT

ION HIGH

:TRIGger:BTRigger:CONDition

Function Sets or queries the achievement condition of condition B.

Syntax :TRIGger:BTRigger:CONDition {ENTER|EXIT}

:TRIGger:BTRigger:CONDition?

Example :TRIGGER:BTRIGGER:CONDITION ENTER

:TRIGGER:BTRIGGER:CONDITION?

-> :TRIGGER:BTRIGGER:CONDITION ENTER

Description This command is valid when the trigger type is ABN or ADB.

:TRIGger:DELay

Function Sets or queries the delay.

Syntax :TRIGger:DELay {<Time>}

:TRIGger:DELay?

<Time> = 0 to 10 s (the resolution varies depending on the sample rate)

(1/sample rate) × (1/10)

The minimum resolution is 10 ns.

If the sample rate is higher than 10 MS/s, the resolution will be 10 ns.

Example :TRIGGER:DELAY 0.001

:TRIGGER:DELAY?

-> :TRIGGER:DELAY 1.0000000E-03

Description When the PX8000 is using an external clock, the delay is fixed to 0.

:TRIGger:EOA?

Function Queries all EdgeOnA settings.

Syntax :TRIGger:EOA?

:TRIGger:EOA:{CHANnel<x>|POWER<y>}[:CONDition]

Function Sets or queries the state of the specified channel for EdgeOnA triggers.

Syntax :TRIGger:EOA:{CHANnel<x>|POWER<y>}

[:CONDition] {OFF|FALL|RISE}

:TRIGger:EOA:{CHANnel<x>|POWER<y>}

[:CONDition]?

<x> = 1 to 8

<y> = 1 to 4

Example :TRIGGER:EOA:CHANNEL3:CONDITION FALL

:TRIGGER:EOA:CHANNEL3:CONDITION?

-> :TRIGGER:EOA:CHANNEL3:

CONDITION FALL

:TRIGger:EOA:CONDition

Function Sets or queries the achievement condition for EdgeOnA triggers.

Syntax :TRIGger:EOA:CONDition {FALSE|TRUE}

:TRIGger:EOA:CONDition?

Example :TRIGGER:EOA:CONDITION TRUE

:TRIGGER:EOA:CONDITION?

-> :TRIGGER:EOA:CONDITION TRUE

:TRIGger:HOLDoff?

Function Queries all hold-off settings.

Syntax :TRIGger:HOLDoff?

5.38 TRIGger Group

:TRIGger:HOLDoff:TIME

Function Sets or queries the hold-off time.
Syntax :TRIGger:HOLDoff:TIME {<Time>}
:TRIGger:HOLDoff:TIME?
<Time> = 0 to 10 s (the resolution is 10 ns)
Example :TRIGGER:HOLDOFF:TIME 0.001
:TRIGGER:HOLDOFF:TIME?
-> :TRIGGER:HOLDOFF:
TIME 1.0000000E-03

:TRIGger:MODE

Function Sets or queries the trigger mode.
Syntax :TRIGger:MODE {AUTO|ALEVel|NORMAL|
SINGLE|NSINGLE|ONStart}
:TRIGger:MODE?
Example :TRIGGER:MODE AUTO
:TRIGGER:MODE? -> :TRIGGER:MODE AUTO

:TRIGger:OR?

Function Queries all OR trigger settings.
Syntax :TRIGger:OR?

:TRIGger:OR:{CHANnel<x>|POWER<y>} [:CONDition]

Function Sets or queries the state of the specified channel for OR triggers.
Syntax :TRIGger:OR:{CHANnel<x>|POWER<y>}
[:CONDition] {OFF|FALL|RISE|WINIn|
WINOut}
:TRIGger:OR:{CHANnel<x>|POWER<y>}
[:CONDition]?
<x> = 1 to 8
<y> = 1 to 4
Example :TRIGGER:OR:CHANNEL1:CONDITION RISE
:TRIGGER:OR:CHANNEL1:CONDITION?
-> :TRIGGER:OR:CHANNEL1:
CONDITION RISE

:TRIGger:OR:EXTERNAL:TYPE

Function Sets or queries the type of external trigger that is used with OR triggers.
Syntax :TRIGger:OR:EXTERNAL:TYPE {OFF|FALL|
RISE}
:TRIGger:OR:EXTERNAL:TYPE?
Example :TRIGGER:OR:EXTERNAL:TYPE RISE
:TRIGGER:OR:EXTERNAL:TYPE?
-> :TRIGGER:OR:EXTERNAL:TYPE RISE

:TRIGger:OUT?

Function Queries all trigger output settings.
Syntax :TRIGger:OUT?

:TRIGger:OUT:TIME

Function Sets or queries the H-pulse interval that is used when the trigger output terminal output type is 1.
Syntax :TRIGger:OUT:TIME {<Time>}
:TRIGger:OUT:TIME?
<Time> = 1 ms, 50 ms, 100 ms, 500 ms
Example :TRIGGER:OUT:TIME 0.05
:TRIGGER:OUT:TIME?
-> :TRIGGER:OUT:TIME 50.000000E-03

:TRIGger:OUT:TYPE

Function Sets or queries the trigger output terminal output type.
Syntax :TRIGger:OUT:TYPE {<Nrf>}
:TRIGger:OUT:TYPE?
<Nrf> = 1, 2
Example :TRIGGER:OUT:TYPE 2
:TRIGGER:OUT:TYPE?
-> :TRIGGER:OUT:TYPE 2

Description 1: The PX8000 generates H pulses for a fixed interval when it triggers. This corresponds to the Pulse setting on the menu.
2: The PX8000 generates an L pulse when it triggers. The L pulse is held during the post operation. The PX8000 switches to an H pulse when the post operation finishes. This corresponds to the Normal setting on the menu.

:TRIGger:POSITION

Function Sets or queries the trigger position.
Syntax :TRIGger:POSITION {<Nrf>}
:TRIGger:POSITION?
<Nrf> = 0 to 100 (% in 0.1% steps)
Example :TRIGGER:POSITION 50
:TRIGGER:POSITION?
-> :TRIGGER:POSITION 50

:TRIGger:SCOUNT (Single(n) COUNT)

Function Sets the number of times the trigger is to be activated when the trigger mode is Single(N) or queries the current setting.
Syntax :TRIGger:SCOUNT {<Nrf>}
:TRIGger:SCOUNT?
<Nrf> = 1 to 5000
Example :TRIGGER:SCOUNT 100
:TRIGGER:SCOUNT?
-> :TRIGGER:SCOUNT 100

:TRIGger:SIMPlE?

Function Queries all simple trigger settings.
 Syntax :TRIGger:SIMPlE?

:TRIGger[:SIMPlE]:EXTErnal:SLOPe

Function Sets or queries the external trigger slope.
 Syntax :TRIGger[:SIMPlE]:EXTErnal:
 SLOPe {FALL|RISE}
 :TRIGger[:SIMPlE]:EXTErnal:SLOPe?
 Example :TRIGGER:SIMPLE:EXTERNAL:SLOPE RISE
 :TRIGGER:SIMPLE:EXTERNAL:SLOPE?
 -> :TRIGGER:SIMPLE:EXTERNAL:
 SLOPE RISE

:TRIGger[:SIMPlE]:HYSTERESIS

Function Sets or queries the hysteresis for simple triggers.
 Syntax :TRIGger[:SIMPlE]:HYSTERESIS {HIGH|
 LOW|MIDDLE}
 :TRIGger[:SIMPlE]:HYSTERESIS?
 Example :TRIGGER:SIMPLE:HYSTERESIS HIGH
 :TRIGGER:SIMPLE:HYSTERESIS?
 -> :TRIGGER:SIMPLE:HYSTERESIS HIGH
 Description You cannot use this command to set the setting
 when the trigger zone is EXTErnal, LINE, or TIME.

:TRIGger[:SIMPlE]:LEVEl

Function Sets or queries the trigger level of the channel
 specified by :TRIGger:SIMPlE:SOURce for
 simple triggers.
 Syntax :TRIGger[:SIMPlE]:LEVEl {<Voltage>|
 <Nrf>|<Current>}
 :TRIGger[:SIMPlE]:LEVEl?
 Example :TRIGGER:SIMPLE:LEVEL 1
 :TRIGGER:SIMPLE:LEVEL?
 -> :TRIGGER:SIMPLE:LEVEL 1.00000E+00
 Description You cannot use this command to set the setting
 when the trigger zone is EXTErnal, LINE, or TIME.
 The selectable range is the range that can be
 measured with the current measurement range
 setting.
 Example: You can set up to twice the range rating
 ($\pm 200V$ for 100 V range).
 Values do not take linear scaling information into
 consideration.

:TRIGger[:SIMPlE]:SLOPe

Function Sets or queries the trigger slope of the channel
 specified by :TRIGger:SIMPlE:SOURce for
 simple triggers.
 Syntax :TRIGger[:SIMPlE]:SLOPe {RISE|FALL|
 BISLOPe}
 :TRIGger[:SIMPlE]:SLOPe?
 Example :TRIGGER:SIMPLE:SLOPE RISE
 :TRIGGER:SIMPLE:SLOPE?
 -> :TRIGGER:SIMPLE:SLOPE RISE
 Description You cannot use this command to set the setting
 when the trigger zone is EXTErnal, LINE, or TIME.

:TRIGger:SIMPlE:SOURce

Function Sets or queries the source for simple triggers.
 Syntax :TRIGger:SIMPlE:SOURce {<Nrf>|P<y>|
 EXTErnal|LINE|TIME}
 :TRIGger:SIMPlE:SOURce?
 <Nrf> = 1 to 8
 <y> = 1 to 4
 Example :TRIGGER:SIMPLE:SOURCE 1
 :TRIGGER:SIMPLE:SOURCE?
 -> :TRIGGER:SIMPLE:SOURCE 1

:TRIGger:SOURce?

Function Queries all the settings of the trigger source for
 enhanced triggers.
 Syntax :TRIGger:SOURce?

:TRIGger:SOURce:{CHANnel<x>|POWER<y>}?

Function Queries all the settings of the specified channel's
 trigger source for enhanced triggers.
 Syntax :TRIGger:SOURce:{CHANnel<x>|
 POWER<y>}?
 <x> = 1 to 8
 <y> = 1 to 4

:TRIGger:SOURce:{CHANnel<x>|POWER<y>}:CENTer

Function Sets or queries the center value of the level width
 of an enhanced trigger (AND or OR trigger).
 Syntax :TRIGger:SOURce:
 {CHANnel<x>|POWER<y>}:
 CENTer {<Voltage>|<Nrf>|<Current>}
 :TRIGger:SOURce:{CHANnel<x>|
 POWER<y>}:CENTer?
 <x> = 1 to 8
 <y> = 1 to 4
 Example :TRIGGER:SOURCE:CHANNEL1:CENTER 1
 :TRIGGER:SOURCE:CHANNEL1:CENTER?
 -> :TRIGGER:SOURCE:CHANNEL1:
 CENTER 1.00000E+00

5.38 TRIGger Group

:TRIGger:SOURce:{CHANnel<x>|POWER<y>}:HYSTeresis

Function Sets or queries the specified channel's hysteresis for enhanced triggers.

Syntax :TRIGger:SOURce:
{CHANnel<x>|POWER<y>}:
HYSTeresis {HIGH|LOW|MIDDLE}
<x> = 1 to 8
<y> = 1 to 4

Example :TRIGGER:SOURCE:CHANNEL1:HYSTERESIS
HIGH
:TRIGGER:SOURCE:CHANNEL1:HYSTERESIS?
-> :TRIGGER:SOURCE:CHANNEL1:HYSTERES
IS HIGH

:TRIGger:SOURce:{CHANnel<x>|POWER<y>}:LEVel

Function Sets or queries the specified channel's level for enhanced triggers.

Syntax :TRIGger:SOURce:
{CHANnel<x>|POWER<y>}:
LEVel <Voltage>|<NRf>|<Current>
:TRIGger:SOURce:{CHANnel<x>|
POWER<y>}:LEVel?
<x> = 1 to 8
<y> = 1 to 4

Example :TRIGGER:SOURCE:CHANNEL1:LEVEL 1
:TRIGGER:SOURCE:CHANNEL1:LEVEL?
-> :TRIGGER:SOURCE:CHANNEL1:LEVEL 1

:TRIGger:SOURce:{CHANnel<x>|POWER<y>}:WIDTh

Function Sets or queries the level width of an enhanced trigger (AND or OR trigger).

Syntax :TRIGger:SOURce
{CHANnel<x>|POWER<y>}:
WIDTh {<Voltage>|<NRf>|<Current>}
:TRIGger:SOURce:{CHANnel<x>|
POWER<y>}:WIDTh?
<x> = 1 to 8
<y> = 1 to 4

Example :TRIGGER:SOURCE:CHANNEL1:WIDTH 2
:TRIGGER:SOURCE:CHANNEL1:WIDTH?
-> :TRIGGER:SOURCE:CHANNEL1:WIDTH 2

:TRIGger:SOURce:{CHANnel<x>|POWER<y>}:WWIDTh

Function Sets or queries the width for wave window triggers.

Syntax :TRIGger:SOURce:
{CHANnel<x>|POWER<y>}:
WWIDTh {<Voltage>|<NRf>|<Current>}
:TRIGger:SOURce:{CHANnel<x>|
POWER<y>}:WWIDTh?
<x> = 1 to 8
<y> = 1 to 4

Example :TRIGGER:SOURCE:CHANNEL1:WWIDTH 0.2
:TRIGGER:SOURCE:CHANNEL1:WWIDTH?
-> :TRIGGER:SOURCE:CHANNEL1:
WWIDTH 200.000E-03

:TRIGger:TGTime?

Function Queries all T>Time trigger settings.

Syntax :TRIGger:TGTime?

:TRIGger:TGTime:TIME

Function Sets or queries the pulse width for T>Time triggers.

Syntax :TRIGger:TGTime:TIME {<Time>}
:TRIGger:TGTime:TIME?
<Time> = 10 ns to 10 s

Example :TRIGGER:TGTIME:TIME 0.001
:TRIGGER:TGTIME:TIME?
-> :TRIGGER:TGTIME:
TIME 1.00000000E-03

:TRIGger:TIMer?

Function Queries all time trigger settings.

Syntax :TRIGger:TIMer?

:TRIGger:TIMer:DATE

Function Sets or queries the date for time triggers.

Syntax :TRIGger:TIMer:DATE <String>
:TRIGger:TIMer:DATE?
<String> = YYYY/MM/DD
YYYY: 2000 to 2099

Example :TRIGGER:TIMER:DATE "2014/01/01"
:TRIGGER:TIMER:DATE?
-> :TRIGGER:TIMER:DATE "2014/01/01"

:TRIGger:TIMER:INTERval

Function Sets or queries the trigger interval for time triggers.

Syntax :TRIGger:TIMER:INTERval {SEC10|SEC15|SEC20|SEC30|SEC40|SEC50|MIN1|MIN2|MIN3|MIN4|MIN5|MIN6|MIN7|MIN8|MIN9|MIN10|MIN15|MIN20|MIN25|MIN30|MIN40|MIN45|MIN50|HOUR1|HOUR2|HOUR3|HOUR4|HOUR5|HOUR6|HOUR7|HOUR8|HOUR9|HOUR10|HOUR11|HOUR12|HOUR18|HOUR24}

Example :TRIGGER:TIMER:INTERVAL HOUR1
:TRIGGER:TIMER:INTERVAL?
-> :TRIGGER:TIMER:INTERVAL HOUR1

:TRIGger:TIMER:TIME

Function Sets or queries the time for time triggers.

Syntax :TRIGger:TIMER:TIME <String>
:TRIGger:TIMER:TIME?
<String> = HH:MM:SS

Example :TRIGGER:TIMER:TIME "00:00:00"
:TRIGGER:TIMER:TIME?
-> :TRIGGER:TIMER:TIME "00:00:00"

:TRIGger:TITime?

Function Queries all T1<T<T2 trigger settings.

Syntax :TRIGger:TITime?

:TRIGger:TITime:TIME<x>

Function Sets or queries the pulse width for T1<T<T2 triggers.

Syntax :TRIGger:TITime:TIME<x> {<Time>}
:TRIGger:TITime:TIME<x>?
<Time> = 10 ns to 10 s
<x> = 1, 2

Example :TRIGGER:TITIME:TIME1 0.001
:TRIGGER:TITIME:TIME1?
-> :TRIGGER:TITIME:
TIME1 1.00000000E-03

:TRIGger:TLTime?

Function Queries all T<Time trigger settings.

Syntax :TRIGger:TLTime?

:TRIGger:TLTime:TIME

Function Sets or queries the pulse width for T<Time triggers.

Syntax :TRIGger:TLTime:TIME {<Time>}
:TRIGger:TLTime:TIME?
<Time> = 10 ns to 10 s

Example :TRIGGER:TLTIME:TIME 0.001
:TRIGGER:TLTIME:TIME?
-> :TRIGGER:TLTIME:
TIME 1.00000000E-03

:TRIGger:TOTime?

Function Queries all T<T1,T2<T trigger settings.

Syntax :TRIGger:TOTime?

:TRIGger:TOTime:TIME<x>

Function Sets or queries the pulse width for T<T1,T2<T triggers.

Syntax :TRIGger:TOTime:TIME<x> {<Time>}
:TRIGger:TOTime:TIME<x>?
<Time> = 10 ns to 10 s
<x> = 1, 2

Example :TRIGGER:TOTIME:TIME1 0.001
:TRIGGER:TOTIME:TIME1?
-> :TRIGGER:TOTIME:
TIME1 1.00000000E-03

:TRIGger:TYPE

Function Sets or queries the trigger type.

Syntax :TRIGger:TYPE {ABN|ADB|AND|EOA|BBETween|BLTime|BGTime|BTOut|OR|SIMPlE|TGTime|TLTime|TITime|TOTime|WWINDOW}

Example :TRIGGER:TYPE?
:TRIGGER:TYPE?
-> :TRIGGER:TYPE SIMPLE

:TRIGger:WWINDOW?

Function Queries all wave window trigger settings.

Syntax :TRIGger:WWINDOW?

:TRIGger:WWINDOW: {CHANnel<x>|POWER<y>}

Function Sets or queries the state of the specified channel for wave window triggers.

Syntax :TRIGger:WWINDOW: {CHANnel<x>|POWER<y>} {<Boolean>}
:TRIGger:WWINDOW: {CHANnel<x>|POWER<y>}?
<x> = 1 to 8
<y> = 1 to 4

Example :TRIGGER:WWINDOW:CHANNEL1 ON
:TRIGGER:WWINDOW:CHANNEL1?
-> :TRIGGER:WWINDOW:CHANNEL1 1

:TRIGger:WWINDOW:FREQuency

Function Sets or queries the cycle frequency for wave window triggers.

Syntax :TRIGger:WWINDOW:
FREQuency {<Frequency>}
:TRIGger:WWINDOW:FREQuency?
<Frequency> = 40 to 1000 (Hz)

Example :TRIGGER:WWINDOW:FREQUENCY 400
:TRIGGER:WWINDOW:FREQUENCY?
-> :TRIGGER:WWINDOW:FREQUENCY 400

5.38 TRIGger Group

:TRIGger:WWINdow:REFCYcle

Function Sets or queries the reference cycle for wave window triggers.

Syntax :TRIGger:WWINdow:REFCYcle {<NRf>}
:TRIGger:WWINdow:REFCYcle?
<NRf> = 1, 2, 4

Example :TRIGGER:WWINDOW:REFCYCLE 1
:TRIGGER:WWINDOW:REFCYCLE?
-> :TRIGGER:WWINDOW:REFCYCLE 1

:TRIGger:WWINdow:SYNC?

Function Queries all synchronization channel settings for wave window triggers.

Syntax :TRIGger:WWINdow:SYNC?

:TRIGger:WWINdow:SYNC:HYSTEResis

Function Sets or queries the hysteresis of the synchronization channel for wave window triggers.

Syntax :TRIGger:WWINdow:SYNC:
HYSTEResis {HIGH|LOW|MIDDLE}
:TRIGger:WWINdow:SYNC:HYSTEResis?

Example :TRIGGER:WWINDOW:SYNC:
HYSTERESIS MIDDLE
:TRIGGER:WWINDOW:SYNC:HYSTERESIS?
-> :TRIGGER:WWINDOW:SYNC:
HYSTERESIS MIDDLE

Description You cannot set this setting when the synchronization channel is set to AUTO.

:TRIGger:WWINdow:SYNC:LEVEL

Function Sets or queries the level of the synchronization channel for wave window triggers.

Syntax :TRIGger:WWINdow:SYNC:
LEVEL {<Voltage>|<NRf>|<Current>}
:TRIGger:WWINdow:SYNC:LEVEL?

Example :TRIGGER:WWINDOW:SYNC:
LEVEL 2.00000E+00
:TRIGGER:WWINDOW:SYNC:LEVEL?
-> :TRIGGER:WWINDOW:SYNC:
LEVEL 2.00000E+00

Description You cannot set this setting when the synchronization channel is set to AUTO.

:TRIGger:WWINdow:SYNC:TRACE

Function Sets or queries the synchronization channel for wave window triggers.

Syntax :TRIGger:WWINdow:SYNC:
TRACE {<NRf>|P<y>|AUTO}
:TRIGger:WWINdow:SYNC:TRACE?
<NRf> = 1 to 8
<y> = 1 to 4

Example :TRIGGER:WWINDOW:SYNC:TRACE 1
:TRIGGER:WWINDOW:SYNC:TRACE?
-> :TRIGGER:WWINDOW:SYNC:TRACE 1

5.39 WAVEform Group

The commands in this group deal with the acquired waveform data. There are no front panel keys that correspond to the commands in this group.

:WAVEform?

Function Queries all waveform data output settings.
Syntax :WAVEform?

:WAVEform:BITS?

Function Queries the bit length of the waveform data specified by the :WAVEform:TRACe command.
Syntax :WAVEform:BITS?
Example :WAVEFORM:BITS? -> :WAVEFORM:BITS 16

:WAVEform:BYTeorder

Function Sets or queries the transmission byte order for data formats that are 2 bytes or longer.
Syntax :WAVEform:BYTeorder {LSBFirst|MSBFirst}
:WAVEform:BYTeorder?
Example :WAVEFORM:BYTEORDER LSBFIRST
:WAVEFORM:BYTEORDER?
-> :WAVEFORM:BYTEORDER LSBFIRST
Description This command is only valid in the :WAVEform group.

:WAVEform:DATaselect

Function Queries whether to query the waveform specified by the :WAVEform:TRACe command using ACQ data or PP data.
Syntax :WAVEform:DATaselect {ACQData|PPData}
:WAVEform:DATaselect?
Example :WAVEFORM:DATASELECT ACQDATA
:WAVEFORM:DATASELECT?
-> :WAVEFORM:DATASELECT ACQDATA

:WAVEform:END

Function Sets or queries the end data point in the waveform specified by the :WAVEform:TRACe command (the main waveform).
Syntax :WAVEform:END {<NRf>}
:WAVEform:END?
<NRf> = 0 to 100100000
Example :WAVEFORM:END 10000
:WAVEFORM:END?
-> :WAVEFORM:END 10000
Description You can query the total number of data points that have been acquired by using the :WAVEform:LENGth? command.

:WAVEform:FORMat

Function Sets or queries the transmission data format.
Syntax :WAVEform:FORMat {ASCIi|BYTE|WORD|DWORD}
:WAVEform:FORMat?
Example :WAVEFORM:FORMAT ASCII
:WAVEFORM:FORMAT?
-> :WAVEFORM:FORMAT ASCII

:WAVEform:LENGth?

Function Queries the total number of data points in the waveform specified by the :WAVEform:TRACe command (the main waveform).
Syntax :WAVEform:LENGth?
Example :WAVEFORM:LENGTH?
-> :WAVEFORM:LENGTH 10010
Description The total number of data points varies depending on the PX8000 settings. For details, see appendix 2, "Relationship between the Time Axis Setting, Record Length, and Sample Rate" in the getting started guide, IM PX8000-03EN.

:WAVEform:MODule?

Function Queries the module of the waveform specified by the :WAVEform:TRACe command.
Syntax :WAVEform:MODule?
Example :WAVEFORM:MODULE?
-> :WAVEFORM:MODULE M760811
Description Values that are returned from each module

NOMODULE	No module
M760811	Voltage module
M760812	Current module
M760813	Current module
M760851	AUX module

:WAVEform:OFFSet?

Function Queries the offset value used to convert the waveform data specified by the :WAVEform:TRACe command to physical values.
Syntax :WAVEform:OFFSet?
Example :WAVEFORM:OFFSET?
-> :WAVEFORM:OFFSET 0.0000000E+00
Description When you are using linear scaling, this command returns a value that includes the scaling data.

5.39 WAVEform Group

:WAVEform:RANGe?

Function Queries the measurement range used to convert the waveform data specified by the :WAVEform:TRACe command to physical values.

Syntax :WAVEform:RANGe?

Example :WAVEFORM:RANGe?
-> :WAVEFORM:RANGe 50.000000E+00

Description When you are using linear scaling, this command returns a value that includes the scaling data.

:WAVEform:RECOrd

Function Sets or queries the main waveform record number that WAVEform commands will be applied to.

Syntax :WAVEform:RECOrd {MINimum|<NRf>}
:WAVEform:RECOrd?
<NRf> = 0 to -4999

Example :WAVEFORM:RECORD -4
:WAVEFORM:RECORD?
-> :WAVEFORM:RECORD -4

Description Specify "MINimum" to specify the minimum record number.
The minimum record number is the record number of the oldest data.

:WAVEform:RECOrd? MINimum

Function Queries the minimum record number in the history memory (for the main waveform).

Syntax :WAVEform:RECOrd? MINimum

Example :WAVEFORM:RECORD?
-> :WAVEFORM:RECORD -8

:WAVEform:SEND?

Function Queries the waveform data specified by the :WAVEform:TRACe command (the main waveform data).

Syntax :WAVEform:SEND? {<NRf>}
<NRf> = 1 to 5000 (this varies depending on the measurement time, sample rate, and memory model)

Example When data is being sent in BYTE or WORD format
:WAVEform:SEND?
-> #N<N-digit number of bytes><Data byte sequence>
When data is being sent in ASCII format
:WAVEform:SEND?
-> <NRf>, <NRf>, <NRf>...

Description

- <NRf> can be omitted. If you specify <NRf>, waveform data is queried <NRf> times in order starting from the record located at the record number specified by :WAVEform:RECOrd - <NRf>.
- If the number of output bytes in binary exceeds nine digits, 0 is returned.

- If the output format is PP and the original data is less than 10 div, only the queried portion of the data is sent.
- If the output format is PP and the number of acquired data values is less than 2k, the section of the data that was acquired is returned in ACQDATA format with the data shifted to the front. (The number of returned data values is 4004 bytes.)
- A frequency value is output for AUX pulse data.

Conversion to physical values when BYTE, WORD, or DWORd output is specified
Use the :WAVEform:RANGe? and :WAVEform:OFFSet? commands to query the range and offset values.

Physical value = (Range × data × 10) / Division + Offset

For power (voltage/current) module

	BYTE	WORD/DWORD
• Voltage/Current		
Division	200	51200
• Power		
Division	156.25	40000

For computed waveform of AUX module

	BYTE	WORD	DWORD
• AUX analog			
Division	93.75	24000	24000
• AUX pulse			
Division	5.96E-5	0.0153	1000

:WAVEform:SIGN?

Function Queries whether signs are included in the block data of the source waveform data specified by :WAVEform:TRACe when the data is queried.

Syntax :WAVEform:SIGN?

Example :WAVEFORM:SIGN? -> :WAVEFORM:SIGN 1

:WAVEform:SRATE? (Sample RATE)

Function Queries the sample rate of the waveform specified by the :WAVEform:TRACe command.

Syntax :WAVEform:SRATE?

Example :WAVEFORM:SRATE?
-> :WAVEFORM:SRATE 500.0E+03

Description This command returns the sample rate of measured data.

:WAVEform:START

Function Sets or queries the start data point in the waveform specified by the :WAVEform:TRACe command (the main waveform).

Syntax :WAVEform:START {<NRf>}
:WAVEform:START?
<NRf> = 0 to (the number of data points – 1)

Example :WAVEFORM:START 0
:WAVEFORM:START?
-> :WAVEFORM:START 0

Description You can query the total number of data points that have been acquired by using the :WAVEform:LENGth? command.

:WAVEform:TRACe

Function Sets or queries the waveform that WAVEform commands will be applied to.

Syntax :WAVEform:TRACe {MATH<x>|<NRf>|P<y>}
:WAVEform:TRACe?
<x> = 1 to 8
<NRf> = 1 to 8
<y> = 1 to 4 (element)

Example :WAVEFORM:TRACE 1
:WAVEFORM:TRACE?
-> :WAVEFORM:TRACE 1

Description An error will occur if nothing is installed in the specified channel.

:WAVEform:TRIGger?

Function Queries the trigger position of the record specified by the :WAVEform:RECOrd command.

Syntax :WAVEform:TRIGger?

Example :WAVEFORM:TRIGGER?
-> :WAVEFORM:TRIGGER 5000

Description Queries the number of points from the beginning of the record to the trigger position.

:WAVEform:TYPE?

Function Queries the acquisition mode of the source waveform.

Syntax :WAVEform:TYPE?

Example :WAVEFORM:TYPE?
-> :WAVEFORM:TYPE NORMAL

Description This command returns "AVERage," "ENVELOpe," or "NORMal."

5.40 XY Group

The commands in this group deal with the X-Y waveform display. You can make the same settings and queries that you can by using the X-Y (SHIFT+DISPLAY SETTING) keys on the front panel.

:XY?

Function Queries all X-Y settings.

Syntax :XY?

:XY:CDISplay (Combine DISplay)

Function Sets or queries whether to combine the displays of Window1 and Window2 on the X-Y waveform display.

Syntax :XY:CDISplay {<Boolean>}

:XY:CDISplay?

Example :XY:CDISPLAY ON

:XY:CDISPLAY? -> :XY:CDISPLAY 1

:XY:DOTConnect

Function Sets or queries whether dot connect is ON or OFF for X-Y waveforms.

Syntax :XY:DOTConnect {<Boolean>}

:XY:DOTConnect?

Example :XY:DOTCONNECT ON

:XY:DOTCONNECT? -> :XY:DOTCONNECT 1

:XY:DECimation

Function Sets or queries the number of dots (after decimation) that X-Y waveforms use.

Syntax :XY:DECimation {<NRf>}

:XY:DECimation?

<NRf> = 2000, 100000

Example :XY:DECIMATION 2000

:XY:DECIMATION?

-> :XY:DECIMATION 2000

:XY:TCLear (Trace CLear on start)

Function Sets or queries whether the X-Y trace-clear-on-start feature is on.

Syntax :XY:TCLear {<Boolean>}

:XY:TCLear?

Example :XY:TCLLEAR ON

:XY:TCLLEAR? -> :XY:TCLLEAR 1

:XY:WAVeform<x1>?

Function Queries all settings related to the specified X-Y waveform.

Syntax :XY:WAVeform<x1>?

<x1> = 1 to 8

:XY:WAVeform<x1>:DISPlay

Function Sets or queries whether the specified X-Y waveform is displayed.

Syntax :XY:WAVeform<x1>:DISPlay {<Boolean>}

:XY:WAVeform<x1>:DISPlay?

<x1> = 1 to 8

Example :XY:WAVEFORM1:DISPLAY ON

:XY:WAVEFORM1:DISPLAY?

-> :XY:WAVEFORM1:DISPLAY 1

:XY:WAVeform<x1>:XTRace

Function Sets or queries the channel that is assigned to the specified X-Y waveform's X-axis.

Syntax :XY:WAVeform<x1>:

XTRace {<NRf>|P<y>|MATH<x2>}

:XY:WAVeform<x1>:XTRace?

<x1> = 1 to 8

<NRf> = 1 to 8

<y> = 1 to 4

<x2> = 1 to 8

Example :XY:WAVEFORM1:XTRACE 1

:XY:WAVEFORM1:XTRACE?

-> :XY:WAVEFORM1:XTRACE 1

:XY:WAVeform<x1>:YTRace

Function Sets or queries the channel that is assigned to the specified XY- waveform's Y-axis.

Syntax :XY:WAVeform<x1>:

YTRace {<NRf>|P<y>|MATH<x2>}

:XY:WAVeform<x1>:YTRace?

<x1> = 1 to 8

<NRf> = 1 to 8

<y> = 1 to 4

<x2> = 1 to 8

Example :XY:WAVEFORM1:YTRACE 2

:XY:WAVEFORM1:YTRACE?

-> :XY:WAVEFORM1:YTRACE 2

:XY:WINDow<x>?

Function Queries all settings related to the specified X-Y window.

Syntax :XY:WINDow<x>?
<x> = 1, 2

:XY:WINDow<x>:MODE

Function Sets or queries whether the specified X-Y window is displayed.

Syntax :XY:WINDow<x>:MODE {<Boolean>}
:XY:WINDow<x>:MODE?
<x> = 1, 2

Example :XY:WINDOW1:MODE ON
:XY:WINDOW1:MODE?
-> :XY:WINDOW1:MODE 1

:XY:WINDow<x>:TRANge

Function Sets or queries the T-Y waveform range to display in the XY window.

Syntax :XY:WINDow<x>:TRANge {<NRf>,<NRf>}
:XY:WINDow<x>:TRANge?
<NRf> = -5.00 to 5.00 div

Resolution: 10/record length
Example :XY:WINDOW1:TRANGE -5, 5
:XY:WINDOW1:TRANGE?
-> :XY:WINDOW1:
TRANGE -5.000000000000,5.000000000000

5.41 ZOOM Group

The commands in this group deal with the zoomed display. You can make the same settings and queries that you can by using the ZOOM key on the front panel.

If the selectable range of the time axis is “<NRf> = -5 to 5div,” the selectable range varies depending on settings such as the record length. For details, see “Selectable Range of Cursor Positions” under “Notes about Cursor Measurement” in chapter 15 of IM PX8000-01EN.

: ZOOM?

Function Queries all zoom settings.

Syntax : ZOOM?

: ZOOM: ASCRoll?

Function Queries all auto scroll settings.

Syntax : ZOOM: ASCRoll?

: ZOOM: ASCRoll: JUMP

Function Moves the center position of the zoom box to the left or right edge of the main window.

Syntax : ZOOM: ASCRoll: JUMP {LEFT|RIGHT}

Example : ZOOM: ASCROLL: JUMP RIGHT

: ZOOM: ASCRoll: SPEEd

Function Sets or queries the auto scroll speed of the zoom box.

Syntax : ZOOM: ASCRoll: SPEEd {<NRf>}

: ZOOM: ASCRoll: SPEEd?

<NRf> = 1 to 10

Example : ZOOM: ASCROLL: SPEED 5

: ZOOM: ASCROLL: SPEED?

-> : ZOOM: ASCROLL: SPEED 5

: ZOOM: ASCRoll: START

Function Starts auto scrolling.

Syntax : ZOOM: ASCRoll: START {LEFT|RIGHT}

Example : ZOOM: ASCROLL: STAR LEFT

: ZOOM: ASCRoll: STOP

Function Stops auto scrolling.

Syntax : ZOOM: ASCRoll: STOP

Example : ZOOM: ASCROLL: STOP

: ZOOM: ASCRoll: TARGeT

Function Sets or queries the zoom window that will be auto scrolled.

Syntax : ZOOM: ASCRoll: TARGeT {Z1|Z2}

: ZOOM: ASCRoll: TARGeT?

Example : ZOOM: ASCROLL: TARGET Z1

: ZOOM: ASCROLL: TARGET?

-> : ZOOM: ASCROLL: TARGET Z1

: ZOOM: FITMeasure

Function Moves the range on which automated measurement of waveform parameters is performed to the zoom waveform display frame.

Syntax : ZOOM: FITMeasure {Z1|Z2}

Example : ZOOM: FITMEASURE Z1

: ZOOM: FITMEASURE?

-> : ZOOM: FITMEASURE Z1

: ZOOM: FORMat<x>

Function Sets or queries the display format of the specified zoom waveform.

Syntax : ZOOM: FORMat<x> {MAIN|<NRf>}

: ZOOM: FORMat<x>?

<NRf> = 1, 2, 3, 4, 6, 8, 12, 16

<x> = 1, 2 (sets the target zoom box)

Example : ZOOM: FORMAT1 1

: ZOOM: FORMAT1? -> : ZOOM: FORMAT1 1

: ZOOM: MAG<x>

Function Sets or queries the horizontal magnification of the specified zoom waveform.

Syntax : ZOOM: MAG<x> {<NRf>}

: ZOOM: MAG<x>?

<x> = 1, 2 (sets the target zoom box)

<NRf> = 1 to 200000000

Example : ZOOM: MAG1 100

: ZOOM: MAG1? -> : ZOOM: MAG1 100.0

Description Use this command when the PX8000 is using an external clock. When the PX8000 is using the internal clock, use the : ZOOM: TDIV<x> command to set the magnification.

The magnification is set as a percentage.

: ZOOM: MAIN

Function Sets or queries the proportion of the main waveform display area that is used when zooming waveforms.

Syntax : ZOOM: MAIN {50|OFF}

: ZOOM: MAIN?

Example : ZOOM: MAIN 50

: ZOOM: MAIN? -> : ZOOM: MAIN 50

-> :ZOOM:Z2TARGET MAIN

: ZOOM:MODE<x>

Function Sets or queries whether the specified zoom waveform is displayed.

Syntax :ZOOM:MODE<x> {<Boolean>}
:ZOOM:MODE<x>?

Example :ZOOM:MODE1 ON
:ZOOM:MODE1? -> :ZOOM:MODE1 1

: ZOOM:MOVE

Function Moves the zoom box to the start position of the waveform.

Syntax :ZOOM:MOVE {Z1|Z2}

Example :ZOOM:MOVE Z1

: ZOOM:POSition<x>

Function Sets or queries the zoom position of the specified zoom waveform.

Syntax :ZOOM:POSition<x> {<Nrf>}
:ZOOM:POSition<x>?

<x> = 1, 2 (sets the target zoom box)

<Nrf> = -5 to 5 div

Example :ZOOM:POS1 2
:ZOOM:POS1?
-> :ZOOM:POS1 2.000000000000

: ZOOM:TDIV<x>

Function Sets or queries the T/DIV value of the specified zoom waveform.

Syntax :ZOOM:TDIV<x> {<Time>|HOUR1|HOUR2|
HOUR3|HOUR4|HOUR5|HOUR6|HOUR7|HOUR8|
HOUR9|HOUR10|HOUR12|DAY1|DAY2|DAY3}
:ZOOM:TDIV<x>?

<x> = 1, 2 (sets the target zoom box)

<Time> = the same as the T/Div setting

Example :ZOOM:TDIV1 100us
:ZOOM:TDIV1? -> :ZOOM:TDIV1 100.0E-
06

Description Use this command when the PX8000 is using the internal clock. When the PX8000 is using an external clock, use the :ZOOM:MAG<x> command to set the magnification.

: ZOOM:WLAYout (Window LAYout)

Function Sets or queries the window layout that is used when waveforms are zoomed.

Syntax :ZOOM:WLAYout {VERTical|SIDE}
:ZOOM:WLAYout?

Example :ZOOM:WLAY SIDE
:ZOOM:WLAY? -> :ZOOM:WLAY SIDE

: ZOOM:Z2Target

Function Sets or queries the source window of Z2 when both Z1 and Z2 are displayed.

Syntax :ZOOM:Z2Target {MAIN|Z1}
:ZOOM:Z2Target?

Example :ZOOM:Z2TARGET MAIN
:ZOOM:Z2TARGET?

5.42 Common Command Group

The commands in this group are defined in IEEE 488.2-1987 and are independent from the instrument's individual functions. There are no front panel keys that correspond to the commands in this group.

*CAL?

Function Executes calibration and queries the result.
Syntax *CAL?
Example *CAL? -> 0
Description This command returns 0 if calibration is completed successfully and 1 otherwise.

*CLS

Function Clears the standard event register, extended event register, and error queue.
Syntax *CLS
Example *CLS
Description • If the *CLS command is located immediately after the program message terminator, the output queue is also cleared.
• For information about each register and queue, see chapter 6.

*ESE

Function Sets or queries the standard event enable register.
Syntax *ESE {<NRf>}
*ESE?
<NRf> = 0 to 255
Example *ESE 251
*ESE? -> 251
Description • Specify the value as a sum of the values of each bit in decimal format.
For example, specifying *ESE 251 will cause the standard enable register to be set to 11111011. In this case, bit 2 of the standard event register is disabled. This means that bit 5 (ESB) of the status byte register is not set to 1, even if a query error occurs.
• The default value is *ESE 0 (all bits disabled).
• A query using *ESE? will not clear the contents of the standard event enable register.
• For information about the standard event enable register, see page 6-3.

*ESR?

Function Queries and clears the standard event register.
Syntax *ESR?
Example *ESR? -> 32
Description • This command returns a sum of the values of each bit in decimal format.
• When an SRQ is sent, you can check what types of events have occurred.
• For example, if a value of 32 is returned, this indicates that the standard event register is set to 00100000. This means that the SRQ occurred due to a command syntax error.
• A query using *ESR? will clear the contents of the standard event register.
• For information about the standard event register, see page 6-3.

*IDN?

Function Queries the PX8000 model.
Syntax *IDN?
Example *IDN?
-> YOKOGAWA, PX8000, 123456789, F1.01
Description This command returns a string in the following format: <Manufacturer>, <Model>, <Serial no.>, <Firmware version>.

*OPC

Function Sets bit 0 (the OPC bit) of the standard event register to 1 upon the completion of the specified overlap command.
Syntax *OPC
Example *OPC
Description • For details on how to use the *OPC command to synchronize the PX8000, see page 4-8.
• The :COMMunicate:OPSE command is used to specify the overlap command.
• If *OPC is not the last command of the message, its operation is not guaranteed.

*OPC?

Function Returns ASCII code 1 when the specified overlap command is completed.
Syntax *OPC?
Example *OPC? -> 1
Description • For details on how to use the *OPC? command to synchronize the PX8000, see page 4-8.
• The :COMMunicate:OPSE command is used to specify the overlap command.
• If *OPC? is not the last command of the message, its operation is not guaranteed.

***OPT?**

Function Queries the installed options.

Syntax *OPT?

Example *OPT?

```
-> CH100MPOINTS, PRINTER, IRIG,
HARMONICS, PROBEPOWER
```

Description This command returns the <size of waveform memory> and whether the <printer>, <IRIG>, <harmonic measurement>, and <probe power supply output> options are installed.

- Size of waveform memory: The total size of waveform data memory.
No options (10 Mpoint): "CH10MPOINTS"
/M1 option (50 Mpoints): "CH50MPOINTS"
/M2 option (100 Mpoints): "CH100MPOINTS"
- Printer: "PRINTER"
- IRIG: "IRIG"
- Harmonic measurement: "HARMONICS"
- Probe power supply output: "PROBEPOWER"
- Sensor power supply output
/PD: "SENSORPOWER"
/PD2: "SENSORPOWER2"

An error occurs if there is a query after this command.

***RST**

Function Initializes settings.

Syntax *RST

Example *RST

Description This command also clears the *OPC and *OPC? commands that have been sent.

***SRE**

Function Sets or queries the service request enable register value.

Syntax *SRE <NRf>

*SRE?

<NRf> = 0 to 255

Example *SRE 239

*SRE? -> 175

***STB?**

Function Queries the status byte register value.

Syntax *STB?

Example *STB? -> 4

- Description
- This command returns a sum of the values of each bit in decimal format.
 - Because the register is read without executing serial polling, bit 6 is an MSS bit, not an RQS bit.
For example, if a value of 4 is returned, this indicates that the status byte register is set to 00000100. This means that the error queue is not empty (in other words, an error occurred).
 - A query using *STB? will not clear the contents of the status byte register.
 - For information about the status byte register, see page 6-2.

***TST?**

Function Performs a self-test and queries the result. The self-test consists of tests of each kind of internal memory.

Syntax *TST?

Example *TST? -> 0

Description This command returns 0 if the self-test is successful and 1 otherwise.

***WAI**

Function Holds the execution of the subsequent command until the specified overlap command is completed.

Syntax *WAI

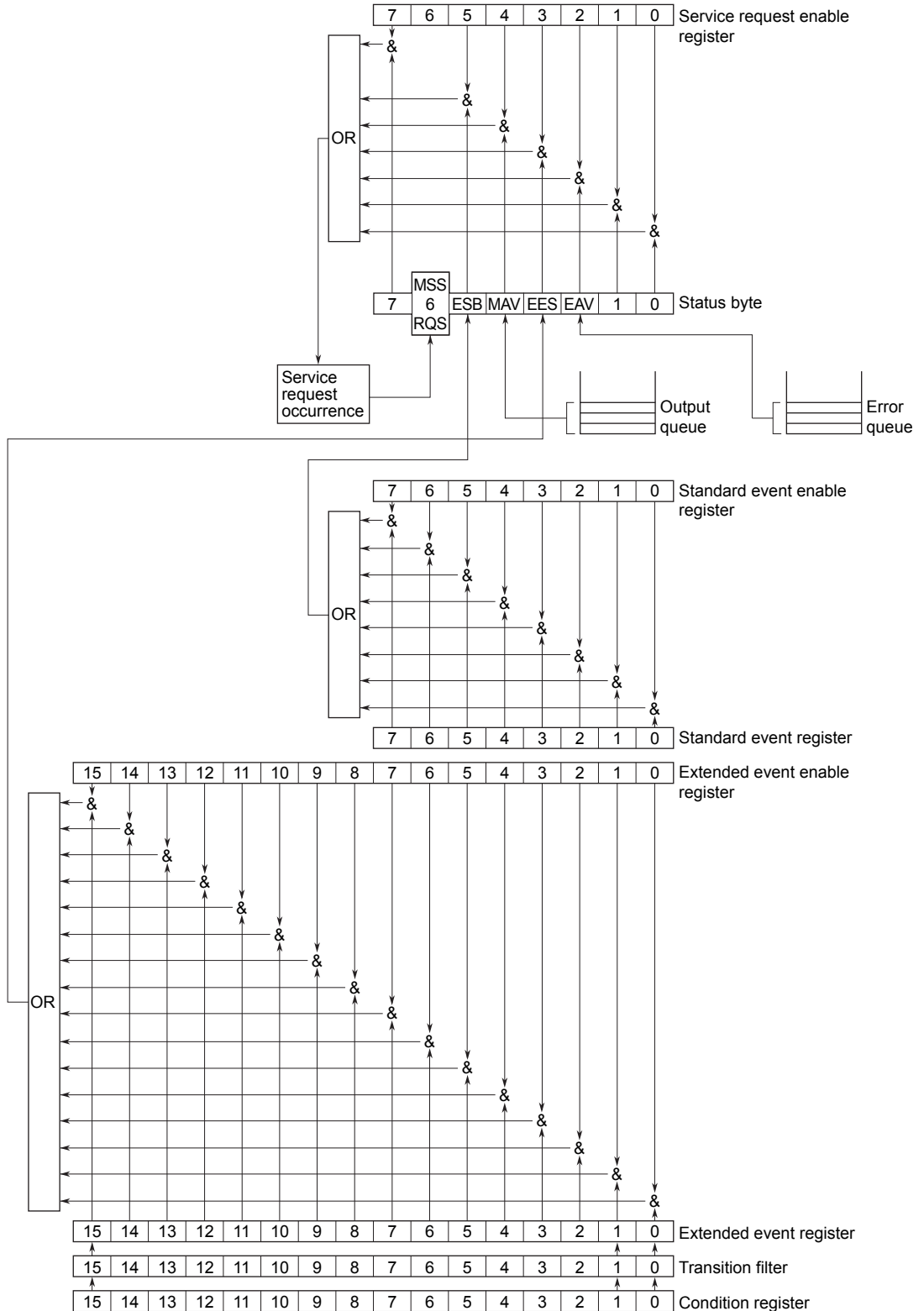
Example *WAI

- Description
- For details on how to use the *WAI command to synchronize the PX8000, see page 4-8.
 - The :COMMunicate:OPSE command is used to specify the overlap command.

6.1 About Status Reports

Status Reports

The figure below shows the format of status reports that are read by serial polling. This status report format is an extended version of the status report format defined in IEEE 488.2-1992.



6.1 About Status Reports

Overview of Registers and Queues

Name	Function	Write	Read
Status byte	–	–	Serial polling (RQS), *STB? (MSS)
Service request enable register	Status byte mask	*SRE	*SRE?
Standard event register	Indicates device status changes	–	*ESR?
Standard event enable register	Standard event register mask	*ESE	*ESE?
Extended event register	Indicates device status changes	–	STATUS:EESR?
Extended event enable register	Extended event register mask	STATUS:EESE	STATUS:EESE?
Condition register	Current device status	–	STATUS:CONDition?
Transition filter	Conditions that change the extended event register	STATUS:FILTer<x>	STATUS:FILTer<x>?
Output queue	Stores response messages for queries	Query commands	
Error Queue	Stores error numbers and messages	–	STATUS:ERRor?

Registers and Queues That Affect the Status Byte

The following registers affect the status byte bits.

Standard event register	Sets bit 5 (ESB) of the status byte to 1 or 0.
Output queue	Sets bit 4 (MAV) of the status byte to 1 or 0.
Extended event register	Sets bit 3 (EES) of the status byte to 1 or 0.
Error queue	Sets bit 2 (EAV) of the status byte to 1 or 0.

Enable Registers

The following registers are used to mask a bit so that the bit will not affect the status byte even when it is set to 1.

Service request enable register	Masks bits of the status byte.
Standard event register	Masks bits in the standard event register.
Extended event register	Masks bits in the extended event register.

Reading and Writing to Registers

For example, you can use the *ESE command to set the standard event enable register bits to ones and zeros. You can use the *ESE? command to query whether the standard event enable register bits are ones or zeros. For details on commands, see chapter 5.

6.2 Status Byte

Status Byte



- **Bits 0 and 7**
Not used (always zero)
- **Bit 1**
Reserved
- **Bit 2 EAV (Error Available)**
This bit is 1 when the error queue is not empty. In other words, this bit is set to 1 when an error occurs. For details, see page 6-6.
- **Bit 3 EES (Extend Event Summary Bit)**
This bit is 1 when the logical AND of the extended event register and its corresponding event register is 1. In other words, this bit is set to 1 when a certain event takes place inside the instrument. For details, see page 6-5.
- **Bit 4 MAV (Message Available)**
This bit is 1 when the output queue is not empty. In other words, this bit is set to 1 when there is data to be transmitted in response to a query. For details, see page 6-6.
- **Bit 5 ESB (Event Summary Bit)**
This bit is 1 when the logical AND of the standard event register and its corresponding event register is 1. In other words, this bit is set to 1 when a certain event takes place inside the instrument. For details, see page 6-4.
- **Bit 6 RQS (Request Service)/MSS (Master Status Summary)**
This bit is 1 when the logical AND of the status byte excluding bit 6 and the service request enable register is 1. In other words, this bit is set to 1 when the instrument requests service from the controller. RQS is set to 1 when the MSS bit changes from 0 to 1 and is cleared when serial polling is carried out or when the MSS bit changes to 0.

Bit Masking

To mask a bit in the status byte so that it does not trigger an SRQ, set the corresponding bit of the service request enable register to zero.

For example, to mask bit 2 (EAV) so that service is not requested when an error occurs, set bit 2 of the service request enable register to 0. Do this using the `*SRE` command. To query whether each bit of the service request enable register is 1 or 0, use `*SRE?`. For details on the `*SRE` command, see chapter 5.

Status Byte Operation

A service request is issued when bit 6 in the status byte becomes 1. Bit 6 is set to 1 when any other bit becomes 1 (when the corresponding bit of the service request enable register is also set to 1). For example, if an event occurs and the logical AND of a standard event register bit and its corresponding enable register bit is 1, then bit 5 (ESB) is set to 1. At this point, if bit 5 of the service request enable register is 1, bit 6 (MSS) is set to 1, and the PX8000 requests service from the controller.

You can check what type of event occurred by reading the contents of the status byte.

Reading the Status Byte

There are two ways to read the contents of the status byte.

- ***STB? Query**
Bit 6 functions as MSS when a query is made using `*STB?`. This causes the MSS to be read. This query does not cause any of the status byte bits to be cleared after the status byte is read.
- **Serial Polling**
Serial polling causes bit 6 to function as an RQS bit. This causes the RQS to be read. After the status byte is read, only the RQS bit is cleared. You cannot read the MSS bit when serial polling is used.

Clearing the Status Byte

There is no way to clear all of the bits in the status byte. The bits that are cleared vary for each operation as follows:

- ***STB? Query**
None of the bits are cleared.
- **Serial Polling**
Only the RQS bit is cleared.
- **A *CLS command is received.**
When a `*CLS` command is received, the status byte itself is not cleared, but the contents of the standard event register, which affect the bits in the status byte, are cleared. As a result, the corresponding status byte bits are cleared. Because the output queue is not cleared with a `*CLS` command, bit 4 (MAV) in the status byte is not affected. However, the output queue will be cleared if the `*CLS` command is received just after a program message terminator.

6.3 Standard Event Register

Standard Event Register

7	6	5	4	3	2	1	0
PON	URQ	CME	EXE	DDE	QYE	RQC	OPC

- **Bit 7 PON (Power ON)**
This bit is set to 1 when the PX8000 is turned on.
- **Bit 6 URQ (User Request)**
Not used (always zero)
- **Bit 5 CME (Command Error)**
This bit is set to 1 when there is a command syntax error.
Example Incorrectly spelled command name; 9 used in octal data.
- **Bit 4 EXE (Execution Error)**
This bit is set to 1 when the command syntax is correct, but the command cannot be executed in the current state.
Example The PX8000 receives a command whose parameter is outside the selectable range. An attempt is made to print a hard copy while the PX8000 is running.
- **Bit 3 DDE (Device Error)**
This bit is set to 1 when a command cannot be executed for internal reasons other than a command syntax error or command execution error.
- **Bit 2 QYE (Query Error)**
This bit is set to 1 when a query command is received, but the output queue is empty or the data is lost.
Example There is no response data. Data is lost due to an overflow in the output queue.
- **Bit 1 RQC (Request Control)**
Not used (always zero)
- **Bit 0 OPC (Operation Complete)**
This bit is set to 1 upon the completion of the operation designated by the *OPC command (see chapter 5).

Bit Masking

To mask a certain bit of the standard event register so that it does not cause bit 5 (ESB) in the status byte to change, set the corresponding bit of the standard event enable register to zero.

For example, to mask bit 2 (QYE) so that ESB will not be set to 1 even if a query error occurs, set bit 2 of the standard event enable register to zero. Do this using the *ESE command. To query whether each bit of the standard event enable register is 1 or 0, use *ESE?. For details on the *ESE command, see chapter 5.

Standard Event Register Operation

The standard event register indicates eight types of events that occur inside the PX8000. When one of the bits in this register becomes 1 (and the corresponding bit of the standard event enable register is also 1), bit 5 (ESB) in the status byte is set to 1.

Example

1. A query error occurs.
2. Bit 2 (QYE) is set to 1.
3. If bit 2 of the standard event enable register is 1, bit 5 (ESB) in the status byte is set to 1.

You can also check what type of event occurred in the PX8000 by reading the contents of the standard event register.

Reading the Standard Event Register

You can use the *ESR? command to read the contents of the standard event register. The register is cleared after it is read.

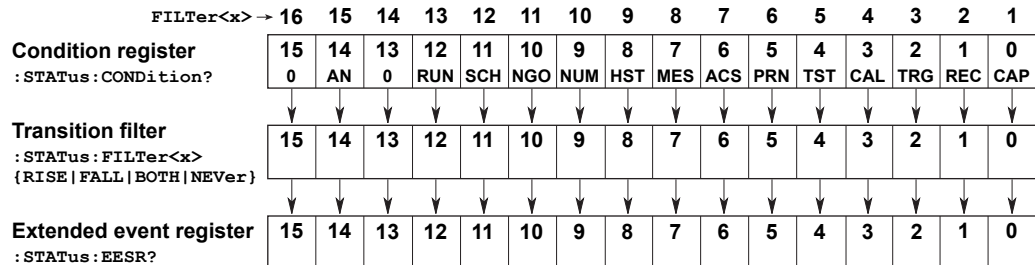
Clearing the Standard Event Register

The standard event register is cleared when:

- The contents of the standard event register are read using the *ESR? command.
- A *CLS command is received.
- The PX8000 is turned off and then back on.

6.4 Extended Event Register

The extended event register receives information about changes in the condition register, which indicates the PX8000's internal condition. The information is the result of edge detection performed by the transition filter.



The condition register bits are described below.

Bit 0	CAP (Capture)	This bit is 1 when waveform acquisition is in progress.
Bit 1	REC (Record)	This bit is 1 when recording is in progress.
Bit 2	TRG (Awaiting Trigger)	This bit is 1 when the PX8000 is waiting for a trigger.
Bit 3	CAL (Calibration)	This bit is 1 when calibration is in progress.
Bit 4	TST (Testing)	This bit is 1 when a self-test is in progress.
Bit 5	PRN (Printing)	This bit is 1 when the internal printer is operating or when data is being transmitted to a network printer.
Bit 6	ACS (Accessing)	This bit is 1 when a drive is being accessed.
Bit 7	MES (Measuring)	This bit is 1 when automated measurement of waveform parameters is in progress.
Bit 8	HST (History Search)	This bit is 1 when a history search is in progress.
Bit 9	NUM (Numeric Measuring)	This bit is 1 when a numeric measurement is in progress.
Bit 10	NGO (Go/No-Go)	This bit is 1 when a GO/NO-GO search is in progress.
Bit 11	SCH (Search)	This bit is 1 when a search is in progress.
Bit 12	RUN (Running)	This bit is 1 when a measurement is in progress.
Bit 14	AN (Analysis)	This bit is 1 when an analysis is in progress.

The transition filter parameters detect changes in the specified condition register bits (numeric suffixes 1 to 16) and overwrite the extended event register in the following ways.

RISE	The specified extended event register bit is set to 1 when the corresponding condition register bit changes from 0 to 1.
FALL	The specified extended event register bit is set to 1 when the corresponding condition register bit changes from 1 to 0.
BOTH	The specified extended event register bit is set to 1 when the corresponding condition register bit changes from 0 to 1 or from 1 to 0.
NEVer	Always zero.

6.5 Output and Error Queues

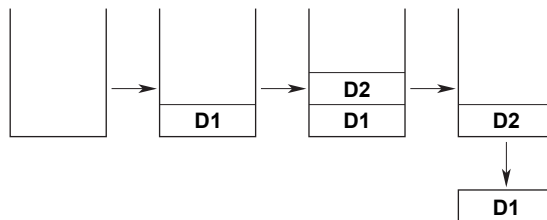
Output Queue

The output queue stores query response messages. For example, if you send a `:WAVEform:SEND?` command, which requests for the transmission of acquired data, the data is stored in the output queue until it is read.

As shown below, data is stored in order and read from the oldest message first. The output queue is cleared when:

- A new message is received from the controller.
- A deadlock occurs (see page 4-2).
- A device clear command (DCL or SDC) is received.
- The PX8000 is turned off and then back on.

The `*CLS` command does not clear the output queue. You can determine whether the output queue is empty by checking bit 4 in the status byte (MAV).



Error Queue

When an error occurs, the error queue stores the error number and message. For example, if the PX8000 receives an incorrect program message from the controller, the error number (113) and the error message (“Undefined header”) are stored in the error queue when the PX8000 displays the error message.

You can use the `:STATUS:ERROR?` query to read the contents of the error queue. Like the output queue, the messages in the error queue are read from the oldest one first.

If the error queue overflows, the last message is replaced with the following message: 350, “Queue overflow.”

The error queue is cleared when:

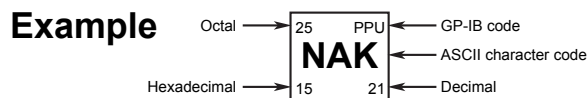
- A `*CLS` command is received.
- The PX8000 is turned off and then back on.

You can determine whether the error queue is empty by checking bit 2 in the status byte (EAV).

Appendix 1 ASCII Character Codes

The following table contains ASCII character codes.

	0	1	2	3	4	5	6	7
0	0 NUL	20 DEL	40 SP	60 0	80 @	100 P	120 '	140 p
1	1 SOH	21 DC1	41 !	61 1	81 A	101 Q	121 a	141 q
2	2 STX	22 DC2	42 "	62 2	82 B	102 R	122 b	142 r
3	3 ETX	23 DC3	43 #	63 3	83 C	103 S	123 c	143 s
4	4 EOT	24 DC4	44 \$	64 4	84 D	104 T	124 d	144 t
5	5 ENQ	25 NAK	45 %	65 5	85 E	105 U	125 e	145 u
6	6 ACK	26 SYN	46 &	66 6	86 F	106 V	126 f	146 v
7	7 BEL	27 ETB	47 ,	67 7	87 G	107 W	127 g	147 w
8	8 BS	28 CAN	48 (68 8	88 H	108 X	128 h	148 x
9	9 HT	29 EM	49)	69 9	89 I	109 Y	129 i	149 y
A	10 LF	30 SUB	50 *	70 :	90 J	110 Z	130 j	150 z
B	11 VT	31 ESC	51 +	71 ;	91 K	111 [131 k	151 {
C	12 FF	32 FS	52 ,	72 <	92 L	112 \	132 l	152
D	13 CR	33 GS	53 -	73 =	93 M	113]	133 m	153 }
E	14 SO	34 RS	54 .	74 >	94 N	114 ^	134 n	154 ~
F	15 SI	35 US	55 /	75 ?	95 O	115 _	135 o	155 DEL (RUBOUT)
	Address command	Universal command	Listener address		Talker address		Secondary command	



Appendix 2 Error Messages

This section explains communication error messages.

- Messages can be displayed in English or Japanese on the PX8000. When they are read from a PC or other similar device, messages are displayed in English.
 - If servicing is necessary to solve the problem indicated by a message, contact your nearest YOKOGAWA dealer.
 - Only communication error messages are listed here. For details on other error messages, see the user's manual, IM PX8000-02EN.
 - Communication syntax errors 100 to 199
 - Communication execution errors 200 to 299
 - Device-specific and other errors 300 to 399
 - Communication query errors 400 to 499
 - System errors (communication) 300 and 399
- } Listed below

Communication Syntax Errors (100 to 199)

Code	Message	Corrective Action	Page
102	Syntax error.	A syntax error not covered by error codes 100 to 199.	Chapters 4 and 5
103	Invalid separator.	Separate data values with a comma.	4-1
104	Data type error.	See page 4-6 and 4-7 and use the correct data type for each parameter.	4-6 and 4-7
105	GET not allowed.	GET is not supported as a response to an interface message.	3-8
108	Parameter not allowed.	Check the number of data values.	4-6 and chapter 5
109	Missing parameter.	Be sure to include all necessary data values.	4-6 and chapter 5
111	Header separator error.	Use a comma to separate each header from its data.	4-1
112	Program mnemonic too long.	Check the command length.	Chapter 5
113	Undefined header.	Check the header.	Chapter 5
114	Header suffix out of range.	Check the header.	Chapter 5
120	Numeric data error.	A value must be specified where the syntax contains <NRf>.	4-6
123	Exponent too large.	Where the syntax contains <NR3>, make the exponent that follows E smaller.	4-6 and chapter 5
124	Too many digits.	Limit numeric values to 255 digits or less.	4-6 and chapter 5
128	Numeric data not allowed.	Use a data type other than <NRf>.	4-6 and chapter 5
131	Invalid suffix.	Check the units where the syntax contains <Voltage>, <Current>, <Power>, <Time>, or <Frequency>.	4-6
134	Suffix too long.	Check the units where the syntax contains <Voltage>, <Current>, <Power>, <Time>, or <Frequency>.	4-6
138	Suffix not allowed.	Units of measurement can only be used where the syntax contains <Voltage>, <Current>, <Power>, <Time>, or <Frequency>.	4-6
141	Invalid character data.	Be sure to select one of the listed choices when the syntax contains {...}.	Chapters 4 and 5
144	Character data too long.	Check the spelling of the strings when the syntax contains {...}.	Chapter 5
148	Character data not allowed.	Use a data type other than <String>.	Chapter 5
150	String data error.	Enclose parameters with single or double quotation marks where the syntax contains <String>.	4-7
151	Invalid string data.	The parameter is either too long, or it contains an unusable character.	Chapter 5
158	String data not allowed.	Use a data type other than <String>.	Chapter 5
161	Invalid block data.	<Block data> cannot be used.	4-7 and chapter 5
168	Block data not allowed.	<Block data> cannot be used.	4-7 and chapter 5

Code	Message	Corrective Action	Page
171	Missing Right	Mathematical operations cannot be used.	—
172	Invalid expression.	Mathematical operations cannot be used.	Chapter 5
178	Expression data not allowed.	Mathematical operations cannot be used.	Chapter 5
181	Invalid outside macro definition.	The PX8000 does not support the IEEE 488.2 macro specifications.	—

Communication Execution Errors (200 to 299)

Code	Message	Corrective Action	Page
221	Setting conflict.	Check settings that are related to each other.	Chapter 5
222	Data out of range.	Check the ranges of the settings.	Chapter 5
223	Too much data.	Check data byte lengths.	Chapter 5
224	Illegal parameter value.	Check the ranges of the settings.	Chapter 5
225	OverFlow.	Keep program messages to 1024 bytes or less in length, including <PMT>.	4-2
226	Out Of Memory.	Keep program messages to 1024 bytes or less in length, including <PMT>.	4-2
241	Hardware missing.	Check that the specified options are all installed.	—
260	Expression error.	Mathematical operations cannot be used.	—
270	Macro error.	The PX8000 does not support the IEEE 488.2 macro specifications.	—
272	Macro execution error.	The PX8000 does not support the IEEE 488.2 macro specifications.	—
273	Illegal macro label.	The PX8000 does not support the IEEE 488.2 macro specifications.	—
275	Macro definition too long.	The PX8000 does not support the IEEE 488.2 macro specifications.	—
276	Macro recursion error.	The PX8000 does not support the IEEE 488.2 macro specifications.	—
277	Macro redefinition not allowed.	The PX8000 does not support the IEEE 488.2 macro specifications.	—
278	Macro header not found.	The PX8000 does not support the IEEE 488.2 macro specifications.	—

Appendix 2 Error Messages

Communication Query Errors (400 to 499)

Code	Message	Corrective Action	Page
410	Query INTERRUPTED.	Check the transmission and reception order.	4-2
420	Query UNTERMINATED.	Check the transmission and reception order.	4-2
430	Query DEADLOCKED.	Keep program messages to 1024 bytes or less in length, including <PMT>.	4-2
440	Query UNTERMINATED after indefinite response.	Do not write a query after *IDN? or *OPT?.	—

System Communication Errors (300 and 399)

Code	Message	Corrective Action	Page
300	Communication device-specific error.	Servicing required.	—
399	Fatal error in the communication driver.	Servicing required.	—

Other Error (350)

Code	Message	Corrective Action	Page
350	Queue overflow.	Read the error queue.	6-6

Note

Code 350 occurs when the error queue overflows. This error is only returned in response to a :STATUS: ERROR? query; it is never displayed on the screen.

Appendix 3 About the IEEE 488.2-1992 Standard

The PX8000's GP-IB interface conforms to the IEEE 488.2-1992 standard. This standard specifies that the following 23 items be stated in the document. This section describes these items.

- (1) **Of the IEEE 488.1 interface functions, the subsets that are supported**
See section 3.2, "GP-IB Interface Features and Specifications."
- (2) **The operation of the device when it is assigned an address outside the 0 to 30 range**
The address of this instrument cannot be set to an address outside the 0 to 30 range.
- (3) **Reaction of the device when the user changes the address**
The address change is detected when the user presses UTILITY and then the Remote Ctrl soft key, and changes the address. The new address is valid until the next time it is changed.
- (4) **Device settings at power-on. The commands that can be used at power-on.**
As a basic rule, the previous settings (the settings that were in use when the PX8000 was turned off) are used.
There are no limitations on the commands that can be used at power-on.
- (5) **Message exchange options**
 - (a) **Input buffer size**
4096 bytes.
 - (b) **Queries that return multiple response messages**
See the example of the commands given in chapter 5.
 - (c) **Queries that create response data when the command syntax is being analyzed**
All queries create response data when the command syntax is analyzed.
 - (d) **Queries that create response data during reception**
There are no queries of which the response data are created upon receiving a send request from the controller.
 - (e) **Commands that have parameters that restrict one another**
See the example of the commands given in chapter 5.
- (6) **Items that are included in the functional or composite header elements constituting a command**
See chapters 4 and 5.
- (7) **Buffer sizes that affect block data transmission**
When block data is being transmitted, the output queue is expanded to match the size of the data that is being transmitted.
- (8) **A list of program data elements that can be used in equations and their nesting limitations**
Equations cannot be used.
- (9) **Syntax of the responses to queries**
See the example of the commands given in chapter 5.
- (10) **Communication between devices that do not follow the response syntax is not supported by the PX8000.**
- (11) **Size of the response data block**
1 to 2004000 bytes
- (12) **A list of supported common commands**
See section 5.42, "Common Command Group."
- (13) **Device condition after a successful calibration**
The device will be performing measurements.
- (14) **The maximum length of block data that can be used for the *DDT trigger macro definition**
Not supported.
- (15) **The maximum length of the macro label for defining macros, the maximum length of block data that can be used for the macro definition, and the process when recursion is used in macro definitions**
Macro functions are not supported.
- (16) **Reply to the *IDN? query**
See section 5.42, "Common Command Group."
- (17) **Size of storage area for protected user data for PUD and *PUD?**
*PUD and *PUD? are not supported.
- (18) **The length of the *RDT and *RDT? resource names**
*RDT and *RDT? are not supported.

(19) The change in the status due to *RST, *LRN?, *RCL, and *SAV

***RST**

See section 5.42, "Common Command Group."

***LRN?, *RCL, and *SAV**

These common commands are not supported.

(20) The extent of the self-test using the *TST? command

Performs the same internal memory test that is executed when the user presses UTILITY and then the Self Test soft key, and executes the MEMORY test.

(21) The structure of the extended return status

See chapter 6.

(22) Whether each command is processed in an overlapped manner or sequentially

See section 4.5, "Synchronization with the Controller" and chapter 5.

(23) The description of the execution of each command

See the explanations of each command's function in chapter 5; the features guide, IM PX8000-01EN; and the user's manual, IM PX8000-02EN.

Index

Symbols

	page
<Boolean>	4-7
<Current>	4-6
<Frequency>	4-6
<NRF>	4-6
<Power>	4-6
<Time>	4-6
<Voltage>	4-6

Numerics

	page
1-cycle mode	5-93
1P2W	5-82
1P3W	5-82
3P3W	5-82
3P3W(3V3A)	5-82
3P3W to 3V3A conversion	5-98
3P4W	5-82
4-, 8-, and 16-value displays	5-53
4 Items	5-53
8 Items	5-53
16 Items	5-53

A

	page
abbreviated form	4-5
analysis source points, number (FFT)	5-59
analysis-source start point (FFT)	5-59
angle cursor (T-Y)	5-36
apparent power equation	5-101
ASCII character codes	App-1
attenuation constant	5-98
auto naming (file)	5-63
auto scrolling	5-140
averaging	5-98
averaging coefficient	5-98
averaging type	5-98

B

	page
background	5-75
backlight, automatic off	5-123
bar graph display format	5-46
bar graph item	5-46
beep (GO/NO-GO)	5-66
beep (trigger)	5-126
block data	4-7

C

	page
calibration	5-25, 5-142
center value, level width	5-131
character data	4-7
character notations	iv
clear trace	5-31
click sound	5-121
columns, number of	5-52
commands	4-3
comment (file)	5-64
comment (screen capture)	5-75
comment (screen printing)	5-71
common command header	4-3

computation range	5-86
computation window (FFT)	5-61
condition register	5-118
corrected power	5-100
CT ratio	5-80
cutoff frequency	5-86
cycle trace (measure)	5-93
cyclic statistical processing (measure)	5-93

D

	page
damping rate (FFT)	5-61
damping rate (MATH)	5-85
data	4-6
data loading	5-63
data saving	5-63
data saving (screen capture)	5-75
data transfer rate (Ethernet)	1-2
data transfer rate (GP-IB)	3-3
data transfer rate (USB)	2-2
date	5-121
DCL (Device Clear)	3-7
deadlock	4-2
delay (trigger)	5-129
delta computation	5-98
delta computation mode	5-98
delta computation type	5-98
delta to star conversion	5-98
deskew	5-78
determination level (search)	5-112
determination logic	5-67
determination mode	5-67
determination range (GO/NO-GO)	5-69
determination range (history)	5-73
determinations, number of	5-67
differential current	5-98
differential voltage	5-98
display mode	5-47
display range (bar graph display)	5-46
distal	5-90

E

	page
edge polarity (search)	5-112
efficiency	5-98
efficiency equation	5-99
electric current auto range	5-77
error messages	App-2
error queue	5-118, 6-6
Ethernet interface	1-2
exponential averaging, attenuation constant	5-24
extended event register	6-5
external current sensor conversion ratio	5-78
external current sensor range	5-77

F

	page
FFT cursor (marker cursor)	5-34
FFT cursor (peak cursor)	5-35
FFT points (MATH)	5-85
file copying	5-62
file deletion	5-62
filename	4-7
file saving	5-63

Index

filter band.....	5-85
filter (MATH)	5-85
filter type	5-86
font size	5-124
format (system).....	5-124
format (waveform)	5-135
format (zoom)	5-140
frequency filter	5-79
front panel.....	1-1, 2-1, 3-1
function options	5-57

G page

GP-IB board.....	3-4
GP-IB interface	3-2
groups.....	4-3
GTL (Go To Local).....	3-7

H page

hold-off time	5-130
horizontal cursor (T-Y).....	5-38
horizontal cursor (X-Y).....	5-42
horizontal magnification (zoom).....	5-140

I page

IFC (Interface Clear).....	3-7
independent power measurement element configuration... ..	5-80
Initialization.....	5-76
input coupling	5-26
instant start (on start).....	5-83
intensity	5-47
IRIG format.....	5-122
IRIG modulation.....	5-122

K page

key lock.....	5-122
---------------	-------

L page

LCD brightness.....	5-123
level range	5-132
linear scaling.....	5-27
line filter	5-79
LLO (Local Lockout)	3-7
local lockout.....	5-32
logic condition (history).....	5-74
logic (history)	5-73

M page

manual trigger.....	5-97
marker cursor (T-Y)	5-39
marker cursor (X-Y).....	5-43
maximum analyzed harmonic order	5-70
medium, free space	5-62
menu language.....	5-123
mesial	5-90
message language	5-123
messages	4-1
minimum analyzed harmonic order	5-70
motor mode	5-95
motor output	5-95
motor output computation, scaling factor.....	5-95
moving average count	5-98

N page

no-go count.....	5-67
NULL feature	5-102
numeric data.....	5-103
all items display.....	5-47
display format.....	5-51
display item (4-, 8-, and 16-value displays).....	5-54
display item (custom display).....	5-50
display item (matrix display).....	5-53
display item (single harmonics and dual harmonics lists).....	5-52
format.....	5-103, 5-107
output item	5-106

O page

offset B	5-27
offset voltage	5-28
output queue.....	6-6
overlap commands	4-8

P page

P1:X, P2:X.....	5-28
P1:Y, P2:Y	5-28
Pc	5-100
peak over-range	5-80
phase difference display format.....	5-101
phase shift (external clock).....	5-85
phase shift (internal clock).....	5-87
PLL source	5-70
Pm	5-95
power coefficient.....	5-80
probe	5-29
program message.....	4-1
proximal	5-90
pulse reference level	5-29
pulse/rotate.....	5-24

Q page

query.....	4-1
------------	-----

R page

record length.....	5-24
reference condition (history).....	5-72
reference condition (parameter)	5-68
reference condition (waveform zone)	5-69
register.....	4-7
remote and local modes, switching	1-2, 2-2, 3-3
remote or local.....	5-32
remote terminal.....	5-124
REN (Remote Enable).....	3-7
response.....	4-5
response message	4-1
responses without headers.....	4-5
rotating speed.....	5-95

S page

sample rate.....	5-125
save file name	5-65
scaling	5-80
scaling coefficient A	5-27
scaling (MATH)	5-86
screen, base color	5-46
screen capture printing (GO/NO-GO).....	5-66
screen capture printing (trigger)	5-126

screen capture saving (GO/NO-GO)	5-66	trigger position	5-130
screen capture saving (trigger)	5-126	trigger time (history)	5-73
SDC (Selected Device Clear)	3-7		
search end position	5-112	U	page
search (history)	5-72	unit (linear scaling)	5-28
search start position	5-113	unit (MATH)	5-87
self-test	5-143	upper-level query	4-4
side panel	1-1, 2-1, 3-1	USB cable	2-3
single-phase, three-wire	5-82	USB hub	2-3
single-phase, two-wire	5-82	USB interface	2-2
single start	5-116	USB keyboard	5-124
snapshot	5-115	user-defined function	5-99
SNTP	5-121	user-defined function, equation	5-99
SPD (Serial Poll Disable)	3-7	user-defined function, name	5-99
speed	5-95		
SPE (Serial Poll Enable)	3-7	V	page
standard event register	6-4	vector display format	5-54
star to delta conversion	5-98	vertical cursor (T-Y)	5-40
START/STOP key	5-123	vertical cursor (X-Y)	5-45
status byte	6-3	vertical position	5-29
status reports	6-1	vertical scale	5-30
string data	4-7	vertical scale, center value	5-61
synchronization source	5-81	vertical scale sensitivity (FFT)	5-61
		vertical zoom	5-30
T	page	voltage auto range	5-81
TCP/IP	1-5	voltage range	5-82
T/DIV	5-141	voltage range (AUX)	5-29
T/DIV (time base)	5-125	VT ratio	5-80
THD	5-70		
three-phase, four-wire	5-82	W	page
three-phase, three-wire	5-82	waveform acquisition	5-24
three-voltage, three-current measurement method	5-82	waveform acquisitions, number of	5-24
threshold level (MATH)	5-84	waveform interpolation	5-56
time	5-121	waveform label (frequency)	5-26
time base	5-24	waveform label (MATH)	5-86
time base (TIME/DIV)	5-125	waveform saving (GO/NO-GO)	5-67
timeout (cursor)	5-42	Window1 and Window2, combined display (X-Y)	5-138
timeout (GO/NO-GO)	5-69	window layout (zoom)	5-141
timeout (measure)	5-94	wiring system	5-82
timeout (single start)	5-116		
timeout value	1-3	Z	page
time search, time of	5-113	zoom position	5-141
time synchronization	5-124		
time window	5-85		
TMCTL	ii		
torque	5-96		
total harmonic distortion	5-70		
trace-clear-on-start	5-138		
transition filter	6-5		
trigger			
A->B(n)	5-126		
A Delay B	5-128		
AND	5-128		
B Between	5-128		
B<Time	5-128		
B>Time	5-128		
B TimeOut	5-129		
EdgeOnA	5-129		
enhanced	5-131		
simple	5-131		
T1<T<T2	5-133		
time	5-132		
T<T1,T2<T	5-133		
T<Time	5-133		
T>Time	5-132		
wave window	5-132		
trigger date (history)	5-72		