HIOKI

Communications Manual

PW3360

Clamp On Power Logger

HIOKI E.E. Corporation

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Table of Contents

Introduction

This manual provides information about the communications commands used with the PW3360Clamp On Power Logger.

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1 Specifications

1.1 LAN Specifications

LAN is an abbreviation for Local Area Network, and refers to a network within a relatively small region such as within a single building or campus. Ethernet is most commonly used for this type of network. The PW3360 is compatible with both 10BASE-T and 100BASE-TX Ethernet and uses the TCP/IP protocol for network communications. It uses port number 3360.

Connector	RJ-45 connector x1
Electrical Specifications	IEEE802.3 compliant
Communications Method	10BASE-T/100BASE-TX
Protocol	TCP/IP

1.2 LAN Settings

The following are example settings:

IP address ..... Computer: 192.168.1.1
PW3360: 192.168.1.2 (must be different from the computer)
Subnet mask ..... Computer and PW3360: 255.255.255.0
Default gateway ..... Computer and PW3360: 0.0.0.0

Refer to the user's manual for the device for more details about connecting to a LAN.

1.3 USB Specifications

USB uses the Communication Device Class (CDC) specification.

Method	USB Ver. 2.0 (Full Speed and High Speed) Virtual COM (CDC)
Connection Destination	Computer
Supported OS	Windows XP / Windows Vista (32-bit) / Windows 7 (32/64-bit) Be sure that all the latest service packs are installed.

1.4 USB Settings

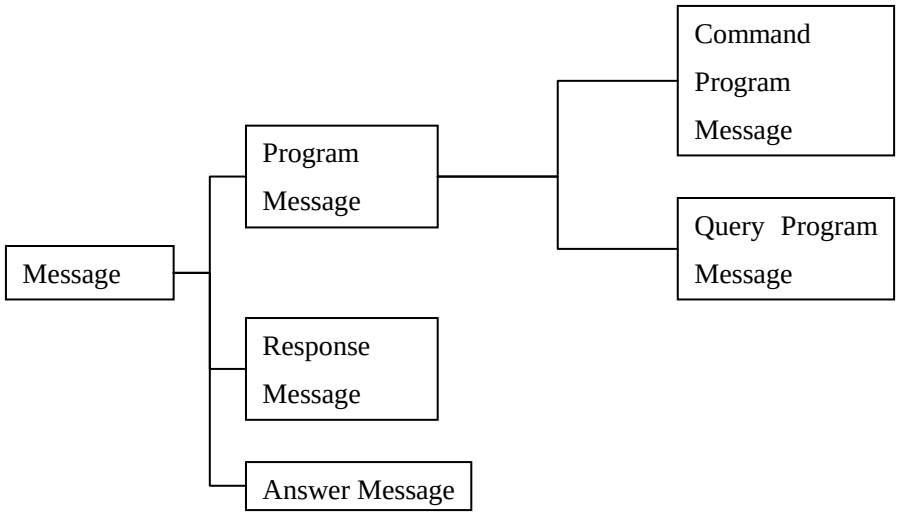
The following are example settings: Do not change any settings during communications.

Setting	PW3360
Transfer rate	19,200 bps
Data length	8-bit
Parity	None
Stop bit	1-bit
Flow control	None

2 Communications Overview

2.1 Command / Messages

Data sent and received from the communication device are called messages and are classified as follows.



Program Message	Message sent from the controller to the instrument.
Response Message	Message sent from the instrument to the controller. This message is created at the time when a query program message is received and syntax checked.
Answer Message	This message confirms that the sent command has been properly received.
Command Program Message	Command to control settings and resetting of the instrument.
Query Program Message	Order to interrogate instrument on operation results, measurement results, and setting status.

Command/Program message, and Query Program Message are collectively known as commands.

2.2 Command Syntax

Commands are accepted in uppercase, lowercase or a mixture of both types of letters. Command names are chosen to mnemonically represent their function, and can be abbreviated. The full command name is called the "long form", and the abbreviated name is called the "short form". The command references in this manual indicate the short form in uppercase letters, extended to the long form in lower case letters.

The response message from The PW3360 is returned as long form in uppercase letters.

【Example】

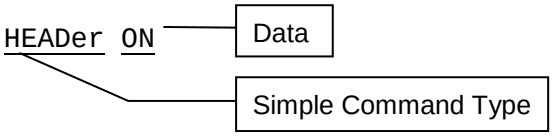
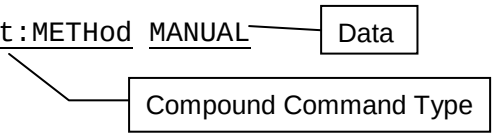
Description as shown in this manual (Command Name)	Short Form	Long Form
DISPlay	DISP	DISPLAY

A mixture of uppercase and lowercase letters such as DiSpLay is accepted, but DISPLA, DISPL and DIS are considered as errors.

2.3 Command Program Header

A header shows what kind of function that command has.

A command always requires a header and comes in three types, “Simple Command Type”, “Compound Command Type”, and “Standard Command Type”.

Types of Commands	Description Explanation
Simple Command Type	A sequence of letters 【Example】 :HEADer ON 
Compound Command Type	Multiple simple command type headers separated by colons ":" 【Example】:STARt:METHod MANUAL 
Standard Command Type	Begins with an asterisk "*", indicating that it is a standard command defined by IEEE 488.2. 【Example】 *RST

2.4 Query Program Header

These commands are used to interrogate the instrument about the results of operations and settings. A query is formed by appending a question mark "**?**" after a program header.

Types of Commands	Description
Simple Command Type	A sequence of letters 【Example】:HEADer? Simple Command Type
Compound Command Type	Multiple simple command type headers separated by colons ":" 【Example】:STARt:METHod? Compound Command Type
Standard Command Type	Begins with an asterisk "*", indicating that it is a standard command defined by IEEE 488.2. 【Example】*IDN?

2.5 Response Message

The response message to a query, like the program message, consists of the header and data and is in principle outputted in the same format as the program message in response to the query. The header can be omitted.

【Example】

Query Program Message	:STARt:METHod?
Response Message	:START:METHOD MANUAL (When header is ON) MANUAL (When header is OFF)

2.6 Terminator and Separator

2.6.1 Message Terminator

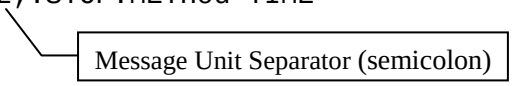
The message terminator means the division of one message forwarding. However, there is no message in the terminator.

Main instrument/Communication Software Setting	ANSI Word code (hexadecimal)	Meaning	English Name
CR+LF	0Dh 0Ah	Recovery + Change line	Carrige Return + Line Feed
CR	0Dh	Recovery	Carrige Return
LF	0Ah	Change line	Line Feed

2.6.2 Message Unit Separator

The semicolon ";" is a message unit separator and is used to write multiple messages in one line.

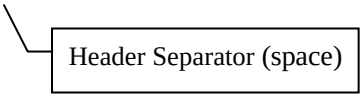
【Example】:STARt:METHod MANUAL;:STOP:METHod TIME



2.6.3 Header Separator

In a message containing header and data, a space (header separator) is used to separate the header from the data.

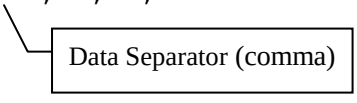
【Example】:STARt:METHod MANUAL



2.6.4 Data Separator

In a message containing multiple data items, commas are used to separate the data items from one another.

【Example】:STARt:TIME 2012,12,25,10,20



2.7 Multiple-Command Header Omission

When several commands having a common header are combined to form a compound command if they are written together in sequence, the common portion can be omitted. This common portion is called the "current path", and until it is cleared, the interpretation of subsequent commands presumes that they share the same common portion.

This usage of the current path is shown in the following example:

```
Full Expression       :STARt:TIME 2013,2,8,10,20;:STARt:METHod MANUAL
Compacted Expression  :STARt:TIME 2013,2,8,10,20;METHod MANUAL
                       ↑
                      current path
```

The current path is cleared when the power is turned on, when reset by key input, by a colon ":" at the start of a command, and when a message terminator is detected.

Standard command messages can be executed regardless of the current path. They have no effect upon the current path.

A colon ":" is not required at the start of the header of a Simple or Compound command. However, to avoid confusion with abbreviated forms and operating mistakes, we recommend always placing a colon at the start of a header.

2.8 Data Area

The PW3360 has a data area in which commands can use character data and decimal values for different tasks.

2.8.1 Character Data

This is alphanumeric data. Character data can handle both upper and lowercase letters, but response messages from the PW3360 are always returned in uppercase.

【Example】: HEADER ON

2.8.2 Decimal Value Data

Decimal values are expressed in NR format, as explained below. There are three variants of NR format: NR1, NR2, and NR3, but all of these together define what is overall known as NRf format.

NRf Format	Meaning	Example
NR1	Integer	+15, -20, 25
NR2	Fixed-point	+1.23, -4.57, 7.89
NR3	Floating point	+10.0E-3, -2.3E+3, 5E3

NR format supports both signed and unsigned values. Unsigned values are treated as positive values.

If the precision of the values exceed that of the accepted range of the PW3360, the value will be rounded off.

The PW3360 receives numerical data in NRf format, but sends data in NR1, NR2, or NR3 format depending on the command.

2.9 Input Buffer and Output Queue

2.9.1 Input Buffer

The input buffer is 4,096 bytes.

2.9.2 Output Queue

The output queue is 4,096 bytes.

2.10 Answer Message

The following messages are returned, depending on the status.

Status		Message
Normal Operation		ALL RIGHT
Error	Execution Error	EXECUTE ERROR
	Command Error	COMMAND ERROR
	Query Error	QUERY ERROR

3 Command Reference (Standard Commands)

Device ID (Identification Code) Query

Syntax	Query	*IDN?
	Response	<Manufacturer Name>, <Model Name>, <Serial Number>, <Software Version>
Description	Query	Queries the ID of the device.
Example	Query	*IDN?
	Response	HIOKI,PW3360-20,123456789,V2.01

Device Reset

Syntax	Command	*RST
Description	Command	Resets the settings on the device.
Example	Command	*RST
	Response	ALL RIGHT

Note: •This resets all settings EXCEPT the following: frequency setting, time, language setting,IP address, subnet mask, and default gateway.
•An execution error will occur if you attempt to send this command when the Quick Set is currently on the screen.

4 Command Reference (Device-Specific Commands)

Note: If a folder or file name exceeds 8 characters in length, they will be displayed as 8 characters in length, truncated with ~1, ~2, ... appended to the end. (Ex.: A folder named "ABCDEFGHI" would display as "ABCDEF~1" on the device.) To use this path in a command, you must enter the name as it is displayed on the device (i.e., the name with a number such as ~1 appended to the end). Responses returned from the device will also be in this format.

LCD Backlight Setting Query

Syntax	Command	:BACKlight <AUTO/ON>
	Query	:BACKlight?
	Response	<AUTO/ON>
		AUTO: Turn off automatically after 2 minutes.
		ON: The backlight is always on.
Description	Command	Configures the LCD backlight.
	Query	Returns the current LCD backlight setting: AUTO or ON.
Example	Command	:BACK AUTO
		Sets the LCD backlight to turn off automatically after 2 minutes.
	Response	ALL RIGHT
	Query	:BACK?
	Response	:BACKLIGHT AUTO (when HEADER ON)
		AUTO (when HEADER OFF)

Battery Pack Inserted Query

Syntax	Query	:BATTery?
	Response	<Y/N>
		Y: Battery pack inserted.
		N: Battery pack not inserted.
Description	Query	Returns Y or N if the battery pack is inserted into the device or not.
Example	Query	:BATT?
	Response	:BATTERY (when HEADER ON)
		Y (when HEADER OFF)
		There is a battery pack in the device.

Operation Sound (Beep) Setting Query

Syntax	Command	:BEEPer <ON/OFF>
	Query	:BEEPer?
	Response	<ON/OFF>
		ON: Plays an operation sound.
		OFF: Does not play an operation sound.
Description	Command	Turns operation sounds ON or OFF.
	Query	Returns the status of the operation sounds setting: ON or OFF.
Example	Command	:BEEP ON
		Turns ON operation sounds.
	Response	ALL RIGHT
	Query	:BEEP?
	Response	:BEEPER ON (when HEADER ON)
		ON (when HEADER OFF)
Note:	An execution error will occur if you attempt to send this command when the Quick Set is currently on the screen. Sending this query will return a response.	

Delete Files on the SD Card

Syntax	Command	:CARD:DELete:FILEname <File Name>, <Path Name> File Name: The name of the file to delete (with extension). Path Name: The name of the folder that contains the file to delete.
Description	Command	Deletes the specified file in the specified path on the SD card. The <Path Name> parameter can be omitted. If the path name is omitted, the specified file in the root directory is deleted.
Example	Command	:CARD:DEL:FILE ABC.BMP,/PW3360/HARDCOPY Deletes the file "ABC.BMP" in the folder "/PW3360/HARDCOPY".
	Response	ALL RIGHT

Delete Folders on the SD Card

Syntax	Command	:CARD:DELete:FOLDERname <Folder Name>, <Path Name> Folder Name: The name of the folder to delete. Path Name: The name of the folder that contains the folder to delete.
Description	Command	Deletes the specified folder in the specified path on the SD card. The <Path Name> parameter can be omitted. If the path name is omitted, the specified folder in the root directory is deleted.
Example	Command	:CARD:DEL:FOLD HARDCOPY,/PW3360 Deletes the "/PW3360/HARDCOOPY" folder.
	Response	ALL RIGHT
Note:	All files and folders in the folder you specify for deletion will also be deleted.	

SD Card Inserted Query

Syntax	Query	:CARD:EXISt?
	Response	<Y/N>
		Y: SD card inserted.
		N: No SD card inserted.
Description	Query	Returns Y or N if an SD card is inserted into the device or not.
Example	Query	:CARD:EXIS?
	Response	:CARD:EXIST Y (when HEADER ON)
		Y (when HEADER OFF)
		An SD card is inserted into the device.

Obtain Names and Sizes of Files on the SD Card

Syntax	Query	:CARD:FILEname? <Path Name>
	Response	<File Name 1>, <File Size 1>, <File Name 2>, <File Size 2>, ...
		File Name: The name of the file at the specified path with extension.
		File Size: The number of bytes in the file.
Description	Query	Returns the names and sizes of files on the SD card.
		The <Path Name> parameter can be omitted. If the path name is omitted, the names and sizes of files in the root directory are returned.
		If there are no files, "NO_FILE" is returned.
Example	Query	:CARD:FILE? /PW3360/FOL
	Response	:CARD:FILENAME ABC.SET,3058,DEF.CSV,65535 (when HEADER ON)
		ABC.SET,3058,DEF.CSV,65535 (when HEADER OFF)

Obtain the Names of Folders on the SD Card

Syntax	Query	:CARD:FOLDername? <Path Name>
	Response	<Folder Name 1>, <Folder Name 2>, ... Folder Name: The name of the folder at the specified path.
Description	Query	Returns the names of folders on the SD card. The <Path Name> parameter can be omitted. If the path name is omitted, the names of folders in the root directory are returned. If there are no folders, "NO_FOLDER" is returned.
Example	Query	:CARD:FOLD? /PW3360
	Response	:CARD:FOLDERNAME HARDCOPY,SETTING,ABC (when HEADER ON) HARDCOPY,SETTING,ABC (when HEADER OFF)

Format SD Card

Syntax	Command	:CARD:FORMat <NONE/PW3360> NONE: Only formats the SD card. PW3360: Formats the SD card and automatically creates the folders required by the PW3360. Omitting this parameter is the same as specifying PW3360.
Description	Command	Formats the SD card.
Example	Command	:CARD:FORM PW3360 Formats the SD card and creates the "PW3360" folder and the "HARDCOPY" and "SETTING" folders within that folder.
	Response	ALL RIGHT
Note:	•An execution error occurs if this command is executed when there is no SD card. •An execution error occurs if this command is executed during the recording standby state or during recording.	

SD Card Free Space Query

Syntax	Query	:CARD:FREEsize?
	Response	<Number of Free Bytes> Number of Free Bytes: kByte (up to 1024 k), MByte (more than 1024 k)
Description	Query	Returns the amount of free space on the SD card.
Example	Query	:CARD:FREE?
	Response	:CARD:FREESIZE 512.5MByte (when HEADER ON) 512.5Mbyte (when HEADER OFF) The amount of free space on the SD card is 512.5 MByte.
Note:	An execution error occurs if this command is executed when there is no SD card.	

Obtain File Data from the SD Card

Syntax	Query	:CARD:PICKout? <File Name>,<Start Position>,<Stop Position>,<Path Name> File Name: The name of the file to transfer. Start Position: Specifies the position to start obtaining the file data, in bytes. Stop Position: Specifies the position to stop obtaining the file data, in bytes. Path Name: Specifies the path at which to search for the file name. If this parameter is omitted, the file is searched for in the root directory.
	Response	(Transferred file data)
Description	Query	Reads and transfers the data between the specified start and stop positions in the specified file at the specified path on the SD card.
Example	Query	:CARD:PICK? ABC.CSV,1,1000,/PW3360/DEF
	Response	(Transferred file data) Returns the data from the 1st to 1000th byte in the file "ABC.CSV" in the "PW3360/DEF" folder on the SD card.

Note:

•The response data does not contain any header data even if headers are turned ON.

•Specify ‘1’ for the start position to start from the beginning of the file.

•If you want to execute this command multiple times in a row, leave at least a one second delay between each execution.

•An execution error occurs with this command in the following cases:

- When an SD card is not inserted into the device.
- The specified file does not exist.
- The path name exceeds 32 characters in length.

•An execution error occurs with this command in the following cases when you specify a file currently being

recorded:

- Save interval of PW3360 is less than one minute.
- Data size (difference between the Stop Position and the Start Position) transferred at once is larger than 15360 byte (via LAN) or 1024 byte (via USB).

Create Required PW3360 Folders on the SD Card and Query

Syntax	Command	:CARD:PW3360
	Query	:CARD:PW3360?
	Response	<NONE/EXIST>
		NONE: The required folders for the PW3360 do not exist on the SD card.
		EXIST: The required folders for the PW3360 exist on the SD card.
Description	Command	Creates the required folders for the PW3360 on the SD card.
	Query	Returns if the required folders for the PW3360 exist on the SD card or not.
Example	Command	:CARD:PW3360
		Creates the folders required for the PW3360 on the SD card.
	Response	ALL RIGHT
	Query	:CARD:PW3360?
	Response	:CARD:PW3360 NONE (when HEADER ON)
		NONE (when HEADER OFF)
		The required folders for the PW3360 do not exist on the SD card.
Note:	An execution error occurs if this command is executed when there is no SD card.	

Query Name of Recording and Measurement Data (CSV file) Being Saved to the SD Card

Syntax	Query	:CARD:SAVE:FILEname?
	Response	<Recording and Measurement Data Name>
Description	Query	Returns the name of the recording and measurement data currently being saved to the SD card.
Example	Query	:CARD:SAVE:FILE?
	Response	:CARD:SAVE:FILENAME ABC.CSV (when HEADER ON) ABC.CSV (when HEADER OFF) The name of the recording and measurement data currently being saved to the SD card is "ABC.CSV".

Note: An execution error occurs with this command in the following cases:

- When an SD card is not inserted.
- When the operation mode is anything other than recording.
- When the save destination is to internal memory.

Query Path of Folder Being Saved to the SD Card

Syntax	Query	:CARD:SAVE:FOLDername?
	Response	<Path Name>
Description	Query	Returns the path to the folder currently being saved to the SD card.
Example	Query	:CARD:SAVE:FOLD?
	Response	:CARD:SAVE:FOLDERNAME /PW3360/ABC (when HEADER ON) /PW3360/ABC (when HEADER OFF) The path to the folder currently being saved to the SD card is "/PW3360/ABC".
Note:	An execution error occurs with this command in the following cases: • When an SD card is not inserted. • When the operation mode is anything other than recording. • When the save destination is to internal memory.	

Query Name of Harmonic Data (HRM file) Being Saved to the SD Card (for PW3360-21,31 Only)

Syntax	Query	:CARD:SAVE:HARMname?
	Response	<Harmonic Data Name>
Description	Query	Returns the name of the harmonic data currently being saved to the SD card.
Example	Query	:CARD:SAVE:HARM?
	Response	:CARD:SAVE:HARMNAME 06210000.HRM (when HEADER ON) 06210000.HRM (when HEADER OFF) The name of the harmonic data currently being saved to the SD card is "06210000.HRM".
Note:	An execution error occurs with this command in the following cases: • When an SD card is not inserted. • When the operation mode is anything other than recording. • When the save destination is to internal memory. • When the save item setting is “Average only (no harmonics)” or “all data (no harmonics)”.	

Query Amount of Time that Can Be Saved to the SD Card

Syntax	Query	:CARD:SAVE:TIME?
	Response	<Max Save Time> YEAR: Number of years DAYS: Number of days HOURS: Number of hours MINUTES: Number of minutes
Description	Query	Returnns the amount of time that can be saved to the SD card.
Example	Query	:CARD:SAVE:TIME?
	Response	:CARD:SAVE:TIME 2.4DAYS (when HEADER ON) 2.4DAYS (when HEADER OFF) The amount of time that can be saved to the SD card is 2.4 days.
Note:	•0.0MINUTES is returned if no SD card is inserted. •An execution error occurs if the save destination is to internal memory.	

Query Name of Waveform Data (WUI file) Being Saved to the SD Card

Syntax	Query	:CARD:SAVE:WAVEname?
	Response	<Waveform Data Name>
Description	Query	Returns the name of the waveform data currently being saved to the SD card.
Example	Query	:CARD:SAVE:WAVE?
	Response	:CARD:SAVE:WAVENAME 06210000.WUI (when HEADER ON) 06210000.WUI (when HEADER OFF) The name of the waveform data currently being saved to the SD card is "06210000.WUI".
Note:	An execution error occurs with this command in the following cases: • When an SD card is not inserted. • When the operation mode is anything other than recording. • When the save destination is to internal memory. • When the save waveform setting is “OFF”.	

Load Settings Files from the SD Card

Syntax	Command	:CARD:SETting:LOAD <File Name>, <Path Name>
Description	Command	Search the SD card for the specified file name plus the .SET extension, load the settings, and then updates the settings. The <Path Name> parameter can be omitted. If omitted, the settings file information in the specified file located in the "/PW3360/SETTING" folder is set to the PW3360.
Example	Command	:CARD:SET:LOAD 60SET00,/PW3360/ABC Load and apply the settings in the "60SET00.SET" file on the SD card to the PW3360.
	Response	ALL RIGHT
Note:	An execution error occurs with this command in the following cases: • If this command is executed during the recording standby state, recording or Quick Set. • A file or path name is specified that does not exist. • When an SD card is not inserted into the device.	

Save a Settings File to the SD Card

Syntax	Command	:CARD:SETting:SAVE <File Name>, <Path Name>
Description	Command	Save the current settings to the specified file name on the SD card. The file and path name parameters can be omitted. If only the path name is omitted, a file with the specified file name is saved in the "/PW3360/SETTING" folder. If both the file and path names are omitted, a file with an automatically generated file name is saved in the "/PW3360/SETTING" folder. The .SET extension is appended automatically.
Example	Command	:CARD:SET:SAVE ABC,/PW3360/DEF Saves the current settings to the "ABC.SET" settings file on the SD card.
	Response	ALL RIGHT
Note:	An execution error occurs if any of the following characters are found in the input: \ / : * ? " < > | , An execution error occurs with this command in the following cases: • If this command is executed during the recording standby state, recording or Quick Set. • A path name is specified that does not exist. • When an SD card is not inserted into the device. • A file name that already exists is specified.	

SD Card Total Capacity Query

Syntax	Query	:CARD:TOTalsize?
	Response	<Number of Megabyte >MByte
Description	Query	Returns the total capacity of the SD card.
Example	Query	:CARD:TOT?
	Response	:CARD:TOTALSIZE 1954MByte (when HEADER ON) 1954Mbyte (when HEADER OFF) The total capacity of the SD card is 1954 megabyte.
Note:	An execution error occurs if this command is executed when there is no SD card.	

Transfer Whole File Data from the SD Card

Syntax	Query	:CARD:TRANsfer? <File Name>,<Path Name> File Name: The name of the file to transfer. Path Name: The path to the specified file name for transfer. If this parameter is omitted, the file is searched for in the root directory.
	Response	(Transferred file data)
Description	Query	Returns all the file data in the specified file at the specified path on the SD card.
Example	Query	:CARD:TRAN? 60SET00.SET,/PW3360/SETTING Returns all the data in the "60SET00.SET" file in the "/PW3360/SETTING" folder on the SD card.
	Response	(Transferred file data)

Note: The response data does not contain any header data even if headers are turned ON.

An execution error occurs with this command in the following cases:

- If this command is executed during the recording standby state or during recording.
- A file or path name is specified that does not exist.
- When an SD card is not inserted into the device.
- The path name exceeds 32 characters in length.

Set Clock and Query

Syntax	Command	:CLOCk <Year Data (NR1)>,<Month Data (NR1)>,<Day Data (NR1)>,<Hours Data (NR1)>,<Minutes Data (NR1)>,<Seconds Data (NR1)>
	Query	:CLOCk?
	Response	<Year Data>,<Month Data>,<Day Data>,<Hours Data>,<Minutes Data>,<Seconds Data> Year Data: 1980 to 2079 Month Data: 1 to 12 Day Data: 1 to 31 Hours Data: 0 to 23 Minutes Data: 0 to 59 Seconds Data: 0 to 59
Description	Command	Sets the time for the PW3360 internal clock.
	Query	Returns the time of the PW3360 internal clock in NR1 numerical format.
Example	Command	:CLOC 2013,12,25,12,30,45 Sets the clock to 12:30:45 on December 25, 2013.
	Response	ALL RIGHT
	Query	:CLOC?
	Response	:CLOCK 2013,12,25,12,30,45 (when HEADER ON) 2013,12,25,12,30,45 (when HEADER OFF)
Note:	•An execution error occurs if an impossible date is set (the number of days per month and leap years are calculated automatically). •An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.	

Save Screen Data

Syntax	Command	:COPY
Description	Command	Performs the same operation as the Copy key on the PW3360.
Example	Command	:COPY
		Saves the data on the screen.
	Response	ALL RIGHT
Note:	•An execution error occurs if this command is executed when there is no SD card. (Nothing will be saved to the internal memory even if saving the screen data fails.)	

Selected CT Ratio Setting and Query

Syntax	Command	:CT:SELect <CT Ratio 1 (NR1)>,<CT Ratio 2 (NR1)>,<CT Ratio 3 (NR1)>
	Query	:CT:SELect?
	Response	<CT Ratio 1(NR1)>,<CT Ratio 2(NR1)>,<CT Ratio 3(NR1)> CT Ratio: The CT ratio to set. Select from one of the following values for the CT ratio: 0, 1, 40, 60, 80, 120, 160, 200, 240, 300, 400, 600, 800, or 1200 Set a value of 0 for a custom setting. CT Ratio 1: CT ratio for circuit 1 CT Ratio 2: CT ratio for circuit 2 CT Ratio 3: CT ratio for circuit 3
Description	Command	Sets the selected CT ratio. The number of parameters depends on the wiring. CT ratio 2 and CT ratio 3 can be omitted. If omitted, the settings for circuits 2 and 3 are not changed.
	Query	Returns the selected CT ratio setting in NR1 numerical format. If set to a custom value, "VARIABLE" is returned.
Example	Command	:CT:SEL 1,40,120 Sets the CT ratio for circuits 1 through 3 to 1, 40, and 120 respectively.
	Response	ALL RIGHT
	Query	:CT:SEL?
	Response	:CT:SELECT 1,40,120 (when HEADER ON) 1,40,120 (when HEADER OFF)
Note:		•If a setting that is outside of the 1.0000 mW to 9.9999 GW range is set for the VT or CT ratio, a scaling error results which causes an execution error to occur. •An execution error occurs if this command is executed during the recording standby state or during recording.

•An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.

Custom CT Ratio Setting and Query

Syntax	Command	:CT:SET <CT Ratio 1 (NR2)>,<CT Ratio 2 (NR2)>,<CT Ratio 3 (NR2)>
	Query	:CT:SET?
	Response	<CT Ratio 1(NR2)>,<CT Ratio 2(NR2)>,<CT Ratio 3(NR2)>
		CT Ratio: The CT ratio to set. 0.01 to 9999.99
		CT Ratio 1: CT ratio for circuit 1
		CT Ratio 2: CT ratio for circuit 2
		CT Ratio 3: CT ratio for circuit 3
Description	Command	Sets a custom CT ratio.
		The number of parameters depends on the wiring.
		CT ratio 2 and CT ratio 3 can be omitted. If omitted, the settings for circuits 2 and 3 are not changed.
	Query	Returns the custom CT ratio setting in NR2 numerical format.
Example	Command	:CT:SET 1,3.5,100
		Sets the CT ratio for circuits 1 through 3 to 1, 3.5, and 100 respectively.
	Response	ALL RIGHT
	Query	:CT:SET?
	Response	:CT:SET 0001.00,0003.50,0100.00 (when HEADER ON)
		0001.00,0003.50,0100.00 (when HEADER OFF)
Note:		•If a setting that is outside of the 1.0000 mW to 9.9999 GW range is set for the VT or CT ratio, a scaling error results which causes an execution error to occur.
		•An execution error occurs if this command is executed during the recording standby state or during recording.
		•An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.

CT Ratio Query

Syntax	Query	:CT?
	Response	<CT Ratio 1(NR1 or NR2)>,<CT Ratio 2(NR1 or NR2)>,<CT Ratio 3(NR1 or NR2)> CT Ratio 1: CT ratio for circuit 1 CT Ratio 2: CT ratio for circuit 2 CT Ratio 3: CT ratio for circuit 3 If a standard CT ratio has been selected, the CT ratio is one of the following values: 1,40, 60, 80, 120, 160, 200, 240, 300, 400, 600, 800, or 1200 If a custom CT ratio has been set, the CT ratio is between 0.01 and 9999.99.
Description	Query	Returns the CT ratio setting in NR1 or NR2 numerical format.
Example	Query	:CT?
	Response	:CT 1,1,1 (when HEADER ON) 1,1,1 (when HEADER OFF)

Current Range Setting and Query

Syntax	Command	:CURRent:RANGe <Current Range 1 (NR2)>,<Current Range 2(NR2)>,<Current Range 3(NR2)>
	Query	:CURRent:RANGe?
	Response	<Current Range 1(NR2)>,<Current Range 2(NR2)>,<Current Range 3(NR2)> Current Range 1: The set value of the current range of circuit 1. Current Range 2: The set value of the current range of circuit 2. Current Range 3: The set value of the current range of circuit 3. • The valid range for each sensor is listed below. 9660,9695-03 (1mV/A): 5, 10, 50, 100 9661 (1mV/A): 5, 10, 50, 100, 500 9669 (0.5mV/A): 100, 200, 1000 9694 (10mV/A): 0.5, 1, 5, 10, 50 9695-02 (10mV/A): 0.5, 1, 5, 10, 50 CT9667 500A Range (1mV/A): 500 CT9667 5000A Range (0.1mV/A): 5000 9657-10,9675 (100mV/A): 0.05, 0.1, 0.5, 1, 5
Description	Command	Specifies the current range. (Unit: Amperes (A)) The number of parameters depends on the wiring. Current Range 2 and Current Range 3 can be omitted. If omitted, the settings for circuits 2 and 3 are not changed.
	Query	Queries the current range. The set value for the current range is returned in NR2 numerical format.
Example	Command	:CURR:RANG 0.5,10,100 Sets the current range for circuits 1 through 3 to 0.5, 10, and 100 (A), respectively.

	Response	ALL RIGHT
	Query	:CURR:RANG?
	Response	:CURRENT:RANGE 0.5,10,100 (when HEADER ON) 0.5,10,100 (when HEADER OFF)
Note:		•If a setting that is outside of the 1.0000 mW to 9.9999 GW range is set for the VT or CT ratio, a scaling error results which causes an execution error to occur. •An execution error occurs if this command is executed during the recording standby state or during recording. •An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.

Save Screen Copy ON/OFF Setting and Query

Syntax	Command	:DATAout:COPY <ON/OFF>
	Query	:DATAout:COPY?
	Response	<ON/OFF> ON: Screen copy ON OFF: Screen copy OFF
Description	Command	Turns the screen copy save function ON or OFF.
	Query	Returns the status of the screen copy save function: ON or OFF.
Example	Command	:DATA:COPY ON Turns ON the screen copy save function.
	Response	ALL RIGHT
	Query	:DATA:COPY?
	Response	:DATAOUT:COPY ON (when HEADER ON) ON (when HEADER OFF)
Note:		•An execution error occurs if this command is executed during the recording standby state or during recording. •An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.

Harmonic Data Output Setting and Query (for PW3360-21,31 Only)

Syntax	Command	:DATAout:HARMonic <ON/OFF>

	Query	:DATAout:HARMonic?
	Response	<ON/OFF>
		ON: Harmonic data output ON
		OFF: Harmonic data output OFF
Description	Command	Turns harmonic data output ON or OFF.
	Query	Returns the current harmonic data output setting: ON or OFF.
Example	Command	:DATA:HARM ON
		Turns harmonic data output ON.
	Response	ALL RIGHT
	Query	:DATA:HARM?
	Response	:DATAOUT:HARMONIC ON (when HEADER ON)
		ON (when HEADER OFF)

Note: •An execution error occurs if this command is executed during standby for logging/measurement or during logging.

•An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.

Save Item Setting and Query

Syntax	Command	:DATAout:ITEM <AVG/ALL>
	Query	:DATAout:ITEM?
	Response	<AVG/ALL>
		AVG: Average
		ALL: Average value, Maximum value, Minimum value
Description	Command	Sets the save item.
	Query	Returns the save item setting as a string.
Example	Command	:DATA:ITEM AVG
		Sets the save item as an average.
	Response	ALL RIGHT
	Query	:DATA:ITEM?
	Response	:DATAOUT:ITEM AVG (when HEADER ON)
		AVG (when HEADER OFF)
Note:	•An execution error occurs if this command is executed during the recording standby state or during recording.	
	•An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.	

Data Save Destination Setting and Query

Syntax	Command	:DATAout:MEDIa <CARD/MEMORY>
	Query	:DATAout:MEDIa?
	Response	<CARD/MEMORY>
		CARD: SD card
		MEMORY: Internal memory
Description	Command	Sets the destination for saved data.
	Query	Returns the data save destination setting as a string.
Example	Command	:DATA:MEDI CARD
		Sets the data save destination to the SD card.
	Response	ALL RIGHT
	Query	:DATA:MEDI?
	Response	:DATAOUT:MEDIA CARD (when HEADER ON)
		CARD (when HEADER OFF)

Note: •An execution error occurs if this command is executed during the recording standby state or during recording.
•An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.

Save Folder/File Name Setting and Query

Syntax	Command	:DATAout:NAME
	Query	:DATAout:NAME?
	Response	<Folder/File Name>
Description	Command	Sets the folder or file name to save. (5 characters or less) Enter "AUTO-NAME" to automatically set a name.
	Query	Returns the name of the fild or folder to save as a string.
Example	Command	:DATA:NAME ABC Sets the name of the folder or file to save to "ABC".
	Response	ALL RIGHT
	Query	:DATA:NAME?
	Response	:DATAOUT:NAME ABC (when HEADER ON) ABC (when HEADER OFF)
Note:	•An execution error occurs if this command is executed during the recording standby state or during recording. •An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response. •Setting a folder or file name that is 6 characters or more in length results in an execution error. •An execution error occurs if any of the following characters are found in the input: \ / : * ? " < > | . ,	

Save Waveform Data File Setting and Query

Syntax	Command	:DATAout:WAVE <ON/OFF>
	Query	:DATAout:WAVE?
	Response	<ON/OFF>
		ON: Save waveform data file ON.
		OFF: Save waveform data file OFF.
Description	Command	Turns the save waveform data file function ON or OFF.
	Query	Returns the current save waveform data file setting: ON or OFF.
Example	Command	:DATA:WAVE ON
		Turns the save waveform data file function ON.
	Response	ALL RIGHT
	Query	:DATA:WAVE?
	Response	:DATAOUT:WAVE ON (when HEADER ON)
		ON (when HEADER OFF)
Note:	An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.	

Measurement Screen Demand Display Item Setting and Query

Syntax	Command	:DISPlay:DEMand <PDEMPLUS/PDEMMINUS/QDEMLAG/QDEMLEAD /PFDEM/PULSE>
	Query	:DISPlay:DEMand?
	Response	<PDEMPLUS/PDEMMINUS/QDEMLAG/QDEMLEAD /PFDEM/PULSE> PDEMPLUS: Active power demand value (Consumption) PDEMMINUS: Active power demand value (Regeneration) QDEMLAG: Reactive power demand value (Lag) QDEMLEAD: Reactive power demand value (Lead) PFDEM: Power factor demand value PULSE: Pulse input value
Description	Command	Sets the demand items to display on the Measurement screen.
	Query	Returns the settings for demand items to display on the Measurement screen as a string.
Example	Command	:DISP:DEM PDEMMINUS Sets the active power demand value (Regeneration) as a demand display item on the Measurement screen.
	Response	ALL RIGHT
	Query	:DISP:DEM?
	Response	:DISPLAY:DEMAND PDEMMINUS (when HEADER ON) PDEMMINUS (when HEADER OFF)

Measurement Screen Magnified Display Item Setting and Query

Syntax	Command	:DISPlay:EXPanse <Header 1>,<Header 2>,<Header 3>,<Header 4>
	Query	:DISPlay:EXPanse?
	Response	<Header 1>,<Header 2>,<Header 3>,<Header 4>
		Header 1: Header of the first item to magnify.
		Header 2: Header of the second item to magnify.
		Header 3: Header of the third item to magnify.
		Header 4: Header of the fourth item to magnify.
Description	Command	Sets the display items to magnify on the Measurement screen.
		<Header 2> through <Header 4> can be omitted.
		If omitted, those settings are not modified.
		The following is a list of all header types:
		U1, U2, U3, U12,
		Upeak1, Upeak2, Upeak3, Upeak12,
		Ufnd1, Ufnd2, Ufnd3, Ufnd12,
		Udeg1, Udeg2, Udeg3, Udeg12,
		I1, I2, I3, I12,
		Ipeak1, Ipeak2, Ipeak3, Ipeak12,
		Ifnd1, Ifnd2, Ifnd3, Ifnd12,
		Ideg1, Ideg2, Ideg3, Ideg12,
		P1, P2, P3, P, S1, S2, S3, S, Q1, Q2, Q3, Q,
		PF1, PF2, PF3, PF, DPF1, DPF2, DPF3, DPF, Freq,
		WP+1, WP+2, WP+3, WP+, WP-1, WP-2, WP-3, WP-,
		WQLAG1, WQLAG2, WQLAG3, WQLAG,
		WQLEAD1, WQLEAD2, WQLEAD3, WQLEAD
		Ecost1, Ecost2, Ecost3, Ecost
	Query	Returns the settings for items to magnify on the Measurement screen as a string.
Example	Command	:DISP:EXP U1,I1,P,Q
		Sets the items to magnify on the Measurement screen to: U1, I1, P, and Q.
	Response	ALL RIGHT
	Query	:DISP:EXP?
	Response	:DISPLAY:EXPANSE U1,I1,P,Q (when HEADER ON)

		U1,I1,P,Q (when HEADER OFF)
Note:	•An execution error occurs if you send a display item that cannot be set.	

Measurement Screen Harmonic Graph Items, Level/Content percentage/ Phase angle Setting and Query (for PW3360-21,31 Only)

Syntax	Command	:DISPlay:HARMonic:GRAPh <U1/U2/U3/I1/I2/I3/P1/P2/P3/P> ,<LEVEL/PERCENT/PHASE>
	Query	:DISPlay:HARMonic:GRAPh?
	Response	<U1/U2/U3/I1/I2/I3/P1/P2/P3/P> ,<LEVEL/PERCENT/PHASE> U1/U2/U3/I1/I2/I3/P1/P2/P3/P: Voltage, Current, Active power LEVEL/PERCENT/PHASE: Level, Content percentage, Phase angle
Description	Command	Sets the harmonic graph items and level/content percentage/ phase angle on the Measurement screen.
	Query	Returns the current harmonic graph items and level/content percentage/ phase angle on the Measurement screen as a string.
Example	Command	:DISP:HARM:GRAP U1,LEVEL Sets the harmonic graph display items to U1 and LEVEL on the Measurement screen.
	Response	ALL RIGHT
	Query	:DISP:HARM:GRAP?
	Response	:DISPLAY:HARMONIC:GRAPH U1,LEVEL (when HEADER ON) U1,LEVEL (when HEADER OFF)

Measurement Screen Harmonic List Items, Level/Content percentage/ Phase angle, Order Setting and Query (for PW3360-21,31 Only)

Syntax	Command	:DISPlay:HARMonic:LIST <U1/U2/U3/I1/I2/I3/P1/P2/P3/P> ,<LEVEL/PERCENT/PHASE> ,<ALL/ODD/HALF>
	Query	:DISPlay:HARMonic:LIST?
	Response	<U1/U2/U3/I1/I2/I3/P1/P2/P3/P> ,<LEVEL/PERCENT/PHASE> ,<ALL/ODD/HALF > U1/U2/U3/I1/I2/I3/P1/P2/P3/P: Voltage, Current, Active power LEVEL/PERCENT/PHASE: Level, Content percentage, Phase angle ALL/ODD/HALF: All orders, Odd-numbered orders only, 1st to 20th orders
Description	Command	Sets the harmonic list items and level/content percentage/ phase angle on the Measurement screen.
	Query	Returns the current harmonic list items and level/content percentage/ phase angle on the Measurement screen as a string.
Example	Command	:DISP:HARM:LIST U1,LEVEL,ALL Sets the harmonic list display items to U1, LEVEL and all orders on the Measurement screen.
	Response	ALL RIGHT
	Query	:DISP:HARM:LIST?
	Response	:DISPLAY:HARMONIC:LIST U1,LEVEL,ALL (when HEADER ON) U1,LEVEL,ALL (when HEADER OFF)

Measurement Screen Display Circuits Setting and Query

Syntax	Command	:DISPlay:MEASure:CIRCuit <1/2/3>
	Query	:DISPlay:MEASure:CIRCuit?
	Response	<1/2/3> 1: First circuit 2: Second circuit 3: Third circuit
Description	Command	Selects which circuits to display on the Measurement screen when there are multiple circuits in the wiring.
	Query	Returns the circuits displayed on the Measurement screen in NR1 numerical format.
Example	Command	:DISP:MEAS:CIRC 2 Sets the second circuit to be displayed on the Measurement screen.
	Response	ALL RIGHT
	Query	:DISP:MEAS:CIRC?
	Response	:DISPLAY:MEASURE:CIRCUIT 2 (when HEADER ON) 2 (when HEADER OFF)
Note:	An execution error occurs if the specified circuit does not exist. If the wiring does not have multiple circuits, an execution error does not occur as long as the first circuit is specified.	

Change Screens and Query Currently Displayed Screen

Syntax

Command :DISPlay:PAGE <WIRING/SET/MEAS/FILE>,<Page Data>

Query :DISPlay:PAGE?

Response <NAVI/WIRING/SET/MEAS/FILE>,<Page Data>

NAVI: Quick Set Screen

WIRING: Wiring Screen

SET: Settings Screen

MEAS: Measurement Screen

FILE: File Screen

<Page Data>

- When (WIRING)
  - CHECK: Wiring Check
  - FIGURE: Wiring Diagram
- When (SET)
  - MEASURE1: MEAS1
  - MEASURE2: MEAS2
  - RECORD1: REC 1
  - RECORD2: REC 2
  - SYSTEM1: SYS1
  - SYSTEM2: SYS2
  - INTERFACE: LAN
  - PULSE: PULSE
- When (MEAS)
  - MAIN: LIST
  - UI: U/I
  - POWER: POWER
  - INTEG: INTEG.
  - DEMAND: DEMAND
  - GRAPH: Harmonic graph (for PW3360-21,31 Only)
  - LIST: Harmonic list (for PW3360-21,31 Only)
  - WAVE: WAVE
  - EXPANSE: ZOOM
  - TIME: TREND

• When (FILE)

CARD: SD card

MEMORY: Memory

Description	Command	Changes the screen that is displayed.
	Query	Returns the name of currently displayed screen as a string.
Example	Command	:DISP:PAGE WIRING,FIGURE Changes the displayed screen to the Wiring Diagram screen.
	Response	ALL RIGHT
	Query	:DISP:PAGE?
	Response	:DISPLAY:PAGE WIRING,FIGURE (when HEADER ON) WIRING,FIGURE (when HEADER OFF)
Note:		•"NAVI" can be returned as a response but cannot be sent as a command parameter. •An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.

Display Screen Color Setting and Query

Syntax	Command	:DISPlay:SETting:COLor <1/2/3>
	Query	:DISPlay:SETting:COLor?
	Response	<1/2/3> 1: COLOR1(Default color) 2: COLOR2 3: COLOR3
Description	Command	Sets the color of the screen display.
	Query	Returns the current color of the screen display as a string.
Example	Command	:DISP:SET:COL 2 Sets the display color of the screen to COLOR2.
	Response	ALL RIGHT
	Query	:DISP:SET:COL?
	Response	:DISPLAY:SET:COLOR 2 (when HEADER ON) 2 (when HEADER OFF)
Note:		An execution error occurs if you attempt to send this

command when the Quick Set is currently on the screen. Sending this query returns a response.

Phase Name Setting and Query

Syntax	Command	:DISPlay:SETting:PHASename <RST/ABC/L1L2L3/UVW>
	Query	:DISPlay:SETting:PHASename?
	Response	<RST/ABC/L1L2L3/UVW> RST: Phase name RST ABC: Phase name ABC L1L2L3: Phase name L1L2L3 UVW: Phase name UVW
Description	Command	Sets the phase name.
	Query	Returns the currently set phase name as a string.
Example	Command	:DISP:SET:PHAS L1L2L3 Sets the phase name to L1L2L3.
	Response	ALL RIGHT
	Query	:DISP:SET:PHAS?
	Response	:DISPLAY:SET:PHASENAME (when HEADER ON) L1L2L3 (when HEADER OFF)
Note:	An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.	

Measurement Screen Time series Display Item Settings and Query

Syntax	Command	:DISPlay:TIMEplot:ITEM <Header>
	Query	:DISPlay:TIMEplot:ITEM?
	Response	<Header>
		Header: The item to display.
Description	Command	Changes the item displayed on the Measurement Time series screen. The following is a list of all header types: U1, U2, U3, U12, Upeak1, Upeak2, Upeak3, Upeak12, Ufnd1, Ufnd2, Ufnd3, Ufnd12, Udeg1, Udeg2, Udeg3, Udeg12, I1, I2, I3, I12, Ipeak1, Ipeak2, Ipeak3, Ipeak12, Ifnd1, Ifnd2, Ifnd3, Ifnd12, Ideg1, Ideg2, Ideg3, Ideg12, P1, P2, P3, P, S1, S2, S3, S, Q1, Q2, Q3, Q, PF1, PF2, PF3, PF, DPF1, DPF2, DPF3, DPF, Freq, WP+1, WP+2, WP+3, WP+, WP-1, WP-2, WP-3, WP-, WQLAG1, WQLAG2, WQLAG3, WQLAG, WQLEAD1, WQLEAD2, WQLEAD3, WQLEAD Ecost1, Ecost2, Ecost3, Ecost
	Query	Returns the current Measurement Time series screen display as a string.
Example	Command	:DISP:TIME:ITEM U1
	Response	ALL RIGHT
	Query	:DISP:TIME:ITEM?
	Response	:DISPLAY:TIMEPLOT:ITEM U1 (when HEADER ON) U1 (when HEADER OFF)

Measurement Screen Waveform Vertical Axis Magnification Setting and Query

Syntax	Command	:DISPlay:WAVE:MAGnification <U/I>,<(1/2)/1/2/5/10>
	Query	:DISPlay:WAVE:MAGnification? <U/I>
	Response	<(1/2)/1/2/5/10> U/I: Display item (1/2)/1/2/5/10: Vertical axis magnification amount
Description	Command	Sets the vertical axis magnification of the measurement waveform.
	Query	Returns the vertical axis magnification of the measurement waveform.
Example	Command	:DISP:WAVE:MAG U,1/2
	Response	ALL RIGHT
	Query	:DISP:WAVE:MAG? U
	Response	:DISPLAY:WAVE:MAGNIFICATION 1/2 (when HEADER ON) 1/2 (when HEADER OFF)

Electricity Charges Currency Setting and Query

Syntax	Command	:ECOSt:CURRency <Currency>
	Query	:ECOSt:CURRency?
	Response	<Currency>
		Currency: within three alphanumeric characters of any.
		Specify "NONE" for no setting.
Description	Command	Sets the currency.
	Query	Returns the currently set currency as a string.
Example	Command	:ECOS:CURR USD
		Sets the currency to USD.
	Response	ALL RIGHT
	Query	:ECOS:CURR?
	Response	:ECOST:CURRENCY USD (when HEADER ON)
		USD (when HEADER OFF)
Note:	•An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.	
	•An execution error occurs if this command is executed during standby for logging/measurement or during logging.	

Electricity Charge Unit Cost Setting and Query

Syntax	Command	:ECOSt:UNITcost <Unit Cost (string)>
	Query	:ECOSt:UNITcost?
	Response	<Unit Cost (string)>
		Unit Cost: 0.00000～99999.9
Description	Command	Sets the electricity charge unit cost.
	Query	Returns the currently set electricity charge unit cost as a string.
Example	Command	:ECOS:UNIT 1234.56
		Sets the electricity charge unit cost to 1234.56.
	Response	ALL RIGHT
	Query	:ECOS:UNIT?
	Response	:ECOST:UNITCOST 1234.56 (when HEADER ON)
		1234.56 (when HEADER OFF)
Note:	•A command error occurs if the sum of an integer part and a decimal portion is not 6 characters. If you want to set the scaling value to 1 for example, please input like 1.00000 and 0001.00.	
	•An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.	
	•An execution error occurs if this command is executed during standby for logging/measurement or during logging.	

Measurement Frequency Setting and Query

Syntax	Command	:FREQuency <50Hz/60Hz>
	Query	:FREQuency?
	Response	<50Hz/60Hz>
		50Hz: 50 Hz
		60Hz: 60Hz
Description	Command	Sets the measurement frequency.
	Query	Returns the measurement frequency as a string.
Example	Command	:FREQ 50Hz
		Sets the measurement frequency to 50 Hz.
	Response	ALL RIGHT
	Query	:FREQ?
	Response	:FREQUENCY 50Hz (when HEADER ON)
		50Hz (when HEADER OFF)
Note:	•An execution error occurs if this command is executed during the recording standby state or during recording. •An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.	

Total Harmonic Distortion Selection and Query (for PW3360-21,31 Only)

Syntax	Command	:HARMonic:THD <THDF/THDR>
	Query	:HARMonic:THD?
	Response	<THDF/THDR>
		THDF: THD-F (Fundamental)
		THDR: THD-R (RMS)
Description	Command	Sets whether to use THD-F or THD-R for the total harmonic distortion.
	Query	Returns the total harmonic distortion setting: THDF or THDR.
Example	Command	:HARM:THD THDF
		Sets to use THD-F as the total harmonic distortion.
	Response	ALL RIGHT
	Query	:HARM:THD?
	Response	:HARMONIC:THD THDF (when HEADER ON)
		THDF (when HEADER OFF)
Note:	•An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.	

Response Message Header ON/OFF Setting and Query

Syntax	Command	:HEADer <ON/OFF>
	Query	:HEADer?
	Response	<ON/OFF>
		ON: Add a header to response messages.
		OFF: Do not add a header to response messages. (default)
Description	Command	Turns response headers ON or OFF.
	Query	Returns the current state of the header messages setting: ON or OFF.
Example	Command	:HEAD ON
		Enables attaching headers to all response messages.
	Response	ALL RIGHT
	Query	:HEAD?
	Response	:HEADER ON (when HEADER ON)
		OFF (when HEADER OFF)
Note:	The default value when the device is powered on is OFF.	

Hold Status Setting and Query

Syntax	Command	:HOLD <OFF/ON>
	Query	:HOLD?
	Response	<OFF/ON>
		OFF: Continuous display
		ON: Display hold
Description	Command	Sets the hold status.
	Query	Returns the hold status: ON or OFF.
Example	Command	:HOLD ON
		Sets the display hold state to ON.
	Response	ALL RIGHT
	Query	:HOLD?
	Response	:HOLD ON (when HEADER ON)
		ON (when HEADER OFF)
Note:	An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.	

Interval Time Setting and Query

Syntax	Command	:INTErval <Time Data>
	Query	:INTErval?
	Response	<Time Data>
		Time Data: 1S,2S,5S,10S,15S,30S,1M,
		2M,5M,10M,15M,20M,30M,60M
Description	Command	Sets the interval time.
	Query	Returns the interval time setting as a string.
Example	Command	:INTE 1M
		Sets the interval time to one minute.
	Response	ALL RIGHT
	Query	:INTE?
	Response	:INTERVAL 1MIN (when HEADER ON)
		1MIN (when HEADER OFF)
Note:	•An execution error occurs if this command is executed during the recording standby state or during recording.	
	•An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.	

Key Lock Setting and Query

Syntax	Command	:KEYLock <ON/OFF>
	Query	:KEYLock?
	Response	<ON/OFF>
		ON: Apply the key lock.
		OFF: Release the key lock.
Description	Command	Turns the key lock ON or OFF.
	Query	Returns the key lock setting: ON or OFF.
Example	Command	:KEYL ON
		Turns the key lock ON.
	Response	ALL RIGHT
	Query	:KEYL?
	Response	:KEYLOCK ON (when HEADER ON)
		ON (when HEADER OFF)

IP Address Setting and Query

Syntax	Command	:LAN:IPADdress <Address 1 (NR1)>,<Address 2 (NR1)>,<Address 3 (NR1)>,<Address 4 (NR1)>
	Query	:LAN:IPADdress?
	Response	<Address 1 (NR1)>,<Address 2 (NR1)>,<Address 3 (NR1)>,<Address 4 (NR1)> Address 1: 000 to 255 Address 2: 000 to 255 Address 3: 000 to 255 Address 4: 000 to 255
Description	Command	Sets the IP address.
	Query	Returns the IP address setting in NR1 numerical format.
Example	Command	:LAN:IPAD 192,168,1,31 Sets the IP address to 192.168.1.31.
	Response	ALL RIGHT
	Query	:LAN:IPAD?
	Response	:LAN:IPADDRESS 192,168,001,031 (when HEADER ON) 192,168,001,031 (when HEADER OFF)
Note:		•When connected via LAN, only the query can be executed. •An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.

Default Gateway Setting and Query

Syntax	Command	:LAN:DEFaultgateway <Address 1 (NR1)>,<Address 2 (NR1)>,<Address 3 (NR1)>,<Address 4 (NR1)>
	Query	:LAN:DEFaultgateway?
	Response	<Address 1 (NR1)>,<Address 2 (NR1)>,<Address 3 (NR1)>,<Address 4 (NR1)> Address 1: 000 to 255 Address 2: 000 to 255 Address 3: 000 to 255 Address 4: 000 to 255
Description	Command	Sets the default gateway.
	Query	Returns the default gateway setting in NR1 numerical format.
Example	Command	:LAN:DEF 192,168,1,1 Sets the default gateway to 192,168,1,1.
	Response	ALL RIGHT
	Query	:LAN:DEF?
	Response	:LAN:DEFAULTGATEWAY 192,168,001,001 (when HEADER ON) 192,168,001,001 (when HEADER OFF)
Note:	•When connected via LAN, only the query can be executed. •An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.	

Subnet Mask Setting and Query

Syntax	Command	:LAN:SUBNetmask <Address 1 (NR1)>,<Address 2 (NR1)>,<Address 3 (NR1)>,<Address 4 (NR1)>
	Query	:LAN:SUBNetmask?
	Response	<Address 1 (NR1)>,<Address 2 (NR1)>,<Address 3 (NR1)>,<Address 4 (NR1)> Address 1: 000 to 255 Address 2: 000 to 255 Address 3: 000 to 255 Address 4: 000 to 255
Description	Command	Sets the subnet mask.
	Query	Returns the subnet mask setting in NR1 numerical format.
Example	Command	:LAN:SUBN 255,255,255,0 Sets the subnet mask to 255,255,255,0.
	Response	ALL RIGHT
	Query	:LAN:SUBN?
	Response	:LAN:SUBNETMASK 255,255,255,000 (when HEADER ON) 255,255,255,000 (when HEADER OFF)
Note:		•When connected via LAN, only the query can be executed. •An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.

Device Display Language Setting and Query

Syntax	Command	:LANGuage <Language>
	Query	:LANGuage?
	Response	<Language>
		<Language> = JAPANESE/ ENGLISH/ CHINESE
		JAPANESE: Japanese
		ENGLISH: English
		CHINESE: simplified Chinese
Description	Command	Sets the display language for the device.
	Query	Returns the currently set display language for the device as a string.
Example	Command	:LANG ENGLISH
		Sets the display language of the device to English.
	Response	ALL RIGHT
	Query	:LANG?
	Response	:LANGUAGE ENGLISH (when HEADER ON)
		ENGLISH (when HEADER OFF)
Note:	An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.	

Harmonic Measurement Data Query (for PW3360-21,31 Only)

Syntax	Query	:MEASure:HARMonic?
	Response	<Item 1>,<Item 2>,<Item 3>,..., Item: (Header) Value
Description	Query	Creates the data for the default items specified via the :MEASure:ITEM:HARMonic command. The order of the data is fixed.
Example	Query	:MEAS:HARM?
	Response	Date 2013,06,21;Time 05,04,12;Status 00000000;ULv1(01)_Avg 102.25E+00,ULv1(02)_Avg 102.35E+00 (when HEADER ON) 2013,06,21;05,04,12; 00000000;102.25E+00,102.35E+00 (when HEADER OFF)
Note:	•Status is not displayed if only the instantaneous value was specified for <Number 2> of the :MEASure:ITEM:HARMonic command. •If the display on the device reads "------" and measurement cannot be performed (invalid data), "0.0000E+99" is output.	

Clear Communications Output Item Data

Syntax	Command	:MEASure:ITEM:ALLClear
Description	Command	Clears the communications output data items. Turns all communications output data items OFF.
Example	Command	:MEAS:ITEM:ALLC Clears the communications output data items.
	Response	ALL RIGHT
Note:	This turns off all settings related to ":MEASure:ITEM:".	

Harmonic Communications Output Item Setting and Query (for PW3360-21,31 Only)

Syntax Command :MEASure:ITEM:HARMonic <Number 1 (NR1)>,<Number 2 (NR1)>,<Number 3 (NR1)>,<Number 4 (NR1)>,<Number 5 (NR1)>,<Number 6 (NR1)>,<Number 7 (NR1)>,<Number 8 (NR1)>,<Number 9 (NR1)>

Query :MEASure:ITEM:HARMonic?

Response <Number 1 (NR1)>,<Number 2 (NR1)>,<Number 3 (NR1)>,<Number 4 (NR1)>,<Number 5 (NR1)>,<Number 6 (NR1)>,<Number 7 (NR1)>,<Number 8 (NR1)>,<Number 9 (NR1)>

<Number 1> CH (or circuit), distortion, phase angle, content percentage, level, selection data:

bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
SUM	CH3	CH2	CH1	Distortion	Phase angle	Content percentage	Level

<Number 2> Degree, odd, even, none, min value, max value, average value, instantaneous value, selection data:

bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
All orders	Odd	Even	None	Min value	Max value	Average value	Instantaneous value

<Number 3> Voltage, current, active power, selection data

bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
None	None	None	None	P	+I	I	U

<Number 4> Maximum order data (1 to 40 orders)

1～40(NR1)

<Number 5> Order data to output from the 1st to 8th order

bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
8th order	7th order	6th order	5th order	4th order	3rd order	2nd order	1st order

<Number 6> Order data to output from the 9th to 16th order

bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
16th order	15th order	14th order	13th order	12th order	11th order	10th order	9th order

<Number 7> Order data to output from the 17th to 24th order

bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
24th order	23rd order	22nd order	21st order	20th order	19th order	18th order	17th order

<Number 8> Order data to output from the 25th to 32nd order

bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
32nd order	31st order	30th order	29th order	28th order	27th order	26th order	25th order

<Number 9> Order data to output from the 33rd to 40th order

bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
40th order	39th order	38th order	37th order	36th order	35th order	34th order	33rd order

	128	64	32	16	8	4	2	1
	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
<Number 1>	SUM	CH3	CH2	CH1	Distortion	Phase angle	Content percentage	Level
<Number 2>	All orders	Odd	Even	None	Min value	Max value	Average value	Instantaneous value
<Number 3>	None	None	None	None	P	+I	I	U
<Number 4>	None	None						
<Number 5>	8th order	7th order	6th order	5th order	4th order	3rd order	2nd order	1st order
<Number 6>	16th order	15th order	14th order	13th order	12th order	11th order	10th order	9th order
<Number 7>	24th order	23rd order	22nd order	21st order	20th order	19th order	18th order	17th order
<Number 8>	32nd order	31st order	30th order	29th order	28th order	27th order	26th order	25th order
<Number 9>	40th order	39th order	38th order	37th order	36th order	35th order	34th order	33rd order

Description Command Sets the harmonic measurement value communications output items.

Query Returns the settings of the harmonic measurement value communications output items in NR1 numerical format.

Example Command :MEAS:ITEM:HARM
255,239,15,40,255,255,255,255,255
Response ALL RIGHT
Query :MEAS:ITEM:HARM?
Response :MEASURE:ITEM:HARMONIC
255,239,15,40,255,255,255,255,255 (when HEADER ON)
255,239,15,40,255,255,255,255,255 (when HEADER OFF)

Note: •When you enter 0 in the Maximum order data<Number 4>, the maximum order is set to 40.
•If you set both Odd order and Even order in <Number 2>, only Odd order is output.
•If you set Odd order or Even order in <Number 2>,value of <Number 5>~<Number 9> are invalid.
• The values you set are reset at the time of power-on.

Normal Communications Output Item Settings and Query

Syntax	Command	:MEASure:ITEM:POWer <Number 1 (NR1)>,<Number 2 (NR1)>,<Number 3 (NR1)>,<Number 4 (NR1)>,<Number 5 (NR1)>,<Number 6 (NR1)>
	Query	:MEASure:ITEM:POWer?
	Response	<Number 1 (NR1)>,<Number 2 (NR1)>,<Number 3 (NR1)>,<Number 4 (NR1)>,<Number 5 (NR1)>,<Number 6 (NR1)>

<Number 1> RMS, fundamental waveform value, fundamental phase angle, peak value selection data:

bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
None	None	None	None	Peak value	Fundamental phase angle	Fundamental waveform value	RMS

<Number 2> Instantaneous value, average value, maximum value, minimum value, integrated value/electricity charges, demand/pulse selection data:

bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
Demand/ pulse	integrated value/electricity charges	None	None	Minimum value	Maximum value	Average value	Instantaneous value

<Number 3> Voltage,Current selection data:

bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
Additional measured current	Current CH3	Current CH2	Current CH1	None	Voltage CH3	Voltage CH2	Voltage CH1

<Number 4> Frequency, active power, apparent power, reactive power, power factor/displacement power factor selection data:

bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
None	None	None	Power factor/ displacement power factor	Reactive power	Apparent power	Active power	Frequency

<Number 5> Integrated value,electricity charges selection data:

bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
None	None	None	electricity charges	Reactive power amount (Lead)	Reactive power amount (Lag)	Active power amount (Regeneration)	Active power amount (Consumption)

<Number 6> Demand, pulse input selection data

bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
None	Pulse input	Maximum Active power demand value	Power factor demand value	Reactive power demand value(Lag/ Lead)	Active power demand value (Consumption/ Regeneration)	Reactive power demand quantity (Lag/ Lead)	Active power demand quantity (Consumption/ Regeneration)

	128	64	32	16	8	4	2	1
	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
<Number 1>	None	None	None	None	Peak value	Fundamental phase angle	Fundamental waveform value	RMS
<Number 2>	Demand/ pulse	integrated value/electricity charges	None	None	Minimum value	Maximum value	Average value	Instantaneous value
<Number 3>	Additional measured current	Current CH3	Current CH2	Current CH1	None	Voltage CH3	Voltage CH2	Voltage CH1
<Number 4>	None	None	None	Power factor/displacemen	Reactive power	Apparent power	Active power	Frequency

				t power factor				
<Number 5>	None	None	None	electricity charges	Reactive power amount (Lead)	Reactive power amount (Lag)	Active power amount (Regeneration)	Active power amount (Consumption)
<Number 6>	None	Pulse input	Maximum Active power demand value	Power factor demand value	Reactive power demand value(Lag/ Lead)	Active power demand value (Consumption/ Regeneration)	Reactive power demand quantity (Lag/ Lead)	Active power demand quantity(Consumption/ Regeneration)

Description Command Sets the standard measurement value communications output items.

Query Returns the settings of the standard measurement value communications output items in NR1 numerical format.

Example Command :MEAS:ITEM:POW 15,207,247,31,15,15

Response ALL RIGHT

Query :MEAS:ITEM:POW?

Response :MEASURE:ITEM:POWER 15,207,247,31,15,15 (when HEADER ON)

15,207,247,31,15,15 (when HEADER OFF)

Note:

- To output the value of <Number 5>, you must set the bit for electrical energy in <Number 2>.
- To output the value of <Number 6>, you must set the bit for demand/pulse in <Number 2>.
- The average peak value is not output.
- When a “Current only” connection is being used, the

average value of the current fundamental wave phase angle is not output.

• The values you set are reset at the time of power-on.

Normal Measurement Data Query

Syntax	Query	:MEASure:POWer?
	Response	<Item 1>,<Item 2>,<Item 3>,...,
		Item: Header Value
Description	Query	Creates the data for the default items specified via the :MEASure:ITEM:POWer command. The order of the data is fixed.
Example	Query	:MEAS:POW?
	Response	Date 2013,01,01;Time 05,04,12;Status 00000000;U1_Ins 102.35E+00,U2_Ins 103.56E+00 (when HEADER ON)
		2013,01,01;05,04,12; 00000000; 102.35E+00,103.56E+00 (when HEADER OFF)

Note:

•Refer to the:MEASure:POWer? Output Items *:MEASure:POWer? Output Items* section, pp.104 for the output items.

•Status is not displayed if only the instantaneous value was specified for <Number 2> of the :MEASure:ITEM:POWer command.

•If the display on the device reads "------" and measurement cannot be performed (invalid data), "0.0000E+99" is output. If nothing is input, the power factor cannot be measured.

Delete Files in Internal Memory

Syntax	Command	:MEMory:DELete:FILEname <File Name> File Name: The name of the file to delete (with extension).
Description	Command	Deletes the specified file at the specified path in internal memory.
Example	Command	:MEM:DEL:FILE ABC.CSV Deletes the file "ABC.CSV".
	Response	ALL RIGHT
Note:		•An execution error occurs if this command is executed during the recording standby state or during recording.

Copy from Internal Memory to SD Card

Syntax	Command	:MEMory:DOWNload <File Name 1>,<Path Name>,<File Name2> <File Name 1>: The name of the file in internal memory. <Path Name>: The path to the save destination on the SD card. <File Name 2>: The name of the file to save on the SD card.
	Response	ALL RIGHT
Description	Command	Reads the specified <File Name 1> from the internal memory and then copies that file to the specified path on the SD card under the name <File Name 2>. <File Name 2> can be omitted. If omitted, the file is copied with the same name as the original (<File Name 1>). <Path Name> and <File Name 2> can also both be omitted. If both of these parameters are omitted, the file is copied with the same file name (<File Name 1>) to the "/PW3360/MEMORY" folder.
Example	Command	:MEM:DOWN MEM.CSV,/PW3360/ABC,CARD.CSV Copies the file "MEM.CSV" from the internal memory to the "/PW3360/ABC" folder on the SD card with the file name "CARD.CSV".
	Response	ALL RIGHT
Note:	•An execution error occurs if this command is executed during the recording standby state or during recording. •An execution error occurs if the specified path name does not exist. •An execution error occurs if the specified file name already exists. •An error occurs if any of the following characters are included in the <File Name 2> parameter: / \ : * ? " < > | ,	

Internal Memory File Name and Size Query

Syntax	Query	:MEMory:FILEname?
	Response	<File Name 1>, <File Size 1>, <File Name 2>, <File Size 2>, ... File Name: The name of the file at the specified path, with extension. File Size: The number of bytes in the file.
Description	Query	Returns the names and sizes of files in internal memory.
Example	Query	:MEM:FILE?
	Response	:MEMORY:FILENAME ABC.CSV,128000,60SET00.SET,500 (when HEADER ON) ABC.CSV,128000,60SET00.SET,500 (when HEADER OFF)

Format Internal Memory

Syntax	Command	:MEMory:FORMat
Description	Command	Formats the internal memory.
Example	Command	MEM:FORM Formats the internal memory.
	Response	ALL RIGHT

Internal Memory Free Space Query

Syntax	Query	:MEMory:FREEsize?
	Response	<Number of Free Bytes> Number of Free Bytes: kByte
Description	Query	Returns the amount of free space in the internal memory as a string.
Example	Query	:MEM:FREE?
	Response	:MEMORY:FREESIZE 240kByte (when HEADER ON) 240kByte (when HEADER OFF) The amount of free space in the internal memory is 240 kByte.

Obtain File Data from Internal Memory

Syntax	Query	:MEMory:PICKout? <File Name>,<Start Position>,<Stop Position> <File Name>,<Start Position>,<Stop Position> File Name: The name of the file to transfer. Start Position: Specifies the position to start obtaining the file data, in bytes. Stop Position: Specifies the position to stop obtaining the file data, in bytes.
	Response	(Transferred file data)
Description	Query	Reads and transfers the data between the specified start and stop positions in the specified file stored in internal memory.
Example	Query	:MEM:PICK? ABC.CSV,1,1000 Returns the data from the 1st to 1000th byte in the file "ABC.CSV" stored in internal memory.
	Response	(Transferred file data)

Note:

- The response data does not contain any header data even if headers are turned ON.
- Specify ‘1’ for the start position to start from the beginning of the file.
- If you want to execute this command multiple times in a row, leave at least a one second delay between each execution.
- An execution error occurs with this command in the following cases when you specify a file currently being recorded:
  - Save interval of PW3360 is less than one minute.
  - Data size (difference between the Stop Position and the Start Position) transferred at once is larger than 15360 byte (via LAN) or 1024 byte (via USB).

Query Name of Recording and Measurement Data Being Saved to Internal Memory

Syntax	Query	:MEMory:SAVE:FILEname?
	Response	< Recording and Measurement Data Name>
Description	Query	Returns the name of the recording and measurement data currently being saved to internal memory.
Example	Query	:MEM:SAVE:FILE?
	Response	:MEMORY:SAVE:FILENAME ABC.CSV (when HEADER ON) ABC.CSV (when HEADER OFF) The name of the recording and measurement data currently being saved to internal memory is "ABC.CSV".
Note:	An execution error occurs with this command in the following cases: • When the operation mode is anything other than recording. • When recording is not being saved to internal memory.	

Query Amount of Time that Can Be Saved to Internal Memory

Syntax	Query	:MEMory:SAVE:TIME? <Max Save Time (DAYS)>
	Response	<Max Save Time> DAYS: Number of days HOURS: Number of hours MINUTES: Number of minutes
Description	Query	Returns the amount of time that can be saved to the internal memory as a string.
Example	Query	:MEM:SAVE:TIME?
	Response	:MEMORY:SAVE:TIME 37.1HOURS (when HEADER ON) 37.1HOURS (when HEADER OFF)
Note:	An execution error occurs if the save destination is to the SD card.	

Load Settings Files from Internal Memory

Syntax	Command	:MEMory:SETting:LOAD <File Name>
Description	Command	Search the internal memory for the specified file name plus the .SET extension and load the settings.
Example	Command	:MEM:SET:LOAD 60SET00 Applies the settings from the "60SET00.SET" file to the device.
	Response	ALL RIGHT
Note:	•An execution error occurs if this command is executed during the recording standby state, recording or Quick Set. •An execution error occurs if the specified file name does not exist.	

Save a Settings File to Internal Memory

Syntax	Command	:MEMory:SETting:SAVE <File Name>
Description	Command	Save the current settings to the specified file name in internal memory. The .SET extension is appended automatically. The file name can be omitted. If omitted, a file name is assigned automatically.
Example	Command	:MEM:SET:SAVE ABC Saves the current settings to the file "ABC.SET".
	Response	ALL RIGHT
Note:	•An execution error occurs if this command is executed during the recording standby state, recording or Quick Set. •An execution error occurs if the specified file name already exists. •An execution error occurs if any of the following characters are found in the input: \ / : * ? " < > |	

Transfer Whole File Data from Internal Memory

Syntax	Command	:MEMory:TRANsfer? <File Name> <File Name>: The name of the file in internal memory.
Description	Command	Returns all the file data in the specified file in internal memory.
Example	Command	:MEM:TRAN? ABC.CSV Returns all the data in the file "ABC.CSV" stored in internal memory.
	Response	(Transferred file data)
Note:	The response data does not contain any header data even if headers are turned ON. •An execution error occurs if the specified file name does not exist. •An execution error occurs if this command is executed during the recording standby state or during recording.	

Quick Set at Power On ON/OFF Setting and Query

Syntax	Command	:NAVIgation <ON/OFF>
	Query	:NAVIgation?
	Response	<ON/OFF> ON: Start the Quick Set when the power is turned ON. OFF: Do not start the Quick Set when the power is turned ON.
Description	Command	Turns the Quick Set at Power On setting ON or OFF.
	Query	Returns the status of the Quick Set at Power On setting: ON or OFF.
Example	Command	:NAVI ON Start the Quick Set when the power is turned ON.
	Response	ALL RIGHT
	Query	:NAVI?
	Response	:NAVIGATION ON (when HEADER ON) ON (when HEADER OFF)
Note:	An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.	

Power Factor, Reactive Power, and Apparent Power Calculation Selection Setting and Query

Query	Command	:OPEration <RMS/FND>
	Query	:OPEration?
	Response	<RMS/FND>
		RMS: RMS calculation
		FND: Fundamental wave calculation
Description	Command	Sets the calculation selection for power factor, reactive power, and apparent power.
	Query	Returns the calculation selection for power factor, reactive power, and apparent power as a string.
Example	Command	:OPE RMS
		Sets the calculation selection for power factor, reactive power, and apparent power to RMS.
	Response	ALL RIGHT
	Query	:OPE?
	Response	:OPERATION RMS (when HEADER ON)
		RMS (when HEADER OFF)
Note:		•An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.
		•An execution error occurs if this command is executed during the recording standby state or during recording.

Pulse Filter Setting and Query

Syntax	Command	:PULSe:FILTer <ON/OFF>
	Query	:PULSe:FILTer?
	Response	<ON/OFF>
		ON: Pulse filter enabled
		OFF: Pulse filter disabled
Description	Command	Turns the pulse filter setting ON or OFF.
	Query	Returns the pulse filter setting: ON or OFF.
Example	Command	:PULS:FILT ON
		Enables the pulse filter.
	Response	ALL RIGHT
	Query	:PULS:FILT?
	Response	:PULSE:FILTER ON (when HEADER ON)
		ON (when HEADER OFF)
Note:	•An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query will return a response.	
	•An execution error occurs if this command is executed during the recording standby state or during recording.	

Pulse Rate Setting and Query

Syntax	Command	:PULSe:RATE <OFF/1/10/100/1k/10k/100k/1000k>
	Query	:PULSe:RATE?
	Response	<OFF/1/10/100/1k/10k/100k/1000k> OFF: None 1: 1 Wh 10: 10 Wh 100: 100 Wh 1k: 1 kWh 10k: 10 kWh 100k: 100 kWh 1000k: 1000 kWh
Description	Command	Sets the pulse rate.
	Query	Returns the pulse rate setting as a string.
Example	Command	PULS:RATE 10 Sets the pulse rate to 10 Wh.
	Response	ALL RIGHT
	Query	:PULS:RATE?
	Response	:PULSE:RATE 10 (when HEADER ON) 10 (when HEADER OFF)
Note:		•An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response. •An execution error occurs if this command is executed during the recording standby state or during recording.

Pulse Input Scaling Setting and Query

Syntax	Command	:PULSe:SCALe <Scaling Value (NR2)>
	Query	:PULSe:SCALe?
	Response	<Scaling Value (NR2)>:0.001 to 100.000
Description	Command	Sets the pulse input scaling.
	Query	Returns the pulse input scaling as an NR2 numerical value.
Example	Command	:PULS:SCAL 10.358 Sets the pulse input scaling to 10.358
	Response	ALL RIGHT
	Query	:PULS:SCAL?
	Response	:PULSE:SCALE 010.358 (when HEADER ON) 010.358 (when HEADER OFF)
Note:	•An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response. •An execution error occurs if this command is executed during the recording standby state or during recording.	

Pulse Input Auxiliary Unit Setting and Query

Syntax	Command	:PULSe:SUBUnit <Auxiliary Unit (NR1)>
	Query	:PULSe:SUBUnit?
	Response	<Auxiliary Unit (NR1)>
		0: p
		1: n
		2: μ
		3: m
		4: None
		5: k
		6: M
		7: G
		8: T
Description	Command	Sets the auxiliary unit for pulse input.
	Query	Returns the auxiliary unit for pulse input in NR1 format.
Example	Command	:PULS:SUBU 0
		Sets the auxiliary unit for pulse input to p.
	Response	ALL RIGHT
	Query	:PULS:SUBU?
	Response	:PULSE:SUBUNIT 0 (when HEADER ON)
		0 (when HEADER OFF)
Note:	•An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.	
	•An execution error occurs if this command is executed during the recording standby state or during recording.	

Pulse Input Unit Setting and Query

Syntax	Command	:PULSe:UNIT <Unit>
	Query	:PULSe:UNIT?
	Response	<Unit>
		String. Max 5 single-byte characters.
		Specify "NONE" for no setting.
Description	Command	Sets the unit for pulse input.
	Query	Returns the unit for pulse input as a string.
Example	Command	:PULS:UNIT PIECE
		Sets the pulse input unit to PIECE.
	Response	ALL RIGHT
	Query	:PULS:UNIT?
	Response	:PULSE:UNIT PIECE (when HEADER ON)
		PIECE (when HEADER OFF)
Note:	•An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.	
	•An execution error occurs if this command is executed during the recording standby state or during recording.	

Clamp Sensor Setting and Query

Syntax	Command	:SENSor <Sensor 1>,<Sensor 2>,<Sensor 3>
	Query	:SENSor?
	Response	<Sensor 1>,<Sensor 2>,<Sensor 3> Sensor 1: Sensor for circuit 1 Sensor 2: Sensor for circuit 2 Sensor 3: Sensor for circuit 3 9660: 9660 sensor 9661: 9661 sensor CT9667-500: CT9667(500A) sensor CT9667-5K: CT9667(5000A) sensor 9669: 9669 sensor 9694: 9694 sensor 9695-02: 9695-02 sensor 9695-03: 9695-03 sensor 9657-10: 9657-10 sensor 9675: 9675 sensor
Description	Command	Sets the clamp sensor. The number of parameters depends on the wiring. Sensor 2 and Sensor 3 can be omitted. If omitted, the settings for circuits 2 and 3 are not changed.
	Query	Returns the clamp sensor setting as a string.
Example	Command	:SENS 9660,9660,9660 Sets the sensor for circuits 1, 2, and 3 to 9660.
	Response	ALL RIGHT
	Query	:SENS?
	Response	:SENSOR 9660,9660,9660 (when HEADER ON) 9660,9660,9660 (when HEADER OFF)
Note:		•The 9657-10 and 9675 sensors are Leak Sensor, and can only be selected when the wiring is I, 2I, 3I, or in ‘+I’ when wiring is 1P3W+I, 1P3W1U+I, or 3P3W2M+I. •If a setting that is outside of the 1.0000 mW to 9.9999 GW range is set for the VT or CT ratio, a scaling error results which causes an execution error to occur.

•An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.
•An execution error occurs if this command is executed during the recording standby state or during recording.

Start Recording

Syntax	Command	:STARt
Description	Command	Performs the following operations according to the recording start method. • When using manual settings, recording is forced to start. • If the recording start method is TIME or INTERVAL, the PW3360 enters standby for recording mode.
Example	Command	:STAR Starts recording measurement or enters standby for recording measurement mode.
	Response	ALL RIGHT
Note:	•An execution error occurs with this command in the following cases: •If this command is executed during the recording standby state or during recording. •If this command is executed anywhere other than the Measurement screen. •If the recording start method is set to "Manual", and the command is sent immediately after changing the device settings.	

Recording Start Method Setting and Query

Syntax	Command	:STARt:METHod <MANUAL/TIME/JUST>
	Query	:STARt:METHod?
	Response	<MANUAL/TIME/JUST>
		MANUAL: MANUAL
		TIME: TIME
		JUST: INTERVAL
Description	Command	Sets the recording start method.
	Query	Returns the currently set recording start method as a string.
Example	Command	:STAR:METH TIME
		Sets the recording start method to "TIME".
	Response	ALL RIGHT
	Query	:STAR:METH?
	Response	:START:METHOD TIME (when HEADER ON)
		TIME (when HEADER OFF)
Note:		•An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.
		•An execution error occurs if this command is executed during the recording standby state or during recording.

Recording Start Time Setting and Query

Syntax	Command	:STARt:TIME <Year (NR1)>,<Month (NR1)>,<Day (NR1)>,<Hours (NR1)>,<Minutes (NR1)>
	Query	:STARt:TIME?
	Response	<Year (NR1)>,<Month (NR1)>,<Day (NR1)>,<Hours (NR1)>,<Minutes (NR1)> Year: 1980 to 2079 Month: 1 to 12 Day: 1 to 31 Hours: 0 to 23 Minutes: 0 to 59
Description	Command	Sets the recording start time.
	Query	Returns the currently set recording start time in NR1 numerical format as the year, month, day, hours, and minutes.
Example	Command	:STAR:TIME 2013,12,8,10,15 Sets the recording start time to December 8, 2013 at 10:15.
	Response	ALL RIGHT
	Query	:STAR:TIME?
	Response	:START:TIME 2013,12,08,10,15 (when HEADER ON) 2013,12,08,10,15 (when HEADER OFF)
Note:	•If a time is set after the stop date, the stop date is moved past the new start date by the interval time. •An execution error occurs if an impossible date is set (the number of days per month and leap years are calculated automatically). •An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response. •An execution error occurs if this command is executed during the recording standby state or during recording.	

Device Measurement Status Query

Syntax	Query	:STATe?
	Response	<STOP/WAIT/RUN/RESET>
		STOP: Recording stopped
		WAIT: Standing by
		RUN: Recording
		RESET: Resetting
Description	Query	Returns the current measurement state as a string.
Example	Query	:STAT?
	Response	:STATE WAIT (when HEADER ON)
		WAIT (when HEADER OFF)
		The current measurement status is standing by.

Stop Recording

Syntax	Command	:STOP
Description	Command	Stops recording.
Example	Command	:STOP
		Stops recording.
	Response	ALL RIGHT
Note:	•An execution error occurs if this command is executed when the device is already stopped or resetting.	
	•An execution error occurs if this command is executed on any screen other than the Measurement screen.	

Recording Stop Method Setting and Query

Syntax	Command	:STOP:METHod <MANUAL/TIME>
	Query	:STOP:METHod?
	Response	<MANUAL/TIME>
		MANUAL: MANUAL
		TIME: TIME
Description	Command	Sets the recording stop method.
	Query	Returns the currently set recording stop method as a string.
Example	Command	:STOP:METH TIME
		Sets the recording stop method to "TIME".
	Response	ALL RIGHT
	Query	:STOP:METH?
	Response	:STOP:METHOD TIME (when HEADER ON)
		TIME (when HEADER OFF)
Note:	•An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.	
	•An execution error occurs if this command is executed during the recording standby state or during recording.	

Recording Stop Date Setting and Query

Syntax	Command	:STOP:TIME <Year (NR1)>,<Month (NR1)>,<Day (NR1)>,<Hours (NR1)>,<Minutes (NR1)>
	Query	:STOP:TIME?
	Response	<Year (NR1)>,<Month (NR1)>,<Day (NR1)>,<Hours (NR1)>,<Minutes (NR1)> Year: 1980 to 2079 Month: 1 to 12 Day: 1 to 31 Hours: 0 to 23 Minutes: 0 to 59
Description	Command	Sets the recording stop time.
	Query	Returns the currently set recording stop time as NR1 numerical values.
Example	Command	:STOP:TIME 2013,12,8,17,40 Sets the recording stop time to December 8, 2013 at 17:40.
	Response	ALL RIGHT
	Query	:STOP:TIME?
	Response	:STOP:TIME 2013,12,08,17,40 (when HEADER ON) 2013,12,08,17,40 (when HEADER OFF)
Note:	•If a time is set before the start date, the start date is moved before the new stop date by the interval time. •An execution error occurs if an impossible date is set (the number of days per month and leap years are calculated automatically). •An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response. •An execution error occurs if this command is executed during the recording standby state or during recording.	

Actual Recording Start Date Query

Syntax	Query	:TIME:STARt?
	Response	<Year Data (NR1)>,<Month Data (NR1)>,<Day Data (NR1)>,<Hours Data (NR1)>,<Minutes Data (NR1)>,<Seconds Data (NR1)> Year Data: 1980 to 2079 Month Data: 1 to 12 Day Data: 1 to 31 Hours Data: 0 to 23 Minutes Data: 0 to 59 Seconds Data: 0 to 59
Description	Query	Returns the actual recording start date in NR1 numerical format.
Example	Query	:TIME:STAR?
	Response	:TIME:START 2013,12,08,10,15,00 (when HEADER ON) 2013,12,08,10,15,00 (when HEADER OFF) Represents that recording started on December 8, 2013 at 10:15:00.
Note:	An execution error occurs if this command is executed when the device is resetting.	

Actual Recording Stop Date Query

Syntax	Query	:TIME:STOP?
	Response	<Year Data (NR1)>,<Month Data (NR1)>,<Day Data (NR1)>,<Hours Data (NR1)>,<Minutes Data (NR1)>,<Seconds Data (NR1)> Year Data: 1980 to 2079 Month Data: 1 to 12 Day Data: 1 to 31 Hours Data: 0 to 23 Minutes Data: 0 to 59 Seconds Data: 0 to 59
Description	Query	Returns the actual recording stop date in NR1 numerical format. Returns the scheduled recording stop date during recording.
Example	Query	:TIME:STOP?
	Response:	TIME:STOP 2012,02,08,12,15,00 (when HEADER ON) 2012,02,08,12,15,00 (when HEADER OFF) Represents that recording stopped on February 8, 2012 at 12:15:00.
Note:	An execution error occurs if this command is executed when the device is resetting.	

Response Message Unit Separator Setting

Syntax	Command	:TRANsmit:SEParator <1/2(NR1)>
	Query	:TRANsmit:SEParator?
	Response	<1/2(NR1)>
		1: Semicolon (;) (default)
		2: Comma (,)
Description	Command	Sets the message unit separator when headers are turned OFF:
	Query	Returns the currently set message unit separator when headers are turned OFF. 1 or 2
Example	Command	:TRAN:SEP 2
		Sets the message unit separator when headers are turned OFF to a comma (,).
	Response	ALL RIGHT
	Query	:TRAN:SEP?
	Response	:TRANSMIT:SEPARATOR 2 (when HEADER ON)
		2 (when HEADER OFF)
Note:	The default value when the device is powered on is 1 (semicolon).	

Message Terminator Setting and Query

Syntax	Command	:TRANsmit:TERMinator <1/2/3(NR1)>
	Query	:TRANsmit:TERMinator?
	Response	<1/2/3(NR1)>
		1: CR+LF (default)
		2: CR
		3: LF
Description	Command	Sets the message terminator.
	Query	Returns the currently set message terminator in NR1 numerical format.
Example	Command	:TRAN:TERM 1
		Sets the message terminator to CR+LF.
	Response	ALL RIGHT
	Query	:TRAN:TERM?
	Response	:TRANSMIT:TERMINATOR 1 (when HEADER ON)
		1 (when HEADER OFF)

Note: The default value when the device is powered on is 1 (CR+LF).

Selected VT Ratio (PT Ratio) Setting and Query

Syntax	Command	:VT:SELect <VT Ratio (NR1)>
	Query	:VT:SELect?
	Response	<VT Ratio (NR1)>
		VT Ratio: The VT ratio to set. Select from one of the following values for the VT ratio: 0, 1, 60, 100, 200, 300, 600, 700, 1000, 2000, 2500,5000
		Set a value of 0 for a custom setting.
Description	Command	Sets the selected VT ratio.
	Query	Returns the selected VT ratio setting in NR1 numerical format.
		If set to a custom value, "VARIABLE" is returned.
Example	Command	:VT:SEL 100
		Sets the VT ratio to 100.
	Response	ALL RIGHT
	Query	:VT:SEL?
	Response	:VT:SELECT 100 (when HEADER ON)
		100 (when HEADER OFF)
Note:		•If a setting that is outside of the 1.0000 mW to 9.9999 GW range is set for the VT or CT ratio, a scaling error results which causes an execution error to occur.
		•An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.
		•An execution error occurs if this command is executed during the recording standby state or during recording.

Custom VT Ratio (PT Ratio) Setting and Query

Syntax	Command	:VT:SET <VT Ratio (NR2)>
	Query	:VT:SET?
	Response	<VT Ratio (NR2)>
		VT Ratio: The VT ratio to set. 0.01 to 9999.99
Description	Command	Sets a custom VT ratio.
	Query	Returns the custom VT ratio setting in NR2 numerical format.
Example	Command	:VT:SET 3.5
		Sets the VT ratio to 3.5.
	Response	ALL RIGHT
	Query	:VT:SET?
	Response	:VT:SET 0003.50 (when HEADER ON)
		0003.50 (when HEADER OFF)
Note:	•If a setting that is outside of the 1.0000 mW to 9.9999 GW range is set for the VT or CT ratio, a scaling error results which causes an execution error to occur.	
	•An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response.	
	•An execution error occurs if this command is executed during the recording standby state or during recording.	

VT Ratio (PT Ratio) Query

Syntax	Query	:VT?
	Response	<VT Ratio (NR1 or NR2)> If a standard VT ratio has been selected, the VT ratio is one of the following values: 1, 60, 100, 200, 300, 600, 700, 1000, 2000, 2500, 5000 If a custom VT ratio has been set, the VT ratio is between 0.01 and 9999.99.
Description	Query	Returns the VT ratio setting in NR1 or NR2 numerical format.
Example	Query	:VT?
	Response	:VT 60 (when HEADER ON) 60 (when HEADER OFF)

Wiring Setting and Query

Syntax	Command	:WIRing <1P2W/1P2W2/1P2W3/1P3W/1P3WI/1P3W1U/1P3W1UI /3P3W2M/3P3W2MI/3P3W3M/3P4W/I/2I/3I>
	Query	:WIRing?
	Response	<1P2W/1P2W2/1P2W3/1P3W/1P3WI/1P3W1U/1P3W1UI /3P3W2M/3P3W2MI/3P3W3M/3P4W/I/2I/3I>
Description	Command	Sets the wiring method.
	Query	Returns the currently set wiring method as a string.
Example	Command	:WIR 1P2W Sets the wiring method to 1P2W.
	Response	ALL RIGHT
	Query	:WIR?
	Response	:WIRING 1P2W (when HEADER ON) 1P2W (when HEADER OFF)
Note:		•An execution error occurs if you attempt to send this command when the Quick Set is currently on the screen. Sending this query returns a response. •An execution error occurs if this command is executed during the recording standby state or during recording. •An execution error occurs if a scaling error is caused by a change to the wiring.

5 :MEASure:POWer? Output Items

Date		Date
Time		Time
Status		Status
		HGFEDCBA (A to H: 0 or 1)
		A: U1 (voltage CH1) peak exceeded
		B: U2 (voltage CH2) peak exceeded
		C: U3 (voltage CH3) peak exceeded
		D: I1 (current CH1) peak exceeded
		E: I2 (current CH2) peak exceeded
		F: I3 (current CH3) peak exceeded
		G: Frequency exceeded
		H: Power outage during interval time
		Example:
		If data includes I1 (current CH1) data in excess of peak:
		1000
Voltage RMS	Instantaneous value	U1_Ins/U2_Ins/U3_Ins/U12_Ins
	Average value	U1_Avg/U2_Avg/U3_Avg/U12_Avg
	Maximum value	U1_Max/U2_Max/U3_Max/U12_Max
	Minimum value	U1_Min/U2_Min/U3_Min/U12_Min
Voltage fundamental wave value	Instantaneous value	Ufnd1_Ins/Ufnd2_Ins/Ufnd3_Ins/Ufnd12_Ins
	Average value	Ufnd1_Avg/Ufnd2_Avg/Ufnd3_Avg/Ufnd12_Avg
	Maximum value	Ufnd1_Max/Ufnd2_Max/Ufnd3_Max/Ufnd12_Max
	Minimum value	Ufnd1_Min/Ufnd2_Min/Ufnd3_Min/Ufnd12_Min
Voltage fundamental wave phase angle	Instantaneous value	Udeg1_Ins/Udeg2_Ins/Udeg3_Ins/Udeg12_Ins
	Average	Udeg1_Avg/Udeg2_Avg/Udeg3_Avg/Udeg12_Avg

	value	
	Maximum value	Udeg1_Max/Udeg2_Max/Udeg3_Max/Udeg12_Max
	Minimum value	Udeg1_Min/Udeg2_Min/Udeg3_Min/Udeg12_Min
Voltage waveform peak	Instantaneous value	Upeak1_Ins/Upeak2_Ins/Upeak3_Ins/Upeak12_Ins
	Average value	
	Maximum value	Upeak1_Max/Upeak2_Max/Upeak3_Max/Upeak12_Max
	Minimum value	Upeak1_Min/Upeak2_Min/Upeak3_Min/Upeak12_Min
Current RMS	Instantaneous value	I1_Ins/I2_Ins/I3_Ins/I12_Ins
	Average value	I1_Avg/I2_Avg/I3_Avg/I12_Avg
	Maximum value	I1_Max/I2_Max/I3_Max/I12_Max
	Minimum value	I1_Min/I2_Min/I3_Min/I12_Min
Current fundamental wave value	Instantaneous value	Ifnd1_Ins/Ifnd2_Ins/Ifnd3_Ins/Ifnd12_Ins
	Average value	Ifnd1_Avg/Ifnd2_Avg/Ifnd3_Avg/Ifnd12_Avg
	Maximum value	Ifnd1_Max/Ifnd2_Max/Ifnd3_Max/Ifnd12_Max
	Minimum value	Ifnd1_Min/Ifnd2_Min/Ifnd3_Min/Ifnd12_Min
Current fundamental wave phase angle	Instantaneous value	Ideg1_Ins/Ideg2_Ins/Ideg3_Ins/Ideg12_Ins
	Average value	Ideg1_Avg/Ideg2_Avg/Ideg3_Avg/Ideg12_Avg
	Maximum value	Ideg1_Max/Ideg2_Max/Ideg3_Max/Ideg12_Max

	Minimum value	Ideg1_Min/Ideg2_Min/Ideg3_Min/Ideg12_Min
Current waveform peak	Instantaneous value	Ipeak1_Ins/Ipeak2_Ins/Ipeak3_Ins/Ipeak12_Ins
	Average value	
	Maximum value	Ipeak1_Max/Ipeak2_Max/Ipeak3_Max/Ipeak12_Max
	Minimum value	Ipeak1_Min/Ipeak2_Min/Ipeak3_Min/Ipeak12_Min
Active power	Instantaneous value	P1_Ins/P2_Ins/P3_Ins/P_Ins
	Average value	P1_Avg/P2_Avg/P3_Avg/P_Avg
	Maximum value	P1_Max/P2_Max/P3_Max/P_Max
	Minimum value	P1_Min/P2_Min/P3_Min/P_Min
Apparent power	Instantaneous value	S1_Ins/S2_Ins/S3_Ins/S_Ins
	Average value	S1_Avg/S2_Avg/S3_Avg/S_Avg
	Maximum value	S1_Max/S2_Max/S3_Max/S_Max
	Minimum value	S1_Min/S2_Min/S3_Min/S_Min
Reactive power	Instantaneous value	Q1_Ins/Q2_Ins/Q3_Ins/Q_Ins
	Average value	Q1_Avg/Q2_Avg/Q3_Avg/Q_Avg
	Maximum value	Q1_Max/Q2_Max/Q3_Max/Q_Max
	Minimum value	Q1_Min/Q2_Min/Q3_Min/Q_Min
Power factor	Instantaneou	PF1_Ins/PF2_Ins/PF3_Ins/PF_Ins

	s value	
	Average value	PF1_Avg/PF2_Avg/PF3_Avg/PF_Avg
	Maximum value	PF1_Max/PF2_Max/PF3_Max/PF_Max
	Minimum value	PF1_Min/PF2_Min/PF3_Min/PF_Min
Displacement power factor	Instantaneous value	DPF1_Ins/DPF2_Ins/DPF3_Ins/DPF_Ins
	Average value	DPF1_Avg/DPF2_Avg/DPF3_Avg/DPF_Avg
	Maximum value	DPF1_Max/DPF2_Max/DPF3_Max/DPF_Max
	Minimum value	DPF1_Min/DPF2_Min/DPF3_Min/DPF_Min
Frequency	Instantaneous value	Freq_Ins
	Average value	Freq_Avg
	Maximum value	Freq_Max
	Minimum value	Freq_Min
Active energy	Consumption	WP+/WP+1WP+2/WP+3
	Regeneration	WP-/WP-1WP-2/WP-3
Reactive energy	Lag	WQLAG/WQLAG1/WQLAG2/WQLAG3
	Lead	WQLEAD/WQLEAD1/WQLEAD2/WQLEAD3
Electricity charges		Ecost1/Ecost2/Ecost3/Ecost
Active power demand quantity	Consumption	WP+dem/WP+dem1/WP+dem2/WP+dem3
	Regeneration	WP-dem/WP-dem1/WP-dem2/WP-dem3
Reactive power demand quantity	Lag	WQLAGdem/WQLAGdem1WQLAGdem2/WQLAGdem3
	Lead	WQLEADdem/WQLEADdem1/WQLEADdem2/WQLEADdem3
Active power demand value	Consumption	Pdem+/Pdem+1/Pdem+2/Pdem+3
	Regeneration	Pdem-/Pdem-1Pdem-2/Pdem-3

Reactive power demand value	Lag	QdemLAG/QdemLAG1/QdemLAG2/QdemLAG3
	Lead	QdemLEAD/QdemLEAD1/QdemLEAD2/QdemLEAD3
Power factor demand value		PFdem/PFdem1/PFdem2/PFdem3
Maximum active power demand value		Pdem_max/Pdem_max1/Pdem_max2/Pdem_max3
Pulse		Pulse

Note: If the wiring is set to "Current Only", there is no average value of the Current fundamental wave phase angle.

6 :MEASure:HARMonic? Output Items(n means order)

Date		Date
Time		Time
Status		Status
		HGFEDCBA (A to H: 0 or 1)
		A: U1 (voltage CH1) peak exceeded
		B: U2 (voltage CH2) peak exceeded
		C: U3 (voltage CH3) peak exceeded
		D: I1 (current CH1) peak exceeded
		E: I2 (current CH2) peak exceeded
		F: I3 (current CH3) peak exceeded
		G: Frequency exceeded
		H: Power outage during interval time
		Example:
		If data includes I1 (current CH1) data in excess of peak:
		00001000
Level of harmonic vlotage	Instantaneous value	ULv1(n)_Ins/ULv2(n)_Ins/ULv3(n)_Ins
	Average value	ULv1(n)_Avg/ULv2(n)_Avg/ULv3(n)_Avg
	Maximum value	ULv1(n)_Max/ULv2(n)_Max/ULv3(n)_Max
	Minimum value	ULv1(n)_Min/ULv2(n)_Min/ULv3(n)_Min
Level of harmonic current	Instantaneous value	ILv1(n)_Ins/ILv2(n)_Ins/ILv3(n)_Ins
	Average value	ILv1(n)_Avg/ILv2(n)_Avg/ILv3(n)_Avg
	Maximum value	ILv1(n)_Max/ILv2(n)_Max/ILv3(n)_Max
	Minimum value	ILv1(n)_Min/ILv2(n)_Min/ILv3(n)_Min
Level of harmonic power	Instantaneous value	PLv1(n)_Ins/PLv2(n)_Ins/PLv3(n)_Ins/PLv(n)_Ins
	Average value	PLv1(n)_Avg/PLv2(n)_Avg/PLv3(n)_Avg/PLv(n)_Avg
	Maximum value	PLv1(n)_Max/PLv2(n)_Max/PLv3(n)_Max/PLv(n)_Max
	Minimum value	PLv1(n)_Min/PLv2(n)_Min/PLv3(n)_Min/PLv(n)_Min
Content percentage of harmonic voltage	Instantaneous value	UPer1(n)_Ins/UPer2(n)_Ins/UPer3(n)_Ins
	Average value	UPer1(n)_Avg/UPer2(n)_Avg/UPer3(n)_Avg

	Maximum value	UPer1(n)_Max/UPer2(n)_Max/UPer3(n)_Max
	Minimum value	UPer1(n)_Min/UPer2(n)_Min/UPer3(n)_Min
Content percentage of harmonic current	Instantaneous value	IPer1(n)_Ins/IPer2(n)_Ins/IPer3(n)_Ins
	Average value	IPer1(n)_Avg/IPer2(n)_Avg/IPer3(n)_Avg
	Maximum value	IPer1(n)_Max/IPer2(n)_Max/IPer3(n)_Max
	Minimum value	IPer1(n)_Min/IPer2(n)_Min/IPer3(n)_Min
Content percentage of harmonic power	Instantaneous value	PPer1(n)_Ins/PPer2(n)_Ins/PPer3(n)_Ins/PPer(n)_Ins
	Average value	PPer1(n)_Avg/PPer2(n)_Avg/PPer3(n)_Avg/PPer(n)_Avg
	Maximum value	PPer1(n)_Max/PPer2(n)_Max/PPer3(n)_Max/PPer(n)_Max
	Minimum value	PPer1(n)_Min/PPer2(n)_Min/PPer3(n)_Min/PPer(n)_Min
Phase angle of harmonic voltage	Instantaneous value	Uphase1(n)_Ins/Uphase2(n)_Ins/Uphase3(n)_Ins
	Average value	Uphase1(n)_Avg/Uphase2(n)_Avg/Uphase3(n)_Avg
	Maximum value	Uphase1(n)_Max/Uphase2(n)_Max/Uphase3(n)_Max
	Minimum value	Uphase1(n)_Min/Uphase2(n)_Min/Uphase3(n)_Min
Phase angle of harmonic current	Instantaneous value	Iphase1(n)_Ins/Iphase2(n)_Ins/Iphase3(n)_Ins
	Average value	Iphase1(n)_Avg/Iphase2(n)_Avg/Iphase3(n)_Avg
	Maximum value	Iphase1(n)_Max/Iphase2(n)_Max/Iphase3(n)_Max
	Minimum value	Iphase1(n)_Min/Iphase2(n)_Min/Iphase3(n)_Min
Phase angle of harmonic power	Instantaneous value	Pphase1(n)_Ins/Pphase2(n)_Ins/Pphase3(n)_Ins/Pphase(n)_Ins
	Average value	Pphase1(n)_Avg/Pphase2(n)_Avg/Pphase3(n)_Avg/Pphase(n)_Avg
	Maximum value	Pphase1(n)_Max/Pphase2(n)_Max/Pphase3(n)_Max/Pphase(n)_Max
	Minimum value	Pphase1(n)_Min/Pphase2(n)_Min/Pphase3(n)_Min/Pphase(n)_Min
Total harmonic distortion of voltage THDF	Instantaneous value	Uthdf1_Ins/Uthdf2_Ins/Uthdf3_Ins
	Average value	Uthdf1_Avg/Uthdf2_Avg/Uthdf3_Avg
	Maximum value	Uthdf1_Max/Uthdf2_Max/Uthdf3_Max
	Minimum value	Uthdf1_Min/Uthdf2_Min/Uthdf3_Min

Total harmonic distortion of voltage THDR	Instantaneous value	Uthdr1_Ins/Uthdr2_Ins/Uthdr3_Ins
	Average value	Uthdr1_Avg/Uthdr2_Avg/Uthdr3_Avg
	Maximum value	Uthdr1_Max/Uthdr2_Max/Uthdr3_Max
	Minimum value	Uthdr1_Min/Uthdr2_Min/Uthdr3_Min
Total harmonic distortion of current THDF	Instantaneous value	Ithdf1_Ins/Ithdf2_Ins/Ithdf3_Ins
	Average value	Ithdf1_Avg/Ithdf2_Avg/Ithdf3_Avg
	Maximum value	Ithdf1_Max/Ithdf2_Max/Ithdf3_Max
	Minimum value	Ithdf1_Min/Ithdf2_Min/Ithdf3_Min
Total harmonic distortion of current THDR	Instantaneous value	Ithdr1_Ins/Ithdr2_Ins/Ithdr3_Ins
	Average value	Ithdr1_Avg/Ithdr2_Avg/Ithdr3_Avg
	Maximum value	Ithdr1_Max/Ithdr2_Max/Ithdr3_Max
	Minimum value	Ithdr1_Min/Ithdr2_Min/Ithdr3_Min

Contact Us HIOKI E.E. Corporation

Headquarters

81 Koizumi, Ueda, Nagano 386-1192, Japan

TEL +81-268-28-0562 FAX +81-268-28-0568 E-mail:os-com@hioki.co.jp

URL http://www.hioki.com/

(International Sales and Marketing Department)

HIOKI USA CORPORATION

E-mail:hioki@hiokiusa.com URL http://www.hiokiusa.com

HIOKI (Shanghai) Sales & Trading Co.,Ltd.

E-mail:info@hioki.com.cn URL http://www.hioki.cn

HIOKI INDIA PRIVATE LIMITED

E-mail:info@hioki.in URL http://www.hioki.in

HIOKI SINGAPORE PTE. LTD.

E-mail:info@hioki.com.sg

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