Mixed-Domain Oscilloscope

MDO-2000EG & MDO-2000EX

PROGRAMMING MANUAL

ISO-9001 CERTIFIED MANUFACTURER

GW INSTEK

July 2017

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Good Will Instrument Co., Ltd.

No. 7-1, Jhongsing Rd., Tucheng Dist., New Taipei City 236, Taiwan.

Table of Contents

INTERFACE OVERVIEW

This manual describes how to use the MDO-2000EG/2000EX's remote command functionality and lists the command details. The Overview chapter describes how to configure the USB and Ethernet remote control interfaces.

Interface Configuration

Configure USB Interface

USB Configuration	PC side connector	Type A, host
	MDO-2000EG/2000EX side connector	Type B, device
	Speed	1.1/2.0
	USB Class	CDC (communications device class)

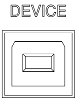
Panel Operation

1. Press the Utility key.

2. Press *I/O* from the bottom menu.

3. Press *USB Device Port* from the side menu and select *Computer*.

4. Connect the USB cable to the rear panel device port.



5. When the PC asks for the USB driver, select the USB driver included on the accompanying User Manual CD or download the driver from the GW Instek website, www.gwinstek.com, in the MDO-2000EG/2000EX Download section. The driver automatically sets the MDO-2000EG/2000EX as a serial COM port (Shown as VPO in the PORTS node).

USB Functionality Check

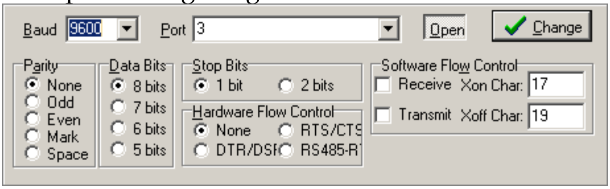
Terminal Application

Invoke a terminal application such as RealTerm.

Set the COM port, baud rate, stop bit, data bit, and parity accordingly.

To check the COM port number and associated port settings, see the Device Manager in the PC. For Windows 7:
Control panel → Hardware and Sound→ Device Manager

Example: Configuring RealTerm:



Baud 9600 Port 3

Parity: ● None ○ Odd ○ Even ○ Mark ○ Space

Data Bits: ● 8 bits ○ 7 bits ○ 6 bits ○ 5 bits

Stop Bits: ● 1 bit ○ 2 bits

Hardware Flow Control: ● None ○ RTS/CTS ○ DTR/DSI ○ RS485-R

Software Flow Control: □ Receive Xon Char: 17 □ Transmit Xoff Char: 19

Functionality Check

Key in this query command via the terminal application.

*idn?

This should return the Manufacturer, Model number, Serial number, and Firmware version in the following format.

GW,MDO-2202EG,PXXXXXX,V1.00

Configure the Ethernet Interface

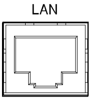
Ethernet Configuration	MAC Address	Domain Name
	Instrument Name	DNS IP Address
	User Password	Gateway IP Address
	Instrument IP Address	Subnet Mask

Background

The Ethernet interface is used for remote control using a socket server connection. For details, please see the Socket Server section on page 7.

Panel Operation

1. Connect the Ethernet cable to the LAN port on the rear panel.

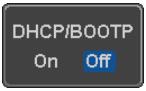


2. Press the *Utility* key.

3. Press *I/O* from the bottom menu.

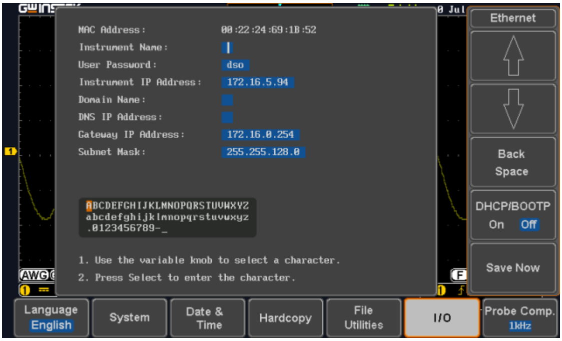
4. Press *Ethernet* from the side menu.

5. Set *DHCP/BOOTP* to *On* or *Off* from the side menu.



Note

IP addresses will automatically be assigned with DHCP/BOOTP set to on. For Static IP Addresses, DHCP/BOOTP should be set to off.



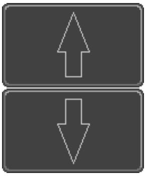
MAC Address: 00:22:24:69:1B:52
Instrument Name:
User Password: dso
Instrument IP Address: 172.16.5.94
Domain Name:
DNS IP Address:
Gateway IP Address: 172.16.0.254
Subnet Mask: 255.255.128.0

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
.0123456789-_

1. Use the variable knob to select a character.
2. Press Select to enter the character.

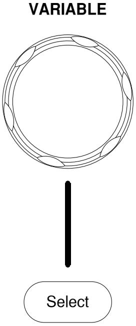
DHCP/BOOTP: On [✓ Off]

6. Use the *Up* and *Down* arrows on the side menu to navigate to each Ethernet configuration item.



Items	MAC Address, Instrument Name, User Password, Instrument IP Address, Domain Name, DNS IP Address, Gateway IP Address, Subnet Mask.

7. Use the *Variable* knob to highlight a character and use the *Select* key to choose a character.



Press *Backspace* to delete a character.

Press *Save Now* to save the configuration. Complete will be displayed when successful.

Save Now

Configure Socket Server

The MDO-2000EG/2000EX supports socket server functionality for direct two-way communication with a client PC or device over LAN. By default, the Socket Server is off.

Configure Socket Server

1. Configure the IP address for the MDO-2000EG/2000EX. Page 5

2. Press the *Utility* key.

Utility

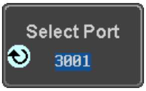
3. Press *I/O* from the bottom menu.

I/O

4. Press *Socket Server* from the side menu.

Socket Server

5. Press *Select Port* and choose the port number with the Variable knob.


Select Port
3001

Range 1024~65535

6. Press *Set Port* to confirm the port number.

Set Port

7. The Current Port icon will update to the new port number.

Current Port
3000

8. Press *Server* and turn the socket server On.

Server
On Off

Socket Server Functionality Check

NI Measurement and Automation Explorer

To test the socket server functionality, National Instruments Measurement and Automation Explorer can be used. This program is available on the NI website, www.ni.com.

Operation

1. Configure the IP address for the MDO-2000EG/2000EX. Page 5

2. Configure the socket port. Page 7

3. Start the NI Measurement and Automation Explorer (MAX) program. Using Windows, press:

   Start>All Programs>National Instruments>Measurement & Automation

ni.com

NATIONAL INSTRUMENTS

Measurement & Automation Explorer

Loading plug-ins

Version 5.6

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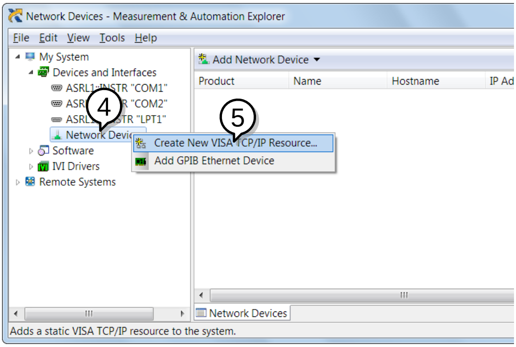
NATIONAL INSTRUMENTS

4. From the Configuration panel access;

   My System>Devices and Interfaces>Network Devices

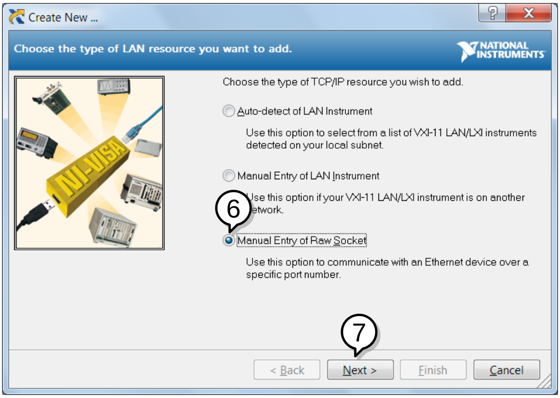
5. Right click *Network Devices* and select *Create New Visa TCP/IP Resource…*



Adds a static VISA TCP/IP resource to the system.

6. Select *Manual Entry of Raw Socket* from the popup window.

7. Click *Next*.



Choose the type of LAN resource you want to add.

Choose the type of TCP/IP resource you wish to add.

○ Auto-detect of LAN Instrument

Use this option to select from a list of VXI-11 LAN/LXI instruments detected on your local subnet.

○ Manual Entry of LAN Instrument

Use this option if your VXI-11 LAN/LXI instrument is on another network.

● Manual Entry of Raw Socket

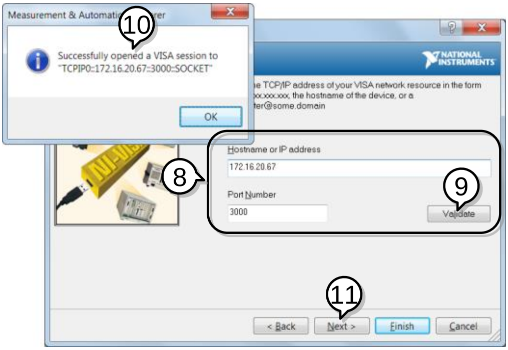
Use this option to communicate with an Ethernet device over a specific port number.

8. Enter the MDO-2000EG/2000EX's IP address and socket port number.

9. Click *Validate*.

10. A popup will appear to tell you if a VISA socket session was successfully created.

11. Click *Next*.



Measurement & Automatio[illegible]rer

Successfully opened a VISA session to "TCPIP0::172.16.20.67::3000::SOCKET"

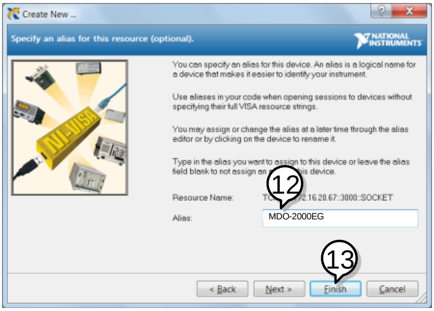
e TCP/IP address of your VISA network resource in the form xxxxxxx, the hostname of the device, or a ter@some.domain

Hostname or IP address: 172.16.20.67

Port Number: 3000

12. Choose an alias for the socket connection if you like.

13. Click *Finish* to finish the configuration.



Create New ...

Specify an alias for this resource (optional).

You can specify an alias for this device. An alias is a logical name for a device that makes it easier to identify your instrument.

Use aliases in your code when opening sessions to devices without specifying their full VISA resource strings.

You may assign or change the alias at a later time through the alias editor or by clicking on the device to rename it.

Type in the alias you want to assign to this device or leave the alias field blank to not assign an [illegible] this device.

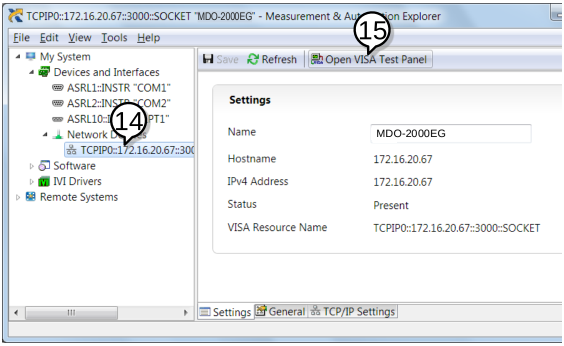
Resource Name: TC[illegible]72.16.20.67::3000::SOCKET

Alias: MDO-2000EG

14. The MDO-2000EG/2000EX will now appear under Network Devices in the Configuration Panel.

Functionality Check

15. Click the *Open Visa Test Panel* to send a remote command to the MDO-2000EG/2000EX.



Settings

Name: MDO-2000EG

Hostname: 172.16.20.67

IPv4 Address: 172.16.20.67

Status: Present

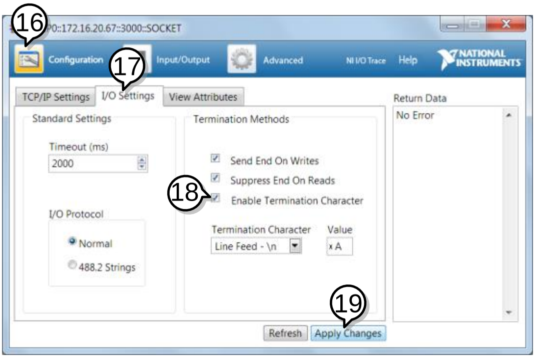
VISA Resource Name: TCPIP0::172.16.20.67::3000::SOCKET

16. Click on the *Configuration* icon.

17. Select the *I/O Settings* tab.

18. Mark the *Enable Termination Character* checkbox. Make sure the termination character is a line feed (/n, value: xA).

19. Click *Apply Changes*.



Standard Settings

Timeout (ms): 2000

I/O Protocol

● Normal

○ 488.2 Strings

Termination Methods

☑ Send End On Writes

☑ Suppress End On Reads

☑ Enable Termination Character

Termination Character: Line Feed - \n

Value: xA

Return Data

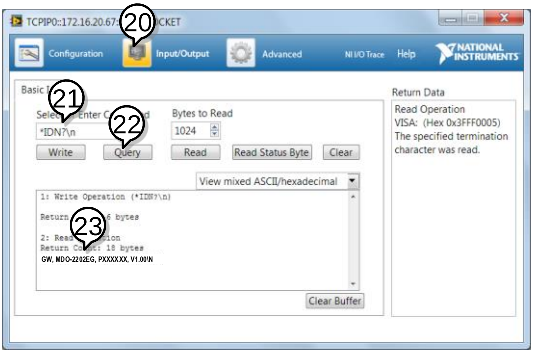
No Error

20. Click the *Input/Output* icon.

21. Make sure *IDN? query is selected in the *Select or Enter Command* drop box.

22. Click on *Query*.

23. The manufacturer, model number, serial number and firmware version will be displayed in the buffer. For example: GW,MDO-2202EG,PXXXXXX,V1.00



Selec Enter C d: *IDN?\n

Bytes to Read: 1024

View mixed ASCII/hexadecimal

```
1: Write Operation (*IDN?\n)

Return 6 bytes

2: Read tion
Return Co t: 18 bytes
GW, MDO-2202EG, PXXXXXX, V1.00\N
```

Read Operation
VISA: (Hex 0x3FFF0005)
The specified termination character was read.

COMMAND OVERVIEW

The Command overview chapter lists all MDO-2000EG/2000EX commands in functional order as well as alphabetical order. The command syntax section shows you the basic syntax rules you have to apply when using commands.

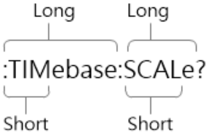
Command Syntax

Compatible standard

- USB CDC_ACM compatible
- SCPI, 1994 (partially compatible)

Command forms

Commands and queries have two different forms, long and short. The command syntax is written with the short form of the command in capitals and the remainder (long form) in lower case.



The commands can be written in capitals or lower-case, just so long as the short or long forms are complete. An incomplete command will not be recognized.

Below are examples of correctly written commands.

LONG	:TIMebase:SCALe? :timebase:scale?	:TIMEBASE:SCALE?
SHORT	:TIM:SCAL?	:TIM:SCAL?

Command format	$\underbrace{\texttt{:TIMebase:SCALe}}_{1}\underbrace{\ }_{2}\underbrace{\texttt{<NR3>}}_{3}\underbrace{\texttt{LF}}_{4}$	1: command header 2: single space 3: parameter 4: message terminator	
Parameter	Type	Description	Example
	<Boolean>	boolean logic	0, 1
	<NR1>	Integers	0, 1, 2, 3
	<NR2>	floating point	0.1, 3.14, 8.5
	<NR3>	floating point with an exponent	4.5e-1, 8.25e+1
	<NRf>	any of NR1, 2, 3	1, 1.5, 4.5e-1
Message terminator	LF	line feed code	
Note	Commands are non-case sensitive.		

List of Commands in Functional Order

Common

Acquisition

Autoscale

Vertical Scale

Power Supply Commands (For the MDO-2000EX series only)

USB Delay Command

COMMAND DETAILS

The Command details chapter shows the detailed syntax, equivalent panel operation, and example for each command. For the list of all commands, see page15.

Common Commands

*IDN?

→Query

Description	Returns the manufacturer, model, serial number and version number of the unit.
Syntax	*IDN?
Example	*IDN? GW,MDO-2074E,PXXXXXX,V1.XX

*LRN?

→Query

Description	Returns the oscilloscope settings as a data string.
Syntax	*LRN?
Example	*LRN? :DISPlay:WAVEform VECTOR;PERSistence 2.400E-01; INTensity:WAVEform 50;INTensity:GRATicule 50;GRATicule FULL;:CHANnel CH1:DISPlay ON;BWLimit FULL;COUPling DC;INVert OFF;POSition -1.600E+00;PROBe:RATio

```
1.000e+01;PROBe:TYPe VOLTAGE;SCALe 2.000E+
01;IMPedance 1E+6;EXPand GROUND;:CHANnel
CH2:DISPlay ON;BWLimit FULL;COUPling DC;INVert
OFF;POSition 0.000E+00;PROBe:RATio
1.000e+01;PROBe:TYPe VOLTAGE;SCALe
2.000E+00;IMPedance 1E+6;EXPand
GROUND;:CHANnel CH3:DISPlay OFF;BWLimit
FULL;COUPling DC;INVert OFF;POSition
0.000E+00;PROBe:RATio 1.000e+01;PROBe:TYPe
VOLTAGE;SCALe 1.000E+00;IMPedance 1E+6;EXPand
GROUND;:CHANnel CH4:DISPlay OFF;BWLimit
FULL;COUPling DC;INVert OFF;POSition
0.000E+00;PROBe:RATio 1.000e+01;PROBe:TYPe
VOLTAGE;SCALe 1.000E+00;IMPedance 1E+6;EXPand
GROUND;:MATH:TYPe FFT;DISP
OFF;DUAL:SOURce1 CH1;SOURce2 CH2;OPERator
MUL;POSition 0.000E+00;SCALe ?;FFT:SOURce
CH1;MAG DB;WINDow HANNING;POSition 2.800E-
01;SCALe 2.000E+01;MATH:ADVanced:OPERator
DIFF;ADVanced:SOURce CH1;ADVanced:EDIT:
SOURce1 CH1;ADVanced:EDIT:S
```

*SAV

Set →

Description	Saves the current panel settings to the selected memory number (setup 1 ~ 20).
Syntax	*SAV {1 | 2 | 3 |.... | 20}
Example	*SAV 1 Saves the current panel settings to Set 1.

*RCL

Set →

Description	Recalls a set of panel settings.
Syntax	*RCL {1 | 2 | 3 |.... | 20}
Example	*RCL 1 Recalls the selected setup from Set 1.

*RST

Set →

Description	Resets the MDO-2000EG/2000EX (recalls the default panel settings).
Syntax	*RST

*CLS

Set →

Description	Clears the error queue.
Syntax	*CLS

*ESE

Set →

→ Query

Description	Sets or queries the Standard Event Status Enable register.	
Syntax	*ESE <NR1>	
Query Syntax	*ESE?	
Return parameter	<NR1>	0~255

Bit Weight

Bit#	Weight	Event	Description
0	1	OPC	Operation Complete Bit
1	2	RQC	Not used
2	4	QYE	Query Error
3	8	DDE	Device Error
4	16	EXE	Execution Error
5	32	CME	Command Error
6	64	URQ	User Request
7	128	PON	Power On

Example

```
*ESE?
>4
```

Indicates that there is a query error.

*ESR

→Query

Description	Queries the Standard Event Status (Event) register. The Event Status register is cleared after it is read.			
Query Syntax	*ESR?			
Return parameter	<NR1>	0~255		
Bit Weight	Bit#	Weight	Event	Description
	0	1	OPC	Operation Complete Bit
	1	2	RQC	Not used
	2	4	QYE	Query Error
	3	8	DDE	Device Error
	4	16	EXE	Execution Error
	5	32	CME	Command Error
	6	64	URQ	User Request
	7	128	PON	Power On

Example

*ESR?

>4

Indicates that there is a query error.

Set→

*OPC

→Query

Description	The *OPC command sets the OPC bit (bit0) of the Standard Event Status Register when all current commands have been processed. The *OPC? Query returns 1 when all the outstanding commands have completed.	
Syntax	*OPC	
Query Syntax	*OPC?	
Return parameter	1	Returns 1 when all the outstanding commands have completed.

*SRE

Set →
→ Query

Description: Sets or queries the Service Request Enable register. The Service Request Enable register determines which registers of the Status Byte register are able to generate service requests.

Syntax: *SRE <NR1>

Query Syntax: *SRE?

Parameter/ Return parameter	<NR1>	0~255

Bit Weight

Bit#	Weight	Event	Description
0	1		Not used
1	2		Not used
2	4		Not used
3	8		Not used
4	16	MAV	Message Available Bit
5	32	ESB	Event Status Bit
6	64	MSS	Master Summary Bit
6	64	RQS	Request Service Bit
7	128		Not used

Example:

```
*SRE?
>48
```

Indicates that the MAVB and ESB bit are both set.

*STB

→ Query

Description: Queries the bit sum of the Status Byte register with MSS (Master summary Status) replacing the RQS bit (bit 6).

Query Syntax: *STB?

Return parameter	<NR1>	0 ~ 255		
Bit Weight	Bit#	Weight	Event	Description
	0	1		Not used
	1	2		Not used
	2	4		Not used
	3	8		Not used
	4	16	MAV	Message Available Bit
	5	32	ESB	Event Status Bit
	6	64	MSS	Master Summary Bit
	6	64	RQS	Request Service Bit
	7	128		Not used

Example

```
*STB?
>16
```

Indicates that the MAV bit is set.

Acquisition Commands

:ACQuire:AVERage

Set →
→ Query

Description	Selects or returns the number of waveform acquisitions that are averaged in the average acquisition mode.	
Syntax	:ACQuire:AVERage {<NR1>| ?}	
Related Commands	:ACQuire:MODe	
Parameter	<NR1>	2, 4, 8 ,16, 32, 64, 128, 256
Note	Before using this command, select the average acquisition mode. See the example below.	
Example	:ACQuire:MODe AVERage :ACQuire:AVERage 2 Selects the average acquisition mode, and sets the average number to 2.	

:ACQuire:MODe

Set → → Query

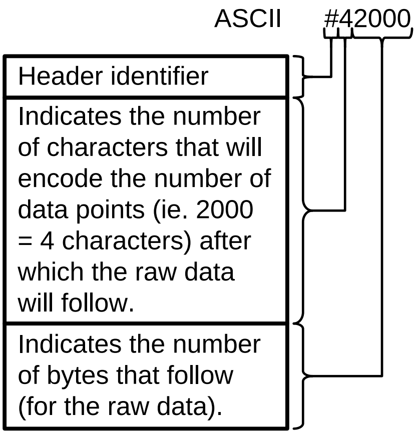
Description	Selects or returns the acquisition mode.	
Syntax	:ACQuire:MODe {SAMPle | PDETect | AVERage | ?}	
Related Commands	:ACQuire:AVERage	
Parameter	SAMPle	Sample mode sampling
	PDETect	Peak detect sampling
	AVERage	Average sampling mode
Example	:ACQuire:MODe PDETect Sets the sampling mode to peak detection.	

:ACQuire<X>:MEMory?

→ Query

Description	Returns the data in acquisition memory for the selected channel as a header + raw data.	
Syntax	:ACQuire<X>:MEMory?	
Related Commands	:ACQuire:RECOrdlength :HEADer	
Parameter	<X>	Channel number (1 to 4)
Return parameter	<string> <waveform block data>	Returns acquisition settings followed by raw waveform block data. <string> Returns the acquisition settings for the selected channel. Format: parameter(1),setting(1);parameter(2),setting(2)…parameter(n),setting(n);Waveform Data; <waveform block data> Header followed by the raw waveform data.

Format:
Header: The header (in ASCII) encodes the number of bytes for the header followed by the number of data points in bytes for the raw data.



ASCII #42000

Header identifier

Indicates the number of characters that will encode the number of data points (ie. 2000 = 4 characters) after which the raw data will follow.

Indicates the number of bytes that follow (for the raw data).

Raw Data:
Each two bytes (in hex) encodes the vertical data of a data point. The data is signed hex data (2's complement, -32768 ~ 32767).

Waveform Raw Data Example:
Header raw data……….

Hex:

23 34 32 30 30 30 00 1C 00 1B 00 1A 00 1A 00 1B ………..

ASCII/Decimal:

#42000 28 27 26 26 27…….

The actual value of a data point can be calculated with the following formula: (Decimal value of hex data/AD Factor) * vertical scale.

Note: AD Factor is fixed as 25. The vertical scale is returned with the

		acquisition settings that precede the raw data. For example if the raw data for a point is 001C (=28 decimal) then, (28/25) x 0.5 = 0.56V
Example	:ACQuire1:MEMory? Format,2.0E;Memory Length,10000;IntpDistance,0; Trigger Address,4999;Trigger Level,1.160E+01; Source,CH1;Vertical Units,V;Vertical Units Div,0;Vertical Units Extend Div,15;Label,ACK ;Probe Type,0;Probe Ratio,1.000e+01;Vertical Scale,5.000e+00;Vertical Position,-1.100e+01;Horizontal Units,S;Horizontal Scale,5.000E-04;Horizontal Position,0.000E+00; Horizontal Mode,Main;SincET Mode,Real Time;Sampling Period,5.000e-07;Horizontal Old Scale,5.000E-04;Horizontal Old Position,0.000E+00; Firmware,V0.99b8;Time,02-Oct-14 17:00:43; Waveform Data; #520000………………..follows waveform block data in hex.	
Note	You need to set the command “:USBDelay ON” once to avoid missing data before running the program if you use USB interface to transfer data in the Windows 10 operating system.	

:ACQuire:FILTer:SOURce

Set →
→ Query

Description	Returns the source of the filter.	
Syntax	:ACQuire:FILTer:SOURce {CH1|CH2|CH3|CH4|?}	
Parameter/ Return parameter	CH1 ~ CH4	Source channel
Example	:ACQuire:FILTer:SOURce? CH1 Sets the filter source to CH1.	

:ACQuire:FILTer

Set →
→ Query

Description	Turns the filter on/off or queries its status.	
Syntax	:ACQuire:FILTer {ON|OFF|?}	
Parameter/ Return parameter	ON	Filter on.
	OFF	Filter off.
Example	:ACQuire:FILTer? OFF Indicates that the filter is turned off.	

:ACQuire:FILTer:FREQuency

Set →
→ Query

Description	Sets or queries the filter frequency.	
Syntax	:ACQuire:FILTer:FREQuency {DEFault|<NRf>|?}	
Parameter/ Return parameter	DEFault	Sets the filter frequency to the default.
	<NRf>	Manually sets the filter frequency. (1Hz ~ 500MHz)
Example	:ACQuire:FILTer:FREQuency 1 Sets the filter frequency to 1Hz.	

:ACQuire:FILTer:TRACking

Set →
→ Query

Description	Turns filter tracking on/off or queries its state.	
Syntax	:ACQuire:FILTer:TRACking {ON|OFF|?}	
Parameter/ Return parameter	OFF	Tracking off
	ON	Tracking on
Example	:ACQuire:FILTer:TRACking ON Turns filter tracking on.	

:ACQuire<X>:STATe?

→Query

Description	Returns the status of waveform data.	
Syntax	:ACQuire<X>:STATe?	
Parameter	<X>	Channel number (1 to 4)
Return parameter	0	Raw data is not ready
	1	Raw data is ready

Example

:ACQuire1:STATe?

0

Returns 0. Channel 1's raw data is not ready.

Note: If the oscilloscope changes the acquisition status from STOP to RUN, the status will be reset as zero.

:ACQuire:INTERpolation

Set→ →Query

Description	Selects or returns the interpolation mode.	
Syntax	:ACQuire:INTERpolation {ET | SINC | ?}	
Parameter/Return parameter	ET	Equivalent Time interpolation. The MDO-2000EG/2000EX doesn't support ET.
	SINC	Sets to SIN(X)/X interpolation

Example

:ACQuire:INTERpolation?

>SINC

Returns SINC as the interpolation mode.

:ACQuire:RECOrdlength

Set→ →Query

Description	Sets or queries the record length.	
Syntax	:ACQuire:RECOrdlength {<NRf>| ?}	
Parameter/Return parameter	<NRf>	Record length. Settable record length: (1e+3 | 1e+4 | 1e+5 | 1e+6 | 1e+7)

Example	:ACQuire:RECOrdlength 1e+3 Sets the record length to 1000 points.	

:HEADer

Set →
→ Query

Description	Configures whether the returned data of the :ACQuire:MEM query will contain header information or not. It is set to ON by default.	
Syntax	:HEADer {OFF | ON | ?}	
Related Commands	:ACQuire<X>:MEMory?	
Parameter	ON	Add header information.
	OFF	Don't add header information.
Return parameter	Returns the configuration (ON, OFF) for the selected channel.	
Example	:HEADer ON	

Autoscale Commands

:AUTOSet

Set →

Description	Runs the Autoset function to automatically configure the horizontal scale, vertical scale, and trigger according to the input signal.
Syntax	:AUTOSet

:AUTORSET:MODe

Set →
→ Query

Description	Sets the Autoset mode or queries its state.	
Syntax	:AUTORSET:MODe {FITScreen | ACPriority | ?}	
Related Commands	:AUTOSet	
Parameter/Return parameter	FITScreen	Fit Screen mode
	ACPriority	AC priority mode
Example	:AUTORSET? FITSCREEN	

Vertical Commands

:CHANNel<X>:BWLimit

Set →
→ Query

Description	Sets or returns the bandwidth limit on/off.	
Syntax	:CHANNel<X>:BWLimit {FULL | <NR3> | ?}	
Parameter	<X>	Channel 1,2,3,4
	FULL	Full bandwidth
	<NR3>	Sets the bandwidth limit to a pre-defined bandwidth.
		100E+6: 100MHz
		20E+6: 20MHz
Return Parameter	<NR3>	Returns the bandwidth.
	Full	Full bandwidth
Example	:CHANNel1:BWLimit 2.000E+07	
	Sets the channel 1 bandwidth to 20MHz.	

Set →
→ Query

:CHANnel<X>:COUPling

Description	Selects or returns the coupling mode.	
Syntax	CHANnel<X>:COUPling {AC | DC | GND | ?}	
Parameter	<X>	Channel 1,2,3,4
	AC	AC coupling
	DC	DC coupling
	GND	Ground coupling
Return parameter	Returns the coupling mode.	
Example	:CHANnel1:COUPling DC Sets the coupling to DC for Channel 1.	

Set →
→ Query

:CHANnel<X>:DESKew

Description	Sets the deskew time in seconds.	
Syntax	:CHANnel<X>:DESKew { <NR3> | ?}	
Parameter	<X>	Channel 1,2,3,4
	<NR3>	Deskew time: -5.00E -11 to 5.00E-11 -50ns to 50 ns. (10 ps /step)
Return parameter	<NR3>	Returns the deskew time.
Example	:CHANnel1:DESKew 1.300E-9 Sets the deskew time to 1.3 nano seconds.	

Set →
→ Query

:CHANnel<X>:DISPlay

Description	Turns a channel on/off or returns its status.	
Syntax	:CHANnel<X>:DISPlay {OFF | ON | ?}	
Parameter	<X>	Channel 1,2,3,4
	OFF	Channel off
	ON	Channel on

Return Parameter	ON	Channel is on
	OFF	Channel is off
Example	:CHANnel1:DISPlay ON Turns on Channel 1	

:CHANnel<X>:EXPand

Set → → Query

Description	Sets Expand By Ground or Expand By Center for a channel or queries its status.	
Syntax	:CHANnel<X>:EXPand {GND | CENTer | ?}	
Parameter	<X>	Channel 1,2,3,4
	GND	Ground
	CENTer	Center
Return parameter	GND	Expand By Ground
	CENTER	Expand By Center
Example	:CHANnel1:EXPand GND Sets Channel 1 to Expand By Ground.	

:CHANnel<X>:IMPedance?

→ Query

Description	Returns the impedance of the oscilloscope. (The impedance of the MDO-2000EG/2000EX is fixed at 1MΩ)	
Syntax	:CHANnel<X>:IMPedance?	
Parameter	<x>	Channel
	1/2/3/4	CH1/2/3/4
Return parameter	<NR3>	Returns the impedance value.
Example	:CHANnel1:IMPedance? 1.000000E+06 The impedance is 1M ohms.	

:CHANnel<X>:INVert

Set →
→ Query

Description	Inverts a channel or returns its status.	
Syntax	:CHANnel<X>:INVert {OFF | ON | ?}	
Parameter	<X>	Channel 1, 2, 3, 4
	OFF	Invert off
	ON	Invert on
Return parameter	ON	Invert on
	OFF	Invert off
Example	:CHANnel1:INVert ON Inverts Channel 1	

:CHANnel<X>:POSition

Set →
→ Query

Description	Sets or returns the position level for a channel.	
Note	The vertical position will only be set to closest allowed value. The position level range depends on the vertical scale. The scale must first be set before the position can be set.	
Syntax	:CHANnel<X>:POSition { <NRf> | ?}	
Parameter	<X>	Channel 1, 2, 3, 4
	<NRf>	Position. Range depends on the vertical scale.
Return parameter	<NR3>	Returns the position value.
Example 1	:CHANnel1:POSition 2.4E–3 Sets the Channel 1 position to 2.4mV/mA	
Example 2	:CHANnel1:POSition? 2.4E-3 Returns 2.4mV as the vertical position.	

:CHANnel<X>:PROBe:RATio

Set →
→ Query

Description	Sets or returns the probe attenuation factor.	
Syntax	:CHANnel<X>:PROBe:RATio { <NRf> | ?}	
Related Commands	:CHANnel<X>:PROBe:TYPe	
Parameter	<X>	Channel 1, 2, 3, 4
	<NRf>	Probe attenuation factor
Return parameter	<NR3>	Returns the probe factor
Example	:CHANnel1:PROBe:RATio 1.00E+0 Sets the Channel 1 probe attenuation factor to 1x	

:CHANnel<X>:PROBe:TYPe

Set →
→ Query

Description	Sets or returns the probe type (voltage/current).	
Syntax	:CHANnel<X>:PROBe:TYPe { VOLTage | CURRent | ?}	
Related Commands	:CHANnel<X>:PROBe:RATio	
Parameter	<X>	Channel 1, 2, 3, 4
	VOLTage	Voltage
	CURRent	Current
Return parameter	Returns the probe type.	
Example	:CHANnel1:PROBe:TYPe VOLTage Sets the Channel 1 probe type to voltage.	

:CHANnel<X>:SCALe

Set →
→ Query

Description	Sets or returns the vertical scale. The scale depends on the probe attenuation factor. Note the probe attenuation factor should be set before the scale.

Syntax	:CHANnel<X>:SCALe { <NRf> | ?}	
Parameter	<X>	Channel 1, 2, 3, 4
	<NRf>	Vertical scale: 2e–3 to 1e+1 2mV to 10V (Probe x1)
Return parameter	<NR3>	Returns the vertical scale in volts or amps.
Example	:CHANnel1:SCAle 2.00E–2 Sets the Channel 1 vertical scale to 20mV/div	

Math Commands

:MATH:DISP

Set→
→Query

Description	Turns the math display on or off on the screen.	
Syntax	:MATH:DISP {OFF|ON|?}	
Parameter/ Return parameter	OFF	Math is not displayed on screen
	ON	Math is displayed on screen
Example	:MATH:DISP OFF Math is off.	

:MATH:TYPe

Set→ →Query

Description	Queries or sets the Math type to FFT, Advanced Math or to dual channel math operations
Syntax	:MATH:TYPe { DUAL | ADVanced | FFT | ? }
Related Commands	:MATH:DISP
Parameter	DUAL Dual channel operations ADVanced Advanced math operations FFT FFT operations
Return parameter	Returns the math type.
Example	:MATH:TYPe DUAL Sets the Math type to dual channel math operation.

:MATH:DUAL:SOURce<X>

Set→ →Query

Description	Sets the dual math source for source 1 or 2.
Syntax	:MATH:DUAL:SOURce<X> { CH1 | CH2 | CH3 | CH4 | REF1 | REF2 | REF3 | REF4 | ? }
Parameter	<X> Source number 1 or 2 CH1~4 Channel 1 to 4 REF1~4 Reference waveforms 1 to 4
Return parameter	Returns the source for the source 1 or 2.
Example	:MATH:DUAL:SOURce1 CH1 Sets source1 as channel 1.

:MATH:DUAL:OPERator

Set→ →Query

Description	Sets the math operator for dual math operations.

Syntax	:MATH:DUAL:OPERator {PLUS | MINUS | MUL| DIV|?}	
Parameter	PLUS	+ operator
	MINUS	- operator
	MUL	× operator
	DIV	÷ operator
Return parameter	Returns operator type.	
Example	:MATH:DUAL:OPERator PLUS Sets the math operator as plus (+).	

:MATH:DUAL:POSition

Set → → Query

Description	Sets the vertical position of the displayed math result expressed by unit/division.	
Syntax	:MATH:DUAL:POSition {<NRf> | ? }	
Parameter	<NRf>	Vertical position Depends on the vertical scale (Unit/Div)
Return parameter	<NR3>	Returns the vertical position.
Example	:MATH:DUAL:POSition 1.0E+0 Sets the vertical position to 1.00 unit/div.	

:MATH:DUAL:SCALe

Set → → Query

Description	Sets the vertical scale of the displayed math result.	
Syntax	:MATH:DUAL:SCALe {<NRf> | ?}	
Parameter	<NRf>	Vertical scale
Return parameter	<NR3>	Returns the scale.
Example	:MATH:DUAL:SCALe 2.0E-3 Sets the vertical scale to 2mV/2mA.	

:MATH:FFT:SOURce

Set →
→ Query

Description	Sets and queries the FFT math source.	
Syntax	:MATH:FFT:SOURce { CH1 | CH2 | CH3 | CH4 | REF1 | REF2 | REF3 | REF4 | ? }	
Related commands	:MATH:ADVanced:EDIT:SOURce<X> :MATH:ADVanced:EDIT:OPERator	
Parameter	CH1~4	Channel 1 to 4
	REF1~4	Reference waveform 1 to 4
Return parameter	Returns the FFT source.	
Example	:MATH:FFT:SOURce CH1 Sets the FFT math source as channel 1.	

:MATH:FFT:MAG

Set →
→ Query

Description	Sets FFT vertical units as linear or decibels.	
Syntax	:MATH:FFT:MAG {LINEAR | DB | ?}	
Parameter	LINEAR	Linear units (Vrms)
	DB	Logarithmic units (dB)
Return parameter	Returns the FFT vertical units.	
Example	:MATH:FFT:MAG DB Sets FFT vertical units to dB.	

:MATH:FFT:WINDow

Set →
→ Query

Description	Sets the windowing filter used for the FFT function.	
Syntax	:MATH:FFT:WINDow {RECTangular|HAMming|HANning|BLAckman|?}	
Parameter	RECTangular	Rectangular window

	HAMming	Hamming window
	HANning	Hanning window
	BLAckman	Blackman window
Return parameter	Returns the FFT window.	
Example	:MATH:FFT:WINDow HAMming Sets the FFT window filter to hamming.	

:MATH:FFT:POSition

Set →
→ Query

Description	Sets the vertical position of the displayed FFT result.	
Syntax	MATH:FFT:POSition { <NRf> | ? }	
Parameter	<NRf>	Vertical position: -12e+0 to +12e+0 (12 units/division to +12 units/division.)
Return parameter	<NR3>	Returns the vertical position.
Example	:MATH:FFT:POSition -2e-1 Sets the FFT position to -0.2 divisions.	

:MATH:FFT:SCALe

Set →
→ Query

Description	Sets the vertical scale of the displayed FFT result.	
Syntax	:MATH:FFT:SCALe {<NRf> | ?}	
Parameter	<NRf>	Vertical scale: Linear: 2e-3 to 1e+3 (2mV~1kV) dB: 1e+0 to 2e+1 (1~20dB)
Return parameter	<NR3>	Returns vertical scale.
Example	:MATH:FFT:SCAle 1.0e+0 Sets the scale to 1dB.	

:MATH:FFT:HORizontal:SCALe

Set→
→Query

Description	Sets or queries the zoom scale for FFT math.	
Syntax	:MATH:FFT:HORizonatal:SCALe {<NRf> | ?}	
Parameter	<NRf>	Zoom scale: 1 to 20 times
Return parameter	<NR3>	Returns zoom scale.
Example	:MATH:FFT:HORizontal:SCALe 5 Sets the zoom scale to 5X.	

:MATH:FFT:HORizontal:POSition

Set→
→Query

Description	Sets the horizontal position of the displayed FFT result.	
Syntax	MATH:FFT:HORizontal:POSition { <NRf> | ? }	
Parameter	<NRf>	Horizontal position: 0Hz ~ 999.9kHz
Return parameter	<NR3>	Returns the vertical position.
Example	:MATH:FFT:HORizontal:POSition 6.0e5 Sets the FFT horizontal position to 600kHz.	

:MATH:DEFine

Set→
→Query

Description	Sets or queries the advanced math expression as a string.	
Syntax	:MATH:DEFine {<string>| ?}	
Related	:MATH:DISP :MATH:TYPe	
Parameter	<string>	An expression enclosed in double quotes. Note, ensure parentheses are used correctly in the expression. The expression can contain the following parts:

	Source	CH1~CH4, Ref1~Ref4
	Function	Intg(, Diff(, log(, ln(, Exp(, Sqrt(, Abs(, Rad(, Deg(, sin(, cos(, tan(, asin(, acos(, atan(
	Variable	VAR1, VAR2
	Operator	+, -, *, /, (,), !(, <, >, <=, >=, ==, !=, ||, &&
	Figure	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., E
	Measure-ment	Pk-Pk(, Max(, Min(, Amp(, High(, Low(, Mean(, CycleMean(, RMS(, CycleRMS(, Area(, CycleArea(, ROVShoot(, FOVShoot(, Freq(, Period(, Rise(, Fall(, PosWidth(, NegWidth(, Dutycycle(, FRR(, FRF(, FFR(, FFF(, LRR(, LRF(, LFR(, LFF(, Phase(
Return parameter	Returns the expression as a string.	
Example	:MATH:DISP ON :MATH:TYPe ADVanced MATH:DEFine "CH1-CH2" Sets the math expression to CH1-CH2.	

:MATHVAR?

Query

Description	Returns the value of the VAR1 and VAR2 variables.	
Syntax	MATHVAR?	
Related Commands	MATHVAR:VAR<X> MATH:DEFine	
Return parameter	<string>	VAR1 <NR3>; VAR2 <NR3>

Example	MATHVAR? VAR1 1.000000E+06; VAR2 1.0E+1 Returns the value of both variables.	

Set →
→ Query

:MATHVAR:VAR<X>

Description	Sets or returns the VAR1 or VAR2 variables.	
Syntax	MATHVAR:VAR<x> {<NRf> | ?}	
Related Commands	MATH:DEFine	
Parameter	<X>	1, 2 (VAR1 or VAR2)
	<NRf>	Value of VAR1/VAR2
Return parameter	<NR3>	Returns the value of VAR1/VAR2
Example	:MATH:VAR1 6.0e4 Sets VAR1 to 60000.	

Set →
→ Query

:MATH:ADVanced:POSition

Description	Sets the vertical position of the advanced math result, expressed in unit/div.	
Syntax	MATH:ADVanced:POSition { <NRf> | ? }	
Parameter	<NRf>	Vertical position: -12e+0 to +12e+0 (12 units/division to +12 units/division.)
Return parameter	<NR3>	Returns the vertical position.
Example	:MATH:ADVanced:POSition 1.0e+0 Sets the position as 1.00 unit/div.	

Set →
→ Query

:MATH:ADVanced:SCALe

Description	Sets or queries the vertical scale the advanced math result.
Syntax	:MATH:ADVanced:SCALe {<NRf> | ?}

Parameter	<NRf>	Vertical scale
Return parameter	<NR3>	Returns the vertical scale.
Example	:MATH:ADVanced:SCALe 2.0E-3 Sets the vertical scale to 2mV/Div.	

Cursor Commands

:CURSor:MODe

Set → → Query

Description	Sets cursor mode to horizontal (H) or horizontal and vertical (HV). Note: When the cursor source is set to bus, then only the horizontal cursor is available.	
Syntax	:CURSor:MODe {OFF | H | HV | ? }	
Parameter	OFF	Turns the cursors off.
	H	Turns the horizontal cursors on.
	HV	Turns horizontal and vertical cursors on.
Return parameter	Returns the state of the cursors (H, HV, OFF).	
Example	:CURSor:MODe OFF Turns the cursors off.	

:CURSor:SOURce

Set → → Query

Description	Sets or queries the cursor source.	
Syntax	:CURSor:SOURce {CH1 | CH2 |CH3 | CH4 | REF1 | REF2 | REF3 | REF4 | MATH | LOGic | BUS1 | ?}	
Parameter	CH1~CH4	Channel 1 to 4
	REF1~4	Reference waveform 1 to 4
	MATH	Math source
	LOGic	Logic source
	BUS1	Bus source
Return parameter	Returns the cursor source.	
Example	:CURSor:SOURce CH1 Turns the cursor source as channel 1.	

:CURSor:HUNI

Set →
→ Query

Description	Sets or queries the units for the horizontal bar cursors.	
Syntax	:CURSor:HUNI {SEConds | HERtz | DEGrees | PERcent | ?}	
Related Commands	:CURSor:MODe	
Parameter	SEConds	Sets the cursor units to time in seconds.
	HERtz	Sets the cursor units to frequency.
	DEGrees	Sets the cursor units to degrees.
	PERcent	Sets the cursor units to percent.
Return parameter	Returns the unit type.	
Example	:CURSor:HUNI SEConds Sets the units to time in seconds.	

:CURSor:HUSE

Set →

Description	Sets the current cursor position as the phase or ratio reference for the Percent or Degrees (horizontal) cursors.	
Note	This command can only be used when :CURSor:HUNI is set to DEGrees or PERcent.	
Syntax	:CURSor:HUSE {CURRent}	
Related Commands	:CURSor:MODe :CURSor:HUNI	
Parameter	CURRent	Uses the current horizontal position
Example	:CURSor:HUSE CURRent.	

:CURSor:VUNI

Set →
→ Query

Description	Sets or queries the units for the vertical bar cursors.	
Syntax	:CURSor:VUNI {BASE | PERcent | ?}	
Related Commands	:CURSor:MODe	
Parameter	BASE	Sets the vertical cursor units the same as the scope units (V or A).
	PERcent	Sets the displayed units to percent.
Return parameter	Returns the unit type.	
Example	:CURSor:VUNI BASE Sets the units to the base units.	

:CURSor:VUSE

Set →

Description	Sets the current cursor position as the ratio reference for the Percent (vertical) cursors.	
Note	This command can only be used when :CURSor:VUNI is set to PERcent.	
Syntax	:CURSor:VUSE {CURRent}	
Related Commands	:CURSor:MODe :CURSor:VUNI	
Parameter	CURRent	Uses the current vertical position
Example	:CURSor:VUSE CURRent.	

:CURSor:DDT

→ Query

Description	Returns the deltaY/deltaT (dy/dT) readout. This function is only supported if the source channels are CH1~4, Ref1~4 or Math.
Syntax	:CURSor:DDT{?}

Related Commands	:CURSor:MODe	
Return Parameter	<NR3>	Returns the readout in <NR3> format.
Example	:CURSor:DDT? 4.00E-05	

:CURSor:H1Position

Set →
→ Query

Description	Sets or returns the first horizontal cursor (H1) position.	
Syntax	:CURSor:H1Position {<NRf>| ?}	
Related Commands	:CURSor:H2Position	
Parameter	<NRf>	Horizontal position
Return parameter	Returns the cursor position.	
Example	:CURSor:H1Position? -1.34E-3 Returns the H1 cursor position as -1.34ms.	

:CURSor:H2Position

Set →
→ Query

Description	Sets or returns the second horizontal cursor (H2) position.	
Syntax	:CURSor:H2Position {<NRf> | ?}	
Related Commands	:CURSor:H1Position	
Parameter	<NRf>	Horizontal Position
Return parameter	Returns the cursor position.	
Example	:CURSor:H2Position 1.5E-3 Sets the H2 cursor position to 1.5ms.	

:CURSor:HDELta

→Query

Description	Returns the delta of H1 and H2.	
Syntax	:CURSor:HDELta{?}	
Return Parameter	<NR3>	Returns the distance between two horizontal cursors.
Example	:CURSor:HDELta? 5.0E-9 Returns the horizontal delta as 5ns.	

:CURSor:V1Position

Set→
→Query

Description	Sets the first vertical cursor (V1) position.	
Syntax	:CURSor:V1Position {<NRf>| ?}	
Parameter	<NRf>	Vertical position. Depends on the vertical scale.
Return parameter	<NR3>	Returns the cursor position.
Example	:CURSor:V1Position 1.6E -1 Sets the V1 cursor position to 160mA.	

:CURSor:V2Position

Set→
→Query

Description	Sets the first vertical cursor (V2) position.	
Syntax	:CURSor:V2Position {<NRf> | ?}	
Parameter	<NRf>	Vertical position. Depends on the vertical scale.
Return parameter	<NR3>	Returns the cursor position.
Example	:CURSor:V2Position 1.1E-1 Sets the V2 cursor position to 110mA.	

:CURSor:VDELta

→Query

Description	Returns the delta of V1 and V2.	
Syntax	:CURSor:VDELta{?}	
Return Parameter	<NR3>	Returns the difference between two vertical cursors.
Example	:CURSor:VDELta? 4.00E+0 Returns the vertical delta as 4 volts.	

:CURSor:XY:RECTangular:X:POSition<X>

Set→
→Query

Description	Sets or queries the horizontal position in XY mode for the X rectangular coordinates for cursor 1 or 2.	
Syntax	:CURSor:XY:RECTangular:X:POSition<X> {<NRf>|?}	
Parameter	<X>	Cursor 1, 2
	<NRf>	Horizontal position co-ordinates
Return parameter	<NR3>	Returns the cursor position.
Example	:CURSor:XY:RECTangular:X:POSition1 4.0E-3 Sets the X-coordinate cursor 1 position to 40mV/mV.	

:CURSor:XY:RECTangular:X:DELta

→Query

Description	Returns the delta value of cursor 1 and 2 on the X coordinate.	
Syntax	:CURSor:XY:RECTangular:X:DELta{?}	
Return Parameter	<NR3>	Returns the delta value of cursor 1 and 2 as <NR3>.

Example	:CURSor:XY:RECTangular:X:DELta? 80.0E-3 Returns the horizontal delta as 80mV.	

:CURSor:XY:RECTangular:Y:POSition<X>

Set → → Query

Description	Sets or queries the vertical position in XY mode for the Y rectangular coordinates for cursor 1 or 2.	
Syntax	:CURSor:XY:RECTangular:Y:POSition<X> {<NRf>|?}	
Parameter	<X>	Cursor 1, 2
	<NRf>	Vertical position co-ordinates
Return parameter	<NR3>	Returns the cursor position.
Example	:CURSor:XY:RECTangular:Y:POSition1 4.0E-3 Sets the Y-coordinate cursor 1 position to 40mV/mV.	

:CURSor:XY:RECTangular:Y:DELta

→ Query

Description	Returns the delta value of cursor 1 and 2 on the Y coordinate.	
Syntax	:CURSor:XY:RECTangular:Y:DELta{?}	
Return Parameter	<NR3>	Returns the delta value of cursor 1 and 2 as <NR3>.
Example	:CURSor:XY:RECTangular:Y:DELta? 80.0E-3 Returns the horizontal delta as 80mV.	

:CURSor:XY:POLar:RADIUS:POSition<X>

→ Query

Description	Queries the polar radius position for the specified cursor in XY mode, where X can be either cursor 1 or 2.

Syntax	:CURSor:XY:POLar:RADIUS:POSition<X>{?}	
Parameter	<X>	1, 2 (cursor 1, cursor 2)
Return Parameter	<NR3>	Returns the polar radius position.
Example	:CURSor:XY:POLar:RADIUS:POSition1? 80.0E-3 Returns the polar radius position as 80.0mV.	

:CURSor:XY:POLar:RADIUS:DELta →Query

Description	Returns the radius delta value of cursor 1 and 2.	
Syntax	:CURSor:XY:POLar:RADIUS:DELta{?}	
Return Parameter	<NR3>	Returns the radius delta.
Example	:CURSor:XY:POLar:RADIUS:DELta? 31.4E-3 Returns the radius delta as 31.4mV.	

:CURSor:XY:POLar:THETA:POSition<X> →Query

Description	Queries the polar angle for the specified cursor in XY mode, where X can be either 1 or 2.	
Syntax	:CURSor:XY:POLar:THETA:POSition<X>{?}	
Parameter	<X>	1, 2 (Cursor 1, Cursor 2)
Return parameter	<NR3>	Returns the polar angle.
Example	:CURSor:XY:POLAR:RADIUS:POSition1? 8.91E+1 Returns the polar angle for cursor1 as 89.1˚.	

:CURSor:XY:POLar:THETA:DELta →Query

Description	Queries the polar angle delta between cursor1 and cursor2.

Syntax	:CURSor:XY:POLar:THETA:DELta{?}	
Return parameter	<NR3>	Returns the theta delta between cursor1 and cursor2.
Example	:CURSor:XY:POLar:THETA:DELta? 9.10E+0 Returns the delta as 9.1°.	

:CURSor:XY:PRODuct:POSition<X> →Query

Description	Queries the product in XY mode for the specified cursor, where x can be either 1 or 2.	
Syntax	:CURSor:XY:PRODuct:POSition<X>{?}	
Parameter	<X>	1, 2 (Cursor 1, Cursor 2)
Return parameter	<NR3>	Returns the product value of the Cursor1 or Cursor2.
Example	:CURSor:XY:PRODuct:POSition1? 9.44E-5 Returns the product of cursor1 as 94.4uVV.	

:CURSor:XY:PRODuct:DELta →Query

Description	Queries the product delta in XY mode.	
Syntax	:CURSor:XY:PRODuct:DELta{?}	
Return parameter	<NR3>	Returns the product delta.
Example	:CURSor:XY:PRODuct:DELta? 1.22E-5 Returns the product delta as 12.2uVV.	

:CURSor:XY:RATio:POSition<X> →Query

Description	Queries the ratio in XY mode for the specified cursor, where x can be either cursor 1 or 2.

Syntax	:CURSor:XY:RATio:POSition<X>{?}	
Parameter	<X>	1, 2 (Cursor 1, Cursor 2)
Return parameter	<NR3>	Returns the ratio.
Example	:CURSor:XY:RATio:POSition? 6.717E+1 Returns the ratio value as 6.717V/V.	

:CURSor:XY:RATio:DELta

→Query

Description	Queries the ratio delta in XY mode.	
Syntax	:CURSor:XY:RATio:DELta{?}	
Return parameter	<NR3>	Returns the ratio delta.
Example	:CURSor:XY:RATio:DELta? 5.39E+1 Returns the ratio delta as 53.9V/V.	

Display Commands

:DISPlay:INTensity:WAVEform

Set →
→ Query

Description	Sets or queries the waveform intensity level.	
Syntax	:DISPlay:INTensity:WAVEform {<NRf> | ?}	
Parameter	<NRf>	0.0E+0 to 1.0E+2 (0% to 100%)
Return Parameter	<NR3>	Returns the intensity.
Example	:DISPlay:INTensity:WAVEform 5.0E+1 Sets the waveform intensity to 50%.	

:DISPlay:INTensity:GRATicule

Set →
→ Query

Description	Sets or queries the graticule intensity level.	
Syntax	:DISPlay:INTensity:GRATicule {<NRf> | ?}	
Parameter	<NRf>	1.0E+0 to 1.0E+2 (10% to 100%)
Return Parameter	<NR3>	Returns the graticule intensity.
Example	:DISPlay:INTensity:GRATicule 5.0E+1 Sets the graticule intensity to 50%.	

:DISPlay:INTensity:BACKLight

Set →
→ Query

Description	Sets or queries the intensity of the backlight display.	
Syntax	:DISPlay:INTensity:BACKLight {<NRf> | ?}	
Parameter	<NRf>	1.0E+0 to 1.0E+2 (10% to 100%)
Return Parameter	<NR3>	Returns the backlight intensity.
Example	:DISPlay:INTensity:BACKLight 5.0E+1 Sets the backlight intensity to 50%.	

:DISPlay:INTensity:BACKLight:AUTODim :ENAble

Set →
→ Query

Description	Sets or queries the display auto-dim function.	
Syntax	:DISPlay:INTensity:BACKLight:AUTODim:ENAble {OFF | ON | ?}	
Parameter/ Return parameter	OFF	Turn auto-dim on.
	ON	Turn auto-dim off.
Example	:DISPlay:INTensity:BACKLight:AUTODim:ENAble ON Turns the auto-dim function on.	

:DISplay:INTENSITy:BACKLight:AUTODim :TIMe

Set →
→ Query

Description	Sets or queries the display auto-dim time.	
Syntax	:DISPlay:INTensity:BACKLight:AUTODim:TIMe { <NR1> | ? }	
Parameter/ Return parameter	<NR1>	1 ~ 180 minutes. Time in minutes.
Example	:DISPlay:INTensity:BACKLight:AUTODim:TIMe 10 Sets the auto-dim time to 10 minutes.	

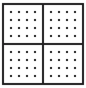
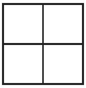
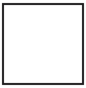
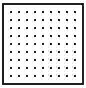
Set →
→ Query

:DISPlay:PERSistence

Description	Sets or queries the waveform persistence level.	
Syntax	:DISPlay:PERSistence { INFInite | OFF | <NRf> | ? }	
Parameter	<NRf>	1.6E-2 ~ 4.0E+0. (16mS to 10S) Range(1.6E-2, 30E-3, 60E-3, 120E-2, 240E-3, 500E-3, 750E-3, 1, 1.5,2,...,9.5,10
	INFInite	Infinite persistence
	OFF	No persistence
Return Parameter	<NR3>	Returns the persistence time.
	INFInite	Infinite persistence
	OFF	No persistence
Example	:DISPlay:PERSistence 2.0E+0 Sets the persistence to 2 seconds.	

Set →
→ Query

:DISPlay:GRATicule

Description	Sets or queries graticule display type.			
Syntax	:DISPlay:GRATicule {FULL | GRID|CROSs | FRAMe | ?}			
Parameter	FULL		CROSs	
	FRAMe		GRID	
Return parameter	Returns the graticule type.			
Example	:DISPlay:GRATicule FULL Sets the graticule to .			

:DISPlay:WAVEform

Set →
→ Query

Description	Sets or queries whether the waveforms are drawn as vectors or dots.	
Syntax	:DISPlay:WAVEform {VECTor | DOT | ?}	
Parameter	VECTor	Vectors
	DOT	Dots
Return parameter	Returns VECTOR or DOT.	
Example	:DISPlay:WAVEform VECTor Sets the waveform to vectors.	

:DISPlay:OUTPut

→ Query

Description	Returns the screen image as a 16 bit RGB run length encoded image.
Syntax	:DISPlay:OUTPut{?}
Return parameter	Format: header+data+LF For example assuming the image data size is 60072 bytes then the following would be returned: #560072<[count] [color] [count] [color]..... ><LF> Where #560072 is the header, each [count] and [color] data are 2 bytes and <LF> is a line feed character.
Note	You need to set the command ":USBDelay ON" once to avoid missing data before running the program if you use USB interface to transfer data in the Windows 10 operating system.

Hardcopy Commands

:HARDcopy:START

Set →

Description	Executing the HARDcopy:START command is the equivalent of pressing the Hardcopy key on the front panel.
Syntax	:HARDcopy:START
Related Commands	:HARDcopy:MODe :HARDcopy:PRINTINKSaver :HARDcopy:SAVEINKSaver :HARDcopy:SAVEFORMat :HARDcopy:ASSIGN

:HARDcopy:MODe

Set →
→ Query

Description	Sets or queries whether hardcopy is set to print or save.	
Syntax	:HARDcopy:MODe { PRINT | SAVE | ? }	
Related Commands	:HARDcopy:START	
Parameter	PRINT	Print mode
	SAVE	Save mode
Return parameter	Returns the mode.(PRINT/SAVE)	

Example	:HARDcopy:MODe PRINT Sets hardcopy to print.	

Set →
→ Query

:HARDcopy:PRINTINKSaver

Description	Sets Inksaver On or Off for printing.	
Syntax	:HARDcopy:PRINTINKSaver { OFF | ON | ? }	
Related Commands	:HARDcopy:START :HARDcopy:MODe	
Parameter	ON	Inksaver ON
	OFF	Inksaver OFF
Return parameter	Returns the print Ink Saver mode.(ON/OFF)	
Example	:HARDcopy:PRINTINKSaver ON Sets Ink Saver to ON for printing.	

Set →
→ Query

:HARDcopy:SAVEINKSaver

Description	Sets Inksaver On or Off for saving screen images.	
Syntax	:HARDcopy:SAVEINKSaver { OFF | ON | ? }	
Related Commands	:HARDcopy:START :HARDcopy:MODe	
Parameter	ON	Inksaver ON
	OFF	Inksaver OFF
Return parameter	Returns the screen image Ink Saver mode (ON/OFF).	
Example	:HARDcopy:SAVEINKSaver ON Sets Inksaver to ON for saving screen images.	

Set →
→ Query

:HARDcopy:SAVEFORMat

Description	Sets or queries the image save file type.	
Syntax	:HARDcopy:SAVEFORMat { PNG | BMP | ? }	

Related Commands	:HARDcopy:START :HARDcopy:MODe	
Parameter	PNG	PNG file format
	BMP	BMP file format
Return parameter	Returns the image file format (PNG/BMP).	
Example	:HARDcopy:SAVEFORMat PNG Sets the file format to PNG.	

Set →
→ Query

:HARDcopy:ASSIGN

Description	Sets or queries what file type the hardcopy key has been assigned to save.	
Syntax	:HARDcopy:ASSIGN {IMAGe | WAVEform | SETUp | ALL | ?}	
Related Commands	:HARDcopy:START :HARDcopy:MODe	
Parameter	IMAGe	Save image files.
	WAVEform	Save waveforms.
	SETUp	Save the panel setup.
	ALL	Save All (image, waveform,setup)
Return parameter	Returns the file type. (IMAGE/WAVEFORM/SETUP/ALL)	
Example	:HARDcopy:ASSIGN IMAGE. Set the hardcopy key to save image files.	

Measure Commands

:MEASure:GATing

Set →
→ Query

Description	Sets or queries the measurement gating.	
Syntax	:MEASure:GATing { OFF | SCREen | CURSor | ? }	
Parameter	OFF	Full record
	SCREen	Gating set to screen width
	CURSor	Gating between cursors
Return parameter	Returns the gating. (OFF, SCREEN, CURSOR)	
Example	:MEASure:GATing OFF Turns gating off (full record).	

:MEASure:SOURce

Set →
→ Query

Description	Sets or queries the measurement source for source1 or source2.
Syntax	:MEASure:SOURce<X> { CH1 | CH2 | CH3 | CH4 | MATH | ? }

Parameter	<X>	Source1 or source2
	CH1~CH4	Channel 1 to 4
	MATH	Math
Return parameter	Returns the source (CH1, CH2, CH3, CH4, MATH)	
Example	:MEASure:SOURce1 CH1 Sets source1 to channel 1.	

Set →
→ Query

:MEASure:METHod

Description	Sets or queries the method used to determine the High-Low measurement values.	
Syntax	:MEASure:METHod { AUTo | HIStogram | MINMax | ? }	
Parameter	AUTo	Set to auto.
	HIStogram	Set to the Histogram method.
	MINMax	Set to the Min-Max method.
Return parameter	Returns the measurement method (AUTO, HISTOGRAM, MINMAX)	
Example	:MEASure:METHod: AUTo Set the measurement method to auto.	

Set →
→ Query

:MEASUrement:REFLevel:PERCent:HIGH

Description	Sets or queries the high reference level as a percentage.	
Syntax	:MEASUrement:REFLevel:PERCent:HIGH {<NRf> | ?}	
Parameter	<NRf>	0 - 100%
Return parameter	Returns the high reference level	
Example	:MEASUrement:REFLevel:PERCent:HIGH 50.1 Set the high reference level to 50.1%.	

:MEASUrement:REFLevel:PERCent:LOW

Set →
→ Query

Description	Sets or queries the low reference level as a percentage.	
Syntax	:MEASUrement:REFLevel:PERCent:LOW {<NRf> | ?}	
Parameter	<NRf>	0 - 100%
Return parameter	Returns the low reference level.	
Example	:MEASUrement:REFLevel:PERCent:LOW 40.1 Set the low reference level to 40.1%.	

:MEASUrement:REFLevel:PERCent:MID

Set →
→ Query

Description	Sets or queries the first mid reference level as a percentage.	
Syntax	:MEASUrement:REFLevel:PERCent:MID {<NRf> | ?}	
Parameter	<NRf>	0 - 100%
Return parameter	Returns the mid reference level.	
Example	:MEASUrement:REFLevel:PERCent:MID 50 Set the mid reference level to 50%.	

:MEASUrement:REFLevel:PERCent:MID2

Set →
→ Query

Description	Sets or queries the second mid reference level as a percentage.	
Syntax	:MEASUrement:REFLevel:PERCent:MID2 {<NRf> | ?}	
Parameter	<NRf>	0 - 100%
Return parameter	Returns the mid reference level of the second source.	
Example	:MEASUrement:REFLevel:PERCent:MID2 50 Set the mid reference level to 50%.	

:MEASure:FALL →Query

Description	Returns the fall time measurement result.	
Syntax	:MEASure:FALL{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:FALL? Selects Channel 1 as the source, and then measures the fall time.	

:MEASure:FOVShoot →Query

Description	Returns the fall overshoot amplitude.	
Syntax	:MEASure:FOVShoot{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the fall overshoot as a percentage
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	

Example	:MEASure:SOURce1 CH1 :MEASure:FOVShoot? 1.27E+0 Selects Channel 1, and then measures the fall overshoot.

:MEASure:FPReshoot

→Query

Description	Returns fall preshoot amplitude.	
Syntax	:MEASure:FPReshoot{?}	
Related Commands	:MEASure:SOURce<X>	
Returns	Returns the fall preshoot as <NR3>.	
Return parameter	<NR3>	Returns the fall preshoot as a percentage.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:FPReshoot? Selects Channel 1, and then measures the fall preshoot.	

:MEASure:FREQuency

→Query

Description	Returns the frequency value.	
Syntax	:MEASure:FREQuency{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the frequency in Hz.
	Chan Off	Indicates the source channel is not activated.

Note	Before using this command, select the measurement channel. See the example below.
Example	:MEASure:SOURce1 CH1 :MEASure:FREQuency? >1.0E+3 Selects Channel 1, and then measures the frequency.

:MEASure:NWIDth →Query

Description	Returns the first negative pulse width timing.	
Syntax	:MEASure:NWIDth{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the negative pulse width in seconds.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:NWIDth? 4.995E-04 Selects Channel 1, and then measures the negative pulse width.	

:MEASure:PDUTy →Query

Description	Returns the positive duty cycle ratio as percentage.	
Syntax	:MEASure:PDUTy{?}	
Related commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the positive duty ratio.

	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:PDUTy? 5.000E+01 Selects Channel 1, and then measures the positive duty cycle.	

:MEASure:PERiod

→Query

Description	Returns the period.	
Syntax	:MEASure:PERiod{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the period.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:PERiod? 1.0E-3 Selects Channel 1, and then measures the period.	

:MEASure:PWIDth

→Query

Description	Returns the first positive pulse width.
Syntax	:MEASure:PWIDth{?}
Related Commands	:MEASure:SOURce<X>

Return parameter	<NR3>	Returns the positive pulse width.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:PWIDth? 5.0E-6 Selects Channel 1, and then measures the positive pulse width.	

:MEASure:RISe

→Query

Description	Returns the first pulse rise time.	
Syntax	:MEASure:RISe{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the rise time.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:RISe? 8.5E-6 Selects Channel 1, and then measures the rise time.	

:MEASure:ROVShoot

→Query

Description	Returns the rising overshoot over the entire waveform in percentage.
Syntax	:MEASure:ROVShoot{?}

Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the overshoot.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:ROVShoot? 5.00E+00 Selects Channel 1, and then measures the rise overshoot.	

:MEASure:RPReshoot

→Query

Description	Returns rising preshoot over the entire waveform in percentage.	
Syntax	:MEASure:RPReshoot{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the rising preshoot.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:RPReshoot? 2.13E-2 Selects Channel 1, and then measures the rise preshoot.	

:MEASure:PPULSE

→Query

Description	Returns the number of positive pulses.	
Syntax	:MEASure:PPULSE{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the number of positive pulses.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:PPULSE? 6.000E+00 Selects Channel 1, and then measures the number of positive pulses.	

:MEASure:NPULSE

→Query

Description	Returns the number of negative pulses.	
Syntax	:MEASure:NPULSE{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the number of negative pulses.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	

Example	:MEASure:SOURce1 CH1 :MEASure:NPULSE? 4.000E+00 Selects Channel 1, and then measures the number of negative pulses.

:MEASure:PEDGE

→Query

Description	Returns the number of positive edges.	
Syntax	:MEASure:PEDGE{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the number of positive edges.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:PEDGE? 1.100E+01 Selects Channel 1, and then measures the number of positive edges.	

:MEASure:NEDGE

→Query

Description	Returns the number of negative edges.	
Syntax	:MEASure:NEDGE{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the number of negative edges.
	Chan Off	Indicates the source channel is not activated.

Note	Before using this command, select the measurement channel. See the example below.
Example	:MEASure:SOURce1 CH1 :MEASure:NEDGE? 1.100E+01 Selects Channel 1, and then measures the number of negative edges.

:MEASure:AMPlitude →Query

Description	Returns the amplitude difference between the Vhigh-Vlow.	
Syntax	:MEASure:AMPlitude{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the amplitude.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:AMPlitude? 3.76E-3 Selects Channel 1, and then measures the amplitude.	

:MEASure:MEAN →Query

Description	Returns the mean voltage/current of one or more full periods.
Syntax	:MEASure:MEAN{?}
Related Commands	:MEASure:SOURce<X>

Return parameter	<NR3>	Returns the mean.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:MEAN? 1.82E-3 Selects Channel 1, and then measures the mean value.	

:MEASure:CMEan

→Query

Description	Returns the mean voltage/current of one full period.	
Syntax	:MEASure:CMEan{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the cyclic mean.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:CMEan? 9.480E-01 Selects Channel 1, and then measures the mean value of the first period.	

:MEASure:HIGH →Query

Description	Returns the global high voltage/current.	
Syntax	:MEASure:HIGH{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the high value.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:HIGH? 3.68E-3 Selects Channel 1, and then measures the high voltage/current.	

:MEASure:LOW →Query

Description	Returns the global low voltage/current.	
Syntax	:MEASure:LOW{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the global low value.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	

Example	:MEASure:SOURce1 CH1 :MEASure:LOW? 1.00E-0 Selects Channel 1, and then measures the low current/voltage.	

:MEASure:MAX

→Query

Description	Returns the maximum amplitude.	
Syntax	:MEASure:MAX{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the maximum amplitude.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:MAX? 1.90E-3 Selects Channel 1, and then measures the maximum amplitude.	

:MEASure:MIN

→Query

Description	Returns the minimum amplitude.	
Syntax	:MEASure:MIN{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the minimum amplitude.
	Chan Off	Indicates the source channel is not activated.

Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:MIN? -8.00E-3 Selects Channel 1, and then measures the minimum amplitude.	

:MEASure:PK2PK →Query

Description	Returns the peak-to-peak amplitude (difference between maximum and minimum amplitude).	
Syntax	:MEASure:PK2Pk{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the voltage or current peak to peak measurement.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:PK2Pk? 2.04E-1 Selects Channel 1, and then measures the peak-to-peak amplitude.	

:MEASure:RMS →Query

Description	Returns the root-mean-square voltage/current of one or more full periods.
Syntax	:MEASure:RMS{?}

Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the RMS value.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:RMS? 1.31E-3 Selects Channel 1, and then measures the RMS voltage/current.	

:MEASure:CRMS

→Query

Description	Returns the root-mean-square voltage/current of one full periods.	
Syntax	:MEASure:CRMS{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the CRMS value.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:CRMS? 1.31E-3 Selects Channel 1, and then measures the CRMS voltage/current.	

:MEASure:AREa

→ Query

Description	Returns the voltage/current area over one or more full periods.	
Syntax	:MEASure:AREa{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the area value.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	
Example	:MEASure:SOURce1 CH1 :MEASure:AREa? 1.958E-03 Selects Channel 1, and then measures the area.	

:MEASure:CARea

→ Query

Description	Returns the voltage/current area over one full period.	
Syntax	:MEASure:CARea{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the area value.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	

Example	:MEASure:SOURce1 CH1 :MEASure:CARea? 1.958E-03 Selects Channel 1, and then measures the area.	

:MEASure:FRRDelay →Query

Description	Returns the delay between the first rising edge of source1 and the first rising edge of source2.	
Syntax	:MEASure:FRRDelay{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the delay.
	Chan Off	Indicates the source channel is not activated.
Note	Select the two source channels before entering this command.	
Example	:MEASure:SOURce1 CH1 :MEASure:SOURce2 CH2 :MEASure:FRRDelay? -4.68E-6 Select channel 1 and 2 as source1/2, and then measure FRR.	

:MEASure:FRFDelay →Query

Description	Returns the delay between the first rising edge of source1 and the first falling edge of source2.	
Syntax	:MEASure:FRFDelay{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the delay.

	Chan Off	Indicates the source channel is not activated.
Note	Select the two source channels before entering this command.	
Example	:MEASure:SOURce1 CH1 :MEASure:SOURce2 CH2 :MEASure:FRFDelay? 3.43E-6 Select channel 1 and 2 as source1/2, and then measures FRF.	

:MEASure:FFRDelay

→Query

Description	Returns the delay between the first falling edge of source1 and the first rising edge of source2.	
Syntax	:MEASure:FRRDelay{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the delay.
	Chan Off	Indicates the source channel is not activated.
Note	Select the two source channels before entering this command.	
Example	:MEASure:SOURce1 CH1 :MEASure:SOURce2 CH2 :MEASure:FRRDelay? -8.56E-6 Select channel 1 and 2 as delay source1/2, and then measure FFR.	

:MEASure:FFFDelay →Query

Description	Returns the delay between the first falling edge of source1 and the first falling edge of source2.	
Syntax	:MEASure:FFFDelay{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the delay.
	Chan Off	Indicates the source channel is not activated.
Note	Select the two source channels before entering this command.	
Example	:MEASure:SOURce1 CH1 :MEASure:SOURce2 CH2 :MEASure:FFFDelay? -8.89E-6 Select channel 1 and 2 as delay source1/2, and then measure FFF.	

:MEASure:FLI →Query

Description	Returns the flicker index of times.	
Syntax	:MEASure:FLI{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the flicker index of times.
	Chan Off	Indicates the source channel is not activated.
Note	Before using this command, select the measurement channel. See the example below.	

Example	:MEASure:SOURce1 CH1 :MEASure:FLI? 2.870E-01 Select channel 1 and then measure the flicker index of times.	

:MEASure:LRRDelay

→Query

Description	Returns the delay between the first rising edge of source1 and the last rising edge of source2.	
Syntax	:MEASure:LRRDelay{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the delay.
	Chan Off	Indicates the source channel is not activated.
Note	Select the two source channels before entering this command.	
Example	:MEASure:SOURce1 CH1 :MEASure:SOURce2 CH2 :MEASure:LRRDelay? -8.89E-6 Select channel 1 and 2 as delay source1/2, and then measure LRR.	

:MEASure:LRFDelay

→Query

Description	Returns the delay between the first rising edge of source1 and the last rising edge of source2.
Syntax	:MEASure:LRFDelay{?}
Related Commands	:MEASure:SOURce<X>

Return parameter	<NR3>	Returns the delay.
	Chan Off	Indicates the source channel is not activated.
Note	Select the two source channels before entering this command.	
Example	:MEASure:SOURce1 CH1 :MEASure:SOURce2 CH2 :MEASure:LRFDelay? -4.99E-6 Select channel 1 and 2 as delay source1/2, and then measure LRF.	

:MEASure:LFRDelay

→Query

Description	Returns the delay between the first falling edge of source1 and the last rising edge of source2.	
Syntax	:MEASure:LFRDelay{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the delay.
	Chan Off	Indicates the source channel is not activated.
Note	Select the two source channels before entering this command.	
Example	:MEASure:SOURce1 CH1 :MEASure:SOURce2 CH2 :MEASure:LFRDelay? -9.99E-6 Select channel 1 and 2 as delay source1/2, and then measure LFR.	

:MEASure:LFFDelay →Query

Description	Returns the delay between the first falling edge of source1 and the last falling edge of source2.	
Syntax	:MEASure:LFFDelay{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the delay.
	Chan Off	Indicates the source channel is not activated.
Note	Select the two source channels before entering this command.	
Example	:MEASure:SOURce1 CH1 :MEASure:SOURce2 CH2 :MEASure:LFFDelay? -9.99E-6 Select channel 1 and 2 as delay source1/2, and then measure LFF.	

:MEASure:PFLI →Query

Description	Returns the %flicker of times	
Syntax	:MEASure:PFLI{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the % flicker of times.
	Chan Off	Indicates the source channel is not activated.
Note	Before using theis command, select the measurement channel. See the example below.	

Example	:MEASure:SOURce1 CH1 :MEASure:PFLI 5.950E+01 Select channel 1 and then measure the %flicker of times.

:MEASure:PHAse

→Query

Description	Returns the phase between source 1 and source 2.	
Syntax	:MEASure:PHAse{?}	
Related Commands	:MEASure:SOURce<X>	
Return parameter	<NR3>	Returns the phase difference.
	Chan Off	Indicates the source channel is not activated.
Note	Select the two source channels before entering this command.	
Example	:MEASure:SOURce1 CH1 :MEASure:SOURce2 CH2 :MEASure:PHAse? 4.50E+01 Select channel 1 and 2 as phase source1/2, and then measure the phase in degrees.	

Measurement Commands

:MEASUrement:MEAS<X>:SOURCE<X>

Set →
→ Query

Description	Sets or queries the measurement source for a selected automatic measurement. This is a statistics related command.	
Syntax	:MEASUrement:MEAS<X>:SOURCE<X> { CH1 | CH2 | CH3 | CH4 | MATH | ? }	
Related commands	:MEASUrement:MEAS<X>:TYPe	
Parameter	MEAS<X>	The automatic measurement number from 1 to 8.
	SOURCE<X>	SOURCE1: the source for all single channel measurements.
	SOURCE<X>	SOURCE2: the source for all delay or phase measurements.
	CH1 to CH4	Channel 1, 2, 3, 4
	MATH	Math source

Return parameter	CH1 to CH4	Channel 1, 2, 3, 4
	MATH	Math source
Example	:MEASUrement:MEAS1:SOURCE1? >CH1 Returns the (first) source for measurement 1.	

Set →

→ Query

:MEASUrement:MEAS<X>:TYPe

Description	Sets or queries the measurement type for a selected automatic measurement. This is a statistics related command.	
Syntax	:MEASUrement:MEAS<X>:TYPe {PK2pk | MAXimum | MINImum | AMPlitude | HIGH | LOW | MEAN | CMEan | RMS | CRMs | AREa | CARea | ROVShoot | FOVShoot | RPReshoot | FPReshoot | FREQuency | PERIod | RISe | FALL | PWIdth | NWIdth | PDUTy | PPULSE | NPULSE | PEDGE | NEDGE | FRRDelay | FRFDelay | FFRDelay | FFFDelay | LRRDelay | LRFDelay | LFRDelay | LFFDelay | PHAse | PFLIcker | FLIcker?}	
Related commands	:MEASUrement:MEAS<X>:SOURCE<X>	
Parameter	MEAS<X>	The automatic measurement number from 1 to 8.
Return parameter	Returns the measurement type	
Example	:MEASUrement:MEAS1:TYPe RMS Sets measurement 1 to RMS measurement.	

Set →

→ Query

:MEASUrement:MEAS<X>:STATE

Description	Sets or queries the state of a selected measurement. This is a statistics related command.
Syntax	:MEASUrement:MEAS<X>:STATE { ON | OFF | 1 | 0 | ? }

Related commands	:MEASUrement:MEAS<X>:SOUrce<X> :MEASUrement:MEAS<X>:TYPe	
Parameter	MEAS<X>	The automatic measurement number from 1 to 8.
	ON/1	Turn the measurement on.
	OFF/0	Turn the measurement off.
Return parameter	0	Measurement is off.
	1	Measurement is on.
Example	:MEASUrement:MEAS1:STATE 1 Turns measurement 1 on.	

:MEASUrement:MEAS<X>:VALue

→Query

Description	Returns the measurement results for the selected measurement. This is a statistics related command.	
Syntax	:MEASUrement:MEAS<X>:VALue?	
Related Commands	:MEASure:SOURce<X>	
Parameter	MEAS<X>	The automatic measurement number from 1 to 8.
Return parameter	<NR3>	Returns the measurement for the selected measurement number.
Note	The measurement source(s), measurement number, measurement type and measurement state must first be set before a measurement result can be returned.	

Example	:MEASUrement:MEAS1:SOUrce1 CH1 :MEASUrement:MEAS1:TYPe PK2PK :MEASUrement:MEAS1:STATE ON :MEASUrement:MEAS1:VALue? 5.000E+0 Selects channel 1 as the source for measurement 1, sets measurement 1 to peak to peak measurement and then turns on the measurement. The result returns the peak to peak measurement.

:MEASUrement:MEAS<X>:MAXimum →Query

Description	Returns the maximum measurement results for the selected measurement from the last time the statistics were reset. This is a statistics related command.	
Syntax	:MEASUrement:MEAS<X>:MAXimum?	
Related Commands	:MEASUrement:STATIstics:MODe	
Parameter	MEAS<X>	The automatic measurement number from 1 to 8.
Return parameter	<NR3>	Returns the measurement for the selected measurement number.
Example	:MEASUrement:MEAS3:SOUrce1 CH1 :MEASUrement:MEAS3:TYPe PK2PK :MEASUrement:MEAS3:STATE ON :MEASUrement:STATIstics:MODe ON :MEASUrement:MEAS3:MAXimum? 2.800E-02 Returns the maximum measurement result for measurement number 3.	

:MEASUrement:MEAS<X>:MEAN

→Query

Description	Returns the mean measurement results for the selected measurement from the last time the statistics were reset. This is a statistics related command.	
Syntax	:MEASUrement:MEAS<X>:MEAN?	
Related Commands	:MEASUrement:STATIstics:MODe	
Parameter	MEAS<X>	The automatic measurement number from 1 to 8.
Return parameter	<NR3>	Returns the measurement for the selected measurement number.
Example	:MEASUrement:MEAS3:SOUrce1 CH1 :MEASUrement:MEAS3:TYPe PK2PK :MEASUrement:MEAS3:STATE ON :MEASUrement:STATIstics:MODe ON :MEASUrement:MEAS3:MEAN? 2.090E-02 Returns the mean measurement result for measurement number 3.	

:MEASUrement:MEAS<X>:MINImum

→Query

Description	Returns the minimum measurement results for the selected measurement from the last time the statistics were reset. This is a statistics related command.	
Syntax	:MEASUrement:MEAS<X>:MINImum?	
Related Commands	:MEASUrement:STATIstics:MODe	
Parameter	MEAS<X>	The automatic measurement number from 1 to 8.

Return parameter	<NR3>	Returns the measurement for the selected measurement number.

Example

```
:MEASUrement:MEAS3:SOUrce1 CH1
:MEASUrement:MEAS3:TYPe PK2PK
:MEASUrement:MEAS3:STATE ON
:MEASUrement:STATIstics:MODe ON
:MEASUrement:MEAS3:MINImum?
1.600E-02
```

Returns the minimum measurement result for measurement number 3.

:MEASUrement:MEAS<X>:STDdev →Query

Description	Returns the standard deviation for the selected measurement from the last time the statistics were reset. This is a statistics related command.	
Syntax	:MEASUrement:MEAS<X>:STDdev?	
Related Commands	:MEASUrement:STATIstics:MODe	
Parameter	MEAS<X>	The automatic measurement number from 1 to 8.
Return parameter	<NR3>	Returns the measurement for the selected measurement number.

Example

```
:MEASUrement:MEAS3:SOUrce1 CH1
:MEASUrement:MEAS3:TYPe PK2PK
:MEASUrement:MEAS3:STATE ON
:MEASUrement:STATIstics:MODe ON
:MEASUrement:MEAS3:STDdev?
1.530E-03
```

Returns the standard deviation for measurement number 3.

:MEASUrement:STATIstics:MODe

Set →
→ Query

Description: Puts the statics measurement results on the display or queries whether the statistics are displayed.

Syntax: :MEASUrement:STATIstics:MODe {OFF | ON | ?}

Related commands: :MEASUrement:STATIstics

Parameter/ Return parameter		
	ON	Display the statistics on the screen.
	OFF	Remove the statistics from the screen

Example: :MEASUrement:STATIstics:MODe ON

Displays statistics on the screen.

:MEASUrement:STATIstics:WEIghting

Set →
→ Query

Description: Sets and queries the number of samples (weighting) used for the statistics calculations.

Syntax: :MEASUrement:STATIstics:WEIghting { <NR1> | ? }

Parameter/ Return parameter		
	<NR1>	Number of samples (2~1000)

Example: :MEASUrement:STATIstics:WEIghting 5

Sets the number of samples to 5.

:MEASUrement:STATIstics

Set →

Description: Resets the statics calculations. This command will clear all the currently accumulated measurements.

Syntax: :MEASUrement:STATIstics {RESET}

Reference Commands

:REF<X>:DISPlay

Set →
→ Query

Description	Sets or queries whether a reference waveform will be shown on the display. A reference waveform must first be saved before this command can be used.	
Syntax	:REF<x>:DISPlay { OFF| ON| ? }	
Parameter	<X>	Reference waveform 1, 2, 3, 4.
	OFF	Turns the selected reference waveform off
	ON	Turns the selected reference waveform on
Return parameter	Returns the status of the selected reference waveform. (OFF, ON).	
Example	:REF1:DISPlay ON Turns on reference1 (REF 1) on the display.	

:REF<X>:TIMebase:POSition

Set →
→ Query

Description	Sets or returns the selected reference waveform time base position.
Syntax	:REF<X>:TIMebase:POSition { <NRf> | ?}

Related commands	:REF<X>:DISPlay	
Parameter	<X>	Reference waveform 1, 2, 3, 4.
	<NRf>	Horizontal co-ordinates
Return parameter	<NR3>	Returns the reference waveform position
Example	:REF1:TIMebase:POSition -5.000E-5	
	Selects reference 1, and then sets the horizontal position to -50us.	

Set →
→ Query

:REF<X>:TIMebase:SCALe

Description	Sets or returns the selected reference waveform time base scale.	
Syntax	:REF<X>:TIMebase:SCALe { <NRf> | ?}	
Related commands	:REF<X>:DISPlay	
Parameter	<X>	Reference waveform 1, 2, 3, 4.
	<NRf>	Horizontal scale
Return parameter	<NR3>	Returns the reference waveform scale.
Example	:REF1:TIMebase:SCALe 5.00E-4	
	Selects reference 1, and then sets the horizontal scale to 500us/div.	

Set →
→ Query

:REF<X>:OFFSet

Description	Sets or returns the selected reference waveform vertical position (offset).	
Syntax	:REF<X>:OFFSet { <NRf> | ?}	
Related commands	:REF<X>:DISPlay	
Parameter	<X>	Reference waveform 1, 2, 3, 4.
	<NRf>	Vertical offset

Return parameter	<NR3>	Returns the reference waveform vertical position.
Example	:REF1:OFFSet -5.000E-2 Selects reference 1, and then sets the vertical position to -50mV/mA.	

:REF<x>:SCALe

Set → → Query

Description	Sets or returns the selected reference waveform vertical scale.	
Syntax	:REF<X>:SCALe { <NRf> | ? }	
Related commands	:REF<X>:DISPlay	
Parameter	<X>	Reference waveform 1, 2, 3, 4.
	<NRf>	Vertical scale
Return parameter	<NR3>	Returns the reference waveform vertical scale.
Example	:REF1:SCALe 5.000E-2 Selects reference 1, and then sets the vertical scale to 50mV|mA/div.	

Run Command

:RUN

Set →

Description	The run command allows the oscilloscope to continuously make acquisitions (equivalent to pressing the Run key on the front panel).
Syntax	:RUN

Stop Command

:STOP

Set →

Description	The stop command stops the oscilloscope making further acquisitions (equivalent to pressing the Stop key on the front panel).
Syntax	:STOP

Single Command

:SINGle

Set →

Description	The single command allows the oscilloscope to capture a single acquisition when trigger conditions have been fulfilled (equivalent to pressing the Single key on the front panel).
Syntax	:SINGle

Force Command

:FORCe

Set →

Description	The Force command forces an acquisition (equivalent to pressing the Force-Trig key on the front panel).
Syntax	:FORCe

Timebase Commands

:TIMebase:EXPand

Set →
→ Query

Description	Sets or queries the horizontal expansion mode.	
Syntax	:TIMebase:EXPand {CENTer|TRIGger|?}	
Parameter/Return parameter	CENTer	Expand from the center of the display.
	TRIGger	Expand from the trigger point.
Example	:TIMebase:EXPand TRIGger Sets the expansion point to the trigger point.	

:TIMebase:POSition

Set →
→ Query

Description	Sets or queries the horizontal position.	
Syntax	:TIMebase:POSition {<NRf> | ?}	
Parameter	<NRf>	Horizontal position
Return parameter	<NR3>	Returns the horizontal position
Example	:TIMebase:POSition 5.00E-4 Sets the horizontal position as 500us.	

:TIMebase:SCALe

Set →
→ Query

Description	Sets or queries the horizontal scale.	
Syntax	:TIMebase:SCALe {<NRf> | ?}	
Parameter	<NRf>	Horizontal scale
Return parameter	<NR3>	Returns the horizontal scale.
Example	:TIMebase:SCALe 5.00E-2 Sets the horizontal scale to 50ms/div.	

:TIMebase:MODe

Set →
→ Query

Description	Sets or queries the time base mode. The time base mode determines the display view window on the scope.	
Syntax	:TIMebase:MODe {MAIN | WINDow | XY | ?}	
Parameter	MAIN	Sets the time base mode to the main screen.
	WINDow	Sets the time base mode to the zoom window.
	XY	Sets the time base mode to the XY display.
Return parameter	Returns the time base mode (MAIN, WINDOW, XY)	
Example	:TIMebase:MODe MAIN Sets the time base mode to the main mode.	

:TIMebase:WINDow:POSition

Set →
→ Query

Description	Sets or queries the zoom horizontal position.
Syntax	:TIMebase:WINDow:POSition {<NRf> | ?}

Related commands	:TIMebase:MODe	
Parameter	<NRf>	Horizontal position for zoom window
Return parameter	<NR3>	Returns the zoom horizontal position.
Example	:TIMebase:WINDow:POSition 2.0E-3 Sets the zoom horizontal position as 20ms.	

Set →

→ Query

:TIMebase:WINDow:SCALe

Description	Sets or queries the zoom horizontal scale.	
Note	If the oscilloscope is under "ZOOM" mode, the main timebase function will be disabled and cannot be modified.	
Syntax	:TIMebase:WINDow:SCALe {<NRf> | ?}	
Related commands	:TIMebase:MODe	
Parameter	<NRf>	Zoom horizontal scale. The range will depend on the time base.
Return parameter	<NR3>	Returns the zoom horizontal scale.
Example	:TIMebase:WINDow:SCALe 2.0E-3 Sets the zoom horizontal scale to 2ms.	

Trigger Commands

:TRIGger:FREQuency

→Query

Description	Queries the trigger frequency.	
Syntax	:TRIGger:FREQuency{?}	
Return parameter	<NR3>	Returns the trigger frequency.
Example	:TRIGger:FREQuency? 1.032E+3 Returns the trigger frequency.	

:TRIGger:TYPe

Set→
→Query

Description	Sets or queries the trigger type.	
Syntax	:TRIGger:TYPe {EDGe | DELay | PULSEWidth | VIDeo | RUNT | RISEFall | LOGic | BUS | TIMEOut | ? }	
Parameter	EDGE	Edge trigger
	DELay	Delay trigger
	PULSEWidth	Pulse width trigger
	VIDeo	Video trigger
	RUNT	Runt trigger
	RISEFall	Rise and fall trigger
	LOGic	Logic trigger
	BUS	Bus trigger
	TIMEOut	Timeout trigger
Return parameter	Returns the trigger type.	
Example	:TRIGger:TYPe EDGE Sets the trigger type to edge.	

:TRIGger:SOURce

Set →
→ Query

Description	Sets or queries the trigger source.	
Syntax	:TRIGger:SOURce { CH1 | CH2 | CH3 | CH4 | EXT | LINe |? }	
Parameter	CH1 to CH4	Channel 1 to channel 4
	EXT	External source
	LINe	AC Line
Return parameter	Returns the trigger source.	
Example	:TRIGger:SOURce CH1 Sets the trigger source to channel 1.	

:TRIGger:COUPle

Set →
→ Query

Description	Sets or queries the trigger coupling.	
Note	Applicable for edge and delay triggers only.	
Syntax	:TRIGger:COUPle {AC | DC | HF | LF | ?}	
Parameter	AC	AC mode
	DC	DC mode
	HF	High frequency rejection
	LF	Low frequency rejection
Return parameter	Returns the trigger coupling.	
Example	:TRIGger:COUPle AC Sets the trigger coupling to AC.	

:TRIGger:NREJ

Set →
→ Query

Description	Sets or queries noise rejection status.
Syntax	:TRIGger:NREJ {OFF| ON| ?}

Parameter	OFF	Turns noise rejection off
	ON	Turns noise rejection on
Return parameter	Returns the noise rejection status (ON, OFF).	
Example	:TRIGger:NREJ ON Turns noise rejection on.	

Set →
→ Query

:TRIGger:MODe

Description	Sets or queries the trigger mode.	
Syntax	:TRIGger:MODe {AUTo | NORMal | ?}	
Parameter	AUTo	Auto trigger (Untriggered roll)
	NORMal	Normal trigger
Return parameter	Returns the trigger mode.	
Example	:TRIGger:MODe NORMal Sets the trigger mode to normal.	

Set →
→ Query

:TRIGger:HOLDoff

Description	Sets or queries the holdoff time.	
Syntax	:TRIGger:HOLDoff {<NRf> | ?}	
Parameter	<NRf>	Holdoff time
Return parameter	<NR3>	Returns the trigger holdoff time.
Example	:TRIGger:HOLDoff 1.00E-8 Sets the trigger holdoff time to 10ns.	

Set →
→ Query

:TRIGger:LEVel

Description	Sets or queries the level.	
Note	Not applicable to Pulse Runt and Rise & Fall triggers.	

Syntax	:TRIGger:LEVel {TTL | ECL | SETTO50 | <NRf> | ?}	
Related commands	:TRIGger:TYPe	
Parameter	<NRf>	Trigger level value.
	TTL	Sets the trigger level to TTL.
	ECL	Sets the trigger level to ECL.
	SETTO50	Sets the trigger level to the User level (50% by default).
Return parameter	<NR3>	Returns the trigger level.
Example1	:TRIGger:LEVel TTL Sets the trigger to TTL.	
Example2	:TRIGger:LEVel 3.30E-1 Sets the trigger level to 330mV/mA.	

Set →
→ Query

:TRIGger:HLEVel

Description	Sets or queries the high trigger level.	
Note	Applicable for Rise and Fall/Pulse Runt triggers.	
Syntax	:TRIGger:HLEVel {<NRf> | ?}	
Related commands	:TRIGger:TYPe	
Parameter	<NRf>	High level value.
Return parameter	<NR3>	Returns the trigger high level.
Example	:TRIGger:HLEVel 3.30E-1 Sets the trigger high level to 330mV/mA.	

Set →
→ Query

:TRIGger:LLEVel

Description	Sets or queries the low trigger level.
Note	Applicable for Rise and Fall/Pulse Runt triggers.

Syntax	:TRIGger:LLEVel {<NRf> | ?}	
Related commands	:TRIGger:TYPe	
Parameter	<NRf>	Low level value.
Return parameter	<NR3>	Returns the trigger low level.
Example	:TRIGger:LLEVel -3.30E-3 Sets the trigger low level to -330mV/mA.	

Set →
→ Query

:TRIGger:EDGe:SLOP

Description	Sets or queries the trigger slope.	
Syntax	:TRIGger:EDGe:SLOP {RISe | FALL | EIThe r | ? }	
Related commands	:TRIGger:TYPe	
Parameter	RISe	Rising slope
	FALL	Falling slope
	EIThe r	Either rising or falling slope
Return parameter	Returns the trigger slope.	
Example	:TRIGger:EDGe:SLOP FALL Sets the trigger slope to falling.	

Set →
→ Query

:TRIGger:DELay:SLOP

Description	Sets or queries the trigger slope for the delay trigger.	
Syntax	:TRIGger:DELay:SLOP {RISe | FALL | EIThe r | ? }	
Related commands	:TRIGger:TYPe	
Parameter	RISe	Rising slope
	FALL	Falling slope
	EIThe r	Either rising or falling slope

Return parameter	Returns the trigger slope.	
Example	:TRIGger:DELay:SLOP FALL Sets the trigger slope to falling.	

Set →
→ Query

:TRIGger:DELay:TYPe

Description	Sets or queries the trigger delay type.	
Syntax	:TRIGger:DELay:TYPE {TIMe | EVENt | ?}	
Related commands	:TRIGger:TYPe	
Parameter	TIMe	Sets the delay type to time.
	EVENt	Sets the delay type to event.
Return parameter	Returns the trigger delay type.	
Example	:TRIGger:DELay:TYPe TIMe Sets the delay type to time delay.	

Set →
→ Query

:TRIGger:DELay:TIMe

Description	Sets or queries the delay time value.	
Syntax	:TRIGger:DELay:TIMe {<NRf> | ?}	
Related commands	:TRIGger:DELay:TYPe	
Parameter	<NRf>	Delay time (1.00E-8~1.00E+1)
Return parameter	<NR3>	Returns the delay time.
Example	:TRIGger:DELay:TIMe 1.00E-6 Sets the delay time to 1us.	

Set →
→ Query

:TRIGger:DELay:EVENt

Description	Sets or queries the number of events for the event delay trigger.

Syntax	:TRIGger:DELay:EVENt {<NR1> | ?}	
Related commands	:TRIGger:DELay:TYPe	
Parameter	<NR1>	1~65535 events
Return parameter	<NR1>	Returns the number of events.
Example	:TRIGger:DELay:EVENt 2 Sets the number of events to 2.	

:TRIGger:DELay:LEVel

Set →
→ Query

Description	Sets or queries the trigger delay level.	
Syntax	:TRIGger:DELay:LEVel {<NRf> | ?}	
Parameter	<NRf>	Delay trigger level
Return parameter	<NR3>	Returns the delay trigger.
Example	:TRIGger:DELay:LEVel 5.00E-3 Sets the delay trigger level to 5mV/mA.	

:TRIGger:PULSEWidth:POLarity

Set →
→ Query

Description	Sets or queries the pulse width trigger polarity.	
Syntax	:TRIGger:PULSEWidth:POLarity {POSitive | NEGative | ?}	
Related commands	:TRIGger:TYPe	
Parameter	POSitive	Positive polarity
	NEGative	Negative polarity
Return parameter	Returns the pulse width polarity.	
Example	:TRIGger:PULSEWidth:POLarity POSitive Sets the pulse width polarity to positive.	

:TRIGger:RUNT:POLarity

Set → → Query

Description	Sets or queries the Pulse Runt trigger polarity.
Syntax	:TRIGger:RUNT:POLarity { POSitive | NEGative | EITher | ? }
Related commands	:TRIGger:TYPe
Parameter	POSitive Positive polarity NEGative Negative polarity EIther Positive or negative polarity
Return parameter	Returns the pulse runt trigger polarity.
Example	:TRIGger:RUNT:POLarity POSitive Sets the Pulse Runt trigger polarity to positive.

:TRIGger:RUNT:WHEn

Set → → Query

Description	Sets or queries the Pulse Runt trigger conditions.
Syntax	:TRIGger:RUNT:WHEn {MOREthan| LESSthan | EQual | UNEQual | ? }
Related commands	:TRIGger:TYPe :TRIGger:RUNT:TIMe
Parameter	MOREthan > LESSthan < Equal = UNEQual ≠
Return parameter	Returns the pulse runt trigger condition.
Example	:TRIGger:RUNT:WHEn UNEQual Sets the Pulse Runt trigger condition to unequal (≠).

:TRIGger:RUNT:TIMe

Set →
→ Query

Description	Sets or queries the Pulse Runt trigger time.	
Syntax	:TRIGger:RUNT:TIMe {<NRf> | ? }	
Related commands	:TRIGger:TYPe :TRIGger:RUNT:WHEn	
Parameter	<NRf>	Pulse runt time (4nS to 10S)
Return Parameter	<NR3>	Returns the runt time in seconds.
Example	:TRIGger:RUNT:TIMe 4.00E-5 Sets the runt time to 40.0uS.	

:TRIGger:RISEFall:SLOP

Set →
→ Query

Description	Sets or queries the Rise & Fall slope.	
Syntax	:TRIGger:RISEFall:SLOP {RISe | FALL | EITher | ?}	
Parameter	RISe	Rising slope
	FALL	Falling slope
	EITher	Either rising or falling slope
Return parameter	Returns the rise & fall slope.	
Example	:TRIGger:RISEFall:SLOP RISe Sets the Rise & Fall slope to rising.	

:TRIGger:RISEFall:WHEn

Set →
→ Query

Description	Sets or queries the rise/fall trigger conditions.	
Syntax	:TRIGger:RISEFall:WHEn {MOREthan | LESSthan | EQual | UNEQual | ? }	
Related commands	:TRIGger:TYPe :TRIGger:RISEFall:TIMe	
Parameter	MOREthan	>

	LESSthan	<
	Equal	=
	UNEQual	≠
Return parameter	Returns the rise/fall trigger condition.	
Example	:TRIGger:RISEFall:WHEn UNEQual Sets the Rise and Fall trigger condition to unequal (≠).	

Set →
→ Query

:TRIGger:RISEFall:TIMe

Description	Sets or queries the Rise and Fall time.	
Syntax	:TRIGger:RISEFall:TIMe {<NRf> | ? }	
Related commands	:TRIGger:TYPe :TRIGger:RISEFall:WHEn	
Parameter	<NRf>	Rise and Fall time (4nS to 10S)
Return Parameter	<NR3>	Returns the rise and fall time in seconds.
Example	:TRIGger:RISEFall:TIMe 4.00E-5 Sets the trigger rise & fall to 40.0us.	

Set →
→ Query

:TRIGger:VIDeo:TYPe

Description	Sets or queries the video trigger type.	
Syntax	:TRIGger:VIDeo:TYPE {NTSC | PAL | SECam | EDTV480P | EDTV576P | HDTV720P | HDTV1080I | HDTV1080P | ? }	
Related commands	:TRIGger:TYPe	
Parameter	NTSC	NTSC
	PAL	PAL
	SECam	SECAM

	EDTV480P	Extra definition TV 480P
	EDTV576P	Extra definition TV 576P
	HDTV720P	High definition TV 720P
	HDTV1080I	High definition TV 1080i
	HDTV1080P	High definition TV 1080P
Return parameter	Returns the video trigger type.	
Example	:TRIGger:VIDeo:TYPe NTSC Sets the video trigger to NTSC.	

Set →
→ Query

:TRIGger:VIDeo:FIELd

Description	Sets or queries the video trigger field.	
Syntax	:TRIGger:VIDeo:FIELd { FIELD1 | FIELD2 | ALLFields | ALLLines | ? }	
Related commands	:TRIGger:TYPe	
Parameter	FIELD1	Trigger on field 1
	FIELD2	Trigger on field 2
	ALLFields	Trigger on all fields
	ALLLines	Trigger on all lines
Return parameter	Returns the video trigger field.	
Example	:TRIGger:VIDeo:FIELd ALLFields Sets the video trigger to trigger on all fields.	

Set →
→ Query

:TRIGger:VIDeo:LINe

Description	Sets or queries the video trigger line.
Syntax	:TRIGger:VIDeo:LINe {<NR1> | ?}
Related commands	:TRIGger:TYPe

Parameter	<NR1>	Video line
Return parameter	<NR3>	Returns the video trigger line.
Example	:TRIGger:VIDeo:LINe 1 Sets the video trigger to line 1.	

Set →
→ Query

:TRIGger:VIDeo:POLarity

Description	Sets or queries the video trigger polarity.	
Syntax	:TRIGger:VIDeo:POLarity { POSitive | NEGative | ? }	
Related commands	:TRIGger:TYPe	
Parameter	POSitive	Positive polarity
	NEGative	Negative polarity
Return parameter	Returns the video trigger polarity.	
Example	:TRIGger:VIDeo:POLarity POSitive Sets the video trigger polarity to positive.	

Set →
→ Query

:TRIGger:PULSe:WHEn

Description	Sets or queries the pulse width trigger conditions.	
Syntax	:TRIGger:PULSe:WHEn { MOREthan | LESSthan | EQual | UNEQual | ? }	
Related commands	:TRIGger:TYPe :TRIGger:PULSe:TIMe	
Parameter	MORE than	>
	LESSthan	<
	EQual	=
	UNEQual	≠
Return parameter	Returns the pulse width trigger conditions.	

Example	:TRIGger:PULSe:WHEn UNEQual Sets the trigger pulse width conditions to not equal to (≠).	

Set →
→ Query

:TRIGger:PULSe:TIMe

Description	Sets or queries the pulse width time.	
Syntax	:TRIGger:PULSe:TIMe {<NRf> | ?}	
Related commands	:TRIGger:TYPe :TRIGger:PULSe:WHEn	
Parameter	<NRf>	Pulse width time (4ns~10s)
Return parameter	<NR3>	Returns the pulse width time in seconds.
Example	:TRIGger:PULSe:TIMe 4.00E-5 Sets the trigger pulse width to 40.0us.	

Set →
→ Query

:TRIGger:TIMEOut:WHEn

Description	Sets or queries the timeout trigger condition.	
Syntax	:TRIGger:TIMEOut:WHEn {HIGH|LOW|EITher|?}	
Related commands	:TRIGger:TIMEOut:TIMER	
Parameter	HIGH	Signal is high.
	LOW	Signal is low.
	EITher	Signal is high or low.
Return parameter	Returns the timeout condition (HIGH, LOW, EITHER).	
Example1	:TRIGger:TIMEOut:WHEn LOW Sets the timeout condition to low.	

:TRIGger:TIMEOut:TIMER

Set →
→ Query

Description	Sets or returns timeout trigger time.	
Syntax	:TRIGger:TIMEOut:TIMER {<NRf> | ? }	
Related commands	:TRIGger:TIMEOut:WHEn	
Parameter	<NRf>	Timeout time. (4nS to 10S).
Return parameter	Returns the timeout time as <NR3>.	
Example	:TRIGger:TIMEOut:TIMER? 8.960e-05	

:TRIGger:ALTernate

Set →
→ Query

Description	Sets alternating between source triggers on or off or queries its state.	
Syntax	:TRIGger:ALTernate {OFF | ON |?}	
Parameter	OFF	Alternate off
	ON	Alternate on
Return parameter	Returns the Alternate trigger status (ON, OFF).	
Example	:TRIGger:ALTernate ON Turns on alternating between source triggers.	

:TRIGger:STATe

→ Query

Description	Returns the current state of the triggering system.	
Syntax	:TRIGger:STATe?	
Return parameter	*ARMED	Indicates that the oscilloscope is acquiring pretrigger information.

	*AUTO	Indicates that the oscilloscope is in the automatic mode and acquires data even in the absence of a trigger.
	*READY	Indicates that all pretrigger information has been acquired and that the oscilloscope is ready to accept a trigger.
	*SAVE	Indicates that the oscilloscope is in save mode and is not acquiring data.
	*TRIGGER	Indicates that the oscilloscope triggered and is acquiring the post trigger information.
Example	:TRIGger:STATe? AUTO The trigger is in auto mode.	

:TRIGger:EXTERnal:PROBe:TYPe

Set →
→ Query

Description	Sets or queries the external probe type.	
Syntax	:TRIGger:EXTERnal:PROBe:TYPe { VOLTage | CURRent | ? }	
Related commands	:TRIGger:EXTERnal:PROBe:RATio	
Parameter	VOLTage	Voltage
	CURRent	Current
Return parameter	Returns the probe type.	
Example	:TRIGger:EXTERnal:PROBe:TYPe? CURRENT	

:TRIGger:EXTERnal:PROBe:RATio

Set →
→ Query

Description	Sets or queries the external probe ratio (attenuation).	
Syntax	:TRIGger:EXTERnal:PROBe:RATio {<NRf> | ?}	
Related commands	:TRIGger:EXTERnal:PROBe:TYPe	
Parameter	<NRf>	External probe attenuation factor.
Return parameter	<NR3>	Returns the probe attenuation factor.
Example	:TRIGger:EXTERnal:PROBe:RATio? 5.000000e+01	

:TRIGger:BUS:TYPe

→ Query

Description	Returns the current bus type.	
Syntax	:TRIGger:BUS:TYPe?	
Return parameter	12C	I^{2}C mode
	SPI	SPI mode
	UART	UART mode
	CAN	CAN mode
	LIN	LIN mode
Example	:TRIGger:BUS:TYPe? UART	

:TRIGger:BUS:THReshold:CH<x>

Set →
→ Query

Description	Sets or queries the threshold level for the selected channel.	
Syntax	:TRIGger:BUS:THReshold:CH<X> {<NR3> | ?}	
	<X>	CH1 ~ CH4

	<NR3>	Threshold level
Return Parameter	<NR3>	Returns the threshold level
Example	:TRIGger:BUS:THReshold:CH1 1 Sets the CH1 threshold to 1V.	

Set →

→ Query

:TRIGger:BUS:B1:I2C:CONDition

Description	Sets or queries the I^{2}C trigger conditions.	
Syntax	:TRIGger:BUS:B1:I2C:CONDition {STARt | STOP | REPEATstart | ACKMISS | ADDRess | DATA | ADDRANDDATA | ? }	
Parameter	STARt	Set Start as the I^{2}C trigger condition.
	STOP	Set Stop as the I^{2}C trigger condition.
	REPEATstart	Set Repeat of Start as the I^{2}C trigger condition.
	ACKMISS	Set Missing Acknowledgement as the I^{2}C trigger condition.
	ADDRess	Set Address as the I^{2}C trigger condition.
	DATA	Set Data as the I^{2}C trigger condition.
	ADDRANDDATA	Set Address and Data as the I^{2}C trigger condition.
Return parameter	Returns the I^{2}C bus trigger condition.	
Example	:TRIGger:BUS:B1:I2C:CONDition ADDRess Set Address as the I2C trigger condition.	

:TRIGger:BUS:B1:I2C:ADDRess:MODe

Set →
→ Query

Description	Sets or queries the I²C addressing mode (7 or 10 bits).	
Syntax	:TRIGger:BUS:B1:I2C:ADDRess:MODe {ADDR7 | ADDR10 | ? }	
Related commands	:TRIGger:BUS:B1:I2C:CONDition	
Parameter	ADDR7	7 bit addressing
	ADDR10	10 bit addressing
Return Parameter	0	7 bit addressing
	1	10 bit addressing
Example	:TRIGger:BUS:B1:I2C:ADDRess:MODe? 0 The addressing mode is currenty set to 7 bits.	

:TRIGger:BUS:B1:I2C:ADDRess:TYPe

Set →
→ Query

Description	Sets the I²C bus address type, or queries what the setting is.	
Syntax	:TRIGger:BUS:B1:I2C:ADDRess:TYPe {GENeralcall | STARtbyte | HSmode | EEPROM | CBUS | ?}	
Related commands	:TRIGger:BUS:B1:I2C:CONDition	
Parameter	GENeralcall	Set a general call address (0000 000 0).
	STARtbyte	Set a start byte address. (0000 000 1)
	HSmode	Set a high-speed mode address. (0000 1xx x)
	EEPROM	Set an EEPROM address. (1010 xxx x)
	CBUS	Set a CBUS address. (0000 001 x)

Return Parameter	Returns the address type	
Example	:TRIGger:BUS:B1:I2C:ADDRess:TYPe? CBUS	

Set →

:TRIGger:BUS:B1:I2C:ADDRess:VALue

→ Query

Description	Sets or queries the I^{2}C bus address value when the I^{2}C bus is set to trigger on Address or Address/Data.	
Syntax	:TRIGger:BUS:B1:I2C:ADDRess:VALue {<string> | ? }	
Related commands	:TRIGger:BUS:B1:I2C:ADDRess:MODe	
Parameter	<sting>	7/10 characters, must be enclosed in double quotes, "string". x = don’t care 1 = binary 1 0 = binary 0
Return Parameter	Returns the address value.	
Example1	:TRIGger:BUS:B1:I2C:ADDRess:MODe ADDR7 :TRIGger:BUS:B1:I2C:ADDRess:VALue "xxx0101" Sets the address to XXX0101	
Example 2	:TRIGger:BUS:B1:I2C:ADDRess:VALue? XXX0101	

Set →

:TRIGger:BUS:B1:I2C:ADDRess:DIRection

→ Query

Description	Sets or queries the address bit as read write or don’t care.
Note	This setting only applies when the I^{2}C trigger is set to trigger on Address or Address/Data
Syntax	:TRIGger:BUS:B1:I2C:ADDRess:DIRection { READ | WRITE | NOCARE | ? }

Related commands	:TRIGger:BUS:B1:I2C:CONDition	
Parameter	READ	Set read as the data direction.
	WRITE	Set write as the data direction.
	NOCARE	Set either as the data direction.
Return Parameter	Returns the direction (READ, WRITE, NOCARE).	
Example	:TRIGger:BUS:B1:I2C:ADDRess:DIRection READ Sets the direction to READ.	

:TRIGger:BUS:B1:I2C:DATa:SIZe

Set →

→ Query

Description	Sets or queries the data size in bytes for the I^{2}C bus.	
Note	This setting only applies when the I^{2}C trigger is set to trigger on Data or Address/Data	
Syntax	:TRIGger:BUS:B1:I2C:DATa:SIZe {<NR1> | ? }	
Related commands	:TRIGger:BUS:B1:I2C:CONDition	
Parameter	<NR1>	Number of data bytes (1 to 5).
Return parameter	<NR1>	Returns the number of bytes.
Example	:TRIGger:BUS:B1:I2C:DATa:SIZe 3 Sets the number of bytes to 3.	

:TRIGger:BUS:B1:I2C:DATa:VALue

Set →

→ Query

Description	Sets or queries the triggering data value for the I^{2}C bus when the I^{2}C bus is set to trigger on Data or Address/Data.
Syntax	:TRIGger:BUS:B1:I2C:DATa:VALue {<string> | ? }
Related commands	:TRIGger:BUS:B1:I2C:DATa:SIZe

Parameter	<sting>	The number of characters in the string depends on the data size setting. The string must be enclosed in double quotes, "string". x = don't care 1 = binary 1 0 = binary 0
Return Parameter	Returns the data value.	
Example1	:TRIGger:BUS:B1:I2C:DATa:SIZe 1 :TRIGger:BUS:B1:I2C:DATa:VALue "1x1x0101" Sets the value to XXX0101	
Example 2	:TRIGger:BUS:B1:I2C:DATa:VALue? 1X1X0101	

:TRIGger:BUS:B1:UART:CONDition

Set →
→ Query

Description	Sets or queries the UART triggering condition.	
Syntax	:TRIGger:BUS:B1:UART:CONDition { RXSTArt | RXDATA | RXENDPacket | TXSTArt | TXDATA | TXENDPacket | TXPARItyerr | RXPARItyerr | ? }	
Parameter	RXSTArt	Set trigger on the RX Start Bit.
	RXDATA	Set trigger on RX Data.
	RXENDPacket	Set trigger on the RX End of Packet condition.
	RXPARItyerr	Set trigger on RX Parity error condition.
	TXSTArt	Set trigger on the TX Start Bit.
	TXDATA	Set trigger on TX Data.
	TXENDPacket	Set trigger on the TX End of Packet condition.
	TXPARItyerr	Set trigger on TX Parity error condition.

Return Parameter	Returns the triggering condition.
Example	:TRIGger:BUS:B1:UART:CONDition TXDATA Sets the UART bus to trigger on Tx Data.

:TRIGger:BUS:B1:UART:RX:DATa:SIZe

Set →
→ Query

Description	Sets or queries the number of bytes for UART data.	
Note	This setting only applies when the UART trigger is set to trigger on Rx Data	
Syntax	:TRIGger:BUS:B1:UART:RX:DATa:SIZe {<NR1> | ?}	
Related commands	:TRIGger:BUS:B1:UART:CONDition	
Parameter	<NR1>	Number of bytes (1 to 10).
Return parameter	<NR1>	Returns the number of bytes.
Example	:TRIGger:BUS:B1:UART:RX:DATa:SIZe 5 Sets the number of bytes to 5.	

:TRIGger:BUS:B1:UART:RX:DATa:VALue

Set →
→ Query

Description	Sets or queries the triggering data value for the UART bus when the bus is set to trigger on Rx Data.	
Syntax	:TRIGger:BUS:B1:UART:RX:DATa:VALue {<string> | ? }	
Related commands	:TRIGger:BUS:B1:UART:RX:DATa:SIZe	
Parameter	<sting>	The number of characters in the string depends on the data size setting. The string must be enclosed in double quotes, "string". x = don’t care 1 = binary 1 0 = binary 0

Return Parameter	Returns the data value.
Example1	:TRIGger:BUS:B1:UART:CONDition RXDATA :TRIGger:BUS:B1:UART:RX:DATa:SIZe 1 :TRIGger:BUS:B1:UART:RX:DATa:VALue "1x1x0101" Sets the value to 1x1x0101
Example 2	:TRIGger:BUS:B1:UART:RX:DATa:VALue? 1X1X0101

:TRIGger:BUS:B1:UART:TX:DATa:SIZe

Set →
→ Query

Description	Sets or queries the number of bytes for UART data.	
Note	This setting only applies when the UART trigger is set to trigger on Tx Data	
Syntax	:TRIGger:BUS:B1:UART:TX:DATa:SIZe {<NR1> | ?}	
Related commands	:TRIGger:BUS:B1:UART:CONDition	
Parameter	<NR1>	Number of bytes (1 to 10).
Return parameter	<NR1>	Returns the number of bytes.
Example	:TRIGger:BUS:B1:UART:TX:DATa:SIZe 5 Sets the number of bytes to 5.	

:TRIGger:BUS:B1:UART:TX:DATa:VALue

Set →
→ Query

Description	Sets or queries the triggering data value for the UART bus when the bus is set to trigger on Tx Data.
Syntax	:TRIGger:BUS:B1:UART:TX:DATa:VALue {<string> | ? }
Related commands	:TRIGger:BUS:B1:UART:TX:DATa:SIZe

Parameter	<sting>	The number of characters in the string depends on the data size setting. The string must be enclosed in double quotes, "string". x = don’t care 1 = binary 1 0 = binary 0
Return Parameter	Returns the data value.	
Example1	:TRIGger:BUS:B1:UART:CONDition TXDATA :TRIGger:BUS:B1:UART:TX:DATa:SIZe 1 :TRIGger:BUS:B1:UART:TX:DATa:VALue "1x1x0101" Sets the value to 1x1x0101	
Example 2	:TRIGger:BUS:B1:UART:TX:DATa:VALue? 1X1X0101	

:TRIGger:BUS:B1:SPI:CONDition

Set →
→ Query

Description	Sets or queries the SPI triggering condition.	
Syntax	:TRIGger:BUS:B1:SPI:CONDition {SS | MISO | MOSI | MISOMOSI | ? }	
Parameter	SS	Set to trigger on the Slave Selection condition.
	MISO	Set to trigger on the Master-In Slave-Out condition.
	MOSI	Set to trigger on the Master-Out Slave-In condition.
	MISOMOSI	Set to trigger on the Master-In Slave-Out and Master-Out Slave-In conditions.
Return Parameter	Returns the triggering condition.	
Example	:TRIGger:BUS:B1:SPI:CONDition MISO Sets the SPI bus to trigger on MISO.	

:TRIGger:BUS:B1:SPI:DATa:SIZe

Set → → Query

Description	Sets or queries the number of words for SPI data.	
Note	This setting only applies when the SPI trigger is set to trigger on MISO, MOSI or MISO/MOSI	
Syntax	:TRIGger:BUS:B1:SPI:DATa:SIZe {<NR1> | ?}	
Related commands	:TRIGger:BUS:B1:SPI:CONDition	
Parameter	<NR1>	Number of words (1 to 32).
Return parameter	<NR1>	Returns the number of words.
Example	:TRIGger:BUS:B1:SPI:DATa:SIZe 10 Sets the number of words to 10.	

:TRIGger:BUS:B1:SPI:DATa:MISO:VALue

Set → → Query

Description	Sets or queries the triggering data value for the SPI bus when the bus is set to trigger on MISO or MISO/MOSI.	
Syntax	:TRIGger:BUS:B1:SPI:DATa:MISO:VALue {<string> | ? }	
Related commands	:TRIGger:BUS:B1:SPI:DATa:SIZe	
Parameter	<sting>	The number of characters in the string depends on the data size setting. The string must be enclosed in double quotes, "string". x = don’t care 1 = binary 1 0 = binary 0
Return Parameter	Returns the data value.	

Example1	:TRIGger:BUS:B1:SPI:CONDition MISO :TRIGger:BUS:B1:SPI:DATa:SIZe 2 :TRIGger:BUS:B1:SPI:DATa:MISO:VALue "1x1x0101" Sets the value to 1x1x0101
Example 2	:TRIGger:BUS:B1:SPI:DATa:MISO:VALue? 1X1X0101

:TRIGger:BUS:B1:SPI:DATa:MOSI:VALue

Set →
→ Query

Description	Sets or queries the triggering data value for the SPI bus when the bus is set to trigger on MOSI or MISO/MOSI.	
Syntax	:TRIGger:BUS:B1:SPI:DATa:MOSI:VALue {<string> | ? }	
Related commands	:TRIGger:BUS:B1:SPI:DATa:SIZe	
Parameter	<sting>	The number of characters in the string depends on the data size setting. The string must be enclosed in double quotes, "string". x = don’t care 1 = binary 1 0 = binary 0
Return Parameter	Returns the data value.	
Example1	:TRIGger:BUS:B1:SPI:CONDition MOSI :TRIGger:BUS:B1:SPI:DATa:SIZe 2 :TRIGger:BUS:B1:SPI:DATa:MOSI:VALue "1x1x0101" Sets the value to 1x1x0101	
Example2	:TRIGger:BUS:B1:SPI:DATa:MOSI:VALue? 1X1X0101	

:TRIGger:BUS:B1:CAN:CONDition

Set →
→ Query

Description
Sets or returns the CAN trigger condition.

Syntax
:TRIGger:BUS:B1:CAN:CONDition {SOF|FRAMEtype|IDentifier|DATA|IDANDDATA|EOF|ACKMISS|STUFFERR|?}

Parameter/ Return parameter

SOF	Triggers on a start of frame
FRAMEtype	Triggers on the type of frame
Identifier	Triggers on a matching identifier
DATA	Triggers on matching data
IDANDDATA	Triggers on matching identifier and data field
EOF	Triggers on the end of frame
ACKMISS	Triggers on a missing acknowledge
STUFFERR	Triggers on a bit stuffing error

Example1
```
:TRIGger:BUS:B1:CAN:CONDition SOF
```
Triggers on a start of frame.

Example2
```
:TRIGger:BUS:B1:CAN:CONDition?
>SOF
```

:TRIGger:BUS:B1:CAN:FRAMEtype

Set →
→ Query

Description
Sets or returns the frame type for a CAN FRAMEType trigger.

Syntax
:TRIGger:BUS:B1:CAN:FRAMEtype {DATA|REMote|ERRor|OVERLoad|?}

Parameter/ Return parameter

DATA	Sets the frame type to data frame
REMote	Sets the frame type to remote frame
ERRor	Sets the frame type to error frame
OVERLoad	Sets the frame type to overload

Example	:TRIGger:BUS:B1:CAN:FRAMEtype DATA Sets the frame type to DATA.

:TRIGger:BUS:B1:CAN:IDentifier:MODe

Set→ →Query

Description	Sets or returns the CAN identifier mode for the bus.	
Syntax	:TRIGger:BUS:B1:CAN:IDentifier:MODe {STANDard|EXTended|?}	
Parameter/ Return parameter	STANDard	Standard addressing mode
	EXTended	Extended addressing mode
Example	:TRIGger:BUS:B1:CAN:IDentifier:MODe? >STANDARD Returns the addressing mode.	

:TRIGger:BUS:B1:CAN:IDentifier:VALue

Set→ →Query

Description	Sets or returns the identifier string used for the CAN trigger. Note: Only applicable when the trigger condition is set to ID or IDANDDATA.	
Syntax	:TRIGger:BUS:B1:CAN:IDentifier:VALue {<string>|?}	
Related Commands	:TRIGger:BUS:B1:CAN:IDentifier:MODe	
Parameter/ Return parameter	<string>	The size of the string depends on the data size setting. The string must be enclosed in double quotes, “string”. String contents: x = don’t care 1 = binary 1 0 = binary 0

Example	:TRIGger:BUS:B1:CAN:CONDition ID :TRIGger:BUS:B1:CAN:IDentifier:MODe STANDARD :TRIGger:BUS:B1:CAN:IDentifier:VALue "01100X1X01X" :TRIGger:BUS:B1:CAN:IDentifier:VALue? >01100X1X01X

Set →

:TRIGger:BUS:B1:CAN:IDentifier:DIRection

→ Query

Description	Sets or queries the address bit as read, write or don’t care.	
Syntax	:TRIGger:BUS:B1:CAN:IDentifier:DIRection {READ|WRITE|NOCARE|?}	
Parameter/ Return parameter	READ	Sets read as the data direction
	WRITE	Sets write as the data direction
	NOCARE	Sets either as the data direction
Example1	:TRIGger:BUS:B1:CAN:IDentifier:DIRection? >WRITE	
Example2	:TRIGger:BUS:B1:CAN:IDentifier:DIRection READ :TRIGger:BUS:B1:CAN:IDentifier:DIRection? > READ	

Set →

:TRIGger:BUS:B1:CAN:DATa:QUALifier

→ Query

Description	Sets or returns the CAN data qualifier. Note: Only applicable when the triggering condition is set to DATA or IDANDDATA.	
Syntax	:TRIGger:BUS:B1:CAN:DATa:QUALifier {LESSthan|MOREthan|EQual|UNEQual|LESSEQual|MOREEQual|?}	
Parameter/ Return parameter	LESSthan	Triggers when the data is less than the qualifier value.

	MOREthan	Triggers when the data is greater than the qualifier value.
	EQual	Triggers when the data is equal to the qualifier value.
	UNEQual	Triggers when the data is not equal to the qualifier value.
	LESSEQual	Triggers when the data is less than or equal to the qualifier value.
	MOREEQual	Triggers when the data is more than or equal to the qualifier value.

Example

```
:TRIGger:BUS:B1:CAN:DATa:QUALifier?
>EQUAL
:TRIGger:BUS:B1:CAN:DATa:QUALifier MOREthan
:TRIGger:BUS:B1:CAN:DATa:QUALifier?
>MOREthan
```

:TRIGger:BUS:B1:CAN:DATa:SIZe

Set →
→ Query

Description

Sets or returns the length of the data string in bytes for a CAN trigger.

Note: Only applicable when the condition is set to DATA or IDANDDATA.

Syntax

```
:TRIGger:BUS:B1:CAN:DATa:SIZe {<NR1>|?}
```

Parameter/ Return parameter	<NR1>	1~8 (bytes)

Example

```
:TRIGger:BUS:B1:CAN:DATa:SIZe?
>1
:TRIGger:BUS:B1:CAN:DATa:SIZe 2
:TRIGger:BUS:B1:CAN:DATa:SIZe?
>2
```

:TRIGger:BUS:B1:CAN:DATa:VALue

Set →
→ Query

Description	Sets or returns the binary data string to be used for a CAN trigger. Note: Only applicable when the condition is set to DATA or IDANDDATA.	
Related Commands	:TRIGger:BUS:B1:CAN:DATa:SIZe	
Syntax	:TRIGger:BUS:B1:CAN:DATa:VALue {<string>|?}	
Parameter/ Return parameter	<string>	The size of the string depends on the data size setting. The string must be enclosed in double quotes, "string". String contents: x = don't care 1 = binary 1 0 = binary 0
Example	:TRIGger:BUS:B1:CAN:DATa:SIZe 1 :TRIGger:BUS:B1:CAN:DATa:VALue "01010X1X" :TRIGger:BUS:B1:CAN:DATa:VALue? >01010X1X	

:TRIGger:BUS:B1:LIN:CONDition

Set →
→ Query

Description	Sets or returns the LIN trigger condition.	
Syntax	:TRIGger:BUS:B1:LIN:CONDition {SYNCField|IDentifier|DATA|IDANDDATA|WAKEup|SLEEP|ERRor|?}	
Parameter/ Return parameter	SYNCField	Sets the LIN trigger condition to the sync field.
	IDentifier	Sets the LIN trigger condition to identifier field.

	DATA	Sets the LIN trigger condition to the data field.
	IDANDDATA	Sets the LIN trigger condition to identifier and data field
	WAKEup	Sets the LIN trigger condition to wake up.
	SLEEP	Sets the LIN trigger condition to sleep.
	ERRor	Sets the LIN trigger condition to error.

Example

```
:TRIGger:BUS:B1:LIN:CONDition?
>IDANDDATA
:TRIGger:BUS:B1:LIN:CONDition DATA
:TRIGger:BUS:B1:LIN:CONDition?
>DATA
```

:TRIGger:BUS:B1:LIN:DATa:QUALifier

Set →
→ Query

Description	Sets or returns the LIN data qualifier. Note: Only applicable when the trigger condition is set to DATA or IDANDDATA.
Syntax	:TRIGger:BUS:B1:LIN:DATa:QUALifier {LESSthan|MOREthan|EQual|UNEQual|LESSEQual|MOREEQual|?}

Parameter/ Return parameter	LESSthan	Triggers when the data is less than the qualifier value.
	MOREthan	Triggers when the data is greater than the qualifier value.
	EQual	Triggers when the data is equal to the qualifier value.
	UNEQual	Triggers when the data is not equal to the qualifier value.
	LESSEQual	Triggers when the data is less than or equal to the qualifier value.

	MOREEQual	Triggers when the data is more than or equal to the qualifier value.

Example

```
:TRIGger:BUS:B1:LIN:DATa:QUALifier?
>EQUAL
:TRIGger:BUS:B1:LIN:DATa:QUALifier MOREthan
:TRIGger:BUS:B1:LIN:DATa:QUALifier?
>MORETHAN
```

:TRIGger:BUS:B1:LIN:DATa:SIZe

Set →
→ Query

Description

Sets or returns the length of the data string in bytes for the LIN trigger.

Note: Only applicable when the condition is set to DATA or IDANDDATA.

Syntax

```
:TRIGger:BUS:B1:LIN:DATa:SIZe {<NR1>|?}
```

Parameter/ Return parameter		
	<NR1>	1~8 (bytes)

Example

```
:TRIGger:BUS:B1:LIN:DATa:SIZe?
>1
:TRIGger:BUS:B1:LIN:DATa:SIZe 2
:TRIGger:BUS:B1:LIN:DATa:SIZe?
>2
```

:TRIGger:BUS:B1:LIN:DATa:VALue

Set →
→ Query

Description

Sets or returns the binary data string to be used for the LIN trigger.

Note: Only applicable when the condition is set to DATA or IDANDDATA.

Related Commands

:TRIGger:BUS:B1:LIN:DATa:SIZe

Syntax

```
:TRIGger:BUS:B1:LIN:DATa:VALue {<string>|?}
```

Parameter/ Return parameter	<string>	The size of the string depends on the data size setting. The string must be enclosed in double quotes, “string”. String contents: x = don’t care 1 = binary 1 0 = binary 0
Example	:TRIGger:BUS:B1:LIN:DATa:SIZe 1 :TRIGger:BUS:B1:LIN:DATa:VALue "01010X1X" :TRIGger:BUS:B1:LIN:DATa:VALue? >01010X1X	

Set →
→ Query

:TRIGger:BUS:B1:LIN:ERRTYPE

Description	Sets or returns the error type be used for the LIN trigger.	
Syntax	:TRIGger:BUS:B1:LIN:ERRTYPE {SYNC|PARIty|CHecksum|?}	
Parameter/ Return parameter	SYNC	Sets the LIN error type to SYNC.
	PARIty	Sets the LIN error type to parity.
	CHecksum	Sets the LIN error type to checksum.
Example	:TRIGger:BUS:B1:LIN:ERRTYPE? >SYNC :TRIGger:BUS:B1:LIN:ERRTYPE CHECKSUM :TRIGger:BUS:B1:LIN:ERRTYPE? >CHECKSUM	

:TRIGger:BUS:B1:LIN:IDentifier:VALue

Set →
→ Query

Description	Sets or returns the identifier string to be used for the LIN trigger. Note: Only applicable when the condition is set to ID or IDANDDATA.	
Syntax	:TRIGger:BUS:B1:LIN:IDentifier:VALue {<string>|?}	
Parameter/ Return parameter	<string>	The size of the string depends on the data size setting. The string must be enclosed in double quotes, “string”. String contents: x = don’t care 1 = binary 1 0 = binary 0
Example	:TRIGger:BUS:B1:LIN:CONDition ID :TRIGger:BUS:B1:LIN:IDentifier:VALue "00X1X01X" :TRIGger:BUS:B1:LIN:IDentifier:VALue? >01100X1X01X	

System Commands

:SYSTem:LOCK

Set →
→ Query

Description	Turns the panel lock on off.	
Syntax	:SYSTem:LOCK {OFF | ON | ? }	
Parameter	OFF	System lock off
	ON	System lock on
Return parameter	Returns the status of the panel lock (ON, OFF).	
Example	:SYSTem:LOCK ON Turns the panel lock on.	

:SYSTem:ERRor

Set →
→ Query

Description	Queries the error queue. See the appendix on page 285 for details.
Syntax	:SYSTem:ERRor?
Return parameter	Returns the last message in the error queue.
Example	:SYSTem:ERRor? +0, “No error.”

Save/Recall Commands

:RECAll:SETUp

Set →

Description	Recalls setup settings from memory or USB.	
Syntax	:RECAll:SETUp {S1~S20 | <file path>("Disk:/xxx.SET","USB:/xxx.SET")}	
Parameter	S1~S20	Recall Set1~Set20
	<file path>	Recall a file from the DSO internal files system or from a USB flash drive.
Example	:RECAll:SETUp S1 Recalls setup setting S1 from memory. :RECAll:SETUp “Disk:/DS0001.SET” Recall the setup setting DS0001.SET from the internal memory.	

:RECAll:WAVEform

Set →

Description	Recalls a waveform from wave1~wave20 or from file to REF1~4.
Note	Detail CSV files cannot be recalled.
Syntax	:RECAll:WAVEform {W<n> | <file path> (“Disk:/xxx.LSF”,”USB:/xxx.LSF”)},REF<X>

Parameter	n	1~20 (Wave1~wave20)
	<file page>	Filename in file path. Example: “Disk:/xxx.LSF”,”USB:/xxx.LSF”, “Disk:/xxx.CSV”,”USB:/xxx.CSV”
	<X>	1,2,3,4 (REF1, REF2, REF3, REF4)
Example	:RECAll:WAVEform W1, REF1 Recalls the waveform stored in Wave1 to reference 1.	

:SAVe:IMAGe

Set →

Description	Saves a screen image to the assigned file path with a specified filename.	
Syntax	:SAVe:IMAGe {<file path> (“Disk:/xxx.PNG”, “USB:/xxx.BMP)}	
Related commands	:SAVe:IMAGe:FILEFormat :SAVe:IMAGe:INKSaver	
Parameter	xxx.PNG or xxx.BMP	File name (8 characters max)
Example	:SAVe:IMAGe “Disk:/pic1.PNG” Saves a screen image named pic1.png to the root directory (Disk:/) of the scope. :SAVe:IMAGe “USB:/pic1.BMP” Saves a screen image named pic1.bmp to the root directory of the external USB flash disk.	

:SAVe:IMAGe:FILEFormat

Set →
→ Query

Description	Sets the file format for image.
Syntax	:SAVe:IMAGe:FILEFormat {PNG | BMP | ?}
Related commands	:SAVe:IMAGe :SAVe:IMAGe:INKSaver

Parameter	PNG	Sets the file format to PNG
	BMP	Sets the file format to BMP
Return parameter	Returns the file format (PNG, BMP).	
Example	:SAVe:IMAGe:FILEFormat PNG Sets the image file format to PNG.	

:SAVe:IMAGe:INKSaver

Set →
→ Query

Description	Turns Ink Saver on or off.	
Syntax	:SAVe:IMAGe:INKSaver {OFF | ON |?}	
Related commands	:SAVe:IMAGe :SAVe:IMAGe:FILEFormat	
Parameter	OFF	Turns Inksaver off.
	ON	Turns Inksaver on.
Return parameter	Returns Ink Saver status (ON, OFF).	
Example	:SAVe:IMAGe:INKSaver ON Turns Ink Saver on.	

:SAVe:SETUp

Set →

Description	Saves the current setup to internal memory (Set1~Set20) or the designated file path.	
Syntax	:SAVe:SETUp {<file path> ("Disk:/xxx.SET", "USB:/xxx.SET) | S1~S20}	
Parameter	S1~S20	Saves the setup to Set1~Set20
	File path	Saves the setup to disk to the specified file path.

Example

:SAVe:SETUp S1

Saves the current setup to Set1 in internal memory.

:SAVe:SETUp “Disk:/DS0001.SET”

Saves the current setup to DS0001.SET in the root directory of the internal memory.

:SAVe:WAVEform

Set →

Description

Saves a waveform to internal memory or to a designated file path.

Related commands

:SAVe:WAVEform:FILEFormat

Syntax

:SAVe:WAVEform {CH1~REF4, REF<X> } | {CH1~REF4, W1~W20} | {CH1~ALL, file path}

Parameter

CH1~REF4,	CH1~CH4, Math, D0~D15, REF1~4
<X>	1,2,3,4 (REF1, REF2, REF3, REF4)
W1~W20	Wave1~Wave20
ALL	All the displayed waveforms on screen.
File path	Saves the waveform(s) to disk or USB to the specified file path. (LSF or CSV, but note that detail CSV can’t be recalled to the scope.)

Example 1

:SAVe:WAVEform CH1, REF2

Saves the channel1 waveform to REF2.

Example 2

:SAVe:WAVEform:FILEFormat LSF

:SAVe:WAVEform ALL, “Disk:/ALL001”

Sets the file format to LSF. A folder named “ALL001” is created and saves all displayed waveforms to the “ALL001” directory in the LSF format.

Example 3	:SAVe:WAVEform:FILEFormat FCSV :SAVe:WAVEform ALL, "Disk:/ALL002" Sets the file format to FCSV(fast CSV format). It then saves the all channel's waveforms to the root directory (Disk:/) of the internal flash disk in the CSV format (with the filename ALL002.CSV).
Example 4	:SAVe:WAVEform:FILEFormat LSF :SAVe:WAVEform CH2, "Disk:/DS0003.LSF" Save the channel 2's waveform to the root directory (Disk:/) of the internal flash disk in the LSF format with DS0003.LSF as the filename.

:SAVe:WAVEform:FILEFormat

Set →

→ Query

Description	Sets the waveform savefile format.	
Syntax	:SAVe:WAVEform:FILEFormat {LSF | DCSV | FCSV | ?}	
Parameter	LSF	Sets the file format to the MDO-2000EG/2000EX's internal file format, LSF. (xxx.LSF) (no support LA)
	DCSV	Sets the file format to detail CSV. (xxx.CSV)
	FCSV	Sets the file format to fast CSV. (xxx.CSV)
Return parameter	Returns the file format (LSF , DCSV, FCSV).	
Example	:SAVe:WAVEform:FILEFormat LSF Sets the file format to LSF.	

Ethernet Command

:ETHERnet:DHCP

Set →
→ Query

Description	Sets or queries the DHCP settings.	
Syntax	:ETHERnet:DHCP { OFF | ON | ? }	
Parameter	ON	Turns DHCP on.
	OFF	Turns DHCP off.
Example	:ETHERnet:DHCP ON Turns DHCP on.	

Time Command

:DATe

Set →

Description	Sets the system date and time.	
Syntax	:DATe {<string>}	
Parameter	<string>	“YYYYMMDDhhmmss” Where: YYYY: year MM: month DD: day hh: hour mm: minute ss: second
Example	:DATe “20140802142830” Sets the time and date as: Year: 2014, Month: 08, Day: 02, Hour: 14 (2PM), Minute: 28, Second: 30.	

Bus Decode Commands

:BUS1

→ Query

Description	Returns the supported BUS types.	
Syntax	:BUS1?	
Return Parameter	Returns the supported bus types.	
Example	BUS1? I2C,SPI,UART,CAN,LIN	

:BUS1:STATE

Set →
→ Query

Description	Sets or queries the state of the bus.	
Syntax	:BUS1:STATE { OFF | ON | ? }	
Related commands	:BUS1:TYPe	
Parameter/Return parameter	OFF	Turns the bus off.
	ON	Turns the bus on.
Example	:BUS1:STATE ON Turns the bus on.	

:BUS1:TYPe

Set →
→ Query

Description	Sets or queries the type of bus.	
Syntax	:BUS1:TYPe { UART | I2C | SPI | PARallel | CAN | LIN | ? }	
Related commands	:BUS1:STATE	
Parameter/Return parameter	UART	Sets the bus to UART mode.
	I2C	Sets the bus to I^{2}C mode.

	SPI	Sets the bus to SPI mode.
	PARallel	Sets the bus to parallel mode.
	CAN	Sets the bus to CAN mode.
	LIN	Sets the bus to LIN mode.
Example	:BUS1:TYPe SPI Sets the bus to SPI mode.	

:BUS1:INPut

Set →
→ Query

Description	Sets or returns the bus source.	
Syntax	:BUS1:INPut {ANAlog | DIGital | ?}	
Parameter/Return parameter	ANAlog	Sets the bus source as analog inputs.
	DIGital	Sets the bus source as digital inputs.
Example1	:BUS1:INPut? >ANALOG	

:BUS1:I2C:ADDRess:RWINClude

Set →
→ Query

Description	Sets or queries whether the read/write bit is included in the I^{2}C address.	
Syntax	:BUS1:I2C:ADDRess:RWINClude { OFF | ON | ? }	
Related commands	:BUS1:STATE	
Parameter	OFF	The R/W bit is not included.
	ON	The R/W bit is included.
Return parameter	0	The R/W bit is not included.
	1	The R/W bit is included.
Example	:BUS1:I2C:ADDRess:RWINClude ON Includes the R/W bit in the I^{2}C address.	

:BUS1:I2C:SCLK:SOURce

Set →
→ Query

Description	Sets or queries which channel is used for the I^2C SCLK source.	
Syntax	:BUS1:I2C:SCLK:SOURce { CH1 | CH2 | CH3 | CH4 |? }	
Parameter/Return parameter	CH1 to CH4	Analog channels 1 ~ 4.
Example	:BUS1:I2C:SCLK:SOURce CH1 Sets channel 1 as the SCLK source.	

:BUS1:I2C:SDA:SOURce

Set →
→ Query

Description	Sets or queries which channel is used for the I^2C SDA source.	
Syntax	:BUS1:I2C:SDA:SOURce { CH1 | CH2 | CH3 | CH4 |? }	
Parameter/Return parameter	CH1 to CH4	Analog channels 1 ~ 4.
Example	:BUS1:I2C:SDA:SOURce CH1 Sets channel 1 as the SDA source.	

:BUS1:UART:BITRate

Set →
→ Query

Description	Sets or queries the UART bit rate.	
Syntax	:BUS1:UART:BITRate {<NR1> | ? }	
Parameter/Return parameter	<NR1>	UART bit rate in bps
Example	:BUS1:UART:BITRate? >2400 :BUS1:UART:BITRate 50 :BUS1:UART:BITRate? >50	

Set →
→ Query

:BUS1:UART:DATABits

Description	Sets or queries the number UART data for bus 1.	
Syntax	:BUS1:UART:DATABits { 5 | 6 | 7 | 8 | 9 | ? }	
Parameter/Return parameter	5	5 data bits in the UART frame.
	6	6 data bits in the UART frame.
	7	7 data bits in the UART frame.
	8	8 data bits in the UART frame.
Example	:BUS1:UART:DATABits 7 Sets the UART frame to 7 bits.	

Set →
→ Query

:BUS1:UART:PARIty

Description	Sets or queries the UART bus parity.	
Syntax	:BUS1:UART:PARIty { <NR1> | ? }	
Parameter/Return parameter	<NR1>	0: None 1: Odd parity 2: Even parity
Example	:BUS1:UART:PARIty 1 Sets the parity to odd.	

Set →
→ Query

:BUS1:UART:PACKEt

Description	Sets or queries the UART packet setting.	
Syntax	:BUS1:UART:PACKEt {<NR1> | ? }	
Parameter/Return parameter	<NR1>	0: Off 1: On
Example	:BUS1:UART:PACKEt 1 Turns UART packets on.	

Set →
→ Query

:BUS1:UART:EOFPAcket

Description	Sets or queries the EOF character for the UART packet setting.	
Syntax	:BUS1:UART:EOFPAcket <NR1>	
Parameter/Return parameter	<NR1>	0: NULL 1: LF (line feed) 2: CR (carriage return) 3: SP (space character) 4: FF
Example	:BUS1:UART:EOFPAcket 2 Sets the OEF character to CR.	

Set →
→ Query

:BUS1:UART:TX:SOURce

Description	Sets or queries which channel is used for the UART Tx source.	
Syntax	:BUS1:UART:TX:SOURce { OFF | CH1 | CH2 | CH3 | CH4 |? }	
Parameter/Return parameter	OFF	Off, no Tx source
	CH1 to CH4	Analog channels CH1 to CH4
Example	:BUS1:UART:TX:SOURce CH1 Sets channel 1 as the Tx source.	

Set →
→ Query

:BUS1:UART:RX:SOURce

Description	Sets or queries which channel is used for the UART Rx source.	
Syntax	:BUS1:UART:RX:SOURce { OFF | CH1 | CH2 | CH3 | CH4 | ? }	
Parameter/Return	OFF	Off, no Rx source

parameter	CH1 to CH4	Analog channels CH1 to CH4
Example	:BUS1:UART:RX:SOURce CH1 Sets channel 1 as the Rx source.	

Set →
→ Query

:BUS1:SPI:SCLK:POLARity

Description	Sets or queries the polarity of the SCLK line for the SPI bus.	
Syntax	:BUS1:SPI:SCLK:POLARity { FALL | RISE | ? }	
Parameter/Return parameter	FALL	Sets the polarity to falling edge.

Set →
→ Query

:BUS1:SPI:SS:POLARity

Description	Sets or queries the polarity of the SS line for the SPI bus.	
Syntax	:BUS1:SPI:SS:POLARity { LOW | HIGH | ? }	
Parameter/Return parameter	LOW	Active low polarity
	HIGH	Active high polarity
Example	:BUS1:SPI:SS:POLARity LOW Sets the SS line to active low.	

Set →
→ Query

:BUS1:SPI:WORDSize

Description	Sets the number of bits per word for the SPI bus.	
Syntax	:BUS1:SPI:WORDSize {<NR1> | ? }	
Parameter/Return parameter	<NR1>	Bits per word (4~32)
Example	:BUS1:SPI:WORDSize 4 Sets the word size to 4 bits per word.	

Set →
→ Query

:BUS1:SPI:BITORder

Description	Sets or queries the bit order for the SPI bus.	
Syntax	:BUS1:SPI:BITORder {<NR1> | ? }	
Parameter/Return parameter	<NR1>	0: MSB bit first 1: LSB bit first
Example	:BUS1:SPI:BITORder? 0 The bit order is currently set as MSB bit first.	

Set →
→ Query

:BUS1:SPI:SCLK:SOURce

Description	Sets or queries which channel is used for the SPI SCLK source.	
Syntax	:BUS1:SPI:SCLK:SOURce { CH1 | CH2 | CH3 | CH4| ? }	
Parameter/Return parameter	CH1 to CH4	Analog channels CH1 to CH4
Example	:BUS1:SPI:SCLK:SOURce CH1 Sets channel 1 as the SPI SCLK source.	

Set →
→ Query

:BUS1:SPI:SS:SOURce

Description	Sets or queries which channel is used for the SPI SS source.	
Syntax	:BUS1:SPI:SS:SOURce { CH1 | CH2 | CH3 | CH4 | D0| ? }	
Parameter/Return parameter	CH1 to CH4	Analog channels CH1 to CH4
Example	:BUS1:SPI:SS:SOURce CH1 Sets channel 1 as the SPI SS source.	

:BUS1:SPI:MOSI:SOURce

Set →
→ Query

Description	Sets or queries which channel is used for the SPI MOSI source.	
Syntax	:BUS1:SPI:MOSI:SOURce { OFF | CH1 | CH2 | CH3 | CH4 |? }	
Parameter/Return parameter	CH1 to CH4	Analog channels CH1 to CH4
	OFF	No MOSI source.
Example	:BUS1:SPI:MOSI:SOURce CH1 Sets channel 1 as the SPI MOSI source.	

:BUS1:SPI:MISO:SOURce

Set →
→ Query

Description	Sets or queries which channel is used for the SPI MISO source.	
Syntax	:BUS1:SPI:MISO:SOURce { OFF | CH1 | CH2 | CH3 | CH4 |? }	
Parameter/Return parameter	CH1 to CH4	Analog channels CH1 to CH4
	OFF	No MISO source.
Example	:BUS1:SPI:MISO:SOURce CH1 Sets channel CH1 as the SPI MISO source.	

:BUS1:DISplay:FORMAt

Set →
→ Query

Description	Sets or queries the display format for the bus, either binary or hexadecimal.	
Syntax	:BUS1:DISplay:FORMAt { BINary | HEXadecimal | ASCII | ? }	
Parameter/Return parameter	BINary	Binary format
	HEXadecimal	Hexadecimal format

Example	: BUS1:DISplay:FORMAt BINary Sets the display format to binary.	

:LISTer:DATA

→Query

Description	Returns the Event Table data as a binary block data.	
Syntax	:LISTer:DATA?	
Return Parameter	Returns the event table as binary block data. The binary block data contains comma separated data with new lines at the end of each row.	

:BUS1:CAN:SOURce

Set→
→Query

Description	Sets or returns the CAN input source.	
Syntax	:BUS1:CAN:SOURce { CH1 | CH2 | CH3 | CH4 |? }	
Parameter/Return parameter	CH1 ~ CH4	Analog channel source
Example	:BUS1:CAN:SOURCE? >CH1 Returns the CAN source.	

:BUS1:CAN:PROBe

Set→
→Query

Description	Sets or returns the signal type of the CAN bus.	
Syntax	:BUS1:CAN:PROBe {CANH | CANL | TX | RX | ? }	
Parameter/Return parameter	CANH	CAN-High
	CANL	CAN-Low
	TX	Transmit
	RX	Receive

Example	:BUS1:CAN:PROBe? >CANH :BUS1:CAN:PROBe CANL :BUS1:CAN:PROBe? >CANL

:BUS1:CAN:SAMPLEpoint

→Query

Description	Returns the sample point of the CAN bus.
Syntax	:BUS1:CAN:SAMPLEpoint?
Return Parameter	Returns the sample point of the CAN bus as a percentage of the bit time.
Example	:BUS1:CAN:SAMPLEpoint? 50 Returns the sample point as a percentage.

:BUS1:CAN:BITRate

Set→
→Query

Description	Sets or returns the bit rate of the CAN bus.
Syntax	:BUS1:CAN:BITRate {RATE10K|RATE20K|RATE50K|RATE125K|RATE250K|RATE500K|RATE800K|RATE1M | <NR1> | ?}

Parameter/Return parameter

RATE10K	10 kbps
RATE20K	20 kbps
RATE50K	50 kbps
RATE125K	125 kbps
RATE250K	250 kbps
RATE500K	500 kbps
RATE800K	800 kbps
RATE1M	1 Mbps
<NR1>	CAN bit rate in bps

Example	:BUS1:CAN:BITRate? >1000000 :BUS1:CAN:BITRate rate800k :BUS1:CAN:BITRate? >800000 :BUS1:CAN:BITRate 25000 :BUS1:CAN:BITRate? >25000	

:BUS1:LIN:BITRate

Set →
→ Query

Description	Sets or returns the bit rate of the LIN bus.	
Syntax	:BUS1:LIN:BITRate {<NR1> | ?}	
Parameter/Return parameter	<NR1>	LIN bit rate in bps.
Example	:BUS1:LIN:BITRate 9600 Sets the LIN bit rate to 9600bps.	

:BUS1:LIN:IDFORmat

Set →
→ Query

Description	Sets or returns the LIN ID format.	
Syntax	:BUS1:LIN:IDFORmat {NOPARity|PARIty|?}	
Parameter/Return parameter	NOPARity	Don’t include parity bits with Id.
	PARIty	Include parity bits with Id.
Example	:BUS1:LIN:IDFORmat? NOPARITY Returns the ID format.	

:BUS1:LIN:POLARity

Set →
→ Query

Description	Sets or returns the LIN polarity.	
Syntax	:BUS1:LIN:POLARity {NORMal|INVerted|?}	
Parameter/Return	NORMal	Normal LIN polarity

parameter	INVerted	Inverted LIN polarity
Example	:BUS1:LIN:POLARity? NORMAL Returns the LIN polarity.	

:BUS1:LIN:SAMPLEpoint

→Query

Description	Returns the sample point.
Syntax	:BUS1:LIN:SAMPLEpoint?
Return Parameter	Returns the sample point of the LIN bus as a percentage.
Example	:BUS1:LIN:SAMPLEpoint? 50 Returns the sample point as a percentage.

:BUS1:LIN:SOURce

Set→

→Query

Description	Sets or returns the LIN data source.	
Syntax	:BUS1:LIN:SOURce {CH1 | CH2 | CH3 | CH4 | ? }	
Parameter/Return parameter	CH1 ~ CH4	Analog channel source
Example	:BUS1:LIN:SOURCE? >CH1 Returns the LIN source.	

:BUS1:LIN:STANDard

Set→

→Query

Description	Sets or returns the LIN standard.	
Syntax	:BUS1:LIN:STANDard {V1X|V2X|BOTH|?}	
Parameter/Return parameter	V1X	Lin standard version 1.x
	V2X	Lin standard version 2.x

	BOTH	Both standards

Example

```
:BUS1:LIN:STANDard?
>BOTH
```

Returns the LIN standard.

Mark Commands

:MARK

Set →

Description	Move to next or previous event mark.	
Syntax	:MARK { NEXT | PREVious }	
Related commands	:MARK:CREATE :MARK:DELEte	
Parameter	NEXT	Move to next mark
	PREVious	Move to previous mark
Example	:MARK NEXT Moves to the next event mark.	

:MARK:CREATE

Set →

Description	Creates a mark on the waveform at the current position or creates a mark for all the events for the current waveform.	
Syntax	:MARK:CREATE { CURRent | ALL }	
Related commands	:MARK :MARK:DELEte	
Parameter	CURRent	Creates a mark at the current position
	ALL	Creates a mark for all the events.
Example	:MARK:CREATE CURRent Creates a mark at the current position.	

:MARK:DELEte

Set →

Description	Deletes the current mark or all the marks on a waveform.	
Syntax	:MARK:DELEte { CURRent | ALL }	
Related commands	:MARK :MARK:CREATE	
Parameter	CURRent	Deletes the current mark
	ALL	Deletes all the marks
Example	:MARK:DELEte CURRent Deletes the current mark.	

Search Commands

:SEARCH:COPY

Set →

Description	Copies the search settings to the trigger settings or copies the trigger settings to the search settings.	
Syntax	:SEARCH:COPY {SEARCHtotrigger|TRIGgertosearch}	
Parameter	SEARCHtotrigger	Copy the search setting to the trigger settings.
	TRIGgertosearch	Copy the trigger settings to the search settings.

Example	:SEARCH:COPY SEARCHtotrigger Copies the search settings to the trigger settings.	

Set →
→ Query

:SEARCH:STATE

Description	Sets or queries whether the Search function is on or off.	
Syntax	:SEARCH:STATE { OFF | ON | ? }	
Parameter/Return parameter	OFF	Turn the Search function on.
	ON	Turn the Search function off.
Example	:SEARCH:STATE ON Turn Search on.	

→ Query

:SEARCH:TOTAL

Description	Returns the total number of events found from the search function.	
Syntax	:SEARCH:TOTAL?	
Return parameter	<NR1>	Number of events.
Example	:SEARCH:TOTAL? 5	

Set →
→ Query

:SEARCH:TRIGger:TYPe

Description	Sets or queries the search trigger type.	
Syntax	:SEARCH:TRIGger:TYPe { EDGe | PULSEWidth | RUNT | RISEFall | FFTPeak | LOGic | BUS | ? }	
Parameter/Return parameter	EDGe	Edge trigger
	PULSEWidth	Pulse width trigger
	RUNT	Runt trigger
	RISEFall	Rise and Fall trigger

	FFTPeak	FFT Peak trigger
	LOGic	Logic trigger
	BUS	Bus trigger
Example	:SEARCH:TRIGger:TYPe EDGE Sets the search trigger to the edge type.	

:SEARCH:TRIGger:SOURce

Set → Query

Description	Sets or queries the search trigger source.	
Syntax	:SEARCH:TRIGger:SOURce {CH1 | CH2 | CH3 | CH4|? }	
Parameter/Return parameter	CH1 to CH4	Channel 1 to Channel 4
Example	:SEARCH:TRIGger:SOURce CH1 Sets the search trigger source as CH1.	

:SEARCH:TRIGger:EDGE:SLOP

Set → Query

Description	Sets or queries the search trigger slope.	
Syntax	:SEARCH:TRIGger:EDGe:SLOP { RISe | FALL | EITher | ? }	
Related commands	:SEARCH:TRIGger:TYPe	
Parameter	RISe	Rising slope
	FALL	Falling slope
	EITher	Either rising or falling slope
Return parameter	Returns the trigger slope.	
Example	:SEARCH:TRIGger:EDGe:SLOP FALL Sets the search trigger slope to falling.	

:SEARCH:TRIGger:LEVel

Set → → Query

Description	Sets or queries the search trigger level.	
Syntax	:SEARCH:TRIGger:LEVel {TTL | ECL| SETTO50 | <NRf> | ?}	
Related commands	:SEARCH:TRIGger:TYPe	
Parameter	<NRf>	Trigger level value
	TTL	Sets the search trigger level to TTL.
	ECL	Sets the search trigger level to ECL.
	SETTO50	Sets the search trigger level to the User level (50% by default).
Return parameter	<NR3>	Returns the trigger.
Example1	:SEARCH:TRIGger:LEVel TTL Sets the search trigger level to TTL.	
Example2	:SEARCH:TRIGger:LEVel 3.30E-1 Sets the search trigger level to 330mV/mA.	

:SEARCH:TRIGger:HLEVel

Set → → Query

Description	Sets or queries the high level search trigger.	
Note	Applicable for Rise and Fall/Pulse Runt search triggers.	
Syntax	:SEARCH:TRIGger:HLEVel { <NRf> | ?}	
Related commands	:SEARCH:TRIGger:TYPe	
Parameter	<NRf>	High level value.
Return parameter	<NR3>	Returns the high level search trigger.
Example	:SEARCH:TRIGger:HLEVel 3.30E-1 Sets the high level search trigger to 330mV/mA.	

:SEARCH:TRIGger:LLEVel

Set →
→ Query

Description	Sets or queries the low level search trigger.	
Note	Applicable for Rise and Fall/Pulse Runt triggers.	
Syntax	:SEARCH:TRIGger:LLEVel { <NRf> | ?}	
Related commands	:SEARCH:TRIGger:TYPe	
Parameter	<NRf>	Low level value.
Return parameter	<NR3>	Returns the low level.
Example	:SEARCH:TRIGger:LLEVel -3.30E-3 Sets the low level search trigger to 330mV/mA.	

:SEARCH:TRIGger:PULSEWidth:POLarity

Set →
→ Query

Description	Sets or queries the pulse width search trigger polarity.	
Syntax	:SEARCH:TRIGger:PULSEWidth:POLarity {POSitive | NEGative | ?}	
Related commands	:SEARCH:TRIGger:TYPe	
Parameter	POSitive	Positive polarity
	NEGative	Negative polarity
Return parameter	Returns the pulse width polarity.	
Example	:SEARCH:TRIGger:PULSEWidth:POLarity POSitive Sets the pulse width polarity to positive.	

Set →

→ Query

:SEARCH:TRIGger:RUNT:POLarity

Description	Sets or queries the Pulse Runt search trigger polarity.	
Syntax	:SEARCH:TRIGger:RUNT:POLarity {POSitive | NEGative | EITher | ?}	
Related commands	:SEARCH:TRIGger:TYPe	
Parameter	POSitive	Positive polarity
	NEGative	Negative polarity
	EITher	Positive or negative polarity
Return parameter	Returns the pulse runt search trigger polarity.	
Example	:SEARCH:TRIGger:RUNT:POLarity POSitive Sets the Pulse Runt search trigger polarity to positive.	

Set →

→ Query

:SEARCH:TRIGger:RISEFall:SLOP

Description	Sets or queries the slope of the Rise and Fall search trigger.	
Syntax	:SEARCH:TRIGger:RISEFall:SLOP { RISe | FALL | EITher | ? }	
Related commands	:SEARCH:TRIGger:TYPe	
Parameter	RISe	Rising slope
	FALL	Falling slope
	EITher	Either rising or falling slope
Return parameter	Returns the rise & fall slope.	
Example	:SEARCH:TRIGger:RISEFall :SLOP RISe Sets the Rise & Fall search trigger slope to rising.	

:SEARCH:TRIGger:PULSe:WHEn

Set →
→ Query

Description	Sets or queries the pulse width search trigger conditions.	
Syntax	:SEARCH:TRIGger:PULSe:WHEn {MOREthan | LESSthan | EQual | UNEQual | ?}	
Related commands	:SEARCH:TRIGger:TYPe :SEARCH:TRIGger:PULSe:TIMe	
Parameter	MOREthan	>
	LESSthan	<
	EQual	=
	UNEQual	≠
Return parameter	Returns the pulse width search trigger conditions.	
Example	:SEARCH:TRIGger:PULSe:WHEn UNEQual Sets the pulse width search trigger conditions to not equal to (≠).	

:SEARCH:TRIGger:PULSe:TIMe

Set →
→ Query

Description	Sets or queries the pulse width search trigger time.	
Syntax	:SEARCH:TRIGger:PULSe:TIMe {<NRf> | ?}	
Related commands	:SEARCH:TRIGger:TYPe :SEARCH:TRIGger:PULSe:WHEn	
Parameter	<NRf>	Pulse width time (4ns~10s)
Return parameter	<NR3>	Returns the pulse width time in seconds.
Example	:SEARCH:TRIGger:PULSe:TIMe 4.00E-5 Sets the pulse width search trigger to 40.0us.	

Set →
→ Query

:SEARCH:TRIGger:RUNT:WHEn

Description	Sets or queries the pulse runt search trigger conditions.	
Syntax	:SEARCH:TRIGger:RUNT:WHEn {MOREthan | LESSthan | EQual | UNEQual | ? }	
Related commands	:SEARCH:TRIGger:TYPe :SEARCH:TRIGger:RUNT:TIMe	
Parameter	MOREthan	>
	LESSthan	<
	Equal	=
	UNEQual	≠
Return parameter	Returns the pulse runt search trigger conditions.	
Example	:SEARCH:TRIGger:RUNT:WHEn UNEQual Sets the pulse runt search trigger condition to unequal (≠).	

Set →
→ Query

:SEARCH:TRIGger:RUNT:TIMe

Description	Sets or queries the pulse runt search trigger time.	
Syntax	:SEARCH:TRIGger:RUNT:TIMe {<NRf> | ? }	
Related commands	:SEARCH:TRIGger:TYPe :SEARCH:TRIGger:RUNT:WHEn	
Parameter	<NRf>	Pulse runt time (4nS to 10S)
Return Parameter	<NR3>	Returns the runt time in seconds.
Example	:SEARCH:TRIGger:RUNT:TIMe 4.00E-5 Sets the pulse runt time to 40.0uS.	

:SEARCH:TRIGger:RISEFall:WHEn

Set →
→ Query

Description	Sets or queries the rise and fall search trigger conditions.
Syntax	:SEARCH:TRIGger:RISEFall:WHEn {MOREthan | LESSthan | EQual | UNEQual |? }
Related commands	:SEARCH:TRIGger:TYPe :SEARCH:TRIGger:RISEFall:TIMe
Parameter	MOREthan > LESSthan < Equal = UNEQual ≠
Return parameter	Returns the rise and fall search trigger condition.
Example	:SEARCH:TRIGger:RISEFall:WHEn UNEQual Sets the rise and fall search trigger condition to unequal (≠).

:SEARCH:TRIGger:RISEFall:TIMe

Set →
→ Query

Description	Sets or queries the rise and fall time.	
Syntax	:SEARCH:TRIGger:RISEFall:TIMe {<NRf> | ? }	
Related commands	:SEARCH:TRIGger:TYPe :SEARCH:TRIGger:RISEFall:WHEn	
Parameter	<NRf>	Rise and Fall time (4nS to 10S)
Return Parameter	<NR3>	Returns the rise and fall time in seconds.
Example	:SEARCH:TRIGger:RISEFall:TIMe 4.00E-5 Sets the trigger rise and fall time to 40.0us.	

:SEARCH:TRIGger:BUS:TYPe

→Query

Description	Returns the current bus type.	
Syntax	:SEARCH:TRIGger:BUS:TYPe?	
Return parameter	12C	I2C mode
	SPI	SPI mode
	UART	UART mode
	CAN	CAN mode
	LIN	LIN mode
	PARallel	Parallel mode
Example	:SEARCH:TRIGger:BUS:TYPe? UART	

:SEARCH:TRIGger:BUS:B1:I2C:CONDition

Set→
→Query

Description	Sets or queries the I^2C search trigger conditions.	
Syntax	:SEARCH:TRIGger:BUS:B1:I2C:CONDition {STARt | STOP | REPEATstart | ACKMISS | ADDRess | DATA | ADDRANDDATA | ? }	
Parameter	STARt	Set Start as the I^2C search trigger condition.
	STOP	Set Stop as the I^2C search trigger condition.
	REPEATstart	Set Repeat of Start as the I^2C search trigger condition.
	ACKMISS	Set Missing Acknowledgement as the I^2C search trigger condition.
	ADDRess	Set Address as the I^2C search trigger condition.

	DATA	Set Data as the I²C search trigger condition.
	ADDRANDDATA	Set Address and Data as the I²C search trigger condition.
Return parameter	Returns the I²C bus search trigger condition.	
Example	:SEARCH:TRIGger:BUS:B1:I2C:CONDition ADDRess Set Address as the I²C search trigger condition.	

:SEARCH:TRIGger:BUS:B1:I2C:ADDRess :MODe

Set →
→ Query

Description	Sets or queries the I²C addressing mode (7 or 10 bits) for the search trigger.	
Syntax	:SEARCH:TRIGger:BUS:B1:I2C:ADDRess:MODe {ADDR7 | ADDR10 | ? }	
Related commands	:SEARCH:TRIGger:BUS:B1:I2C:CONDition	
Parameter	ADDR7	7 bit addressing
	ADDR10	10 bit addressing
Return Parameter	0	7 bit addressing
	1	10 bit addressing
Example	:SEARCH:TRIGger:BUS:B1:I2C:ADDRess:MODe? 0 The addressing mode is current set to 7 bits.	

:SEARCH:TRIGger:BUS:B1:I2C:ADDRess :TYPe

Set →
→ Query

Description	Sets the I²C bus address type, or queries what the setting is for the search trigger.
Syntax	:SEARCH:TRIGger:BUS:B1:I2C:ADDRess:TYPe {GENeralcall | STARtbyte | HSmode | EEPROM | CBUS | ?}

Related commands	:SEARCH:TRIGger:BUS:B1:I2C:CONDition	
Parameter	GENeralcall	Set a general call address (0000 000 0).
	STARtbyte	Set a start byte address. (0000 000 1)
	HSmode	Set a high-speed mode address. (0000 1xx x)
	EEPROM	Set an EEPROM address. (1010 xxx x)
	CBUS	Set a CBUS address. (0000 001 x)
Return Parameter	Returns the address type	
Example	:SEARCH:TRIGger:BUS:B1:I2C:ADDRess:TYPe? CBUS	

:SEARCH:TRIGger:BUS:B1:I2C:ADDRess :VALue

Set →
→ Query

Description	Sets or queries the I^2C bus address value when the I^2C search trigger is set to trigger on Address or Address/Data.	
Syntax	:SEARCH:TRIGger:BUS:B1:I2C:ADDRess:VALue {<string> | ? }	
Related commands	:SEARCH:TRIGger:BUS:B1:I2C:ADDRess:MODe	
Parameter	<sting>	7/10 characters, must be enclosed in double quotes "string". x = don’t care 1 = binary 1 0 = binary 0
Return Parameter	Returns the address value in binary.	

Example 1

:SEARCH:TRIGger:BUS:B1:I2C:ADDRess:MODe ADDR7
:SEARCH:TRIGger:BUS:B1:I2C:ADDRess:VALue "xxx0101"

Sets the address to XXX0101

Example 2

:SEARCH:TRIGger:BUS:B1:I2C:ADDRess:VALue?
XXX0101

:SEARCH:TRIGger:BUS:B1:I2C:ADDRess :DIRection

Set →
→ Query

Description

Sets or queries the address bit as read write or don't care for the search function.

Note

This setting only applies when the I^2C search trigger is set to trigger on Address or Address/Data

Syntax

:SEARCH:TRIGger:BUS:B1:I2C:ADDRess:DIRection { READ | WRITE | NOCARE | ? }

Related commands

:SEARCH:TRIGger:BUS:B1:I2C:CONDition

Parameter

READ	Set read as the data direction.
WRITE	Set write as the data direction.
NOCARE	Set either as the data direction.

Return Parameter

Returns the direction (READ, WRITE, NOCARE).

Example

:SEARCH:TRIGger:BUS:B1:I2C:ADDRess:DIRection READ

Sets the direction to READ.

:SEARCH:TRIGger:BUS:B1:I2C:DATa:SIZe

Set →
→ Query

Description

Sets or queries the data size in bytes for the I^2C bus.

Note	This setting only applies when the I^2C search trigger is set to trigger on Data or Address/Data	
Syntax	:SEARCH:TRIGger:BUS:B1:I2C:DATa:SIZe {<NR1> | ? }	
Related commands	:SEARCH:TRIGger:BUS:B1:I2C:CONDition	
Parameter	<NR1>	Number of data bytes (1 to 5).
Return parameter	<NR1>	Returns the number of bytes.
Example	:SEARCH:TRIGger:BUS:B1:I2C:DATa:SIZe 3 Sets the number of bytes to 3.	

:SEARCH:TRIGger:BUS:B1:I2C:DATa:VALue

Set→ →Query

Description	Sets or queries the triggering data value for the I^2C bus when the I^2C search trigger is set to trigger on Data or Address/Data.	
Syntax	:SEARCH:TRIGger:BUS:B1:I2C:DATa:VALue {<string> | ? }	
Related commands	:SEARCH:TRIGger:BUS:B1:I2C:DATa:SIZe	
Parameter	<string>	The number of characters in the string depends on the data size setting. The string must be enclosed in double quotes, "string". x = don’t care 1 = binary 1 0 = binary 0
Return Parameter	Returns the data value.	
Example 1	:SEARCH:TRIGger:BUS:B1:I2C:DATa:SIZe 1 :SEARCH:TRIGger:BUS:B1:I2C:DATa:VALue "1x1x0101" Sets the value to XXX0101	

Example 2	:SEARCH:TRIGger:BUS:B1:I2C:DATa:VALue? 1X1X0101

:SEARCH:TRIGger:BUS:B1:UART :CONDition

Set →
→ Query

Description	Sets or queries the UART search triggering condition.	
Syntax	:SEARCH:TRIGger:BUS:B1:UART:CONDition { RXSTArt | RXDATA | RXENDPacket | TXSTArt | TXDATA | TXENDPacket | TXPARItyerr | RXPARItyerr | ? }	
Parameter	RXSTArt	Set search trigger on the RX Start Bit.
	RXDATA	Set search trigger on RX Data.
	RXENDPacket	Set search trigger on the RX End of Packet condition.
	RXPARItyerr	Set search trigger on RX Parity error condition.
	TXSTArt	Set search trigger on the TX Start Bit.
	TXDATA	Set search trigger on TX Data.
	TXENDPacket	Set search trigger on the TX End of Packet condition.
	TXPARItyerr	Set search trigger on TX Parity error condition.
Return Parameter	Returns the search triggering condition.	
Example	:SEARCH:TRIGger:BUS:B1:UART:CONDition TXDATA Sets the UART bus to trigger on Tx Data for the search function.	

:SEARCH:TRIGger:BUS:B1:UART:RX:DATa:SIZe

Set →
→ Query

Description	Sets or queries the number of bytes for UART data.	
Note	This setting only applies when the UART search trigger is set to trigger on Rx Data	
Syntax	:SEARCH:TRIGger:BUS:B1:UART:RX:DATa:SIZe {<NR1> | ?}	
Related commands	:SEARCH:TRIGger:BUS:B1:UART:CONDition	
Parameter	<NR1>	Number of bytes (1 to 10).
Return parameter	<NR1>	Returns the number of bytes.
Example	:SEARCH:TRIGger:BUS:B1:UART:RX:DATa:SIZe 5 Sets the number of bytes to 5.	

:SEARCH:TRIGger:BUS:B1:UART:RX:DATa:VALue

Set →
→ Query

Description	Sets or queries the search triggering data value for the UART bus when the bus is set to trigger on Rx Data.	
Syntax	:SEARCH:TRIGger:BUS:B1:UART:RX:DATa:VALue {<string> | ? }	
Related commands	:SEARCH:TRIGger:BUS:B1:UART:RX:DATa:SIZe	
Parameter	<sting>	The number of characters in the string depends on the data size setting. The string must be enclosed in double quotes, "string". x = don't care 1 = binary 1 0 = binary 0

Return Parameter	Returns the data value.
Example1	:SEARCH:TRIGger:BUS:B1:UART:CONDition RXDATA :SEARCH:TRIGger:BUS:B1:UART:RX:DATa:SIZe 1 :SEARCH:TRIGger:BUS:B1:UART:RX:DATa:VALue "1x1x0101" Sets the value to 1x1x0101
Example 2	:SEARCH:TRIGger:BUS:B1:UART:RX:DATa:VALue? 1X1X0101

:SEARCH:TRIGger:BUS:B1:UART:TX:DATa :SIZe

Set →
→ Query

Description	Sets or queries the number of bytes for UART data.	
Note	This setting only applies when the UART search trigger is set to trigger on Tx Data	
Syntax	:SEARCH:TRIGger:BUS:B1:UART:TX:DATa:SIZe {<NR1> | ?}	
Related commands	:SEARCH:TRIGger:BUS:B1:UART:CONDition	
Parameter	<NR1>	Number of bytes (1 to 10).
Return parameter	<NR1>	Returns the number of bytes.
Example	:SEARCH:TRIGger:BUS:B1:UART:TX:DATa:SIZe 5 Sets the number of bytes to 5.	

:SEARCH:TRIGger:BUS:B1:UART:TX:DATa: VALue

Set →
→ Query

Description	Sets or queries the search triggering data value for the UART bus when the bus is set to trigger on Tx Data.
Syntax	:SEARCH:TRIGger:BUS:B1:UART:TX:DATa:VALue {<string> | ? }

Related commands	:SEARCH:TRIGger:BUS:B1:UART:TX:DATa:SIZe	
Parameter	<sting>	The number of characters in the string depends on the data size setting. The string must be enclosed in double quotes, "string". x = don’t care 1 = binary 1 0 = binary 0
Return Parameter	Returns the data value.	
Example 1	:SEARCH:TRIGger:BUS:B1:UART:CONDition TXDATA :SEARCH:TRIGger:BUS:B1:UART:TX:DATa:SIZe 1 :SEARCH:TRIGger:BUS:B1:UART:TX:DATa:VALue "1x1x0101" Sets the value to 1x1x0101	
Example 2	:SEARCH:TRIGger:BUS:B1:UART:TX:DATa:VALue? 1X1X0101	

:SEARCH:TRIGger:BUS:B1:SPI:CONDition

Set →
→ Query

Description	Sets or queries the SPI search triggering condition.	
Syntax	:SEARCH:TRIGger:BUS:B1:SPI:CONDition {SS | MISO | MOSI | MISOMOSI | ? }	
Parameter	SS	Set to trigger on the Slave Selection condition.
	MISO	Set to trigger on the Master-In Slave-Out condition.
	MOSI	Set to trigger on the Master-Out Slave-In condition.
	MISOMOSI	Set to trigger on the Master-In Slave-Out and Master-Out Slave-In conditions.

Return Parameter	Returns the triggering condition.	
Example	:SEARCH:TRIGger:BUS:B1:SPI:CONDition MISO Sets the SPI bus to trigger on MISO.	

:SEARCH:TRIGger:BUS:B1:SPI:DATa:SIZe

Set →
→ Query

Description	Sets or queries the number of words for SPI data for the search function.	
Note	This setting only applies when the SPI search trigger is set to trigger on MISO, MOSI or MISO/MOSI	
Syntax	:SEARCH:TRIGger:BUS:B1:SPI:DATa:SIZe {<NR1> | ?}	
Related commands	:SEARCH:TRIGger:BUS:B1:SPI:CONDition	
Parameter	<NR1>	Number of words (1 to 32).
Return parameter	<NR1>	Returns the number of words.
Example	:SEARCH:TRIGger:BUS:B1:SPI:DATa:SIZe 10 Sets the number of words to 10.	

:SEARCH:TRIGger:BUS:B1:SPI:DATa:MISO:VALue

Set →
→ Query

Description	Sets or queries the search triggering data value for the SPI bus when the bus is set to trigger on MISO or MISO/MOSI.	
Syntax	:SEARCH:TRIGger:BUS:B1:SPI:DATa:MISO:VALue {<string> | ? }	
Related commands	:SEARCH:TRIGger:BUS:B1:SPI:DATa:SIZe	
Parameter	<sting>	The number of characters in the string depends on the data size setting. The string must be enclosed in double quotes, "string".

		x = don’t care 1 = binary 1 0 = binary 0
Return Parameter	Returns the data value.	
Example 1	:SEARCH:TRIGger:BUS:B1:SPI:CONDition MISO :SEARCH:TRIGger:BUS:B1:SPI:DATa:SIZe 2 :SEARCH:TRIGger:BUS:B1:SPI:DATa:MISO:VALue "1x1x0101" Sets the value to 1x1x0101	
Example 2	:SEARCH:TRIGger:BUS:B1:SPI:DATa:MISO:VALue? 1X1X0101	

:SEARCH:TRIGger:BUS:B1:SPI:DATa:MOSI:VALue

Set → → Query

Description	Sets or queries the search triggering data value for the SPI bus when the bus is set to trigger on MOSI or MISO/MOSI.	
Syntax	:SEARCH:TRIGger:BUS:B1:SPI:DATa:MOSI:VALue {<string> | ? }	
Related commands	:SEARCH:TRIGger:BUS:B1:SPI:DATa:SIZe	
Parameter	<sting>	The number of characters in the string depends on the data size setting. The string must be enclosed in double quotes, "string". x = don’t care 1 = binary 1 0 = binary 0
Return Parameter	Returns the data value.	

Example1	:SEARCH:TRIGger:BUS:B1:SPI:CONDition MOSI :SEARCH:TRIGger:BUS:B1:SPI:DATa:SIZe 2 :SEARCH:TRIGger:BUS:B1:SPI:DATa:MOSI:VALue "1x1x0101" Sets the value to 1x1x0101
Example2	:SEARCH:TRIGger:BUS:B1:SPI:DATa:MOSI:VALue? 1X1X0101

:SEARCH:TRIGger:BUS:B1:CAN:CONDition

Set → → Query

Description	Sets or returns the CAN search trigger condition.	
Syntax	:SEARCH:TRIGger:BUS:B1:CAN:CONDition {SOF|FRAMEtype|IDentifier|DATA|IDANDDATA|EOF|ACKMISS|STUFFERR|?}	
Parameter/ Return parameter	SOF	Sets search to trigger on a start of frame
	FRAMEtype	Sets search to trigger on the type of frame
	Identifier	Sets search to trigger on a matching identifier
	DATA	Sets search to trigger on matching data
	IDANDDATA	Sets search to trigger on matching identifier and data field
	EOF	Sets search to trigger on the end of frame
	ACKMISS	Sets search to trigger on a missing acknowledge
	STUFFERR	Sets search to trigger on a bit stuffing error
Example1	:SEARCH:TRIGger:BUS:B1:CAN:CONDition SOF Triggers search on a start of frame.	

Example2	:SEARCH:TRIGger:BUS:B1:CAN:CONDition? >SOF	

:SEARCH:TRIGger:BUS:B1:CAN:FRAMEtype

Set →
→ Query

Description	Sets or returns the frame type for the CAN FRAMEType search trigger.	
Syntax	:SEARCH:TRIGger:BUS:B1:CAN:FRAMEtype {DATA|REMote|ERRor|OVERLoad|?}	
Parameter/ Return parameter	DATA	Sets the frame type to data frame
	REMote	Sets the frame type to remote frame
	ERRor	Sets the frame type to error frame
	OVERLoad	Sets the frame type to overload
Example	:SEARCH:TRIGger:BUS:B1:CAN:FRAMEtype DATA Sets the frame type to DATA.	

SEARCH:TRIGger:BUS:B1:CAN:IDentifier:MODe

Set →
→ Query

Description	Sets or returns the CAN identifier mode for the bus.	
Syntax	:SEARCH:TRIGger:BUS:B1:CAN:IDentifier:MODe {STANDard|EXTended|?}	
Parameter/ Return parameter	STANDard	Standard addressing mode
	EXTended	Extended addressing mode
Example	:SEARCH:TRIGger:BUS:B1:CAN:IDentifier:MODe? >STANDARD :SEARCH:TRIGger:BUS:B1:CAN:IDentifier:MODe EXTENDED :SEARCH:TRIGger:BUS:B1:CAN:IDentifier:MODe? >EXTENDED	

:SEARCH:TRIGger:BUS:B1:CAN:IDentifier:VALue

Set →
→ Query

Description	Sets or returns the identifier string used for the CAN search trigger. Note: Only applicable when the search trigger condition is set to ID or IDANDDATA.	
Syntax	:SEARCH:TRIGger:BUS:B1:CAN:IDentifier:VALue {<string>|?}	
Related Commands	:SEARCH:TRIGger:BUS:B1:CAN:IDentifier:MODe	
Parameter/ Return parameter	<string>	The size of the string depends on the data size setting. The string must be enclosed in double quotes, “string”. String contents: x = don’t care 1 = binary 1 0 = binary 0
Example	:SEARCH:TRIGger:BUS:B1:CAN:CONDition ID :SEARCH:TRIGger:BUS:B1:CAN:IDentifier:MODe STANDARD :SEARCH:TRIGger:BUS:B1:CAN:IDentifier:VALue "01100X1X01X" :SEARCH:TRIGger:BUS:B1:CAN:IDentifier:VALue? >01100X1X01X	

:SEARCH:TRIGger:BUS:B1:CAN:IDentifier :DIRection

Set →
→ Query

Description	Sets or queries the address bit as read, write or don’t care.
Syntax	:SEARCH:TRIGger:BUS:B1:CAN:IDentifier:DIRection {READ|WRITE|NOCARE|?}

Parameter/ Return parameter	READ	Sets read as the data direction
	WRITE	Sets write as the data direction
	NOCARE	Sets either as the data direction
Example2	:SEARCH:TRIGger:BUS:B1:CAN:IDentifier:DIRection? >WRITE :SEARCH:TRIGger:BUS:B1:CAN:IDentifier:DIRection READ :SEARCH:TRIGger:BUS:B1:CAN:IDentifier:DIRection? >READ	

:SEARCH:TRIGger:BUS:B1:CAN:DATa:QUALifier

Set →
→ Query

Description	Sets or returns the CAN data qualifier. Note: Only applicable when the search triggering condition is set to DATA or IDANDDATA.	
Syntax	:SEARCH:TRIGger:BUS:B1:CAN:DATa:QUALifier {LESSthan|MOREthan|EQual|UNEQual|LESSEQual|MOREEQual|?}	
Parameter/ Return parameter	LESSthan	Sets search to trigger when the data is less than the qualifier value.
	MOREthan	Sets search to trigger when the data is greater than the qualifier value.
	EQual	Sets search to trigger when the data is equal to the qualifier value.
	UNEQual	Sets search to trigger when the data is not equal to the qualifier value.
	LESSEQual	Sets search to trigger when the data is less than or equal to the qualifier value.
	MOREEQual	Sets search to trigger when the data is more than or equal to the qualifier value.

Example	:SEARCH:TRIGger:BUS:B1:CAN:DATa:QUALifier? >EQUAL :SEARCH:TRIGger:BUS:B1:CAN:DATa:QUALifier MOREthan :SEARCH:TRIGger:BUS:B1:CAN:DATa:QUALifier? >MORETHAN

:SEARCH:TRIGger:BUS:B1:CAN:DATa:SIZe

Set →
→ Query

Description	Sets or returns the length of the data string in bytes for the CAN search trigger. Note: Only applicable when the condition is set to DATA or IDANDDATA.	
Syntax	:SEARCH:TRIGger:BUS:B1:CAN:DATa:SIZe {<NR1>|?}	
Parameter/ Return parameter	<NR1>	1~8 (bytes)
Example	:SEARCH:TRIGger:BUS:B1:CAN:DATa:SIZe? >1 :SEARCH:TRIGger:BUS:B1:CAN:DATa:SIZe 2 :SEARCH:TRIGger:BUS:B1:CAN:DATa:SIZe? >2	

:SEARCH:TRIGger:BUS:B1:CAN:DATa: VALue

Set →
→ Query

Description	Sets or returns the binary data string to be used for the CAN search trigger.	
Related Commands	:SEARCH:TRIGger:BUS:B1:CAN:DATa:SIZe	
Syntax	:SEARCH:TRIGger:BUS:B1:CAN:DATa:VALue {<string>|?}	
Parameter/ Return parameter	<string>	The size of the string depends on the data size setting. The string must be enclosed in double quotes, “string”.

String contents:

x = don’t care

1 = binary 1

0 = binary 0

Example

```
:SEARCH:TRIGger:BUS:B1:CAN:DATa:SIZe 1
:SEARCH:TRIGger:BUS:B1:CAN:DATa:VALue
"01010X1X"
:SEARCH:TRIGger:BUS:B1:CAN:DATa:VALue?
>01010X1X
```

:SEARCH:TRIGger:BUS:B1:LIN:CONDition

Set →
→ Query

Description: Sets or returns the LIN search trigger condition.

Syntax

```
:SEARCH:TRIGger:BUS:B1:LIN:CONDition
{SYNCField|IDentifier|DATA|IDANDDATA|WAKEup|SL
EEP|ERRor|?}
```

Parameter/ Return parameter		
	SYNCField	Sets the LIN search trigger condition to the sync field.
	IDentifier	Sets the LIN search trigger condition to identifier field.
	DATA	Sets the LIN search trigger condition to the data field.
	IDANDDATA	Sets the LIN search trigger condition to identifier and data field
	WAKEup	Sets the LIN search trigger condition to wake up.
	SLEEP	Sets the LIN search trigger condition to sleep.
	ERRor	Sets the LIN search trigger condition to error.

Example

```
:SEARCH:TRIGger:BUS:B1:LIN:CONDition?
>IDANDDATA
:SEARCH:TRIGger:BUS:B1:LIN:CONDition DATA
:SEARCH:TRIGger:BUS:B1:LIN:CONDition?
>DATA
```

:SEARCH:TRIGger:BUS:B1:LIN:DATa:QUALifier

Set →

→ Query

Description

Sets or returns the LIN data qualifier.
Note: Only applicable when the search trigger condition is set to DATA or IDANDDATA.

Syntax

```
:SEARCH:TRIGger:BUS:B1:LIN:DATa:QUALifier
{LESSthan|MOREthan|EQual|UNEQual|LESSEQual|MOREEQual|?}
```

Parameter/
Return parameter

LESSthan	Sets search to trigger when the data is less than the qualifier value.
MOREthan	Sets search to trigger when the data is greater than the qualifier value.
EQual	Sets search to trigger when the data is equal to the qualifier value.
UNEQual	Sets search to trigger when the data is not equal to the qualifier value.
LESSEQual	Sets search to trigger when the data is less than or equal to the qualifier value.
MOREEQual	Sets search to trigger when the data is more than or equal to the qualifier value.

Example	:SEARCH:TRIGger:BUS:B1:LIN:DATa:QUALifier? >EQUAL :SEARCH:TRIGger:BUS:B1:LIN:DATa:QUALifier MOREthan :SEARCH:TRIGger:BUS:B1:LIN:DATa:QUALifier? >MORETHAN

:SEARCH:TRIGger:BUS:B1:LIN:DATa:SIZe

Set →
→ Query

Description	Sets or returns the length of the data string in bytes for the LIN search trigger. Note: Only applicable when the condition is set to DATA or IDANDDATA.	
Syntax	:SEARCH:TRIGger:BUS:B1:LIN:DATa:SIZe {<NR1>|?}	
Parameter/ Return parameter	<NR1>	1~8 (bytes)
Example	:SEARCH:TRIGger:BUS:B1:LIN:DATa:SIZe? >1 :SEARCH:TRIGger:BUS:B1:LIN:DATa:SIZe 2 :SEARCH:TRIGger:BUS:B1:LIN:DATa:SIZe? >2	

:SEARCH:TRIGger:BUS:B1:LIN:DATa:VALue

Set →
→ Query

Description	Sets or returns the binary data string to be used for the LIN search trigger. Note: Only applicable when the condition is set to DATA or IDANDDATA.
Related Commands	:SEARCH:TRIGger:BUS:B1:LIN:DATa:SIZe
Syntax	:SEARCH:TRIGger:BUS:B1:LIN:DATa:VALue {<string>|?}

Parameter/ Return parameter	<string>	The size of the string depends on the data size setting. The string must be enclosed in double quotes, “string”. String contents: x = don’t care 1 = binary 1 0 = binary 0
Example	:SEARCH:TRIGger:BUS:B1:LIN:DATa:SIZe 1 :SEARCH:TRIGger:BUS:B1:LIN:DATa:VALue "01010X1X" :SEARCH:TRIGger:BUS:B1:LIN:DATa:VALue? >01010X1X	

:SEARCH:TRIGger:BUS:B1:LIN:ERRTYPE

Set →
→ Query

Description	Sets or returns the error type to be used for the LIN search trigger.	
Syntax	:SEARCH:TRIGger:BUS:B1:LIN:ERRTYPE {SYNC|PARIty|CHecksum|?}	
Parameter/ Return parameter	SYNC	Sets the LIN error type to SYNC.
	PARIty	Sets the LIN error type to parity.
	CHecksum	Sets the LIN error type to checksum.
Example	:SEARCH:TRIGger:BUS:B1:LIN:ERRTYPE? >SYNC :SEARCH:TRIGger:BUS:B1:LIN:ERRTYPE CHECKSUM :SEARCH:TRIGger:BUS:B1:LIN:ERRTYPE? >CHECKSUM	

:SEARCH:TRIGger:BUS:B1:LIN:IDentifier:VALue

Set →
→ Query

Description	Sets or returns the identifier string to be used for the LIN search trigger. Note: Only applicable when the condition is set to ID or IDANDDATA.	
Syntax	:SEARCH:TRIGger:BUS:B1:LIN:IDentifier:VALue {<string>|?}	
Parameter/ Return parameter	<string>	The size of the string depends on the data size setting. The string must be enclosed in double quotes, “string”. String contents: x = don’t care 1 = binary 1 0 = binary 0
Example	:SEARCH:TRIGger:BUS:B1:LIN:CONDition ID :SEARCH:TRIGger:BUS:B1:LIN:IDentifier:VALue "00X1X01X" :SEARCH:TRIGger:BUS:B1:LIN:IDentifier:VALue? >01100X1X01X	

:SEARCH:FFTPeak:METHod

Set →
→ Query

Description	Sets or returns the FFT peak method type.	
Related Commands	:SEARCH:TRIGger:TYPe :SEARCH:FFTPeak:METHod:MPEak :SEARCH:TRIGger:LEVel	
Syntax	:SEARCH:FFTPeak:METHod {MPEak | LEVel | ?}	
Parameter/ Return parameter	MPEak	Sets the peak method to the Max Peak type.
	LEVel	Sets the peak methods to the Level type.

Example

```
:SEARCH:FFTPeak:METHod LEVel
:SEARCH:FFTPeak:METHod?
>LEVEL
:SEARCH:TRIGger:LEVel?
>1.000E+00
:SEARCH:TRIGger:LEVel 2
:SEARCH:TRIGger:LEVel?
>2.000E+00
```

:SEARCH:FFTPeak:METHod:MPEak

Set →
→ Query

Description	Sets the active peak number (1 ~ 10) or return the frequency of the active peak number.	
Related Commands	:SEARCH:TRIGger:TYPe :SEARCH:FFTPeak:METHod	
Syntax	:SEARCH:FFTPeak:METHod:MPEak {<NR1> | ?}	
Parameter	<NR1>	Active peak number.
Return parameter	<NR3>	Frequency of the active peak.

Example

```
:SEARCH:FFTPeak:METHod MPEak
:SEARCH:FFTPeak:METHod?
>MPEAK
:SEARCH:FFTPeak:METHod:MPEak?
>1.000E+00
:SEARCH:FFTPeak:METHod:MPEak 2
:SEARCH:FFTPeak:METHod:MPEak?
>2.000E+00
```

:SEARCH:FFTPeak:SINFo

Set →
→ Query

Description	Sets or returns the State Info to “Mark” or “Peak”.

Related Commands	:SEARCH:TRIGger:TYPe

Syntax	:SEARCH:FFTPeak:SINFo {MARK | PEAK | ?}	
Parameter/ Return parameter	MARK	Sets the State Info to Mark.
	PEAK	Sets the State Info to Peak.

Example

```
:SEARCH:FFTPeak:SINFo?
>PEAK
:SEARCH:FFTPeak:SINFo mark
:SEARCH:FFTPeak:SINFo?
>MARK
```

:SEARCH:FFTPeak:LIST

→Query

Description	Returns the data of the search event table.
Syntax	:SEARCH:FFTPeak:LIST?

Example

```
:SEARCH:FFTPeak:LIST?
No.,Frequency,Value;
  1,1.000E+04,-6.400E+00;
  2,2.750E+06,-7.360E+01;
  3,2.830E+06,-7.280E+01;
  4,2.910E+06,-7.200E+01;
  5,3.020E+06,-7.120E+01;
  6,3.170E+06,-7.040E+01;
  7,5.550E+06,-8.240E+01;
  8,5.640E+06,-8.160E+01;
  9,5.740E+06,-8.080E+01;
  10,5.900E+06,-8.000E+01;
```

Label Commands

:CHANnel<X>:LABel

Set →
→ Query

Description	Sets or returns the file label for the selected channel.	
Syntax	:CHANnel<X>:LABel {<string> | ?}	
Related commands	:CHANnel<X>:LABel:DISPlay	
Parameter	<X>	Channel 1, 2, 3, 4
	<string>	The string must be no more than 8 characters and only contain alphanumeric characters in addition to period, dash and underscore characters. The string must be enclosed in double quotes, “string”.
Return parameter	<string>	Returns the label for the selected channel. No return indicates that there has not been a file label assigned for the selected channel.
Example1	:CHANnel1:LABel "CH1_lab" Sets the channel 1 label as "CH1_lab".	
Example2	:CHANnel1:LABel? CH1_lab	

:CHANnel<X>:LABel:DISPlay

Set →
→ Query

Description	Turns the label on/off for the selected channel or returns its status.	
Syntax	:CHANnel<X>:LABel:DISPlay { OFF | ON | ? }	
Related commands	:CHANnel<X>:LABel	
Parameter	<X>	Channel 1, 2, 3, 4
	OFF	Turns the file label off for the selected channel.
	ON	Turns the file label on for the selected channel.
Return parameter	Returns the status of the file label for the selected channel (ON, OFF).	
Example	:CHANnel1:LABel "CH1" :CHANnel1:LABel:DISPlay ON :CHANnel1:LABel:DISPlay? ON Sets the channel 1 label to "CH1" and then turns the label display on. The query return shows that the label is on.	

:REF<X>:LABel

Set →
→ Query

Description	Sets or returns the file label for the selected reference waveform.	
Syntax	:REF<X>:LABel {<string> | ?}	
Related commands	:REF<X>:LABel:DISPlay	
Parameter	<X>	REF 1, 2, 3, 4

	<string>	The string must be no more than 8 characters and only contain alphanumeric characters in addition to period, dash and underscore characters. The string must be enclosed in double quotes, “string”.
Return parameter	<string>	Returns the label for the selected reference waveform. No return indicates that there has not been a file label assigned for the selected reference waveform.
Example1	:REF1:LABel "REF1_lab" Sets the REF1 label as "REF1_lab".	
Example2	:REF1:LABel? REF1_lab	

:REF<X>:LABel:DISPlay

Set →
→ Query

Description	Turns the label on/off for the selected reference waveform or returns its status.	
Syntax	:REF<X>:LABel:DISPlay { OFF | ON | ? }	
Related commands	:REF<X>:LABel	
Parameter	<X>	Reference waveform 1, 2, 3, 4
	OFF	Turns the file label off for the selected reference waveform.
	ON	Turns the file label on for the selected reference waveform.
Return parameter	Returns the status of the file label for the selected reference waveform (ON, OFF).	

Example	:REF1:LABel "REF1" :REF1:LABel:DISPlay ON :REF1:LABel:DISPlay? ON Sets the label for reference waveform 1 to "REF1" and then turns the label display on. The query return shows that the label is on.	

:BUS1:LABel

Set→ →Query

Description	Sets or returns the file label for the bus.	
Syntax	:BUS1:LABel {<string> | ?}	
Related commands	:BUS1:LABel:DISPlay	
Parameter	<string>	The string must be no more than 8 characters and only contain alphanumeric characters in addition to period, dash and underscore characters. The string must be enclosed in double quotes, “string”.
Return parameter	<string>	Returns the label for the bus. No return indicates that there has not been a file label assigned for bus.
Example1	:BUS1:LABel "Bus" Sets the bus label as "Bus".	
Example2	:BUS1:LABel? Bus	

:BUS1:LABel:DISPlay

Set→ →Query

Description	Turns the label on/off for the bus or returns its status.
Syntax	:BUS1:LABel:DISPlay { OFF | ON | ? }

Related commands	:BUS1:LABel	
Parameter	OFF	Turns the file label off for the bus.
	ON	Turns the file label on for the bus.
Return parameter	Returns the status of the file label for the bus (ON, OFF).	
Example	:BUS1:LABel "Bus" :BUS1:LABel:DISPlay ON :BUS1:LABel:DISPlay? ON Sets the label for the bus to "Bus" and then turns the label display on. The query return shows that the label is on.	

:SET<X>:LABel

Set → → Query

Description	Sets or returns the file label for the selected setup.	
Syntax	:SET<X>:LABel {<string> | ?}	
Related commands	:SET<X>:LABel:DISPlay	
Parameter	<X>	Setup number 1 to 20
	<string>	The string must be no more than 8 characters and only contain alphanumeric characters in addition to period, dash and underscore characters. The string must be enclosed in double quotes, "string".
Return parameter	<string>	Returns the label for the selected setup. No return indicates that there has not been a file label assigned for the selected setup.
Example1	:SET1:LABel "SET1_lab" Sets the label for setup 1 as "SET1_lab".	

Example2	:SET1:LABel? SET1_lab

Segment Commands

:SEGMents:STATE

Set →
→ Query

Description	Turns the segmented memory function on/off or queries its state.	
Syntax	:SEGMents:STATE { OFF | ON | ? }	
Related commands	:RUN :STOP	
Parameter/ Return parameter	OFF	Turns the segmented memory off.
	ON	Turns the segmented memory on.
Example1	:SEGMents:STATE ON Turns segmented memory on.	

:SEGMents:CURRent

Set →
→ Query

Description	Sets or queries the current segment. The total number of segments depends on the record length.	
Syntax	:SEGMents:CURRent {SETTOMIN|SETTOMAX|<NR1>|?}	
Related commands	:SEGMents:STATE :SEGMents:TOTalnum	
Parameter/ Return parameter	SETTOMIN	Current segment = min segment
	SETTOMAX	Current segment = max segment
	<NR1>	1~29000
Example1	:SEGMents:CURRent 10 Sets the current segment to segment number 10.	

:SEGMents:TOTalnum

Set →
→ Query

Description	Sets or queries the total number of segments for the segmented memory function. The total number of segments depends on the record length.	
Syntax	:SEGMents:TOTalnum {SETTOMIN|SETTOMAX|<NR1>|?}	
Related commands	:SEGMents:STATE :SEGMents:CURRent	
Parameter/ Return parameter	SETTOMIN	Sets to the minimum number
	SETTOMAX	Sets to the maximum number
	<NR1>	1~29000
Example1	:SEGMents:TOTalnum SETTOMAX Sets the number of segments to max number (29000).	

:SEGMents:TIMe

→Query

Description	Returns the time of the current segment in relation to the first segment.
Syntax	:SEGMents:TIMe?
Related commands	:SEGMents:STATE :SEGMents:CURRent
Return parameter	The segment time as <NR3>.
Example	:SEGMents:TIMe? >8.040E-03 Returns the segment time.

:SEGMents:DISPALL

Set→
→Query

Description	Sets or queries whether all the segments are displayed on the screen.	
Syntax	:SEGMents:DISPALL {OFF|ON|?}	
Related commands	:SEGMents:STATE :SEGMents:CURRent	
Parameter/ Return parameter	OFF	Turns the display all function off.
	ON	Turns the display all function on.
Example1	:SEGMents:DISPALL ON Turns the display all function on.	

:SEGMents:MEASure:MODe

Set→
→Query

Description	Sets or queries the measurement mode.
Syntax	:SEGMents:MEASure:MODe {OFF|PLOT|TABle|?}
Related commands	:MEASUrement:MEAS<x>

Parameter/ Return parameter	OFF	Disables the automatic measurement function for the segments measurement.
	PLOT	Sets the measurement mode to Statistics.
	TABLE	Sets the measurement mode to a measurement list.
Example	:SEGMents:MEASure:MODe? >PLOT Returns the measurement mode as Statistics.	

:SEGMents:MEASure:PLOT:SOURce

Set →
→ Query

Description	Sets or queries the statistics source.	
Syntax	:SEGMents:MEASure:PLOT:SOURce {<NR1> | ? }	
Related commands	:SEGMents:MEASure:MODe :SEGMents:MEASure:PLOT:DIVide :SEGMents:MEASure:PLOT:SELect :SEGMents:MEASure:PLOT:RESults	
Parameter/ Return parameter	<NR1>	1~8 (Automatic measurement item 1~8)
Example1	:SEGMents:MEASure:PLOT:SOURce 1 Sets the source as auto measurement item 1.	

:SEGMents:MEASure:PLOT:DIVide

Set →
→ Query

Description	Sets or queries the number of bins for the statistics function.
Syntax	:SEGMents:MEASure:PLOT:DIVide {<NR1> | ? }
Related commands	:SEGMents:MEASure:PLOT:SOURce :SEGMents:MEASure:PLOT:SELect

Parameter/ Return parameter	<NR1>	1~20
Example1	:SEGMents:MEASure:PLOT:DIVide 5 Sets the number of bins to 5 for the statistics function.	

:SEGMents:MEASure:PLOT:SELect

Set → → Query

Description	Sets or queries which bin to view the statics of.	
Syntax	:SEGMents:MEASure:PLOT:SELect {<NR1> | ? }	
Related commands	:SEGMents:MEASure:PLOT:SOURce :SEGMents:MEASure:PLOT:DIVide	
Parameter	<NR1>	1~20 (cannot exceed the number of bins)
Return parameter	Return the bin number as <NR3>.	
Example1	:SEGMents:MEASure:PLOT:SELect 5 Set to bin number 5.	

:SEGMents:MEASure:PLOT:RESults

→ Query

Description	Returns the results of the currently selected bin for the statistics measurement.
Note	At least one automatic measurement must be turned on.
Syntax	:SEGMents:MEASure:PLOT:RESults?
Related commands	:SEGMents:STATE :SEGMents:MEASure:MODe PLOT :SEGMents:MEASure:PLOT:SOURce :SEGMents:MEASure:PLOT:DIVide :SEGMents:MEASure:PLOT:SELect
Return parameter	Returns the statistics measurements as a string.

Example	:SEGMents:STATE ON STOP :SEGMents:MEASure:MODe PLOT :SEGMents:MEASure:PLOT:SOURce 1 :SEGMents:MEASure:PLOT:DIVide 10 :SEGMents:MEASure:PLOT:SELect 1 :SEGMents:MEASure:PLOT:RESults? > MAX,1.000kHz;MIN,1.000kHz;MEAN,1.000kHz; Bin Statistics,1 of 10;Percent,10.00%;Count,1; Measured,10;Unmeasured,0;Bin Range, 1.000kHz~1.000kHz; Plots the results for automatic measurement #1, bin 1 of 10.

Set →
→ Query

:SEGMents:MEASure:TABle:SOURce

Description	Sets or queries the source of the measurement list.	
Syntax	:SEGMents:MEASure:TABle:SOURce {CH1 | CH2 | CH3| CH4 | ? }	
Related commands	:SEGMents:MEASure:MODe :SEGMents:MEASure:TABle:SELect :SEGMents:MEASure:TABle:LIST	
Parameter/ Return parameter	CH1~CH4	Channel 1 to 4
Example1	:SEGMents:MEASure:TABle:SOURce CH1 Sets the source to CH1.	

Set →
→ Query

:SEGMents:MEASure:TABle:SELect

Description	Sets or queries a segment to view in the measurement table.
Syntax	:SEGMents:MEASure:TABle:SELect {<NR1> | ? }

Related commands	:SEGMents:TOTalnum	
Parameter	<NR1>	1~29000
Return parameter	Returns the number of segments as <NR3>.	
Example1	:SEGMents:MEASure:TABle:SELect 10 Select segment number 10.	

:SEGMents:MEASure:TABle:LIST

→Query

Description	Returns the measurement results of each segment in the list.
Syntax	:SEGMents:MEASure:TABle:LIST?
Return parameter	Returns the measurements results as a string for each segment.
Example	:SEGMents:MEASure:TABle:LIST? >"GW MDO-2074E, serial number PXXXXXX, version V1.11",Segment Summary : CH1, Seg.,Pk-Pk (V),Pk-Pk (V),1,8.00m,8.00m……etc

:SEGMents:MEASure:TABle:SAVe

Set→

Description	Saves the list of segment automatic measurement results.
Syntax	:SEGMents:MEASure:TABle:SAVe

:SEGMents:SAVe

Set→

Description	Saves the segments.
Syntax	:SEGMents:SAVe
Related Commands	:SEGMents:SAVe:SOURce :SEGMents:SAVe:SELect:STARt :SEGMents:SAVe:SELect:END

Example	:SEGMents:SAVe:SOURce CH1 :SEGMents:SAVe:SELect:STARt 1 :SEGMents:SAVe:SELect:END 10 :SEGMents:SAVe	

:SEGMents:SAVe:SOURce

Set →
→ Query

Description	Sets or queries the source segment waveform to save.	
Syntax	:SEGMents:SAVe:SOURce {CH1 | CH2 | CH3 | CH4 |? }	
Parameter/ Return parameter	CH1~CH4	Channel 1 to 4.
Example	:SEGMents:SAVe:SOURce CH1 >Sets the source to CH1.	

:SEGMents:SAVe:SELect:STARt

Set →
→ Query

Description	Sets or queries the starting segment to save from. The number of possible segments depends on the record length.	
Syntax	:SEGMents:SAVe:SELect:STARt {SETTOMIN | SETTOMAX | <NR1> | ? }	
Related commands	:SEGMents:TOTalnum	
Parameter/ Return parameter	SETTOMIN	Sets the starting segment to min segment.
	SETTOMAX	Sets the starting segment to the max segment.
	<NR1>	Sets the segment to 1~29000
Example	:SEGMents:SAVe:SELect:STARt 2 Sets the starting segment to segment number 2.	

:SEGMents:SAVe:SELect:END

Set →
→ Query

Description	Sets or queries the ending segment to save from. The number of possible segments depends on the record length.	
Syntax	:SEGMents:SAVe:SELect:END {SETTOMIN | SETTOMAX | <NR1> | ? }	
Related commands	:SEGMents:TOTalnum	
Parameter/ Return parameter	SETTOMIN	Sets the starting segment to min segment.
	SETTOMAX	Sets the starting segment to the max segment.
	<NR1>	Sets the segment to 1~29000.
Return parameter	<NR3>	Returns the ending segment as NR3.
Example	:SEGMents:SAVe:SELect:END 10 Sets the ending segment to segment number 10.	

DVM Commands

The DVM commands are only available when the optional DVM software is installed.

:DVM:STATE

Set →
→ Query

Description	Sets or queries the DVM state to on or off.	
Syntax	:DVM:STATE {OFF | ON | ? }	
Related commands	:DVM:SOURce :DVM:MODe	
Parameter/ Return parameter	OFF	Turns the DVM off.
	ON	Turns the DVM on.
Example	:DVM:STATE ON Turns the DVM state on.	

:DVM:SOURce

Set →
→ Query

Description	Sets or queries the source of the DVM.	
Syntax	:DVM:SOURce {CH1|CH2|CH3|CH4|?}	
Related commands	:DVM:STATE :DVM:MODe	
Parameter/ Return parameter	CH1~CH4	Channel 1 to 4.
Example	:DVM:SOURce CH1 Sets the DVM source to channel 1.	

:DVM:MODe

Set → → Query

Description	Sets or queries the DVM mode.	
Syntax	:DVM:MODe {ACRMS|DC|DCRMS|DUTY|FREQuency|?}	
Related commands	:DVM:SOURce :DVM:STATE	
Parameter/ Return parameter	ACRMS	Sets the mode to AC RMS
	DC	Sets the mode to DC
	DCRMS	Sets the mode to DC RMS
	DUTY	Sets the mode to AC Duty
	FREQuency	Sets the mode to AC frequency
Example	:DVM:MODe DUTY Sets the DVM mode to DUTY.	

:DVM:VALue

→ Query

Description	Returns the measurement value of the selected mode.
Syntax	:DVM:VALue?
Related commands	:DVM:SOURce :DVM:STATE :DVD:MODe
Return parameter	Returns the measurement value as <NR3>.
Example	:DVM:VALue? >8.410E-04 Returns the measurement.

Go_NoGo Commands

The GoNoGo APP must first be launched (or use the command, ":GONogo:SCRipt") before any of the Go_NoGo or Template commands can be used.

:GONogo:CLEar

Set →

Description	Clears the Go/NoGo counter.
Syntax	:GONogo:CLEar

:GONogo:EXECute

Set →
→ Query

Description	Enables or disables the Go/NoGo function or queries its state.
Syntax	:GONogo:EXECute {OFF|ON|?}

Parameter/ Return Parameter	OFF ON	Disabled Enabled
Example	:GONogo:EXECute OFF Turns Go/NoGo off.	

:GONogo:FUNCtion

Set →

Description	Initializes the Go/NoGo APP. This must be run after the Go/NoGo APP has been started.
Syntax	:GONogo:FUNCtion

:GONogo:NGCount

→ Query

Description	Returns the Go/NoGo counter.
Syntax	:GONogo:NGCount{?}
Return parameter	Returns a string in the following format “number of violations,total tests”
Example	:GONogo:NGCount? > 3,25 Indicates that 3 violations occurred over 25 tests.

Set →
→ Query

:GONogo:NGDefine

Description	Sets the Go/NoGo “When” conditions.	
Syntax	:GONogo:NGDefine {EXITs|ENTers|?}	
Parameter/ Return Parameter	EXITs	Sets the NoGo condition to when the input signal exceeds the limit boundary.
	ENTers	Sets the NoGo condition to when the input signal stays within the limit boundary.
Example	:GONogo:NGDefine EXITs Sets the Go/NoGo condition to EXITs.	

:GONogo:SOURce

Set →
→ Query

Description	Sets the source for the Go/NoGo signal.	
Syntax	:GONogo:SOURce {CH1|CH2|CH3|CH4|?}	
Parameter/ Return Parameter	CH1~CH4	
Example	:GONogo:SOURce CH1 Sets the source to CH1.	

:GONogo:VIOLation

Set →
→ Query

Description	Sets or returns actions for the Go/NoGo violations.	
Syntax	:GONogo:VIOLation {STOP | CONTinue | ?}	
Parameter/ Return Parameter	STOP	The waveform will be frozen.
	CONTinue	Ignore the violation.
Example	:GONogo:VIOLation STOP Sets violation action to STOP.	

:GONogo:SCRipt

Set →

Description	Activates/Deactivates the Go/NoGo APP or queries its state.	
Syntax	:GONogo:SCRipt {OFF | ON | ?}	
Parameter/ Return Parameter	ON	Turns Go/NoGo APP on.
	OFF	Turns the Go/NoGo APP off.
Example	:GONogo:SCRipt? >ON The Go/NoGo script is on.	

:TEMPlate:MODe

Set →
→ Query

Description	Sets or returns the Go/NoGo template mode.	
Syntax	:TEMPlate:MODe {MAXimum|MINimum|AUTO|?}	
Parameter/ Return Parameter	MAXimum	Maximum template
	MINimum	Minimum template
	AUTO	Auto template
Example	:TEMPlate:MODe AUTO Sets the template mode to AUTO.	

:TEMPlate:MAXimum

Set →
→ Query

Description	Defines or queries which waveform memory (REF1 or W1~W20) is set to the maximum template.	
Syntax	:TEMPlate:MAXimum {REF1|W1~W20|?}	
Parameter/ Return Parameter	REF1	Reference one
	W1~W20	Waveform memory 1 to 20
Example	:TEMPlate:MAXimum REF1 Saves the maximum template to REF1.	

:TEMPlate:MINimum

Set →
→ Query

Description	Defines or queries which waveform memory (REF1 or W1~W20) is set to the minimum template.	
Syntax	:TEMPlate:MINimum {REF2|W1~W20|?}	
Parameter/ Return Parameter	REF2	Reference one
	W1~W20	Waveform memory 1 to 20
Example	:TEMPlate:MINimum REF2 Saves the minimum template to REF2.	

:TEMPlate:POSition:MAXimum

Set →
→ Query

Description	Sets or queries the position of the maximum template.
Syntax	:TEMPlate:POSition:MAXimum {<NR2>|?}
Parameter	<NR2> Desired template position (-12.0 ~ +12.0 divisions)
Return parameter	Returns the position in the following format: “<NR2>Div”
Example	:TEMPlate:POSition:MAXimum 3.00 Sets the maximum template position to 3.00 divisions.

:TEMPlate:POSition:MINimum

Set →
→ Query

Description	Sets or queries the position of the minimum template.
Syntax	:TEMPlate:POSition:MINimum {<NR2>|?}
Parameter	<NR2> Desired template position (-12.0 ~ +12.0 divisions)
Return parameter	Returns the position in the following format: “<NR2>Div”
Example	:TEMPlate:POSition:MINimum 3.00 Sets the minimum template position to 3.00 divisions.

:TEMPlate:SAVe:MAXimum

Set →

Description	Saves the maximum template.
Syntax	:TEMPlate:SAVe:MAXimum

:TEMPlate:SAVe:MINimum

Set →

Description	Saves the maximum template.
Syntax	:TEMPlate:SAVe:MINimum

:TEMPlate:TOLerance

Set →
→ Query

Description	Sets or queries the tolerance as a percentage.	
Syntax	:TEMPlate:TOLerance {<NR2>|?}	
Parameter/ Return Parameter	<NR2>	The auto tolerance range (0.4% ~ 40%)
Example	:TEMPlate:TOLerance 10 Sets the tolerance to 10%.	

:TEMPlate:SAVe:AUTo

Set →

Description	Saves the AUTO template (maximum and minimum templates).
Syntax	:TEMPlate:SAVe:AUTo

AWG Commands

The Arbitrary Wave Generator is available on the MDO-2000EX only.

:AWG<x>:AMPlitude

Set→
→Query

Description	Sets or returns the waveform amplitude.	
Syntax	:AWG<x>:AMPlitude {<NRf> | ?}	
Related command	:AWG<x>:OUTPut:LOAd:IMPEDance	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Amplitude in Volts. (50Ω impedance 0.1~2.5V) (High Z impedance 0.2~5V)
Example	:AWG1:AMP 1	

:AWG<x>:FREQuency

Set→
→Query

Description	Sets or returns the waveform frequency.
Syntax	:AWG<x>:FREQuency {<NRf> | ?}

Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Frequency in Hertz.
Example	:AWG1:FREQ 2000	

:AWG<x>:FUNCtion

Set →
→ Query

Description	Sets or returns the type of waveform.	
Syntax	:AWG<x>:FUNCtion {ARBitrary | SINE | SQUAre | PULSe | RAMP | DC | NOISe | SINC | GAUSsian | LORENtz | EXPRise | EXPFall | HAVERSINe | CARDIac | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	ARBitrary	Arbitrary waveform
	SINE	Sine waveform
	SQUAre	Square waveform
	PULSe	Pulse waveform
	RAMP	Ramp waveform
	DC	DC waveform
	NOISe	Noise waveform
	SINC	Sinc waveform
	GAUSsian	Gaussian waveform
	LORENTz	Lorentz waveform
	EXPRise	Exponential rise waveform
	EXPFall	Exponential fall waveform
	HAVERSINe	Haversine waveform
	CARDIac	Cardiac waveform
Example	:AWG1:FUNC? >SINE	

:AWG<x>:OFFSet

Set →
→ Query

Description	Sets or returns the waveform offset.	
Syntax	:AWG<x>:OFFSet {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Offset in Volts.
Example	:AWG1:OFFS	

:AWG<x>:OUTPut:LOAd:IMPEDance

Set →
→ Query

Description	Sets or returns the output termination	
Syntax	:AWG<x>:OUTPut:LOAd:IMPEDance {FIFty | HIGHZ | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2
	FIFTy	50 Ohm output termination
	HIGHZ	High Z output termination
Example	:AWG1:OUTP:LOA:IMPED HIGHZ Sets the output termination of channel 1 to high impedance.	

:AWG<x>:OUTPut:STATE

Set →
→ Query

Description	Sets or returns the channel output state.	
Syntax	:AWG<x>:OUTPut:STATE {OFF | ON | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2
	OFF	Turns the channel output off
	ON	Turns the channel output on
Example	:AWG1:OUTP:STATE OFF Turns the channel 1 output off.	

:AWG<x>:PHAse

Set → → Query

Description	Sets or returns the channel phase.	
Syntax	:AWG<x>:PHAse {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Phase in degree -180~180°
Example	:AWG1:PHA 45	
	Sets the channel 1 phase to 45°.	

:AWG<x>:PULSe:DUTYcycle

Set → → Query

Description	Sets or returns the pulse duty cycle.	
Syntax	:AWG<x>:PULSe:DUTYcycle {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Duty cycle in percentage 0.2~99.8%
Example	:AWG1:PULS:DUTY 50	
	Sets the channel 1 pulse duty cycle to 50%.	

:AWG<x>:RAMP:SYMmetry

Set → → Query

Description	Sets or returns the ramp symmetry.	
Syntax	:AWG<x>:RAMP:SYMmetry {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Symmetry of the ramp waveform 0~100%
Example	:AWG1:RAMP:SYM 15	
	Sets the channel 1 ramp symmetry to 15%.	

:AWG<x>:MODulation:STATE

Set → → Query

Description	Sets or returns the modulation state.	
Syntax	:AWG<x>:MODulation:SATE {OFF | ON | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	OFF	Sets the modulation to off.
	ON	Sets the modulation to on.
Example	:AWG1:MOD:STATE ON Turns the modulation on for channel 1.	

:AWG<x>:MODulation:TYPe

Set → → Query

Description	Sets or returns the type of modulation.	
Syntax	:AWG<x>MODulation:TYPe {AM | FM | FSK | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	AM	Sets a AM modulation.
	FM	Sets a FM modulation.
	FSK	Sets a FSK modulation.
Example	:AWG1:MOD:TYPE AM Sets a AM modulation for channel 1.	

:AWG<x>:MODulation:AM:DEPth

Set → → Query

Description	Sets or returns the AM modulation depth.	
Syntax	:AWG<x>:MODulation:AM:DEPth {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	AM depth in percentage 0~120%.
Example	:AWG1:MOD:AM:DEP? >1.20000e+02	

:AWG<x>:MODulation:AM:FREQ

Set →
→ Query

Description	Sets or returns the AM modulation frequency.	
Syntax	:AWG<x>:MODulation:AM:FREQ {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	AM frequency in Hertz.
Example	:AWG1:MOD:AM:FREQ 1000 Sets the AM frequency to 1kHz.	

:AWG<x>:MODulation:AM:SHApe

Set →
→ Query

Description	Sets or returns the shape of the AM modulation.	
Syntax	:AWG<x>:MODulation:AM:SHAPe {SINE | SQUare | PULSe | RAMP | NOISe | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	SINE	Sine wave shape.
	SQUare	Square wave shape.
	PULSe	Pulse wave shape.
	RAMP	Ramp wave shape.
	NOISe	Noise wave shape.
Example	:AWG1:MOD:AM:SHA RAMP Sets a ramp shape to the AM modulating waveform.	

:AWG<x>:MODulation:AM:PHAse

Set →
→ Query

Description	Sets or returns the phase of the AM modulation (sine wave shape only).	
Syntax	:AWG<x>:MODulation:AM:PHAse {<NRf> | ?}	
Parameter/	<x>	Channel number 1~2.

Return parameter	<NRf>	Phase in degree -180~180°.
Example	:AWG1:MOD:AM:PHA? >-1.80000e+02	

Set→ →Query

:AWG<x>:MODulation:AM:DUTYcycle

Description	Sets or returns the duty cycle of the AM modulation (pulse wave shape only).	
Syntax	:AWG<x>:MODulation:AM:DUTYcycle {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Duty cycle in percentage 2~98%.
Example	:AWG1:MOD:AM:DUTY 50 Sets the duty cycle of the AM modulating waveform to 50%.	

Set→ →Query

:AWG<x>:MODulation:AM:SYMmetry

Description	Sets or returns the symmetry of the AM modulation (ramp wave shape only).	
Syntax	:AWG<x>:MODulation:AM:SYMmetry {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Symmetry in percentage 0~100%.
Example	:AWG1:MOD:AM:SYM 50 Sets the symmetry of the AM modulating waveform to 50%.	

:AWG<x>:MODulation:AM:RATE

Set → → Query

Description	Sets or returns the rate of the AM modulation (noise wave shape only).	
Syntax	:AWG<x>:MODulation:AM:RATE {RATE10M | RATE5M | RATE1M | RATE500K | RATE100K | RATE50K | RATE10K | RATE5K | RATE1K | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	RATE10M	10MHz noise rate.
	RATE5M	5MHz noise rate.
	RATE1M	1MHz noise rate.
	RATE500K	500kHz noise rate.
	RATE100K	100kHz noise rate.
	RATE50K	50kHz noise rate.
	RATE10K	10kHz noise rate.
	RATE5K	5kHz noise rate.
	RATE1K	1kHz noise rate.
Example	:AWG1:MOD:AM:RATE RATE5K Sets the noise rate of the AM modulating waveform to 5kHz.	

:AWG<x>:MODulation:FM:DEV

Set → → Query

Description	Sets or returns the deviation of the FM modulation.	
Syntax	:AWG<x>:MODulation:FM:DEV {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Frequency deviation in Hertz.
Example	:AWG1:MOD:FM:DEV? >2.000000000e+02	

:AWG<x>:MODulation:FM:FREQ

Set →
→ Query

Description: Sets or returns the frequency of the FM modulation.

Syntax: :AWG<x>:MODulation:FM:FREQ {<NRf> | ?}

Parameter/ Return parameter		
	<x>	Channel number 1~2.
	<NRf>	Frequency in Hertz.

Example: :AWG1:MOD:FM:FREQ 1000

Sets the frequency of the FM modulating waveform to 1kHz.

:AWG<x>:MODulation:FM:SHApe

Set →
→ Query

Description: Sets or returns the shape of the FM modulation.

Syntax: :AWG<x>:MODulation:FM:SHApe {SINE | SQUare | PULSe | RAMP | NOISe | ?}

Parameter/ Return parameter		
	<x>	Channel number 1~2.
	SINE	Sine wave shape.
	SQUare	Square wave shape.
	PULSe	Pulse wave shape.
	RAMP	Ramp wave shape.
	NOISe	Noise wave shape.

Example: :AWG1:MOD:FM:SHA SINE

Sets a sine shape to the FM modulation.

:AWG<x>:MODulation:FM:PHAse

Set →
→ Query

Description: Sets or returns the phase of the FM modulation (sine wave shape only).

Syntax: :AWG<x>:MODulation:FM:PHAse {<NRf> | ?}

Parameter/		
	<x>	Channel number 1~2.

Return parameter	<NRf>	Phase in degree -180~180°.
Example	:AWG1:MOD:FM:PHA 90 Sets a 90° phase to the FM modulating waveform.	

:AWG<x>:MODulation:FM:DUTYcycle

Set →
→ Query

Description	Sets or returns the duty cycle of the FM modulation (pulse shape wave only).	
Syntax	:AWG<x>:MODulation:FM:DUTYcycle {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Duty cycle in percentage 1~99%.
Example	:AWG1:MOD:FM:DUTY 50 Sets the duty cycle of the FM modulating waveform to 50%.	

:AWG<x>:MODulation:FM:SYMmetry

Set →
→ Query

Description	Sets or returns the symmetry of the FM modulation (ramp shape wave only).	
Syntax	:AWG<x>:MODulation:FM:SYMmetry {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Symmetry in percentage 0~100%.
Example	:AWG1:MOD:FM:SYM 50 Sets the symmetry of the FM modulating waveform to 50%.	

:AWG<x>:MODulation:FM:RATE

Set →
→ Query

Description	Sets or returns the noise rate of the FM modulation (noise shape wave only).

Syntax :AWG<x>:MODulation:FM:RATE {RATE10M | RATE5M | RATE1M | RATE500K | RATE100K | RATE50K | RATE10K | RATE5K | RATE1K | ?}

Parameter/ Return parameter

<x>	Channel number 1~2.
RATE10M	10MHz noise rate.
RATE5M	5MHz noise rate.
RATE1M	1MHz noise rate.
RATE500K	500kHz noise rate.
RATE100K	100kHz noise rate.
RATE50K	50kHz noise rate.
RATE10K	10kHz noise rate.
RATE5K	5kHz noise rate.
RATE1K	1kHz noise rate.

Example :AWG1:MOD:FM:RATE RATE5K

Sets the noise rate of the FM modulating waveform to 5kHz.

:AWG<x>:MODulation:FSK:FREQ

Set →
→ Query

Description Sets or returns the hop frequency of the FSK modulation.

Syntax :AWG<x>:MODulation:FSK:FREQ {<NRf> | ?}

Parameter/ Return parameter

<x>	Channel number 1~2.
<NRf>	Frequency in Hertz.

Example :AWG1:MOD:FSK:FREQ 2000000

Sets the FSK hop frequency to 2MHz.

:AWG<x>:MODulation:FSK:RATE

Set →
→ Query

Description Sets or returns the FSK modulation rate.

Syntax :AWG<x>:MODulation:FSK:RATE {<NRf> | ?}

Parameter/ Return parameter	<x> <NRf>	Channel number 1~2. Frequency in Hertz.
Example	:AWG1:MOD:FSK:RATE 100000 Sets the FSK rate to 100kHz.	

:AWG<x>:SWEep:STATE

Set →
→ Query

Description	Sets or returns the Sweep mode state.	
Syntax	:AWG<x>:SWEep:STATE {OFF | ON | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	OFF	Sets the sweep mode to off.
	ON	Sets the sweep mode to on.
Example	:AWG1:SWE:STATE ON Turns the sweep mode to on for channel 1.	

:AWG<x>:SWEep:TYPe

Set →
→ Query

Description	Sets or returns the sweep mode type.	
Syntax	:AWG<x>:SWEep:TYPe {LINEAR | LOG | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	LINEAR	Sets the sweep mode to linear.
	LOG	Sets the sweep mode to logarithmic.
Example	:AWG1:SWE:TYP LIN Sets the sweep mode to linear for channel 1.	

:AWG<x>:SWEep:START

Set →
→ Query

Description	Sets or returns the start frequency of the sweep mode.	
Syntax	:AWG<x>:SWEep:START {<NRf> | ?}	
Parameter/	<x>	Channel number 1~2.

Return parameter	<NRf>	Start frequency in Hertz.
Example	:AWG1:SWE:START 1000 Sets the sweep mode start frequency to 1kHz.	

Set →
→ Query

:AWG<x>:SWEep:STOP

Description	Sets or returns the stop frequency of the sweep mode.	
Syntax	:AWG<x>:SWEep:STOP {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Stop frequency in Hertz.
Example	:AWG1:SWE:STOP 500000 Sets the sweep mode stop frequency to 500kHz.	

Set →
→ Query

:AWG<x>:SWEep:TIMe

Description	Sets or returns the sweep time.	
Syntax	:AWG<x>:SWEep:TIMe {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Sweep time in seconds.
Example	:AWG1:SWE:TIM 6.500e-01 Sets the sweep time to 650ms.	

Set →
→ Query

:AWG<x>:SWEep:SPAN

Description	Alternatively to setting the start and stop frequencies, the span and center frequency can be set.	
Syntax	:AWG<x>:SWEep:SPAN {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Span of the sweep in Hertz.

Example	:AWG1:SWE:SPAN 1100 Sets the span of the sweep to 1.1kHz.	

:AWG<x>:SWEep:CENTer

Set → → Query

Description	Alternatively to setting the start and stop frequencies, the span and center frequency can be set.	
Syntax	:AWG<x>:SWEep:CENTer {<NRf> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NRf>	Center frequency of the sweep in Hertz.
Example	:AWG1:SWE:CENT 550 Sets the center frequency of the sweep to 550Hz.	

:AWG<x>:ARBitrary:EDIT:NUMPOINt

Set → → Query

Description	Sets or returns the number of points of an arbitrary waveform.	
Syntax	:AWG<x>:ARBitrary:EDIT:NUMPOINt { <NR1> | ?}	
Parameter/ Return parameter	<x>	Channel number 1~2.
	<NR1>	Number of points
Example	:AWG1:ARB:EDIT:NUMPOIN 1500 Sets 1500 points for the arbitrary waveform.	

:AWG<x>:ARBitrary:EDIT:FUNCtion

Set →

Description	Sets the inbuilt waveform of the arbitrary waveform.	
Syntax	:AWG<x>:ARBitrary:EDIT:FUNCtion { SINE | SQUare | PULSe | RAMP | NOISe}	
Parameter	<x>	Channel number 1~2.
	SINE	Sine wave shape.

	SQUare	Square wave shape.
	PULSe	Pulse wave shape.
	RAMP	Ramp wave shape.
	NOISe	Noise wave shape.
Example	:AWG1:ARB:EDIT:FUNCT RAMP Sets a ramp shape to the arbitrary waveform.	

:AWG<x>:ARBitrary:SAVe:WAVEform (Set →)

Description	Saves an arbitrary waveform.	
Syntax	:AWG<x>:ARBitrary:SAVe:WAVEform {ARB1| ARB2 | ARB3 | ARB4 | <file path>}	
Parameter	<x>	Channel number 1~2.
	ARB1~4	Saves the arbitrary waveform to one of the internal memory slots.
	<file path>	Saves the arbitrary waveform to disk or USB to the specified file path. Exemple: “Disk:/xxx.UAW” “USB:/xxx.UAW”
Example	:AWG1:ARB:SAVE:WAVE ARB2 Saves the arbitrary waveform to ARB2.	

:AWG<x>:ARBitrary:LOAd:WAVEform (Set →)

Description	Loads an arbitrary waveform.	
Syntax	:AWG<x>:ARBitrary:LOAd:WAVEform { ARB1| ARB2 | ARB3 | ARB4 | <file path>}	
Parameter	<x>	Channel number 1~2.
	ARB1~4	Loads the arbitrary waveform from one of the internal memory slots.

	<file path>	Loads the arbitrary waveform from disk or USB at the specified file path. Exemple: “Disk:/xxx.UAW” “USB:/xxx.UAW”
Example	:AWG1:ARB:LOA:WAVE ARB2 Loads the arbitrary waveform from ARB2.	

:AWG<x>:ARBitrary:EDIT:COPY

Set →

Description	Copies a segment of an arbitrary waveform to a specific point.	
Syntax	:AWG<x>:ARBitrary:EDIT:COPY {<STARt> , <LENGth> , <PASTe>}	
Parameter	<x>	Channel number 1~2.
	<STARt>	NR1, point at which the segment to copy starts.
	<LENGth>	NR1, length of the segment to copy.
	<PASTe>	NR1, point at which the segment is to be copied.
Example	:AWG1:ARB:EDIT:COPY 5,100,106 Copies a segment of 100 points starting from point 5 of an arbitrary waveform and paste it to point 106 of this arbitrary waveform.	

:AWG<x>:ARBitrary:EDIT:CLEar

Set →

Description	Deletes a segment of an arbitrary waveform	
Syntax	:AWG<x>:ARBitrary:EDIT:CLEar { ALL | <STARt> , <LENGth>}	
Parameter	<x>	Channel number 1~2.
	ALL	Deletes the entire arbitrary waveform.
	<STARt>	NR1, point at which the segment to delete starts.

	<LENGth>	NR1, length of the segment to delete.
Example	:AWG1:ARB:EDIT:CLE ALL	

:AWG<x>:ARBitrary:EDIT:LINe

Set →

Description	Creates a line on an arbitrary waveform.	
Syntax	:AWG<x>:ARBitrary:EDIT:LINe {<address1> , <data1> , address2> , <data2>}	
Parameter	<x>	Channel number 1~2.
	<address1>	NR1, the point at which the line starts.
	<data1>	NRf, the value at the starting point.
	<address2>	NR1, the point at which the line ends.
	<data2>	NRf, the value at the ending point.
Example	:AWG1:ARB:EDIT:LIN 40,0.05,100,0.1 Creates a line between point 40 at value 0.05 and point 100 at value 0.01.	

:AWG<x>:ARBitrary:EDIT:SCALe

Set →

Description	Sets the vertical scale of the arbitrary waveform.	
Syntax	:AWG<x>:ARBitrary:EDIT:SCALe {<NRf>}	
Parameter	<x>	Channel number 1~2.
	<NRf>	Scale 0.1~ 10
Example	:AWG1:ARB:EDIT:SCAL 5.5	

:AWG<x>:ARBitrary:EDIT:POINt

Set →

Description	Edits a single point on an arbitrary waveform.	
Syntax	:AWG<x>:ARBitrary:EDIT:POINt {<address1> , <data1>}	
Parameter	<x>	Channel number 1~2.

	<address1>	NR1, the point to be edited.
	<data1>	NRf, the value of that point.
Example	:AWG1:ARB:EDIT:POIN 20,0.2	

:AWG<x>:ARBitrary:EDIT:POINt:ADD Set →

Description	Adds the edited point to the arbitrary waveform.	
Syntax	:AWG<x>:ARBitrary:EDIT:POINt:ADD {<NR1>}	
Parameter	<x>	Channel number 1~2.
	<NR1>	The point to be added.
Example	:AWG1:ARB:EDIT:POIN:ADD 20	

:AWG<x>:ARBitrary:EDIT:POINt:DELEte Set →

Description	Adds the edited point to the arbitrary waveform.	
Syntax	:AWG<x>:ARBitrary:EDIT:POINt:DELEte {<NR1>}	
Parameter	<x>	Channel number 1~2.
	<NR1>	The point to be deleted.
Example	:AWG1:ARB:EDIT:POIN:DELE 20	

Data Logging Commands

:DATALOG:STATE

Set →
→ Query

Description	Sets or queries the state of the data logging app.	
Syntax	:DATALOG:STATE {OFF|ON|?}	
Related commands	:DATALOG:SOURce :DATALOG:SAVe :DATALOG:INTerval :DATALOG:DURation	
Parameter/ Return parameter	OFF	Turns the data logging off.
	ON	Turns the data logging on.
Example	:DATALOG:STATE ON Turns the data logging app on.	

:DATALOG:SOURce

Set →
→ Query

Description	Sets or queries the data logging source channel.	
Syntax	:DATALOG:SOURce { CH1~CH4 | D0~D15 | all | ? }	
Related commands	:DATALOG:STATE :DATALOG:SAVe :DATALOG:INTerval :DATALOG:DURation	
Parameter/Return	CH1 ~CH4	Channel 1, 2, 3 or 4

parameter	D0~D15 all	Digital channels D0~D15 All displayed channels.
Example	:DATALOG:SOURce CH1 Sets the source to CH1.	

Set →
→ Query

:DATALOG:SAVe

Description	Sets or queries the save format as image or waveform.	
Syntax	:DATALOG:SAVe {IMAGe|WAVEform|?}	
Related commands	:DATALOG:STATE :DATALOG:SOURce :DATALOG:INTerval :DATALOG:DURation	
Parameter/Return parameter	IMAGe WAVEform	Save as images. Save as waveforms.
Example	:DATALOG:SAVe WAVEform Sets the save format to waveform.	

Set →
→ Query

:DATALOG:INTerval

Description	Sets or queries the interval time between each recording.	
Syntax	:DATALOG:INTerval <NRf> :DATALOG:INTerval?	
Related commands	DATALOG:SAVe	
Parameter/Return parameter	<NRf>	Discrete time intervals in seconds.
Example	:DATALOG:INT 2 Sets the interval time to 2 seconds	

:DATALOG:DURation

Set →
→ Query

Description	Sets or queries the duration time of each recording.	
Syntax	:DATALOG:DURation <NRf> :DATALOG:DURation?	
Parameter/Return parameter	<NRf>	Discrete recording time in seconds.
Example	:DATALOG:DUR 5 Sets the recording time to 5 seconds.	

Remote Disk Commands

:REMOTEDisk:IPADDress

Set →
→ Query

Description	Sets or returns the IP address of remote disk.	
Syntax	:REMOTEDisk:IPADDress {<string>|?}	
Parameter/ Return parameter	<string>	IP address enclosed in double quotes. Eg., 172.16.20.255
Example	:REMOTEDisk:IPADDress “172.16.20.255” Sets the remote disk IP address as 172.16.20.255.	

:REMOTEDisk:PATHName

Set →
→ Query

Description	Sets or returns the file path of the remote disk.	
Syntax	:REMOTEDisk:PATHName {<string>|?}	
Parameter/ Return parameter	<string>	File path in enclosed in double quotes eg., “remote_disk”
Example	:REMOTEDisk:PATHName “remote_disk” Sets the file path to c:/remote_disk.	

Set →
→ Query

:REMOTEDisk:USERName

Description	Sets or queries the account username for the remote disk.	
Syntax	:REMOTEDisk:USERName {<string> | ? }	
Parameter/Return parameter	<string>	User name enclosed in double quotes eg., “User_Name”.
Example	:REMOTEDisk:USERName “User_Name” Sets the account name as User_Name.	

Set →
→ Query

:REMOTEDisk:PASSWord

Description	Sets or queries the account password for the remote disk.	
Syntax	:REMOTEDisk:PASSWord {<string> | ? }	
Parameter/Return parameter	<string>	Username password enclosed in double quotes eg., “Password”.
Example	:REMOTEDisk:PASSWord “Password” Sets the account password as Password.	

Set →
→ Query

:REMOTEDisk:MOUNT

Description	Turns remote disk on/off or queries its state.	
Syntax	:REMOTEDisk:MOUNT { OFF | ON | ? }	
Parameter/Return parameter	OFF	Unmount remote disk
	ON	Mount remote disk

Example	:REMOTEDisk:IPADDress "172.16.5.154" :REMOTEDisk:PATHName "remote_disk" :REMOTEDisk:USERName "guest" :REMOTEDisk:PASSWord "password" :REMOTEDisk:MOUNT ON Sets the remote disk parameters and mounts the remote disk.

:REMOTEDisk:AUTOMount

Set →
→ Query

Description	Turns automount on/off or queries its state. The remote disk must be configured beforehand.	
Syntax	:REMOTEDisk:AUTOMount { OFF | ON | ? }	
Parameter/Return parameter	OFF	Don’t mount the remote disk at start up.
	ON	Automatically mount the remote disk on start up.
Example	:REMOTEDisk:AUTOMount ON Turns the automount function on.	

DMM Commands (For the MDO-2000EX series only)

:DMM

→ Query

Description	Returns the DMM status.	
Syntax	:DMM?	
Related commands	:MEASUrement:DISPlay	
Parameter/Return parameter	<string>	Returns the mode, current measurement, max measurement, minimum measurement, Hold state.
Example	:DMM? Mode:ACV,Value:0.000,Max Value:0.000,Min Value:0.000,Hold:OFF	

:DMM:STATE

Set →
→ Query

Description	Sets or queries the DMM function .
Syntax	:DMM: STATE { ON | OFF | ?}

Parameter/Return parameter	ON OFF	Turns the DMM function on. Turns the DMM function off.
Example	:DMM:STATE ON Turns the DMM function on.	

:DMM:VALue

→Query

Description	Returns the measurement value.	
Syntax	:DMM:VALue?	
Related commands	:MEASUrement:DISPlay	
Return parameter	<string>	Returns the measurement or value on the display as a string.
Example	:DMM:VALue? 0.000 Returns the value on the DMM display.	

:DMM:HOLD

Set→
→Query

Description	Sets or queries the Hold function status.	
Syntax	:DMM:HOLD { ON | OFF | ?}	
Parameter/Return parameter	ON OFF	Turns the Hold function on. Turns the Hold function off.
Example	:DMM:HOLD ON Turns the Hold function on.	

:DMM:MMIN

Set→
→Query

Description	Sets or queries the maximum and minimum status.
Syntax	:DMM: MMIN { ON | OFF | ?}

Parameter/Return parameter	ON	Turns the maximum and minimum function on.
	OFF	Turns the maximum and minimum function off.
Example	:DMM: MMIN ON Turns the maximum and minimum function on.	

:DMM:MODe

Set →
→ Query

Description	Sets or queries the DMM mode.
Syntax	:DMM:MODe { DCV | DCMV | ACV | ACMV | DCA | DCMA | ACA | ACMA | OHM | DIODE | BEEP | TEMPerature | ?}

Parameter/Return parameter	DCV	DCV mode
	DCMV	DCMV mode
	ACV	ACV mode
	ACMV	ACMV mode
	DCA	DCA mode
	DCMA	DCMA mode
	ACA	ACA mode
	ACMA	ACMA mode
	OHM	Resistance measurement mode
	DIODE	Diode tester
	BEEP	Continuity tester
	TEMPerature	Temperature measurement mode
Example	:DMM:MODe DCV Sets the measurement mode to DCV.	

:DMM:MODe:RANGe

Set →
→ Query

Description	Sets or queries the DMM measurement range.	
Syntax	:DMM:MODe:RANGe (AUTo|<NRf>) :DMM:MODe:RANGe?	
Related commands	:DMM:MODe	
Parameter/Return parameter	AUTo	Auto range
	<NRf>	ACV: 5,50,750 DCV: 5,50,500,1000 ACmV: 0.5,0.05 DCmV: 0.5,0.05 ACmA: 0.5,0.05 DCmA: 0.5,0.05 ACA: 10 DCA: 10
Example	:DMM:MODe ACV :DMM:MODe:RANGe AUTo Sets the ACV measurement to auto range.	

:DMM:TEMPerature:UNITs

Set →
→ Query

Description	Sets the units for the temperature measurement function.	
Syntax	:DMM:TEMPerature:UNITs { Celsius | Fahrenheit | ? }	
Parameter/Return parameter	Celsius	Degrees Celsius
	Fahrenheit	Degrees Fahrenheit
Example	:DMM:TEMPerature:TYPe Celsius Sets the temperature measurement to °C.	

:DMM:TEMPerature:TYPe

Set →
→ Query

Description	Sets the type of thermocouple used for the temperature measurement function.	
Syntax	:DMM:TEMPerature:TYPe { TYPEB | TYPEE | TYPEJ | TYPEK | TYPEN | TYPER | TYPES | TYPET | ? }	
Parameter/Return parameter	TYPEB	B
	TYPEE	E
	TYPEJ	J
	TYPEK	K
	TYPEN	N
	TYPER	R
	TYPES	S
	TYPET	T
Example	:DMM:TEMPerature:TYPe K Sets the temperature measurement function to use the K type thermocouple.	

:DMM:TEMPerature:SIM

Set →
→ Query

Description	Set or returns the environment temperature when temperature measurement selected.	
Syntax	:DMM:TEMPerature:SIM {<NRf>} :DMM:TEMPerature:SIM?	
Related commands	:DMM:MODe :DMM:TEMPerature:UNITs	
Parameter/Return parameter	<NRf>	0.0~50.0 for Celsius degrees; 32~ 122.0 for Fahrenheit degrees

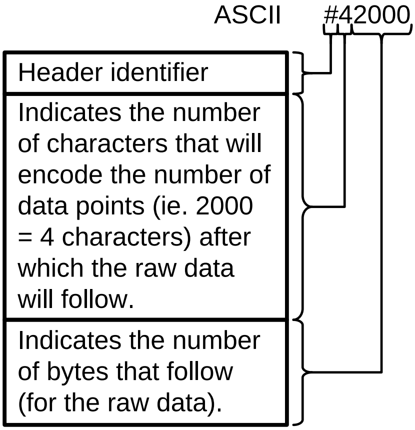
Example	:DMM:MODe TEMPerature :DMM:TEMPerature:UNITs Celsius :DMM:TEMPerature:SIM 23.5 Sets the environment temperature to 23.5 Celsius degrees.

Spectrum Analyzer Commands

:SA:MEMory?

→Query

Description	Returns the data in acquisition memory for the spectrum analyzer function as a header + raw data.

Syntax	:SA:MEMory?	
Related Commands	:SA:MEMory:SOURce	
Return parameter	<string> <waveform block data>	Returns acquisition settings followed by raw waveform block data. <string> Returns the spectrum analyzer settings . Format: parameter(1),setting(1);parameter(2),setting(2)…parameter(n),setting(n);Waveform Data; <waveform block data> Header followed by the raw waveform data. Format: Header: The header (in ASCII) encodes the number of bytes for the header followed by the number of data points in bytes for the raw data.  Header identifier Indicates the number of characters that will encode the number of data points (ie. 2000 = 4 characters) after which the raw data will follow. Indicates the number of bytes that follow (for the raw data). Raw Data: Each two bytes (in hex) encodes the vertical data of a data point. The data

is signed hex data (2's complement, -32768 ~ 32767).

Waveform Raw Data Example:
Header raw data……….

Hex:

23 34 32 30 30 30 00 1C 00 1B 00 1A 00 1A 00 1B ………..

ASCII/Decimal:

#42000 28 27 26 26 27…….

The actual value of a data point can be calculated with the following formula: (Decimal value of hex data/ vertical division Factor) * vertical scale.

Note: Vertical division Factor is fixed as 25. The vertical scale is returned with the acquisition settings that precede the raw data.

For example if the raw data for a point is 001C (=28 decimal) then,
(28/25) x 10dB = 11.2dB

Example

:SA:MEMory?

Format,2.0E;Firmware,V1.28;Time,24-Apr-17 15:54:49;Memory Length,1.000E+03;Source,CH1;Probe Ratio,1.000E+00;Vertical Unit,dB;Vertical Position,3.000E+00;Vertical Scale,2.000E+01;Horizontal Unit,Hz;Horizontal Scale,1.000E+04;Sampling Period,1.000E+02;Center Frequency,2.300E+03;Span,1.000E+05;FREQUENCY,NORM,Waveform Data;

#42000 …………………. follows waveform block data in hex

Note

You need to set the command ":USBDelay ON" once to avoid missing data before running the program if you use USB interface to transfer data in the Windows 10 operating system.

:SA:MEMory:SOURce

Set →
→ Query

Description	Sets or returns the source of the waveform data	
Syntax	:SA:MEMory:SOURce {NORMal | AVErage| MAXHold | MINHold} :SA:MEMory:SOURce?	
Parameter/Return parameter	NORMal	Normal data
	AVErage	Average data
	MAXHold	Maxhold data
	MINHold	Minhold data
Example	:SA:MEMory:SOURce AVE Sets the memory source to average data	

:SA:STATE

Set →
→ Query

Description	Sets or returns the state of spectrum analyzer.	
Syntax	:SA:STATE {ON |OFF}	
Parameter/Return parameter	ON	Turns the spectrum analyzer on.
	OFF	Turns the spectrum analyzer off
Example	:SA:STATE ON Sets the spectrum analyzer on.	

:SA:SOURce

Set →
→ Query

Description	Sets or returns the source of the spectrum analyzer	
Syntax	:SA:SOURce {CH1 | CH2| CH3 | CH4} :SA:SOURce?	
Parameter/Return parameter	CH1	Channel one
	CH2e	Chnanel two

	CH3	Channel three
	CH4	Channel four
Example	:SA:SOURce CH2 Sets the source of spectrum analyzer to channel two	

:SA:SPECTRUMTrace

Set →

Description	Resets all spectrum traces.	
Syntax	SA:SPECTRUMTrace {RESET}	
Parameter	RESET	Reset the trace
Example	:SA:SPECTRUMTrace RESET Reset all the trace of spectrum analyzer	

:SELect:NORMal

Set →
→ Query

Description	Sets or returns the frequency domain Normal trace display on or off in the frequency domain graticule.	
Syntax	:SELect:NORMal {ON|OFF} :SELect:NORMal?	
Parameter/Return parameter	ON	Turns the normal trace display on.
	OFF	Turns the normal trace display off.
Example	:SELect:NORMal ON Sets the normal trace display on	

:SELect:MAXHold

Set →
→ Query

Description	Sets or returns the frequency domain Max Hold trace display on or off in the frequency domain graticule.

Syntax	:SELect:MAXHold {ON | OFF} :SELect:MAXHold?	
Parameter/Return parameter	ON	Turns the Max Hold trace display on.
	OFF	Turns the Max Hold trace display off.
Example	:SELect:MAXHold OFF Sets the Max Hold trace display off	

Set →

→ Query

:SELect:MINHold

Description	Sets or returns the frequency domain Min Hold trace display on or off in the frequency domain graticule.	
Syntax	:SELect:MINHold {ON | OFF} :SELect:MINHold?	
Parameter/Return parameter	ON	Turns the Min Hold trace display on.
	OFF	Turns the Min Hold trace display off.
Example	: SELect:MINHold OFF Sets the Min Hold trace display off	

Set →

→ Query

:SELect:AVErage

Description	Sets or returns the frequency domain Average trace display on or off in the frequency domain graticule.	
Syntax	:SELect:AVErage {ON | OFF} :SELect: AVErage?	
Parameter/Return parameter	ON	Turns the Average trace display on.
	OFF	Turns the Average trace display off.
Example	: SELect: AVErage ON Sets the Average trace display on	

:SA:AVErage:NUMAVg

Set →
→ Query

Description	Sets or returns the number of acquisitions to be used when creating the Average frequency domain trace.	
Syntax	:SA:AVErage:NUMAVg {<NR1>} :SA:AVErage:NUMAVg?	
Parameter/Return parameter	<NR1>	The range is 2 – 256, in exponential increments.
Example	:SA:AVErage:NUMAVg 128 Sets the Average number to 128	

:SA:DETECTionmethod:MODe

Set →
→ Query

Description	Sets or returns the detection within the oscilloscope occurs automatically or manually.	
Syntax	:SA:DETECTionmethod:MODe {AUTo|MANual} :SA:DETECTionmethod:MODe?	
Related commands	:SA:DETECTionmethod:MAXHold,:SA:DETECTionmethod:MINHold :SA:DETECTionmethod:NORMal,:SA:DETECTionmethod:AVErage	
Parameter/Return parameter	AUTo	Automatically mode
	MANual	Manually mode
Example	:SA:DETECTionmethod:MODe AUTo Sets the detection mode to automatic.	

:SA:DETECTionmethod:MAXHold

Set →
→ Query

Description	Sets or returns the detection method of max Hold frequency domain trace.

Syntax	:SA:DETECTionmethod:MAXHold {PLUSpeak | MINUSpeak | SAMPle | AVErage} :SA:DETECTionmethod:MAXHold?	
Parameter/Return parameter	PLUSpeak	Sets the detection method to plus peak.
	MINUpeak	Sets the detection method to minus peak
	SAMple	Sets the detection method to sample.
	AVErage	Sets the detection method to average.
Example	:SA:DETECTionmethod:MAXHold AVErage Sets the detection method to average.	

:SA:DETECTionmethod:MINHold

Set →
→ Query

Description	Sets or returns the detection method of min Hold frequency domain trace.	
Syntax	:SA:DETECTionmethod:MINHold {PLUSpeak | MINUSpeak | SAMPle | AVErage} :SA:DETECTionmethod:MINHold?	
Parameter/Return parameter	PLUSpeak	Sets the detection method to plus peak.
	MINUpeak	Sets the detection method to minus peak
	SAMple	Sets the detection method to sample.
	AVErage	Sets the detection method to average.
Example	:SA:DETECTionmethod:MINHold AVErage Sets the detection method to average.	

:SA:DETECTionmethod:NORMal

Set →
→ Query

Description	Sets or returns the detection method of normal frequency domain trace.

Syntax	:SA:DETECTionmethod:NORMal {PLUSpeak | MINUSpeak | SAMPle | AVErage} :SA:DETECTionmethod:NORMal?	
Parameter/Return parameter	PLUSpeak	Sets the detection method to plus peak.
	MINUpeak	Sets the detection method to minus peak
	SAMple	Sets the detection method to sample.
	AVErage	Sets the detection method to average.
Example	:SA:DETECTionmethod:NORMal AVErage Sets the detection method to average.	

Set → → Query

:SA:DETECTionmethod:AVErage

Description	Sets or returns the detection method of average frequency domain trace.	
Syntax	:SA:DETECTionmethod:AVErage {PLUSpeak | MINUSpeak | SAMPle | AVErage} :SA:DETECTionmethod:AVErage?	
Parameter/Return parameter	PLUSpeak	Sets the detection method to plus peak.
	MINUpeak	Sets the detection method to minus peak
	SAMple	Sets the detection method to sample.
	AVErage	Sets the detection method to average.
Example	:SA:DETECTionmethod:AVErage AVErage Sets the detection method to average.	

Set → → Query

:SA:FREQuency

Description	Sets or returns the frequency (or center frequency) of the acquisition system.

Syntax	:SA:FREQuency {<NRf> | CENTER} :SA:FREQuency?	
Parameter/Return parameter	<NRf> CENTER	Sets the frequency by user. Sets the frequency of Max. peak marker to center.
Example	SA:FREQuency 3.0E+06 sets the center frequency to 3 MHz.	

Set→ →Query

:SA:SPAN

Description	Sets or returns the span frequency setting.	
Syntax	:SA:SPAN <NRf> :SA:SPAN?	
Parameter/Return parameter	<NRf>	Sets the span frequency by user.
Example	SA:SPAN 25E+06 sets the span frequency to 25 MHz	

Set→ →Query

:SA:START

Description	Sets or returns the start frequency setting.	
Syntax	:SA:START <NRf> :SA:START?	
Parameter/Return parameter	<NRf>	Sets the start frequency by user.
Example	SA:START -9.5E+06 sets the start frequency to -9.5 MHz.	

Set→ →Query

:SA:STOP

Description	Sets or returns the stop frequency setting.

Syntax	:SA:STOP <NRf> :SA:STOP?	
Parameter/Return parameter	<NRf>	Sets the stop frequency by user.
Example	SA:START 100E+06 sets the stop frequency to 100MHz.	

:SA:RBW:MODe

Set →
→ Query

Description	Sets or returns the resolution bandwidth (RBW) mode, either automatic or manual.	
Syntax	:SA:RBW:MODe {AUTo|MANual} :SA:RBW:MODe?	
Parameter/Return parameter	AUTo MANual	Automatically mode. Manually mode.
Example	SA:RBW:MODe AUTo sets the mode to automatic.	

:SA:RBW

Set →
→ Query

Description	Sets or returns the resolution bandwidth (RBW) when the RBW mode has been set to MANUAL (using the command SA:RBW:MODe).	
Syntax	:SA:RBW <NRf> :SA:RBW?	
Related commands	SA:RBW:MODe	
Parameter/Return parameter	<NRf>	Sets the RBW by user.

Example	Sets SA:RBW 2.0E+04 Query SA:RBW? Return 1.825017e+04 If the RBW set to 20kHz, the query will return the nearestvalue (1.825017e+04).

:SA:SPANRbwratio

Set → Query

Description	Sets or returns the resolution bandwidth (RBW) when the RBW mode has been set to AUTO (using the command SA:RBW:MODe).	
Syntax	:SA:SPANRbwratio {RATIO1K|RATIO2K|RATIO5K|<NRf>} :SA:SPANRbwratio?	
Related commands	SA:RBW:MODe	
Parameter/ Return parameter	<NRf>	Sets the RBW by user.
	RATIO1K	1000 : 1
	RATIO2K	2000 : 1
	RATIO5K	5000 : 1
Example	:SA:SPANRbwratio RATIO2K Sets the ratio to 2000:1. Sets :SA:SPANRbwratio 2000 Query :SA:SPANRbwratio? Return RATIO2K	

:SA:WINDow

Set → Query

Description	Sets or returns the windowing function, which is only used for traces.

Syntax	:SA:WINDow {RECTangular | HAMming | HANning | BLAckman}:SA:WINDow?	
Parameter/ Return parameter	RECTangular	Sets to Rectangular window
	HAMming	Sets to Hamming window
	HANning	Sets to Hanning window
	BLAckman	Sets to Blackman window
Example	:SA:WINDow HANning Sets to the hanning window.	

Set →

:SA:UNIts

→ Query

Description	Sets or returns the vertical units.	
Syntax	:SA:UNIts {DBV | LINEAR | DBM} :SA:UNIts?	
Parameter/ Return parameter	DBV	Sets to DBV unit
	LINEAR	Sets to Linear unit
	DBM	Sets to DBM unit
Example	:SA:UNIts DBM Sets the unit to DBM unit.	

Set →

:SA:SCAle

→ Query

Description	Sets or returns the overall vertical scale.
Syntax	:SA:SCAle <NRf> :SA:SCAle?
Related commands	:SA:UNIts

Parameter/ Return parameter	<NRf>	Vertical scale, the value may vary which depends on the unit selected. dBM and dBV : 1, 2, 5, 10, 20 (dB) Linear: 2m, 5m, 10m, 20m, 50m, 100m, 200m, 500m, 1, 2, 5, 10, 20, 50, 100, 200, 500, 1k (V)
Example	:SA:SCAle 2 Sets the scale to 2.	

:SA:POSition

Set →

→ Query

Description	Sets or returns the overall vertical position.	
Syntax	:SA:POSition <NRf> :SA:POSition?	
Parameter/ Return parameter	<NRf>	Vertical position range: +/-12
Example	:SA:POSition 3 Sets the vertical position to 3.	

Power Supply Commands (For the MDO-2000EX series only)

:POWERSupply:OUTPut<X>

Set → → Query

Description	Sets or returns the power supply output.	
Syntax	:POWERSupply:OUTPut<X> {ON|OFF} :POWERSupply:OUTPut<X>?	
Parameter/ Return parameter	OFF	Turns off the power supply output
	ON	Turns on the power supply output
	<X>	Range 1~2, Select the output 1 or output 2
Example	:POWERSupply:OUTPut1 ON Turn on output 1.	
Note	Please run the command ":POWERSupply:CONFigure ON" once before setting for the first time.	

:POWERSupply:OUTPut<X>:VOLTage

Set → → Query

Description	Sets or returns the power supply voltage.	
Syntax	:POWERSupply:OUTPut<X>:VOLTage <NR3> :POWERSupply:OUTPut<X>:VOLTage?	
Parameter/	<NR3>	Range 1.0~5.0, sets the voltage

Return parameter	<X>	Range 1~2, Select the output 1 or output 2
Example	:POWERSupply:OUTPut1:VOLTage 3.3 Sets the power supply output 1 to 3.3V.	

:POWERSupply:OUTPut<X>:RECONFigure

Set →

Description	Reconfigure the power supply when OCP occured.	
Syntax	:POWERSupply:OUTPut<X>:RECONFigure {ON}	
Parameter/ Return parameter	ON	Reconfigure the power supply
	<X>	Range 1~2, Select the output 1 or output 2
Example	:POWERSupply:OUTPut1:RECONFigure ON Reconfigure the power supply output 1.	

:POWERSupply:OUTPut<X>:OCP

→ Query

Description	Returns the power supply OCP.	
Syntax	:POWERSupply:OUTPut<X>:OCP?	
Parameter/ Return parameter	OFF	No OCP occured
	ON	OCP occured
	<X>	Range 1~2, Select the output 1 or output 2
Example	:POWERSupply:OUTPut1:OCP? OFF Return the OCP status (no OCP occured) for output 1.	

:POWERSupply:CONFigure

Set →
→ Query

Description	Configure the power supply function. *It takes 6 seconds to perform the initialization setting.	
Syntax	:POWERSupply:CONFigure{ON|?}	
Parameter/ Return parameter	OFF	Con figure the power supply function.
	?	Qurey the configuration of power supply.
Example	:POWERSupply:CONFigure ON Configure the power supply function.	
Note	It is necessary to run this command once to initialize settings after the device is turned on.	

USB Delay Command

:USBDelay

Set →
→ Query

Description	Sets or returns the USB delay function for the PC connection which Windows 10 installed	
Syntax	:USBDelay {OFF|ON} :USBDelay?	
Parameter/ Return parameter	<ON>	Turns on the USB delay function
	<OFF>	Turns off the USB delay function
Example	:USBDelay ON Turns on the USB delay function when the scope connected with window 10 installed PC.	
Note 1	This command needs to be runned once only when you use USB interface to transfor remote command in the Windiwos 10 operating system.	
Note 2	It is known that there is a problem with missing data when using the USB CDC ACM protocol in the Windows 10 operationg system to receive massive data from the oscilloscope (raw data / image data). This problem can be solved by reducing the data output rate at the oscilloscope. The same problem doesn’t occur on other versions of Windows operating systems.	

APPENDIX

Error messages

Description

The following error messages may be returned from the :SYSTem:ERRor? query. For details see page 157.

List of error messages

Error number, “Error Description”
+0, "No error."
-100, "Command error"
-101, "Invalid character"
-102, "Syntax error"
-103, "Invalid separator"
-104, "Data type error"
-105, "GET not allowed"
-108, "Parameter not allowed"
-109, "Missing parameter"
-110, "Command header error"
-111, "Header separator error"
-112, "Program mnemonic too long"
-113, "Undefined header"
-114, "Header suffix out of range"
-115, "Unexpected number of parameters"
-120, "Numeric data error"
-121, "Invalid character in number"
-123, "Exponent too large"
-124, "Too many digits"
-128, "Numeric data not allowed"
-130, "Suffix error"
-131, "Invalid suffix"
-134, "Suffix too long"
-138, "Suffix not allowed"

-140, "Character data error"
-141, "Invalid character data"
-144, "Character data too long"
-148, "Character data not allowed"
-150, "String data error"
-151, "Invalid string data"
-158, "String data not allowed"
-160, "Block data error"
-161, "Invalid block data"
-168, "Block data not allowed"
-170, "Expression error"
-171, "Invalid expression"
-178, "Expression data not allowed"
-180, "Macro error"
-181, "Invalid outside macro definition"
-183, "Invalid inside macro definition"
-184, "Macro parameter error"

-200, "Execution error"
-201, "Invalid while in local"
-202, "Settings lost due to rtl"
-203, "Command protected"
-210, "Trigger error"
-211, "Trigger ignored"
-212, "Arm ignored"
-213, "Init ignored"
-214, "Trigger deadlock"
-215, "Arm deadlock"
-220, "Parameter error"
-221, "Settings conflict"
-222, "Data out of range"
-223, "Too much data"
-224, "Illegal parameter value"
-225, "Out of memory"
-226, "Lists not same length"
-230, "Data corrupt or stale"
-231, "Data questionable"
-232, "Invalid format"
-233, "Invalid version"
-240, "Hardware error"

-241, "Hardware missing"
-250, "Mass storage error"
-251, "Missing mass storage"
-252, "Missing media"
-253, "Corrupt media"
-254, "Media full"
-255, "Directory full"
-256, "File name not found"
-257, "File name error"
-258, "Media protected"
-260, "Expression error"
-261, "Math error in expression"
-270, "Macro error"
-271, "Macro syntax error"
-272, "Macro execution error"
-273, "Illegal macro label"
-274, "Macro parameter error"
-275, "Macro definition too long"
-276, "Macro recursion error"
-277, "Macro redefinition not allowed"
-278, "Macro header not found"
-280, "Program error"
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