

Digital Storage Oscilloscope

GDS-2000HD/HG series

PROGRAMMING MANUAL



ISO-9001 CERTIFIED MANUFACTURER

GW INSTEK

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Table of Contents

COMMAND OVERVIEW	4
Command Syntax	4
List of Commands in Functional Order	6
COMMAND DETAILS	17
Common Commands	17
Mask Commands	22
Acquisition Commands	26
Autoscale Commands	34
Vertical Commands	35
Math Commands	40
Cursor Commands	49
Display Commands	62
Measure Commands	66
Measurement Commands	89
Reference Commands	99
Run Command	101
Stop Command	101
Force Command	101
Timebase Commands	102
Trigger Commands	105
System Commands	141
Save/Recall Commands	142
Bus Decode Commands	146
Label Commands	162
DVM Commands	167
AWG Commands	172
FRA Commands	182
Time Command	185
Single Command	186
Hardcopy Commands	187

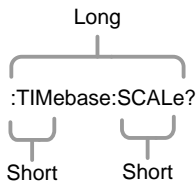
C COMMAND OVERVIEW

The Command overview chapter lists all GDS-2000HD/HG 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 | <ul style="list-style-type: none"> • 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.
---------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------



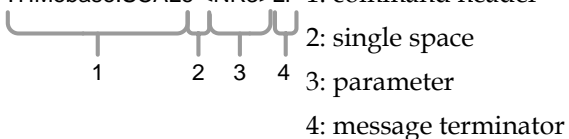
The commands can be written in capitals or lower-case, just so long as the short or long forms are complete. An incomplete command will not be recognized.

Below are examples of correctly written commands.

LONG :TIMEbase:SCALE? :TIMEBASE:SCALE?
:timebase:scale?

SHORT :TIM:SCAL? :TIM:SCAL?

Command format :TIMEbase:SCALE <NR3>LF 1: command header



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	



Commands are non-case sensitive.

List of Commands in Functional Order

Common commands	*IDN?	17
	*RST	17
	*CLS	17
	*ESE	18
	*ESR	18
	*OPC	19
	*SRE	19
	*STB	20
Mask commands	:MASK:STATe	22
	:MASK:SOURce	22
	:MASK:VIOLation	22
	:MASK:VIOLation:MODE	23
	:MASK:VIOLation:BEEP	23
	:MASK:SAVe (0 - 7)	23
	:MASK:RECALL (0 - 7)	24
	:MASK:RESults:FAILed	24
	:MASK:RESults:PASSed	24
	:MASK:RESults:TOTal	25
	:MASK:AUTo	25
:MASK:RESults:DISPlay	25	
Acquisition commands	:ACQuire:AVERAge	26
	:ACQuire:MODE	26
	:ACQuire<X>:MEMory?	27
	:ACQuire:FILTer:SOURce	29
	:ACQuire:FILTer	29
	:ACQuire:FILTer:FREQuency:UPPER	30
	:ACQuire:FILTer:FREQuency:LOWER	30
	:ACQuire:FILTer:TYPe	31
	:ACQuire:FILTer:WINDow	31
	:ACQuire:FILTer:VERTical:POSition	31
	:ACQuire<X>:STATe?	32
:ACQuire:INTERpolation	32	

	:ACQUIRE:RECORDlength	33
	:ACQUIRE:SAMPLERATE?	33
Autoscale commands	:AUTOSet	34
Vertical Scale commands	:CHANNEL<X>:BWLIMIT	35
	:CHANNEL<X>:COUPLING	35
	:CHANNEL<X>:DISPLAY	36
	:CHANNEL<X>:EXPAND	36
	:CHANNEL<X>:IMPEDANCE	36
	:CHANNEL<X>:INVERT	37
	:CHANNEL<X>:POSITION	37
	:CHANNEL<X>:PROBE:RATIO	38
	:CHANNEL<X>:PROBE:TYPE	38
	:CHANNEL<X>:SCALE	39
Math commands	:MATH:DISP	40
	:MATH:TYPE	40
	:MATH:DUAL:SOURCE<X>	40
	:MATH:DUAL:OPERATOR	41
	:MATH:DUAL:POSITION	41
	:MATH:DUAL:SCALE	42
	:MATH:FFT:SOURCE	42
	:MATH:FFT:MAG	42
	:MATH:FFT:WINDOW	43
	:MATH:FFT:POSITION	43
	:MATH:FFT:SCALE	44
	:MATH:FFT:HORIZONTAL:SCALE	44
	:MATH:FFT:HORIZONTAL:POSITION	44
	:MATH:FFT:PEAKSTABLE:DISPLAY	45
	:MATH:FFT:PEAKSTABLE:NUM	45
	:MATH:FFT:PEAKSTABLE:THRESHOL	45
	:MATH:FFT:PEAKSTABLE:ORDER	46
	:MATH:DEFINE	46
	:MATH:LABEL	47
	:MATH:LABEL:DISPLAY	47
	:MATH:ADVANCED:POSITION	48

	:MATH:ADVanced:SCALE	48
Cursor	:CURSor:MODE	49
commands	:CURSor:SOURce.....	49
	:CURSor:HUNI	50
	:CURSor:HUSE	50
	:CURSor:VUNI	51
	:CURSor:VUSE	51
	:CURSor:H1Position	51
	:CURSor:H2Position	52
	:CURSor:HDELta	52
	:CURSor:V1Position.....	53
	:CURSor:AREA	53
	:CURSor:V2Position.....	54
	:CURSor:VDELta	54
	:CURSor:TIME:TYPe	54
	:CURSor:XY:RECTangular:X:UNIts	55
	:CURSor:XY:RECTangular:X:POSition<X>	55
	:CURSor:XY:RECTangular:X:DELta	55
	:CURSor:XY:RECTangular:Y:UNIts	56
	:CURSor:XY:RECTangular:Y:POSition<X>	56
	:CURSor:XY:RECTangular:Y:DELta	56
	:CURSor:XY:POLar:RADIUS:UNIts	57
	:CURSor:XY:POLar:RADIUS:POSition<X>	57
	:CURSor:XY:POLar:RADIUS:DELta	57
	:CURSor:XY:POLar:THETA:UNIts.....	58
	:CURSor:XY:POLar:THETA:POSition<X>	58
	:CURSor:XY:POLar:THETA:DELta.....	58
	:CURSor:XY:PRODUct:UNIts	59
	:CURSor:XY:PRODUct:POSition<X>	59
	:CURSor:XY:PRODUct:DELta	59
	:CURSor:XY:PRODUct:UNIts	60
	:CURSor:XY:RATio:POSition<X>.....	60
	:CURSor:XY:RATio:UNIts	60
	:CURSor:XY:RATio:DELta	60
	:CURSor:HTRACKing	61

	:CURSor:VTRACking	61
Display commands	:DISPlay:INTensity:WAVEform	62
	:DISPlay:INTensity:GRATicule.....	62
	:DISPlay:INTensity:BACKLight	62
	:DISPlay:INTENSITy:BACKLight:AUTODim:TIME	63
	:DISPlay:PERSiStence	63
	:DISPlay:GRATicule	64
	:DISPlay:WAVEform.....	64
	:DISPlay:TRANSREADouts	64
	:DISPlay:WAVEform:COLor.....	65
Measure commands	:MEASure:GATing.....	66
	:MEASure:SOURce	66
	:MEASure:METHod	66
	:MEASUrement:REFLevel:PERCent:HIGH.....	67
	:MEASUrement:REFLevel:PERCent:LOW	67
	:MEASUrement:REFLevel:PERCent:MID	68
	:MEASure:FALL.....	68
	:MEASure:FREQUency	68
	:MEASure:NWIDth	69
	:MEASure:PDUTy.....	70
	:MEASure:NDUTy.....	70
	:MEASure:PERiod	71
	:MEASure:PWIDth	71
	:MEASure:RISe.....	72
	:MEASure:ROVShoot.....	72
	:MEASure:RPReshoot	73
	:MEASure:PPULSE.....	73
	:MEASure:NPULSE	74
	:MEASure:PEDGE	74
	:MEASure:NEDGE	75
:MEASure:AMPlitude.....	76	
:MEASure:MEAN	77	
:MEASure:CMEan	77	
:MEASure:HIGH	78	
:MEASure:LOW	78	

:MEASure:MAX.....	79
:MEASure:MIN	79
:MEASure:PK2PK	80
:MEASure:RMS	80
:MEASure:CRMS.....	81
:MEASure:AREa	82
:MEASure:CARea	82
:MEASure:FRRDelay	83
:MEASure:FRFDelay	83
:MEASure:FFRDelay	84
:MEASure:FFFDelay.....	85
:MEASure:LRRDelay	85
:MEASure:LRFDelay.....	86
:MEASure:LFRDelay.....	86
:MEASure:LFFDelay.....	87
:MEASure:PHase.....	88

Measurement commands	:MEASUrement:MEAS<X>:SOURCE<X>	89
	:MEASUrement:MEAS<X>:DELay.....	89
	:MEASUrement:MEAS<X>:DELay:DIRection	90
	:MEASUrement:MEAS<X>:DELay:EDGE<x>	90
	:MEASUrement:MEAS<X>:TYPE.....	91
	:MEASUrement:MEAS<X>:STATE	91
	:MEASUrement:MEAS<X>:VALue	92
	:MEASUrement:MEAS<X>:MAXimum	93
	:MEASUrement:MEAS<X>:MEAN	93
	:MEASUrement:MEAS<X>:MINimum	94
	:MEASUrement:MEAS<X>:STDdev	95
	:MEASUrement:MEAS<X>:UNIts	95
	:MEASUrement:STATIstics:MODE	96
	:MEASUrement:STATIstics:WEIghting	96
	:MEASUrement:INDICators:STAT	96
	:MEASUrement:INDICators:HORIZ<x>?	97
	:MEASUrement:INDICators:VERT<x>?	97
	:MEASUrement:INDICators:NUMHORZ?	98

	:MEASUrement:INDICAtors:NUMVERT?	98
	:MEASUrement:STATIstics	98
Reference	:REF<X>:DISPLAy.....	99
commands	:REF<X>:OFFSet	99
	:REF<x>:SCALE	100
	:REF:STATe	100
Run command	:RUN	101
Stop command	:STOP	101
Force command	:FORCe.....	101
Timebase	:TIMebase:EXPand	102
commands	:TIMebase:SCALE.....	102
	:TIMebase:MODE	102
	:TIMebase:WINDow:POSition	103
	:PLAYStop	103
	:TIMebase:WINDow:SCALE	104
Trigger	:TRIGger:TYPe.....	105
commands	:TRIGger:SOURce	105
	:TRIGger:COUPlE.....	106
	:TRIGger:MODE.....	106
	:TRIGger:HOLDoff.....	106
	:TRIGger:LEVel.....	107
	:TRIGger:HLEVel.....	107
	:TRIGger:LLEVel.....	108
	:TRIGger:LOGic:FUNCTion.....	108
	:TRIGger:LOGic:PATtern:INPut:CH<x>	109
	:TRIGger:LOGic:PATtern:DELTatime.....	109
	:TRIGger:LOGic:PATtern:WHEn	109
	:TRIGger:EDGE:SLOP	110
	:TRIGger:PULSEWidth:POLarity.....	111
	:TRIGger:NEDGE:POLarity	111
	:TRIGger:NEDGE:TIME.....	111
	:TRIGger:NEDGE:EDGE	112
	:TRIGger:WINDow:POLarity	112
	:TRIGger:WINDow:WHEn	113

:TRIGger:WINDow:TIME	113
:TRIGger:RUNT:POLarity	113
:TRIGger:RUNT:WHEn	114
:TRIGger:RUNT:TIME	114
:TRIGger:RISEFall:SLOP	115
:TRIGger:RISEFall:WHEn	115
:TRIGger:RISEFall:TIME	116
:TRIGger:VIDeo:TYPe	116
:TRIGger:VIDeo:FIELD	116
:TRIGger:VIDeo:LINE	117
:TRIGger:PULSe:WHEn	117
:TRIGger:PULSe:TIME	118
:TRIGger:TIMEOut:TIMER	118
:TRIGger:STATe	119
:TRIGger:SENSitivity.....	119
:TRIGger:BUS:TYPe	120
:TRIGger:BUS:B1:I2C:CONDition	120
:TRIGger:BUS:B1:I2C:ADDRes:MODE.....	121
:TRIGger:BUS:B1:I2C:ADDRes:VALue	121
:TRIGger:BUS:B1:I2C:ADDRes:DIRection	122
:TRIGger:BUS:B1:I2C:DATA:SIZE	122
:TRIGger:BUS:B1:I2C:DATA:VALue	123
:TRIGger:BUS:B1:I2C:SCLK:SOURce	123
:TRIGger:BUS:B1:I2C:SCLK:THReshold	124
:TRIGger:BUS:B1:I2C:SDA:SOURce	124
:TRIGger:BUS:B1:I2C:SDA:THReshold	125
:TRIGger:BUS:B1:UART:CONDition	125
:TRIGger:BUS:B1:UART:RX:DATA:SIZE	126
:TRIGger:BUS:B1:UART:RX:DATA:VALue	126
:TRIGger:BUS:B1:UART:TX:DATA:SIZE	127
:TRIGger:BUS:B1:UART:TX:DATA:VALue	127
:TRIGger:BUS:B1:UART:POLarity.....	128
:TRIGger:BUS:B1:UART:BITRate	128
:TRIGger:BUS:B1:UART:PARity	129
:TRIGger:BUS:B1:UART:STOPBits	129

	:TRIGger:BUS:B1:UART:CERRor:PARity.....	130
	:TRIGger:BUS:B1:CAN:CONDition.....	130
	:TRIGger:BUS:B1:CAN:FRAMeType.....	131
	:TRIGger:BUS:B1:CAN:IDentifier:MODE.....	131
	:TRIGger:BUS:B1:CAN:DATA:SIZE.....	132
	:TRIGger:BUS:B1:CAN:DATA:VALue.....	132
	:TRIGger:BUS:B1:CAN:TYPE.....	133
	:TRIGger:BUS:B1:CAN:SAMPLEpoint.....	133
	:TRIGger:BUS:B1:CAN:BITRate.....	134
	:TRIGger:BUS:B1:CAN:IDentifier:VALue.....	134
	:TRIGger:BUS:B1:LIN:BITRate.....	135
	:TRIGger:BUS:B1:LIN:IDentifier:VALue.....	135
	:TRIGger:BUS:B1:LIN:CONDition.....	136
	:TRIGger:BUS:B1:LIN:DATA:SIZE.....	136
	:TRIGger:BUS:B1:LIN:DATA:VALue.....	137
	:TRIGger:BUS:B1:SPI:DATA:SIZE.....	137
	:TRIGger:BUS:B1:SPI:SCLK:SOURce.....	138
	:TRIGger:BUS:B1:SPI:SCLK:THReshold.....	138
	:TRIGger:BUS:B1:SPI:SDA:SOURce.....	139
	:TRIGger:BUS:B1:SPI:SDA:THReshold.....	139
	:TRIGger:BUS:B1:SPI:IDLETime.....	140
	:TRIGger:BUS:B1:SPI:SCLK:POLarity.....	140
<hr/>		
System	:SYSTEM:LOCK.....	141
commands	:SYSTEM:ERRor.....	141
<hr/>		
Save/Recall	:RECALL:SETUp.....	142
commands	:SAVE:IMAGe.....	142
	:SAVE:IMAGe:FILEFormat.....	142
	:SAVE:IMAGe:INKSaver.....	143
	:SAVE:SETUp.....	143
	:SAVE:WAVEform.....	143
	:SAVE:WAVEform:FILEFormat.....	144
<hr/>		
Bus Decode	:BUS<x>:STATe.....	146
Commands	:BUS<x>:TYPE.....	146
	:BUS<x>:I2C:ADDReSS:RWINClude.....	147

:BUS<x>:I2C:SCLK:SOURce	147
:BUS<x>:I2C:SCLK:THReshold	147
:BUS<x>:I2C:SDA:SOURce	148
:BUS<x>:I2C:SDA:THReshold	148
:BUS<x>:UART:BITRate	149
:BUS<x>:UART:DATABits	149
:BUS<x>:UART:STOPBits	149
:BUS<x>:UART:BITOrder	150
:BUS<x>:UART:SOURce	150
:BUS<x>:UART:THReshold	151
:BUS<x>:UART:PARity	151
:BUS<x>:UART:POLARity	151
:BUS<x>:DISPlay:FORMAt	152
:BUS<x>:CAN:SOURce	152
:BUS<x>:CAN:PROBe	152
:BUS<x>:CAN:SAMPLEpoint	153
:BUS<x>:CAN:BITRate	153
:BUS<x>:LIN:BITRate	154
:BUS<x>:LIN:POLARity	154
:BUS<x>:LIN:SOURce	155
:BUS<x>:LIN:STANDard	155
:BUS<x>:LIN:THReshold	155
:BUS<x>:SPI:FRAMING	156
:BUS<x>:SPI:IDLETime	156
:BUS<x>:SPI:SCLK:POLARity	157
:BUS<x>:SPI:SCLK:SOURce	157
:BUS<x>:SPI:SCLK:THReshold	157
:BUS<x>:SPI:SS:POLARity	158
:BUS<x>:SPI:SS:SOURce	158
:BUS<x>:SPI:SS:THReshold	158
:BUS<x>:SPI:DATa{:OUT :MOSI}:THReshold	159
:BUS<x>:SPI:DATa{:IN :MOSI}:THReshold	159
:BUS<x>:SPI:WORDSize	160
:BUS<x>:SPI:BITORder	160
:BUS<x>:SPI:MOSI:SOURce	160

	:BUS<x>:SPI:MISO:SOURce	161
Label Commands	:CHANnel<X>:LABel	162
	:CHANnel<X>:LABel:DISPlay	162
	:REF<X>:LABel	163
	:REF<X>:LABel:DISPlay	164
	:BUS<x>:LABel	164
	:BUS<x>:LABel:DISPlay	165
DVM Commands	:DVM:STATE	167
	:DVM:SOURce	167
	:DVM:MODE	167
	:DVM{RESET}	168
	:DVM:STATistics RESet	168
	:DVM:STATistics:MAXimum	168
	:DVM:STATistics:MINimum	168
	:DVM:STATistics:{AVG AVERage}	169
	:DVM:ALARm:MODE	169
	:DVM:ALARm:HIGHLimit	169
	:DVM:ALARm:LOWLimit	170
	:DVM:ALARm:WHEN	170
	:DVM:VALue	171
AWG Commands	:AWG<x>:AMPlitude	172
	:AWG<x>:FREQuency	172
	:AWG<x>:FUNCTion	173
	:AWG<x>:OFFSet	174
	:AWG<x>:OUTPut:LOAD:IMPEDance	174
	:AWG<x>:OUTPut:STATE	175
	:AWG<x>:PHAsE	175
	:AWG<x>:PULSe:DUTYcycle	175
	:AWG<x>:RAMP:SYMmetry	176
	:AWG<x>:MODulation:STATE	176
	:AWG<x>:MODulation:TYPe	176
	:AWG<x>:MODulation:AM:DEPth	177
	:AWG<x>:MODulation:AM:FREQ	177
	:AWG<x>:MODulation:AM:SHApe	177
	:AWG<x>:MODulation:FM:DEV	178

	:AWG<x>:MODulation:FM:FREQ	178
	:AWG<x>:MODulation:FM:SHApe	178
	:AWG<x>:MODulation:FSK:FREQ	179
	:AWG<x>:MODulation:FSK:RATE	179
	:AWG<x>:SWEep:TYPe	179
	:AWG<x>:SWEep:START	180
	:AWG<x>:SWEep:STOP	180
	:AWG<x>:SWEep:TIME	180
	:AWG<x>:SWEep:SPAN	181
	:AWG<x>:SWEep:CENTer	181
FRA Commands	:FRA:RUN	182
	:FRA:STOP	182
	:FRA:FREQuency:STARt	182
	:FRA:FREQuency:STOP	183
	:FRA:POINt	183
	:FRA:DATA	183
	:FRA:SAVETOCsv	184
	:FRA:STATe	184
Time command	:DATE	185
Single command	:SINGle	186
Hardcopy commands	:HARDcopy:START	187
	:HARDcopy:ASSIGN	187
Segment Commands	:SEGMENTS:STATE	188
	:SEGMENTS:CURRent	188
	:SEGMENTS:TOTAlnum	189
	:SEGMENTS:FASTACQuisition	189

C 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 page 6.

Common Commands

*IDN?

→ Query

Description	Returns the manufacturer, model, serial number and version number of the unit.
Syntax	*IDN?
Example	*IDN? GW,GDS-2254HD,PXXXXXX,V1.XX

*RST

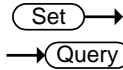
Set →

Description	Resets the GDS-2000HD/HG (recalls the default panel settings).
Syntax	*RST

*CLS

Set →

Description	Clears the error queue.
Syntax	*CLS



***ESE**

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**

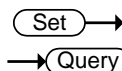


Description	Queries the Standard Event Status (Event) register. The Event Status register is cleared after it is read.			
Query Syntax	*ESR?			
Return parameter	<NR1>	0~255		
Bit Weight	Bit#	Weight	Event	Description
	0	1	OPC	Operation Complete Bit

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.

***OPC**

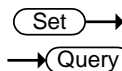


Description The *OPC command sets the OPC bit (bit0) of the Standard Event Status Register when all current commands have been processed.
The *OPC? Query returns 1 when all the outstanding commands have completed.

Syntax *OPC

Query Syntax *OPC?

Return parameter 1 Returns 1 when all the outstanding commands have completed.



***SRE**

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**



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.

Mask Commands

:MASK:STATe



Description	Set or query pass/ fail function status.	
Syntax	:MASK:STATE {ON OFF <NR1>} :MASK:STATe?	
Parameter	ON	Turn the mask function on.
	OFF	Turn the mask function off.
	<NR1>	is 0 to disable this function; other values to enable this function

Example :MASK:STATe ON
Query pass/ fail function status to ON

:MASK:SOURce



Description	Sets or returns the compared source.	
Syntax	:MASK:SOURce {CH1 CH2 CH3 CH4} :MASK:SOURce?	
Parameter	CH1~CH4:	Channel 1 to Channel 4.

Example :MASK:SOURce CH1
Set the compared source as channel 1.

:MASK:VIOLation



Description	Set or returns actions for the mask violations.	
Syntax	:MASK:VIOLation {STOP CONTInue} :MASK:VIOLation?	
Parameter	STOP	The waveform will be frozen.
	CONTInue	Ignore the violation.

Example :MASK:VIOLation STOP
Sets the violation action to stop.

Set →

:MASK:VIOLation:MODE

→ Query

Description Set or query pass/fail function type.

Syntax :MASK:VIOLation:MODE {PASS|FAIL}
:MASK:VIOLation:MODE?

Parameter PASS
FAIL

Example :MASK:VIOLation:MODE PASS
Set pass/fail type to PASS.

Set →

:MASK:VIOLation:BEEP

→ Query

Description Set or query the pass/fail beep function status.

Syntax :MASK:VIOLation:BEEP {ON|OFF|<NR1>}
:MASK:VIOLation:BEEP?

Parameter ON Enable beep function.
OFF Disable beep function.
<NR1> <NR1> is 0 to disable this function; other values to enable this function.

Example :MASK:VIOLation:BEEP ON
Set pass/fail beep function status to ON.

:MASK:SAVe (0 - 7)

Set →

Description Save rules as set 0 to set 7. (only 8 sets can be saved)

Syntax :MASK:SAVe <0 -7>

Parameter <0 - 7> File set and perform the save operation.

Example :MASK:SAVe 5
Save rules as 5th set



Note

Saving is invalid if the creation rule is not executed. When saving with existing data, it will directly overwrite the original data.

:MASK:RECALL (0 - 7)



Description Read the corresponding pass/fail test rules.

Syntax :MASK:RECALL <QString>

Parameter <QString> Read the corresponding pass/fail test rules, 0-8.

Example :MASK:RECALL 2
Read pass/fail test rules from 2nd set

:MASK:RESults:FAILED



Description Query number of frames failed during pass/fail test function.

Syntax :MASK:RESults:FAILED?

Example :MASK:RESults:FAILED?
:MASK:RESults:FAILED 0

:MASK:RESults:PASSEd



Description Query number of frames passed during pass/fail test function.

Syntax :MASK:RESults:PASSEd?

Example :MASK:RESults:PASSEd?
:MASK:RESults:PASSEd 473

:MASK:RESults:TOTal → Query

Description Query total frames number of during pass/ fail test function.

Syntax :MASK:RESults:TOTal?

Example :MASK:RESults:TOTal?
:MASK:RESults:TOTal 764

Set →

→ Query

:MASK:AUTO

Description Creates a mask fast in according to the reference source. Or returns the setting of the mask.

Syntax :MASK:AUTO {<Xmask>,<Ymask>}
:MASK:AUTO?

Parameter <Xmask> Sets the horizontal range for the mask.
<Ymask> Sets the vertical range for the mask.

Example :MASK:AUTO 0.2,1.2
Sets the range of mask as {0.2,1.2} and creates a mask.

Set →

→ Query

:MASK:RESults:DISPlay

Description Sets or queries the display state of mask results menu.

Syntax :MASK:RESults:DISPlay {ON|OFF}
:MASK:RESults:DISPlay?

Parameter ON Turns on the mask results menu.
OFF Turns off the mask results menu.

Example :MASK:RESults:DISPlay ON
:MASK:RESults:DISPlay?
ON

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, 512, 1024, 2048, 4096, 8192, 16384, 32768, 65536
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 HIRES AVERage ?}								
Related Commands	:ACQuire:AVERage								
Parameter	<table border="0"> <tr> <td>SAMPlE</td> <td>Sample mode sampling</td> </tr> <tr> <td>PDETECT</td> <td>Peak detect sampling</td> </tr> <tr> <td>HIRES</td> <td>High Resolution sampling</td> </tr> <tr> <td>AVERage</td> <td>Average sampling mode</td> </tr> </table>	SAMPlE	Sample mode sampling	PDETECT	Peak detect sampling	HIRES	High Resolution sampling	AVERage	Average sampling mode
SAMPlE	Sample mode sampling								
PDETECT	Peak detect sampling								
HIRES	High Resolution sampling								
AVERage	Average sampling mode								

Example :ACQuire:MODE PDETECT
Sets the sampling mode to peak detection.

:ACQuire<X>:MEMory? → Query

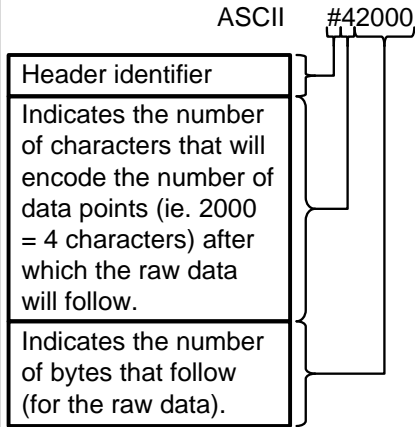
Description Returns the data in acquisition memory for the selected channel as a header + raw data.

Syntax :ACQuire<X>:MEMory?

Related Commands :ACQuire:RECOrdlength
:HEADer

Parameter <X> Channel number (1 to 4)

Return parameter <string> Returns acquisition settings followed by raw waveform block data.
<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.



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,
 $(28/25) \times 0.5 = 0.56V$

Example :ACquire1:MEMory?
 Format,3.0HD;Memory
 Length,10000;IntpDistance,0;Trigger
 Address,49;Trigger
 Level,2.3200;Source,CH1;Vertical Units,V;Vertical
 Units Extend Div,0;Label,ACK;Probe Type,0;Probe
 Ratio,10.0000;Vertical Scale,1.0000;Vertical
 Position,-560.0000E-3;Horizontal
 Units,s;Horizontal Scale,100.0000E-6;Horizontal
 Position,420.0000E-6;Horizontal
 Mode,Main;SincET Mode,Real Time;Sampling
 Period,200.0000E-9;Horizontal Old
 Scale,100.0000E-6;Horizontal Old
 Position,420.0000E-6;Firmware,V1.16;Time,18-Dec-
 25 17:16:07;Data Bit,12;AD Factor,400; Waveform
 Data;
 #520000.....follows waveform block
 data in hex.....

Set →

→ Query

:ACquire:FILTer:SOURce

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.

Set →

→ Query

:ACquire:FILTer

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.	

Set →
 → Query

Description	Sets or returns the filter upper frequency.	
Syntax	:ACquire:FILTer:FREQuency:UPPER {DEFAult}	
	:ACquire:FILTer:FREQuency:UPPER <NRf>	
	:ACquire:FILTer:FREQuency:UPPER?	

Parameter	DEFAult	Sets the frequency to default.
	<NRf>	Sets the frequency to user. (Range: 1Hz ~ 500MHz)


Example	:ACquire:FILTer:FREQuency:UPPER 4.95e+07	
	:ACquire:FILTer:FREQuency:UPPER?	
	4.950000e+07	

Set →
 → Query

Description	Sets or returns the filter lower frequency.	
Syntax	:ACquire:FILTer:FREQuency:LOWER {DEFAult}	
	:ACquire:FILTer:FREQuency:LOWER <NRf>	
	:ACquire:FILTer:FREQuency:LOWER?	

Parameter	DEFAult	Sets the frequency to default.
	<NRf>	Sets the frequency to user. (Range: 1Hz ~ 500MHz)

Example	:ACquire:FILTer:FREQuency:LOWER 1.25e+07	
	:ACquire:FILTer:FREQuency:LOWER?	
	1.250000e+07	

:ACquire:FILTer:TYPe




Description	Sets or returns the filter type.	
Syntax	:ACquire:FILTer:TRACking {LOWPass HIGHPass BANDPass BANDReject} :ACquire:FILTer:TYPe?	
Parameter	LOWPass	Lowpass Type.
	HIGHPass	Highpass Type.
	BANDPass	Bandpass Type.
	BANDReject	Bandreject Type
Example	:ACquire:FILTer:TYPe? >LOWPass Returns low pass type as present filter type	

:ACquire:FILTer:WINDow




Description	Query or set the window for filter function.	
Syntax	:ACquire:FILTer:WINDow {RECTangular HAMming HANning BLAckman TAPered TRIAngular} :ACquire:FILTer:WINDow?	
Example	:ACquire:FILTer:WINDow RECTangular Set filter window type to RECTangular	

:ACquire:FILTer:VERTical:POSition




Description	Query or set the vertical position of the filter function.	
Syntax	:ACquire:FILTer:VERTical:POSition <NR3> :ACquire:FILTer:VERTical:POSition ?	

Parameter	<code><NR3></code>	Is a float number that specifies the desired position from the center grid division. The range is ± 5 divisions, with a resolution of 0.01 divisions.
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Example :ACQuire:FILTer:VERTical:POSition 1
Set the vertical position of the filter to 1div

:ACQuire<X>:STATe? → **Query**

Description	Returns the status of waveform data.	
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Syntax	:ACQuire<X>:STATe?	
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Parameter	<code><X></code>	Channel number (1 to 4)
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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.

→ **Set** →

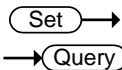
:ACQuire:INTERpolation → **Query**

Description	Selects or returns the interpolation mode.	
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Syntax	:ACQuire:INTERpolation {AUTO SINC X ?}	
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Parameter/Return parameter	AUTO	The oscilloscope automatically selects the best interpolation method based on the current horizontal timebase/settings.
	SINC	Sets to SIN(X)/X interpolation.
	X	An alternative linear interpolation method

Example :ACQUIRE:INTERpolation?
 >SINC
 Returns SINC as the interpolation mode.



:ACQUIRE:RECORDlength

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 | 1e+8)

Example :ACQUIRE:RECORDlength 1e+3
 Sets the record length to 1000 points.

:ACQUIRE:SAMPLerate?



Description Queries the value of sample rate.

Syntax : ACQUIRE:SAMPLerate?

Example : ACQUIRE:SAMPLerate?
 1.00000E+09

Autoscale Commands

:AUTOSet



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

:CHANnel<X>:BWLimit
 →
 →

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.	

: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.	

:CHANnel<X>:DISPlay (Set) →
→ (Query)

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	

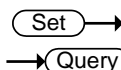
:CHANnel<X>:EXPand (Set) →
→ (Query)

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 (Set) →
→ (Query)

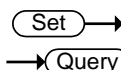
Description	Sets or returns the impedance of the oscilloscope.	
Syntax	:CHANnel<X>:IMPedance {50 1M ?} :CHANnel<X>:IMPedance?	

Parameter	<x> 1/2/3/4	Channel 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

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



:CHANnel<X>:POSition

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> <NRf>	Channel 1, 2, 3, 4 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

Set →

→ Query

:CHANnel<X>:PROBe:TYPe

Description Sets or returns the probe type (voltage/current).

Syntax :CHANnel<X>:PROBe:TYPe { VOLTage | CURRent | POWER | UNKNown |?}

Related Commands :CHANnel<X>:PROBe:RATio

Parameter <X> Channel 1, 2, 3, 4
VOLTage Voltage
CURRent Current
POWER Power
UNKNown Unknow

Return parameter Returns the probe type.

Example :CHANnel1:PROBe:TYPe VOLTage
Sets the Channel 1 probe type to voltage.

Set →

:CHANnel<X>:SCALe

→ 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)

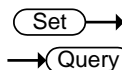
Description	Queries or sets the Math type to FFT, Advanced Math or to dual channel math operations	
Syntax	:MATH:TYPE { DUAL ADVanced FFT ? }	
Related Commands	:MATH:DISP	
Parameter	DUAL	Dual channel operations
	ADVanced	Advanced math operations
	FFT	FFT operations
Return parameter	Returns the math type.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

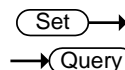
Parameter	<X> CH1~4	Source number 1 or 2 Channel 1 to 4
Return parameter	Returns the source for the source 1 or 2.	
Example	:MATH:DUAL:SOURce1 CH1 Sets source1 as channel 1.	

:MATH:DUAL:OPERator



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

:MATH:DUAL:POSition



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.	

Set →
→ Query

:MATH:DUAL:SCALE

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.	

Set →
→ Query

:MATH:FFT:SOURce

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

Set →
→ Query

:MATH:FFT:MAG

Description	Sets FFT vertical units as linear or decibels.	
Syntax	:MATH:FFT:MAG {LINEAR DB RADIans DEGREes ?}	
Parameter	LINEAR	Linear units (Vrms)
	DB	Logarithmic units (dB)
	RADIANS	Radians units
	DEGRESS	Degree unit
Return parameter	Returns the FFT vertical units.	

Example :MATH:FFT:MAG DB
Sets FFT vertical units to dB.

Set →

→ Query

:MATH:FFT:WINDow

Description Sets the windowing filter used for the FFT function.

Syntax :MATH:FFT:WINDow
{RECTangular|HAMming|HANning|BLAckman|BARTlett|KAISer|?}

Parameter	RECTangular	Rectangular window
	HAMming	Hamming window
	HANning	Hanning window
	BLAckman	Blackman window
	BARTlett	Bartlett window
	KAISer	Kaise window

Return parameter Returns the FFT window.

Example :MATH:FFT:WINDow HAMming
Sets the FFT window filter to hamming.

Set →

→ Query

:MATH:FFT:POSition

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.)
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Return parameter <NR3> Returns the vertical position.

Example :MATH:FFT:POSition -2e-1
Sets the FFT position to -0.2 divisions.

Set →

→ Query

:MATH:FFT:SCALE

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.	

Set →

→ Query

:MATH:FFT:HORizontal:SCALE

Description	Sets or queries the zoom scale for FFT math.	
Syntax	:MATH:FFT:HORizontal: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.	

Set →

→ Query

:MATH:FFT:HORizontal:POSition

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:FFT:PEAKSTable:DISPlay

Description	Query or set the peak display of FFT function.	
Syntax	:MATH:FFT:PEAKSTable:DISPlay {ON OFF <NR1>} :MATH:FFT:PEAKSTable:DISPlay?	
Parameter	OFF	Disable peak display function.
	ON	Enable peak display function.
	<NR1>	0 is to disable this function; other values to enable this function.
Example	:MATH:FFT:PEAKSTable:DISPlay ON Set FFT peak display to ON	





:MATH:FFT:PEAKSTable: NUM

Description	Set or query the number of peak display for FFT function.	
Syntax	:MATH:FFT:PEAKSTable:NUM <NR1> :MATH:FFT:PEAKSTable:NUM?	
Parameter	<NR1>	Range is 1-15.
Example	:MATH:FFT:PEAKSTable:NUM 15 Set FFT peak display count to 5	





:MATH:FFT:PEAKSTable:THReshol

Description	Set or query FFT function peak threshold.	
Syntax	:MATH:FFT:PEAKSTable:THReshold<NR3> :MATH:FFT:PEAKSTable:THReshold?	
Parameter	<NR3>	Unit: V, db, rad; Maximum value is the current vertical position*5.
Example	:MATH:FFT:PEAKSTable:THReshold 1 Set FFT peak threshold to 1	

Set →

:MATH:FFT:PEAKSTable:ORDER

→ Query

Description	Query or set the peak display of FFT function.
Syntax	:MATH:FFT:PEAKSTable:ORDER {AMPlitude FREQuency} :MATH:FFT:PEAKSTable:ORDER?
Parameter	AMPlitude Sort by peak size. FREQuency Sort by frequency size.
Example	:MATH:FFT:PEAKSTable:ORDER AMPlitude Set FFT peak sort method to AMPlitude

Set →

:MATH:DEFine

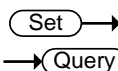
→ Query

Description	Sets or queries the advanced math expression as a string.								
Syntax	:MATH:DEFine {<string> ?}								
Related	:MATH:DISP :MATH:TYPE								
Parameter	<p><string> An expression enclosed in double quotes. Note that ensure parentheses are used correctly in the expression. The expression can contain the following parts:</p> <table border="1"> <tr> <td>Source</td> <td>CH1~CH4, Ref1~Ref4</td> </tr> <tr> <td>Function</td> <td>Intg(, Diff(, log(, ln(, Exp(, Sqrt(, Abs(, Rad(, Deg(, sin(, cos(, tan(, asin(, acos(, atan(</td> </tr> <tr> <td>Variable</td> <td>VAR1, VAR2</td> </tr> <tr> <td>Operator</td> <td>+, -, *, /, (,), !(, <, >, <=, >=, ==, !=, , &&</td> </tr> </table>	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	+, -, *, /, (,), !(, <, >, <=, >=, ==, !=, , &&
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
	Measurement	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.



:MATH:LABel

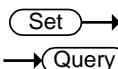
Description Set or query FFT function's label.

Syntax :MATH:LABel <QString>
:MATH:LABel?

Parameter <NR3> Unit is Hz, scientific notation.

Return parameter

Example :MATH:LABel "abc"
Set FFT label name to abc



:MATH:LABel:DISPlay

Description Sets or returns the waveform label for MATH on/off.

Syntax :MATH:LABel:DISPlay {OFF|ON}
:MATH:LABel:DISPlay?

Related :MATH:LABel
Commands

Related :MATH:LABel "MATH1"
Commands :MATH:LABel?
Example MATH1

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




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 | V |? }

Parameter	OFF	Turns the cursors off.
	H	Turns the horizontal cursors on.
	HV	Turns horizontal and vertical cursors on.
	V	Turns vertical cursors on

Return parameter Returns the state of the cursors (H, HV, OFF).

Example :CURSor:MODE OFF
Turns the cursors off.

:CURSor:SOURce



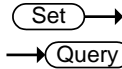

Description Sets or queries the cursor source.

Syntax :CURSor:SOURce {CH1 | CH2 | CH3 | CH4 | MATH | FFT | AUTO |? }

Parameter	CH1~CH4	Channel 1 to 4
	MATH	Math source
	FFT	Cursor source is selected as FFT.
	AUTO	Cursor source selection follows the channel.

Return parameter Returns the cursor source.

Example :CURSor:SOURce CH1
Turns the cursor source as channel 1.



:CURSor:HUNI

Description	Sets or queries the units for the horizontal bar cursors.								
Syntax	:CURSor:HUNI {SEConds HERTz DEGrees PERcent ?}								
Related Commands	:CURSor:MODE								
Parameter	<table border="0"> <tr> <td>SEConds</td> <td>Sets the cursor units to time in seconds.</td> </tr> <tr> <td>HERTz</td> <td>Sets the cursor units to frequency.</td> </tr> <tr> <td>DEGrees</td> <td>Sets the cursor units to degrees.</td> </tr> <tr> <td>PERcent</td> <td>Sets the cursor units to percent.</td> </tr> </table>	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.
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



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

Set →
→ Query

:CURSor:VUNI

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.	

Set →

:CURSor:VUSE

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.	

Set →
→ Query

:CURSor:H1Position

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.

Set →

→ Query

:CURSor:H2Position

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.

Set →
 → Query


:CURSor:V1Position

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.	

Set →
 → Query

:CURSor:AREA

Description	Query or set the cursor waveform area.	
Syntax	:CURSor:AREA {MAIN ZOOM XY FFT} :CURSor:AREA?	

 **Note** After enabling the XY|FFT|ZOOM function, it can be set. If there is only one waveform area, it can only be MAIN; subsequent basic commands need to determine the area to which the current waveform area belongs and return the cursor information corresponding to the waveform area.

Parameter	MAIN	Set the waveform area as the main waveform area.
	ZOOM	Set the waveform area as ZOOM (requires ZOOM to be enabled).
	XY	Set the waveform area as XY (requires XY to be enabled).
	FFT	Set the waveform area to FFT (requires FFT to be enabled).

Example :CURSor:AREA MAIN
Set cursor waveform area to MIAN.

: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:TIME:TYPE (Set) →
→ (Query)

Description	Set or query automatic cursor toggle.	
Syntax	:CURSor:TIME:TYPE {MANual AUTO} :CURSor:TIME:TYPE?	
Parameter	MANual	Set cursor mode to manual.
	AUTO	Set cursor mode to automatic.
Example	:CURSor:TIME:TYPE AUTO Set cursor mode to automatic.	

:CURSor:XY:RECTangular:X:UNIts → Query

Description Query returns the X module unit of Rectangular module in XY mode.

Syntax :CURSor:XY:RECTangular:X:UNIts?

Example :CURSor:XY:RECTangular:X:UNIts?
Query the X module unit of Rectangular module in XY mode

Set →

:CURSor:XY:RECTangular:X:POSition<X> → 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:UNIts → **Query**

Description	Query returns the Y module unit of Rectangular module in XY mode.
Syntax	:CURSor:XY:RECTangular:Y:UNIts?
Example	:CURSor:XY:RECTangular:Y:UNIts? Query the Y module unit of Rectangular module in XY mode.

: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:UNIts → Query

Description Query retrieves the unit of r in the Polar module in XY mode.

Syntax :CURSor:XY:POLar:RADIUS:UNIts?

Example :CURSor:XY:POLar:RADIUS:UNIts?
Query the unit of r in the Polar module in XY mode.

: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:UNIts → Query

Description	Query returns the unit of θ in the Polar module in XY mode.
Syntax	:CURSor:XY:POLar:THETA:UNIts?
Example	:CURSor:XY:POLar:THETA:UNIts? Query the unit of θ in the Polar module in XY mode

: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:UNIts → Query

Description	Query returns the unit of Product module in XY mode.
Syntax	:CURSor:XY:PRODUct:UNIts?
Example	:CURSor:XY:PRODUct:UNIts? Query the unit of Product module in XY mode.

: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:PRODUct:UNIts → Query

Description Query returns the unit of Product module in XY mode.

Syntax :CURSor:XY:PRODUCT:UNIts?

Example :CURSor:XY:PRODUCT:UNIts?
Query the unit of Product module in XY mode

: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:UNIts → Query

Description Query returns the unit of Ratio module in XY mode.

Syntax :CURSor:XY:RATio:UNIts?

Example :CURSor:XY:RATio:UNIts?
Query the unit of Ratio module in XY mode.

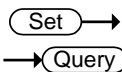
:CURSor:XY:RATio:DELta → Query

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.

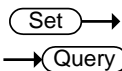


:CURSor:HTRACking

Description Sets or queries the state of horizontal cursor track.

Syntax :CURSor:HTRACking {ON|OFF}
 :CURSor:HTRACking?

Example :CURSor:HTRACking ON
 :CURSor:HTRACking?
 ON



:CURSor:VTRACking

Description Sets or queries the state of vertical cursor track.

Syntax :CURSor:VTRACking {ON|OFF}
 :CURSor:VTRACking?

Example :CURSor:VTRACking ON
 :CURSor:VTRACking?
 ON

Display Commands

Set →
 → Query

:DISPlay:INTensity:WAVEform

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%.	

Set →
 → Query

:DISPlay:INTensity:GRATICule

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%.	

Set →
 → Query

:DISPlay:INTensity:BACKLight

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 (Set) →
:TIME → (Query)

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






:DISPlay:PERSistence (Set) →
→ (Query)

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 CROSSs FRAME ?}			
Parameter	FULL		CROSSs	
	FRAME		GRID	
Return parameter	Returns the graticule type.			
Example	:DISPlay:GRATicule FULL Sets the graticule to  .			

Set →

→ Query

:DISPlay:WAVEform

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.	

Set →

→ Query

:DISPlay:TRANSREADouts

Description	Sets or queries the state of transparent display.	
Syntax	:DISPlay:TRANSREADouts {ON OFF} :DISPlay:TRANSREADouts?	
Parameter	ON	Turns on the transparent display.
	OFF	Turns off the transparent display.

Example :DISPlay:TRANSREADouts ON
 :DISPlay:TRANSREADouts?
 ON

:DISPlay:WAVEform:COLor

Set →

← Query

Description Sets or queries the waveform color display format.

Syntax :DISPlay:WAVEform:COLor {GRAYscale | COLor | ?}

Parameter	GRAYscale	Sets waveform display as grayscale
	COLor	Sets waveform display as color

Return parameter Returns GRAYscale or COLor.

Example :DISPlay:WAVEform:COLor GRAYscale
 Sets the waveform to grayscale.

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

:MEASure:METHod (Set) →
→ (Query)

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.

 →
 → 

: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%
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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

Description Sets or queries the low reference level as a percentage.

Syntax :MEASUrement:REFLevel:PERCent:LOW {<NRf> | ?}

Parameter	<NRf>	0 - 100%
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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%.	

: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: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	<pre>:MEASure:SOURce1 CH1 :MEASure:FREQuency? >1.0E+3</pre> Selects Channel 1, and then measures the frequency.	

:MEASure:NWIDth → 

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	<pre>:MEASure:SOURce1 CH1 :MEASure:NWIDth? 4.995E-04</pre> 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:NDUTy

→ Query

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


5.000E+01

Selects Channel 1, and then measures the negative 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



Description

Returns rising preshoot over the entire waveform in percentage.

Syntax

```
:MEASure:RPReshoot{?}
```

Related

```
:MEASure:SOURce<X>
```

Commands

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



Description

Returns the number of positive pulses.

Syntax

```
:MEASure:PPULSE{?}
```

Related

```
:MEASure:SOURce<X>
```

Commands

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



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

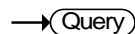
```
:MEASure:SOURce1 CH1
```

```
:MEASure:NPULSE?
```

```
4.000E+00
```

Selects Channel 1, and then measures the number of negative pulses.

:MEASure:PEDGE



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 → 

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

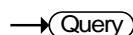
```
:MEASure:SOURce1 CH1
```

```
:MEASure:LOW?
```

```
1.00E-0
```

Selects Channel 1, and then measures the low current/voltage.

:MEASure:MAX



Description

Returns the maximum amplitude.

Syntax

```
:MEASure:MAX{?}
```

Related

```
:MEASure:SOURce<X>
```

Commands

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



Description

Returns the minimum amplitude.

Syntax

```
:MEASure:MIN{?}
```

Related

```
:MEASure:SOURce<X>
```

Commands

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



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




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	<pre>:MEASure:SOURce1 CH1 :MEASure:RMS? 1.31E-3</pre> <p>Selects Channel 1, and then measures the RMS voltage/current.</p>	

: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	<pre>:MEASure:SOURce1 CH1 :MEASure:CRMS? 1.31E-3</pre> <p>Selects Channel 1, and then measures the CRMS voltage/current.</p>	

: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



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: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 → 

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

:MEASUrement:MEAS<X>:DELay
Set →
 → Query

Description	Query measurement parameters for the specified index delay measurement.	
Syntax	MEASUrement:MEAS1:DELay?	
Parameter	<X>	Range is 1-8.
Example	MEASUrement:MEAS1:DELay? Query measurement parameters for the specified index 1 delay measurement	

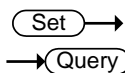
:MEASUrement:MEAS<X>:DElAy:DIRectiOn (Set) →
→ (Query)

Description	Query or set the direction of the delay measurement for the specified index.	
Syntax	:MEASUrement:MEAS<x>:DElAy:DIRectiOn {BACKWards FORWards} :MEASUrement:MEAS<x>:DElAy:DIRectiOn?	
Parameter	BACKWards	Searching from the end of the waveform and looking for the last rising or falling edge within the waveform. Use the: MEAS<x>:DElAy:EDGE<x> command to specify.
	FORWards	Searching from the beginning of the waveform, looking for the first rising or falling edge within the waveform. Use the: MEAS<x>:DElAy:EDGE<x> command to specify.
Example	:MEASUrement:MEAS1:DElAy:DIRectiOn FORWards Set the direction setting of delay measurement for the specified number 1 to FORWards.	

:MEASUrement:MEAS<X>:DElAy:EDGE<x> (Set) →
→ (Query)

Description	Query or set the edge type for the specified sequence number delay measurement.	
Syntax	:MEASUrement:MEAS<x>:DElAy:EDGE<x> {FALL RISe} :MEASUrement:MEAS<x>:DElAy:EDGE<x>?	
Parameter	FALL	Range of 1-2. 1 indicates from waveform; 2 indicates to waveform.
	RISe	
	X	

Example :MEASUrement:MEAS1:DElay:EDGE1 RISE
 Set the edge type of the delay measurement for the specified number 1 to RISE.



:MEASUrement:MEAS<X>:TYPE

Description Sets or queries the measurement type for a selected automatic measurement. This is a statistics related command.

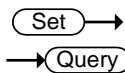
Syntax :MEASUrement:MEAS<X>:TYPE
 {PK2pk | MAXimum | MINimum | AMplitude | HIGH | LOW | MEAN | CMEan | RMS | CRMs | AREa | CAREa | ROVShoot | FOVShoot | RPReshoot | FPReshoot | FREquency | PERIod | RISE | FALL | PWIdth | NWIdth | PDUTy | NDUTy | PPULSE | NPULSE | PEDGE | NEDGE | FRRDelay | FRFDelay | FFRDelay | FFFDelay | LRRDelay | LRFDelay | LFRDelay | LFFDelay | PHase | ?}

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.



: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:MEAS<X>:UNIts → **Query**

Description Query unit of measurement for specified sequence number.

Syntax :MEASUrement:MEAS<X>:UNIts



Parameter	X	Range from 1 to 8.
------------------	---	--------------------

Example

```
:MEASUrement:MEAS1:UNIts?
Query unit of measurement for specified sequence number 1
```

:MEASUrement:STATIstics:MODE
 →
 → 

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
 →
 → 

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:INDICators:STAT
 →
 → 

Description	Set or query the measurement indicator's state.	
Syntax	:MEASUrement:INDICators:STAT {OFF MEAS<x>} :MEASUrement:INDICators:STAT?	
Parameter	OFF	Turn off the indicator.
	MEAS<x>	Set the indicator source. <x>:1~8.

Example :MEASUREMENT:INDICATORS:STAT OFF
 :MEASUREMENT:INDICATORS:STAT?
 OFF
 :MEASUREMENT:INDICATORS:STAT MEAS2
 :MEASUREMENT:INDICATORS:STAT?
 MEAS2

:MEASUREMENT:INDICATORS:HORIZ<x>? → **Query**

Description Query the position of measurement indicator's horizontal track.

Syntax :MEASUREMENT:INDICATORS:HORIZ<x>? {PRECISE}

Parameter	HORIZ<x>	The horizontal track. <x>:1 or 2.
	PRECISE	Display more digit for the return value.

Example :MEASUREMENT:INDICATORS:HORIZ1?
 3.120e+00
 :MEASUREMENT:INDICATORS:HORIZ1? PRECISE
 3.120000e+00

:MEASUREMENT:INDICATORS:VERT<x>? → **Query**

Description Query the position of measurement indicator's vertical track.

Syntax :MEASUREMENT:INDICATORS:VERT<x>? {PRECISE}

Parameter	VERT<x>	The vertical track. <x>:1 or 2.
	PRECISE	Display more digit for the return value.

Example :MEASUREMENT:INDICATORS:VERT1?
 -2.135e-02
 :MEASUREMENT:INDICATORS:VERT1? PRECISE
 -2.135000e-02

:MEASUrement:INDICators:NUMHORZ? → Query

Description	Query the number of measurement indicator's horizontal tracks currently being displayed.
Syntax	:MEASUrement:INDICators:NUMHORZ?
Example	:MEASUrement:INDICators:NUMHORZ? 2

:MEASUrement:INDICators:NUMVERT? → Query

Description	Query the number of measurement indicator's vertical tracks currently being displayed.
Syntax	:MEASUrement:INDICators:NUMVERT?
Example	:MEASUrement:INDICators:NUMVERT? 1

: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>:OFFSet

Set →
→ Query

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.

:REF:STATe (Set) →
→ (Query)

Description Enable or disable the reference waveform function.

Syntax :REF:STATe { OFF | ON | ? }

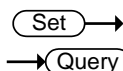
Parameter	OFF	Disable the Reference waveform function.
	ON	Enable the Reference waveform function

Return parameter	Returns the status of the reference waveform.	
------------------	-----------------------------------------------	--

Example :REF:STATe ON
 Enable the reference waveform function.

Run Command

:RUN



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

Syntax :RUN{ ? }

Return parameter Returns the status of the acquisitions.

Stop Command

:STOP



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

Syntax :STOP

Force Command

:FORCE



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: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.

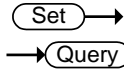
:PLAYStop (Set) →

Description Set the zoom play/stop or play the current segment in segments mode.

Syntax :PLAYStop {ON|OFF}
:PLAYStop?

Parameter	ON	Play
	OFF	Stop

Example :PLAYStop ON
:PLAYStop?
ON



: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:TYPe

Set →
→ Query

Description	Sets or queries the trigger type.	
Syntax	:TRIGger:TYPe {EDGE LOGic PULSEWidth VIDEo RUNT RISEFall BUS TIMEOut ? }	
Parameter	EDGE	Edge trigger
	LOGic	Logic trigger
	PULSEWidth	Pulse width trigger
	VIDEo	Video trigger
	RUNT	Runt trigger
	RISEFall	Rise and fall 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 EXT/5 LINE ? }	
Parameter	CH1 to CH4	Channel 1 to channel 4
	EXT	External source
	EXT/5	External divided by 5
	LINE	AC Line
Return parameter	Returns the trigger source.	

Example :TRIGger:SOURce CH1
Sets the trigger source to channel 1.

Set →

:TRIGger:COUple

→ Query

Description Sets or queries the trigger coupling.

Note Applicable for edge and delay triggers only.

Syntax :TRIGger:COUple {AC | DC | HF | ?}

Parameter	AC	AC mode
	DC	DC mode
	HF	High frequency rejection

Return parameter Returns the trigger coupling.

Example :TRIGger:COUple AC
Sets the trigger coupling to AC.

Set →

:TRIGger:MODE

→ Query

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 →

:TRIGger:HOLDoff

→ Query

Description Sets or queries the holdoff time.

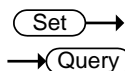
Syntax :TRIGger:HOLDoff {<NRf> | ?}

Parameter	<NRf>	Holdoff time
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Return parameter	<NR3>	Returns the trigger holdoff time.
------------------	-------	-----------------------------------

Example	:TRIGger:HOLDoff 1.00E-8	Sets the trigger holdoff time to 10ns.
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:TRIGger:LEVel



Description	Sets or queries the level.	
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Note	Not applicable to Pulse Runt and Rise & Fall triggers.	
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Syntax	:TRIGger:LEVel {SETTO50 <NRf> ?}	
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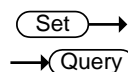
Related commands	:TRIGger:TYPe	
------------------	---------------	--

Parameter	<NRf>	Trigger level value.
	SETTO50	Sets the trigger level to the User level (50% by default).

Return parameter	<NR3>	Returns the trigger level.
------------------	-------	----------------------------

Example	:TRIGger:LEVel 3.30E-1	Sets the trigger level to 330mV/mA.
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:TRIGger:HLEVel



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

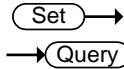
Syntax	:TRIGger:HLEVel {<NRf> ?}	
--------	-----------------------------	--

Related commands	:TRIGger:TYPe	
------------------	---------------	--

Parameter	<NRf>	High level value.
-----------	-------	-------------------

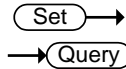
Return parameter	<NR3>	Returns the trigger high level.
------------------	-------	---------------------------------

Example	:TRIGger:HLEVel 3.30E-1	Sets the trigger high level to 330mV/mA.
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: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.	



:TRIGger:LOGic:FUNCTion

Description	Sets or queries the logical combination of the input channels for logic trigger.	
Syntax	:TRIGger:LOGic:FUNCTion {AND OR XOR XNOR} :TRIGger:LOGic:FUNCTion?	
Related commands	:TRIGger:LOGic:PATtern:INPut:D<X>	
Parameter	AND	Sets the AND mode of define logic.
	OR	Sets the OR mode of define logic.
	XOR	Sets the XOR mode of define logic.
	XNOR	Sets the XNOR mode of define logic.
Example 1	TRIGger:LOGic:FUNCTion? >AND	
Example 2	TRIGger:LOGic:FUNCTion OR Sets the OR mode of define logic.	

Set →
 → Query

:TRIGger:LOGic:PATtern:INPut:CH<x>

Description	Sets or returns the logic trigger input for the specified digital channel.	
Syntax	:TRIGger:LOGic:PATtern:INPut:CH<x>{HIGH LOW X} :TRIGger:LOGic:PATtern:INPut:CH<x>?	
Parameter	X	High/low level
	HIGH	High level
	LOW	Low level
Example	:TRIGger:LOGic:PATtern:INPut:CH1 LOW? Set analog channel 1 logic trigger input to LOW.	

Set →
 → Query

:TRIGger:LOGic:PATtern:DELTatime

Description	Sets or returns the pattern trigger delta time value.	
Syntax	:TRIGger:LOGic:PATtern:DELTatime <NR3> :TRIGger:LOGic:PATtern:DELTatime?	
Related commands	:TRIGger:LOGic:PATtern:WHEn	
Parameter	<NR3>	It is a floating point value with exponent that sets the pattern trigger time value. A range of 1E-9 (1 ns) to 10.0E0 (10 s).
Example 1	:TRIGger:LOGic:PATtern:DELTatime 8.960e-05	
Example 2	:TRIGger:LOGic:PATtern:DELTatime? >8.960e-05	

Set →
 → Query

:TRIGger:LOGic:PATtern:WHEn

Description	Sets or returns the pattern logic condition on which to trigger the oscilloscope.	
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Syntax	:TRIGger:LOGic:PATtern:WHEn {TRUE FALSE LESSthan MOREthan EQUAL} :TRIGger:LOGic:PATtern:WHEn?	
Parameter	TRUE	Set true mode.
	FALSE	Set false mode.
	LESSTHAN	Set less than mode (Is True < time period (set in :TRIGger:LOGic:PATtern: DELTatime)).
	MORETHAN	Set more than mode (Is True > time period (set in :TRIGger:LOGic:PATtern: DELTatime)).
	EQUAL	Set equal mode (Is True = time period (set in: TRIGger:LOGic: PATtern: DELTatime)).
Example 1	:TRIGger:LOGic:PATtern:WHEn FALSE	
Example 2	:TRIGger:LOGic:PATtern:WHEn? >FALSE	

:TRIGger:EDGE:SLOP



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

:TRIGger:PULSEWidth:POLarity  

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:NEDGE:POLarity  

Description Sets or queries the Nth edge trigger polarity.

Syntax :TRIGger:NEDGE:POLarity
{POSitive | NEGative | ?}

Related commands :TRIGger:TYPE

Parameter	POSitive	Positive polarity
	NEGative	Negative polarity

Return parameter Returns the Nth edge trigger polarity.

Example :TRIGger:NEDGE:POLarity POSitive
Sets the Nth edge polarity to positive.

:TRIGger:NEDGE:TIME  

Description Sets or queries the Nth Edge trigger idle time.

Syntax :TRIGger:NEDGE:TIME
{<NRF> | ?}

Related commands :TRIGger:TYPe

Parameter <NRF> Set the Nth edge trigger time, unit in seconds.

Return parameter Returns the time value.

Example :TRIGger:NEDGE:TIME 2E-6
Set the Nth edge trigger idle time to 2 us.

Set →

→ Query

:TRIGger:NEDGE:EDGE

Description Sets or queries the Nth Edge trigger count.

Syntax :TRIGger:NEDGE:EDGE
{<NR1> | ?}

Related commands :TRIGger:TYPe

Parameter <NR1> Set edge counts, range is :1 ~ 128.

Return parameter Returns the Nth Edge trigger count.

Example :TRIGger:NEDGE:EDGE 10
Set the Nth edge trigger edge counts to 10.

Set →

→ Query

:TRIGger:WINDOW:POLarity

Description Set or query windows trigger polarity.

Syntax :TRIGger:WINDOW:POLarity
{ POSitive | NEGative | ? }

Related commands :TRIGger:TYPe

Parameter POSitive Positive polarity

NEGative Negative polarity

Return parameter Returns the Nth Edge trigger count.

Example :TRIGger:WINDOW:POLarity POSitive
Set windows trigger polarity to positive.

:TRIGger:WINDow:WHEn




Description	Set or query the conditions for out-of-range triggers, which are: “out-of-range entry”, “out-of-range exit” and “out-of-range time”.						
Syntax	:TRIGger:WINDow:WHEn { ENTer EXIT TIME ? }						
Related commands	:TRIGger:TYPe						
Parameter	<table border="1"> <tr> <td>ENTer</td> <td>out-of-range entry</td> </tr> <tr> <td>EXIT</td> <td>out-of-range exit</td> </tr> <tr> <td>TIME</td> <td>out-of-range time</td> </tr> </table>	ENTer	out-of-range entry	EXIT	out-of-range exit	TIME	out-of-range time
ENTer	out-of-range entry						
EXIT	out-of-range exit						
TIME	out-of-range time						
Return parameter	Returns the conditions for out-of-range triggers.						
Example	:TRIGger:WINDow:WHEn EXIT Set windows trigger condition to exit.						

:TRIGger:WINDow:TIME




Description	Set or query windows trigger polarity.
Syntax	:TRIGger:WINDow:TIME { <NR3> ? }
Related commands	:TRIGger:TYPe
Parameter	<NR3> Set windows trigger time in seconds.
Return parameter	Returns the windows trigger time.
Example	:TRIGger:WINDow:TIME 2E-7 Set windows trigger time to 200 ns.

:TRIGger:RUNT:POLarity




Description	Sets or queries the Pulse Runt trigger polarity.
Syntax	:TRIGger:RUNT:POLarity { POSitive NEGative ? }

Related commands :TRIGger:TYPe

Parameter	POSitive	Positive polarity
	NEGative	Negative polarity

Return parameter Returns the pulse runt trigger polarity.

Example :TRIGger:RUNT:POLarity POSitive
Sets the Pulse Runt trigger polarity to positive.

Set →

→ Query

:TRIGger:RUNT:WHEn

Description Sets or queries the Pulse Runt trigger conditions.

Syntax :TRIGger:RUNT:WHEn {MOREthan| LESSthan | EQual | ? }

Related commands :TRIGger:TYPe
:TRIGger:RUNT:TIME

Parameter	MOREthan	>
	LESSthan	<
	EQual	=

Return parameter Returns the pulse runt trigger condition.

Example :TRIGger:RUNT:WHEn EQual
Sets the Pulse Runt trigger condition to equal (=).

Set →

→ Query

:TRIGger:RUNT:TIME

Description Sets or queries the Pulse Runt trigger time.

Syntax :TRIGger:RUNT:TIME {<NRf> | ? }

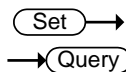
Related commands :TRIGger:TYPe
:TRIGger:RUNT:WHEn

Parameter	<NRf>	Pulse runt time (30nS to 10S)
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Return Parameter	<NR3>	Returns the runt time in seconds.
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Example :TRIGger:RUNT:TIME 4.00E-5
Sets the runt time to 40.0uS.

:TRIGger:RISEFall:SLOP



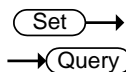
Description Sets or queries the Rise & Fall slope.

Syntax :TRIGger:RISEFall:SLOP {RISe | FALL | ?}

Parameter	RISe	Rising slope
	FALL	Falling slope

Return parameter Returns the rise & fall slope.

Example :TRIGger:RISEFall:SLOP RISe
Sets the Rise & Fall slope to rising.



:TRIGger:RISEFall:WHEN

Description Sets or queries the rise/fall trigger conditions.

Syntax :TRIGger:RISEFall:WHEN {MOREthan | LESSthan | Equal | ?}

Related commands :TRIGger:TYPE
:TRIGger:RISEFall:TIME

Parameter	MOREthan	>
	LESSthan	<
	Equal	=

Return parameter Returns the rise/fall trigger condition.

Example :TRIGger:RISEFall:WHEN Equal
Sets the Rise and Fall trigger condition to equal (=).

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 (30nS 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 ? }	
Related commands	:TRIGger:TYPe	
Parameter	NTSC	NTSC
	PAL	PAL
	SECam	SECAM

Return parameter Returns the video trigger type.

Example :TRIGger:VIDeo:TYPe NTSC
Sets the video trigger to NTSC.

Set →

→ Query

:TRIGger:VIDeo:FIELD

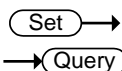
Description	Sets or queries the video trigger field.	
Syntax	:TRIGger:VIDeo:FIELD { FIELD1 FIELD2 ALLFields ALLLines NUMERIC? }	

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
	NUMERIC	Specific lines

Return parameter Returns the video trigger field.

Example :TRIGger:VIDeo:FIELD ALLFields
Sets the video trigger to trigger on all fields.



:TRIGger:VIDeo:LINE

Description Sets or queries the video trigger line.

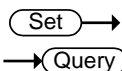
Syntax :TRIGger:VIDeo:LINE {<NR1> | ?}

Related commands :TRIGger:TYPe

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



:TRIGger:PULSe:WHEn

Description Sets or queries the pulse width trigger conditions.

Syntax :TRIGger:PULSe:WHEn { MOREthan | LESSthan | Equal | ? }

Related commands :TRIGger:TYPe
:TRIGger:PULSe:TIME

Parameter	MORE than	>
	LESSthan	<

EQual =

Return parameter Returns the pulse width trigger conditions.

Example :TRIGger:PULSe:WHEn EQual
 Sets the trigger pulse width conditions to equal (=).

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 (30ns~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:TIMER

Description Sets or returns timeout trigger time.

Syntax :TRIGger:TIMEOut:TIMER {<NRf> | ?}

Related commands :TRIGger:TIMEOut:WHEn

Parameter <NRf> Timeout time. (30nS to 10S).

Return parameter Returns the timeout time as <NR3>.

Example :TRIGger:TIMEOut:TIMER?
 8.960e-05

: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:SENSitivity Set →
→ Query

Description	Set or query channel trigger sensitivity.	
Syntax	:TRIGger:SENSitivity{ <NRf> ?}	
Return parameter	<NR3>	Set the sensitivity in div units, with a minimum of 0.3 div and a maximum of 10 div.

Example :TRIGger:SENSitivity 1.5
 Set trigger sensitivity to 1.5 div.

:TRIGger:BUS:TYPE (Set) →
→ (Query)

Description	Set or query the current bus type.	
Syntax	:TRIGger:BUS:TYPE{I2C SPI UART CAN LIN ?}	
Return parameter	I2C	I ² C mode
	SPI	SPI mode
	UART	UART mode
	CAN	CAN mode
	LIN	LIN mode
Example	:TRIGger:BUS:TYPE? UART	

:TRIGger:BUS:B1:I2C:CONDition (Set) →
→ (Query)

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 I²C bus trigger condition.

Example :TRIGger:BUS:B1:I2C:CONDition ADDRess
Set Address as the I2C trigger condition.

:TRIGger:BUS:B1:I2C:ADDRess:MODE  

Description Sets or queries the I²C addressing mode (7, 8 or 10 bits).

Syntax :TRIGger:BUS:B1:I2C:ADDRess:MODE {ADDR7 | ADDR8 | ADDR10 | ? }

Related commands :TRIGger:BUS:B1:I2C:CONDition

Parameter	ADDR7	7 bit addressing
	ADDR8	8 bit addressing
	ADDR10	10 bit addressing

Example :TRIGger:A:I2C:ADDRess:MODE ADDR7
The addressing mode is currenty set to 7 bits.

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

Description Sets or queries the I²C bus address value when the I²C 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

:TRIGger:BUS:B1:I2C:ADDRess:DIRection (Set) →
 → (Query)

Description Sets or queries the address bit as read write or don't care.

Note This setting only applies when the I²C 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 I²C bus.

Note This setting only applies when the I²C 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




Description Sets or queries the triggering data value for the I²C bus when the I²C 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
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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:I2C:SCLK:SOURce




Description Set or query I2C trigger SCL source.

Syntax :TRIGger:BUS:B1:I2C:SCLK:SOURce { CH1 | CH2 | CH3 | CH4 | ? }

Parameter CH1 ~ CH4 Analog channel 1 to 4.

Return parameter Returns the I2C trigger SCL source.

Example :TRIGger:BUS:B1:I2C:SCLK:SOURce CH1
Set I2C trigger's SCL source to channel 1.

:TRIGger:BUS:B1:I2C:SCLK:THReshold (Set) →
→ (Query)

Description Set or query I2C trigger current SCL selected source threshold.

Syntax :TRIGger:BUS:B1:I2C:SCLK:THReshold
{ SETTO50 | <Nrf> | ? }

Parameter	<Nrf>	Logical trigger thresholds for each channel in volts (V), supporting scientific notation input.
	SETTO50	Set the SCLK trigger to 50% of current signal's peak-to-peak value.

Return parameter Returns the I2C trigger current SCL selected source threshold.

Example :TRIGger:BUS:B1:I2C:SCLK:THReshold 1.0000
Set I2C threshold for the current SCL selected source to 1 V.

:TRIGger:BUS:B1:I2C:SDA:SOURce (Set) →
→ (Query)

Description Set or query I2C trigger SDA source.

Syntax :TRIGger:BUS:B1:I2C:SDA:SOURce
{ CH1 | CH2 | CH3 | CH4 | ? }

Parameter CH1 ~ CH4 Analog channel 1 to 4.

Return parameter Returns the I2C trigger SDA source.

Example :TRIGger:BUS:B1:I2C:SDA:SOURce CH2
Set I2C trigger's SDA source to channel 2.

:TRIGger:BUS:B1:I2C:SDA:THReshold


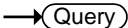



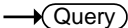
Description	Set or query I2C trigger current SDA selected source threshold.	
Syntax	:TRIGger:BUS:B1:I2C:SDA:THReshold { SETTO50 <Nrf> ? }	
Parameter	<Nrf>	Logical trigger thresholds for each channel in volts (V), supporting scientific notation input.
	SETTO50	Set the SDA trigger to 50% of current signal's peak-to-peak value
Return parameter	Returns the I2C trigger current SDA selected source threshold.	
Example	:TRIGger:BUS:B1:I2C:SDA:THReshold 1.0000 Set I2C threshold for the current SDA selected source to 1 V.	

:TRIGger:BUS:B1:UART:CONDition



Description	Sets or queries the UART triggering condition.	
Syntax	:TRIGger:BUS:B1:UART:CONDition { START ERRor CERRor DATA ? }	
Parameter	START	Set trigger on the start bit.
	ERRor	Set trigger on any UART error.
	CERRor	Set trigger on the a specific error
	DATA	Set trigger when specific UART data is received.
Return Parameter	Returns the triggering condition.	
Example	:TRIGger:BUS:B1:UART:CONDition START Sets the UART bus to trigger on start bit.	

		
		
<hr/>		
:TRIGger:BUS:B1:UART:RX:DATA:SIZE		
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 (5, 6, 7, 8).
Return parameter	<NR1>	Returns the number of bytes.
Example	:TRIGger:BUS:B1:UART:RX:DATA:SIZE 5 Sets the number of bytes to 5.	

		
		
<hr/>		
:TRIGger:BUS:B1:UART:RX:DATA:VALue		
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  

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 (5, 6, 7, 8).

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  

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.

Example 1 :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:UART:POLarity

Set →

→ Query

Description Sets or queries the UART trigger polarity.

Syntax :TRIGger:BUS:B1:UART:POLarity
 { POSitive | NEGative | ? }

Parameter	POSitive	Positive polarity
	NEGative	Negative polarity

Return parameter	<NR1>	Returns the condition of UART trigger polarity.
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Example : TRIGger:BUS:B1:UART:POLarity POSitive
 Sets the UART trigger polarity to positive.

Set →

→ Query

:TRIGger:BUS:B1:UART:BITRate

Description Sets or queries the UART trigger baud rate.

Syntax :TRIGger:BUS:B1:UART:BITRate {<NR1> | ?}

Parameter	<NR1>	Range is: 50 bps to 10 Mbps, unit is bps.
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Return parameter	<NR1>	Returns the UART trigger baud rate.
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Example :TRIGger:BUS:B1:UART:BITRate 9600
Sets the UART trigger baud rate to 9600 bps.

:TRIGger:BUS:B1:UART:PARity  

Description Sets or queries the UART trigger parity under error frames.

Syntax :TRIGger:BUS:B1:UART:PARity
{ NONE | EVEN | ODD | ? }

Parameter	NONE	unspecified parity
	EVEN	Even parity specified
	ODD	Odd parity specified

Return parameter Returns the UART parity condition.

Example :TRIGger:BUS:B1:UART:PARity EVEN
Sets the UART trigger to even parity on error frames.

:TRIGger:BUS:B1:UART:STOPBits  

Description Sets or queries the UART trigger parity under error frames.

Syntax :TRIGger:BUS:B1:UART:STOPBits
{ 1 | 1.5 | 2 | ? }

Parameter	1	1 stop bit
	1.5	1.5 stop bit
	2	2 stop bit

Return parameter Returns the UART stop bit condition.

Example :TRIGger:BUS:B1:UART:STOPBits 1
Sets the UART trigger stop bit to 1.

:TRIGger:BUS:B1:UART:CERRor:PARity (Set) →
→ (Query)

Description	Sets or queries the UART trigger parity under error checking.	
Syntax	:TRIGger:BUS:B1:UART:CERRor:PARity { EVEN ODD ? }	
Parameter	EVEN	Even parity specified
	ODD	Odd parity specified
Return parameter	Returns the UART parity condition.	
Example	:TRIGger:BUS:B1:UART:CERRor:PARity EVEN Sets the UART trigger with EVEN parity under error checking.	

: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  

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  

Description Sets or returns the CAN identifier mode for the bus.

Syntax :TRIGger:BUS:B1:CAN:IDentifier:MODE
{STANDard|EXTended|?}


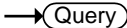
Parameter/ Return parameter	STANDard	Standard addressing mode
	EXTended	Extended addressing mode

Example :TRIGger:BUS:B1:CAN:IDentifier:MODE?
>STANDARD
Returns the addressing mode.

		Set →
		→ Query
:TRIGger:BUS:B1:CAN:DATa:SIZE		
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	

		Set →
		→ Query
:TRIGger:BUS:B1:CAN:DATa:VALue		
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:CAN:TYPE



Description	Sets or queries the CAN trigger type.	
Syntax	:TRIGger:BUS:B1:CAN:TYPE { CANH CANL TX RX ? }	
Parameter	CANH	Set the signal type to a CAN High signal.
	CANL	Set the signal type to a CAN LOW signal.
	TX	Set the signal type to a CAN controller transmitter signal.
	RX	Set the signal type to a CAN controller receiver signal.
Return parameter	Returns the condition of CAN trigger type.	

Example : TRIGger:BUS:B1:CAN:TYPE CANH
 Sets the CAN trigger type to CAN high signal.

:TRIGger:BUS:B1:CAN:SAMPLEpoint




Description	Set or query CAN trigger sample points.	
Syntax	:TRIGger:BUS:B1:CAN:SAMPLEpoint { <NRF> ? }	
Parameter	<NRF>	range is 0.5 to 95.
Return parameter	Returns the CAN trigger sample point.	

Example :TRIGger:BUS:B1:CAN:SAMPLEpoint 4
 Set CAN trigger sample points to 4.

:TRIGger:BUS:B1:CAN:BITRate (Set) →
→ (Query)

Description	Set or query CAN trigger baud rate.
Syntax	:TRIGger:BUS:B1:CAN:BITRate {<NR1> ? }
Parameter	<NR1> range is: 10 kbps to 1 Mbps, unit is bps.
Return parameter	Returns the CAN trigger baud rate.
Example	:TRIGger:BUS:B1:CAN:BITRate 10000 Set CAN trigger baud rate to 10000 bps.

: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:LIN:BITRate

→ Query


Description	Set or query LIN trigger baud rate.
Syntax	:TRIGger:BUS:B1:LIN:BITRate { <NR1> ? }
Parameter	<NR1> range is: 1 kbps to 20 kbps, unit is bps.
Return parameter	Returns the LIN trigger baud rate.
Example	:TRIGger:BUS:B1:LIN:BITRate 600 Set LIN trigger baud rate to 600 bps.

Set →

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

→ Query

Description	Sets or returns the identifier string to be used for the LIN trigger.
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 Note	Only applicable when the condition is set to ID or IDANDDATA.
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Syntax	:TRIGger:BUS:B1:LIN:IDentifier:VALue {<string> ?}
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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
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Example	:TRIGger:BUS:B1:LIN:CONDition ID :TRIGger:BUS:B1:LIN:IDentifier:VALue "00X1X01X" :TRIGger:BUS:B1:LIN:IDentifier:VALue? >01100X1X01X
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Set →

→ Query

:TRIGger:BUS:B1:LIN:CONDition

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
```

Set →

→ Query

:TRIGger:BUS:B1:LIN:DATA:SIZE

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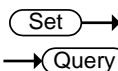
Note

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

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

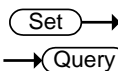
 Note Only applicable when the condition is set to DATA or IDANDDATA.

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



:TRIGger:BUS:B1:SPI:DATA:SIZE

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 (4 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:SCLK:SOURce (Set) →
→ (Query)

Description	Set or query SPI trigger's SCL source.	
Syntax	:TRIGger:BUS:B1:SPI:SCLK:SOURce { CH1 CH2 CH3 CH4 ? }	
Parameter	CH1 ~ CH4	Analog channel 1 to 4.
Return parameter	Returns the SPI trigger SCL source.	
Example	:TRIGger:BUS:B1:SPI:SCLK:SOURce CH1 Set SPI trigger's SCL source to channel 1.	

:TRIGger:BUS:B1:SPI:SCLK:THReshold (Set) →
→ (Query)

Description	Set or query SPI trigger current SCL selected source threshold.	
Syntax	:TRIGger:BUS:B1:SPI:SCLK:THReshold { SETTO50 <NRf> ? }	
Parameter	<NRf>	Logical trigger thresholds for each channel in volts (V), supporting scientific notation input.
	SETTO50	Set the SCLK trigger to 50% of current signal's peak-to-peak value.
Return parameter	Returns the SPI trigger current SCL selected source threshold.	

Example :TRIGger:BUS:B1:SPI:SCLK:THReshold 1.0000
Set SPI threshold for the current SCL selected source to 1 V.

:TRIGger:BUS:B1:SPI:SDA:SOURce  

Description Set or query SPI trigger SDA source.

Syntax :TRIGger:BUS:B1:SPI:SDA:SOURce
{ CH1 | CH2 | CH3 | CH4 | ? }

Parameter CH1 ~ CH4 Analog channel 1 to 4.

Return parameter Returns the SPI trigger SDA source.

Example :TRIGger:BUS:B1:SPI:SDA:SOURce CH2
Set SPI trigger's SDA source to channel 2.

:TRIGger:BUS:B1:SPI:SDA:THReshold  

Description Set or query SPI trigger current SDA selected source threshold.

Syntax :TRIGger:BUS:B1:I2C:SPI:THReshold
{ SETTO50 | <NRF> | ? }

Parameter <NRF> Logical trigger thresholds for each channel in volts (V), supporting scientific notation input.

SETTO50 Set the SDA trigger to 50% of current signal's peak-to-peak value

Return parameter Returns the SPI trigger current SDA selected source threshold.

Example :TRIGger:BUS:B1:SPI:SDA:THReshold 1.0000
Set SPI threshold for the current SDA selected source to 1 V.

:TRIGger:BUS:B1:SPI:IDLETime (Set) →
→ (Query)

Description	Set or query SPI trigger timeout.	
Syntax	:TRIGger:BUS:B1:SPI:IDLETime { <NRf> ? }	
Parameter	<NRf>	Set the idle time for timeout trigger, in seconds, supports scientific notation input; range is 30 ns to 10 s.
Return parameter	Returns the SPI trigger timeout time.	
Example	:TRIGger:BUS:B1:SPI:IDLETime 1.0000 Set SPI trigger timeout to 1 second.	

:TRIGger:BUS:B1:SPI:SCLK:POLarity (Set) →
→ (Query)

Description	Sets or queries the SPI trigger clock edge.	
Syntax	:TRIGger:BUS:B1:SPI:SCLK:POLarity { RISE FALL ? }	
Parameter	RISe	Rise edge
	FALL	Fall edge
Return parameter	Returns the condition of SPI trigger edge.	
Example	: TRIGger:BUS:B1:SPI:SCLK:POLarity RISe Sets the SPI trigger clock edge to rise.	

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.	
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 internal memory (0~9).	
Syntax	:RECALL:SETUp {0~9}	
Parameter	0~9	Recall setup from internal memory 0~9
Example	:RECALL:SETUp 1 Recalls setup setting from internal memory 1.	

:SAVE:IMAGe

Set →

Description	Saves a screen image to the specified file.	
Syntax	:SAVE:IMAGe {<file name>}	
Related commands	:SAVE:IMAGe:FILEFormat :SAVE:IMAGe:INKSaver	
Parameter	name	File name
Example	:SAVE:IMAGe aaa Saves a screen image to aaa.	

Set →

:SAVE:IMAGe:FILEFormat

→ Query

Description	Sets the file format for image.	
Syntax	:SAVE:IMAGe:FILEFormat {PNG BMP JPG TIFF ?}	
Related commands	:SAVE:IMAGe :SAVE:IMAGe:INKSaver	
Parameter	PNG	Sets the file format to PNG
	BMP	Sets the file format to BMP
	JPG	Sets the file format to JPG

	TIFF	Set the file format TIFF
Return parameter	Returns the file format (PNG, BMP, JPG, TIFF).	

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 (0~9).	
Syntax	:SAVe:SETUp {0~9}	
Parameter	0~9	Saves the setup to internal memory 0~9
Example	:SAVe:SETUp 1 Saves the current setup to internal memory 1.	

:SAVe:WAVEform (Set) →

Description	Set to save the waveform to the specified file.	
Related commands	:SAVe:WAVEform:FILEFormat :SAVe:WAVEform:SOURce	

Syntax	:SAVe:WAVEform {<name>}	
Parameter	name	Specify the file name, the storage path is fixed
Example 1	:SAVe:WAVEform wav1 Set the saved waveform file name to "wav1".	

Set →

→ Query

:SAVe:WAVEform:FILEFormat


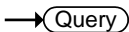
Description	Sets the waveform savefile format.	
Syntax	:SAVe:WAVEform:FILEFormat {CSV ZIP MATlab ?}	
Parameter	CSV	Set the file format to CSV
	ZIP	Set the file format to ZIP
	MATlab	Set the file format to matlab
Return parameter	Returns the file format (CSV, ZIP, MATlab).	
Example	:SAVe:WAVEform:FILEFormat CSV Sets the file format to CSV.	

Set →

→ Query

:SAVe:PATH

Description	Query or set current selected path.	
Syntax	:SAVe:PATH {INTERNAL EXTERNAL ?}	
Related commands	:SAVe:IMAGe :SAVe:IMAGe:INKSaver	
Parameter	INTERNAL	Sets the file path to internal
	EXTERNAL	Sets the file path to external
Return parameter	Returns the file path (INTERNAL or EXTERNAL).	
Example	:SAVe:PATH INTERNAL Sets the file path to internal disk.	

		 
:SAVe:WAVEform:SOUrce		
Description	Query or set the source channel for saving the waveform.	
Related commands	:SAVe:WAVEform:SOUrce	
Syntax	:SAVe:WAVEform:SOUrce{ CH1 CH2 CH3 CH4 MATH FFT ALL ? }	
Parameter	CH1~CH4, MATH FFT ALL	Set the CH1~CH4 as source Set the MATH as source Set the FFT as source Select all source.
Example 1	:SAVe:WAVEform:SOUrce CH1 Set the save waveform source to channel 1.	
Example 2	:SAVe:WAVEform:SOUrce? Query save waveform source. Return CH1	
Example 3	:SAVe:WAVEform:SOUrce CH1, CH3 Set the waveform source to CH1 & CH3 :SAVe:WAVEform:SOUrce? Return CH1,CH3	

Bus Decode Commands

:BUS<x>:STATe




Description	Sets or queries the state of the bus.	
Syntax	:BUS<x>:STATe { OFF ON ? }	
Related commands	:BUS<x>:TYPe	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	OFF	Turns the bus off.
	ON	Turns the bus on.

Example :BUS1:STATe ON
Turns the bus 1 on.

:BUS<x>:TYPe




Description	Sets or queries the type of bus.	
Syntax	:BUS<x>:TYPe { UART I2C SPI CAN LIN ? }	
Related commands	:BUS<x>:STATE	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	UART	Set to UART mode.
	I2C	Sets to I2C mode.
	SPI	Set to SPI mode
	CAN	Sets to CAN mode.
	LIN	Sets to LIN mode.

Example :BUS1:TYPe LIN
Sets the bus to LIN mode.

:BUS<x>:I2C:ADDRess:RWINClude



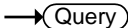

Description	Sets or queries whether the read/write bit is included in the I ² C address.	
Syntax	:BUS<x>:I2C:ADDRess:RWINClude { OFF ON ? }	
Related commands	:BUS<x>:STATE	
Parameter	<x>	1 or 2, indicating decoding 1 or 2
	OFF	The R/W bit is not included.
	ON	The R/W bit is included.
Return parameter	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.	

:BUS<x>:I2C:SCLK:SOURce




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

:BUS<x>:I2C:SCLK:THReshold

Description	Set or query the threshold of the currently selected SCL source for I ² C decode.	
Syntax	:BUS<x>:I2C:SCLK:THReshold <NR3> :BUS<x>:I2C:SCLK:THReshold?	

Parameter/Return parameter	<x>	It can be 1 or 2, indicating decoding one or decoding two.
	<NR3>	Thresholds for each logic decoding channel (in Volts). Settings are rounded to the nearest allowable value.

Example :BUS1:I2C:SCLK:THReshold 1.0
 Set I2C the SCL selected source threshold for I2C decode 1 to 1V

:BUS<x>:I2C:SDA:SOURce (Set) →
→ (Query)

Description Sets or queries which channel is used for the I²C SDA source.

Syntax :BUS<x>:I2C:SDA:SOURce{ CH1 | CH2 | CH3 | CH4| ? }

Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	CH1 to CH4	Analog channels 1 ~ 4.

Example :BUS1:I2C:SDA:SOURce CH1
 Sets channel 1 as the SDA source.

:BUS<x>:I2C:SDA:THReshold (Set) →
→ (Query)

Description Set or query the threshold of the currently selected SDA source for I2C decode.

Syntax :BUS<x>:I2C:SDA:THReshold <NR3>
 :BUS<x>:I2C:SDA:THReshold?

Parameter/Return parameter	<x>	It can be 1 or 2, indicating decoding one or decoding two.
	<NR3>	Thresholds for each logic decoding channel (in Volts). Settings are rounded to the nearest allowable value.

Example :BUS1:I2C:SDA:THReshold 1.0
 Set I2C the SDA selected source threshold for I2C decode 1 to 1V

Set →
 → Query

:BUS<x>:UART:BITRate

Description Sets or queries the UART bit rate.

Syntax :BUS<x>:UART:BITRate {<NR1> | ? }

Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	<NR1>	UART bit rate in bps

Example :BUS1:UART:BITRate?
 >2400
 :BUS1:UART:BITRate 50
 :BUS1:UART:BITRate?
 >50

Set →
 → Query

:BUS<x>:UART:DATABits

Description Sets or queries the number UART data for bus 1.

Syntax :BUS1:UART:DATABits { 5 | 6 | 7 | 8 | ? }

Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	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

:BUS<x>:UART:STOPBits

Description Set or query UART decode stop bit.

Syntax :BUS<x>:UART:STOPBits {1|1.5|2}
 :BUS<x>:UART:STOPBits?

Parameter/Return <x> It can be 1 or 2, indicating decoding one or parameter decoding two.

Example :BUS1:UART:STOPBits 1
 Set decode stop bit to 1

Set →

→ Query

:BUS<x>:UART:BITOrder

Description Set or query UART decode bit order.

Syntax :BUS<x>:UART:BITOrder {MSB|LSB}
 :BUS<x>:UART:BITOrder?

Parameter <x> It can be 1 or 2, indicating decoding one or decoding two.

MSB Bit order is in larger-endian mode.

LSB Bit order is in little-endian mode.

Example :BUS1:UART:BITOrder LSB
 Set decode bit order to LSB

Set →

→ Query

:BUS<x>:UART:SOURce

Description Set or query UART decode source.

Syntax :BUS<x>:UART:SOURce {CH1|CH2|CH3|CH4}
 :BUS<x>:UART:SOURce?

Parameter <x> It can be 1 or 2, indicating decoding one or decoding two.

CH1-4 Channel 1~4.

Example :BUS1:UART:SOURce CH
 Set UART decode 1 source to CH1

Set →
 → Query

:BUS<x>:UART:THReshold

Description	Set or query UART decode threshold.	
Syntax	:BUS<x>:UART:THReshold <NR3> :BUS<x>:UART:THReshold?	
Parameter	<x>	It can be 1 or 2, indicating decoding one or decoding two.
	<NR3>	Thresholds for each logic decoding channel (in Volts). Settings are rounded to the nearest allowable value.
Example	:BUS1:UART:THReshold 1.0 Set decode 1 threshold to 1V	

Set →
 → Query

:BUS<x>:UART:PARity

Description	Sets or queries the UART decode parity check.	
Syntax	:BUS<x>:UART:PARity {<NR1> ? }	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	<NR1>	0: None; 1:Odd; 2:Even
Example	:BUS1:UART:PARity? >1 Query decode parity, return 1 (Odd)	

Set →
 → Query

:BUS<x>:UART:POLARity

Description	Sets or returns the UART polarity.	
Syntax	:BUS<x>:UART: POLARity {NORMal INVerted} :BUS<x>:UART: POLARity?	
Parameter	<x>	1 or 2, indicating decoding 1 or 2
	NORMal	Sets normal UART polarity.
	INVerted	Sets inverted UART polarity.

Example :BUS1:UART:POLARity NORMAl
 :BUS1:UART:POLARity?
 NORMAL

Set →

→ Query

:BUS<x>:DISPlay:FORMAt

Description	Sets or queries the display format for the bus, either binary or hexadecimal.	
Syntax	:BUS<x>:DISPlay:FORMAt { BINary HEXadecimal ASCII DECimal ? }	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	BINary	Binary format
	HEXadecimal	Hexadecimal format
	DECimal	Decimal format

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

Set →

→ Query

:BUS<x>:CAN:SOURce

Description	Sets or returns the CAN input source.	
Syntax	:BUS<x>:CAN:SOURce { CH1 CH2 CH3 CH4 ? }	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	CH1 ~ CH4	Analog channel source

Example :BUS1:CAN:SOURCE?
 >CH1
 Returns the CAN source.

Set →

→ Query

:BUS<x>:CAN:PROBe

Description	Sets or returns the signal type of the CAN bus.	
Syntax	:BUS1:CAN:PROBe { CANH CANL TX RX ? }	

Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	CANH	CAN-High
	CANL	CAN-Low
	TX	Transmit
	RX	Receive

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

Set →
 → Query

:BUS<x>:CAN:SAMPLEpoint

Description Set or query the sample point of the CAN bus.

Syntax :BUS<x>: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.

Set →
 → Query

:BUS<x>:CAN:BITRate

Description Sets or returns the bit rate of the CAN bus.

Syntax :BUS<x>:CAN:BITRate
 {RATE10K|RATE20K|RATE50K|RATE125K|RATE250K|
 RATE500K|RATE800K|RATE1M | <NR1> | ?}

Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	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

Set →

→ Query

:BUS<x>:LIN:BITRate

Description	Sets or returns the bit rate of the LIN bus.	
Syntax	:BUS<x>:LIN:BITRate {<NR1> ?}	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	<NR1>	LIN bit rate in bps.
Example	:BUS1:LIN:BITRate 9600 Sets the LIN bit rate to 9600bps.	

Set →

→ Query

:BUS<x>:LIN:POLARity

Description	Sets or returns the LIN polarity.	
Syntax	:BUS<x>:LIN:POLARity {NORMal INVerted ?}	
Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	NORMal	Normal LIN polarity
	INVerted	Inverted LIN polarity

Example :BUS1:LIN:POLARity?
 NORMAL
 Returns the LIN polarity.

Set →
 → Query

:BUS<x>:LIN:SOURce

Description Sets or returns the LIN data source.

Syntax :BUS<x>:LIN:SOURce {CH1 | CH2 | CH3 | CH4}? }

Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	CH1 ~ CH4	Analog channel source

Example :BUS1:LIN:SOURCE?
 >CH1
 Returns the LIN source.

Set →
 → Query

:BUS<x>:LIN:STANDard

Description Sets or returns the LIN standard.

Syntax :BUS<x>:LIN:STANDard {V1X|V2X|BOTH|?}

Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	V1X	Lin standard version 1.x
	V2X	Lin standard version 2.x
	BOTH	Both standards

Example :BUS1:LIN:STANDard?
 >BOTH
 Returns the LIN standard.

Set →
 → Query

:BUS<x>:LIN:THReshold

Description Set or query LIN decode threshold.

Syntax :BUS<x>:LIN:THReshold <NR3>
 :BUS<x>:LIN:THReshold?

Parameter	<x>	It can be 1 or 2, indicating decoding one or decoding two.
	<NR3>	Thresholds for each logic decoding channel (in Volts). Settings are rounded to the nearest allowable value.

Example :BUS1:LIN:THReshold 1.0
Set decode 1 threshold to 1V

:BUS<x>:SPI:FRAMING  

Description	Set or query decode mode of SPI decode.	
Syntax	:BUS<x>:SPI:FRAMING {SS IDLEtime} :BUS<x>:SPI:FRAMING?	
Parameter	<x>	It can be 1 or 2, indicating decoding one or decoding two.
	SS	Chip select.
	IDLEtime	Timeout

Example :BUS1:SPI:FRAMING SS
Set decode 1 decode mode of SPI decode to SS

:BUS<x>:SPI:IDLETime  

Description	Set or query SPI decode idle time.	
Syntax	:BUS<x>:SPI:IDLETime <NR3> :BUS<x>:SPI:IDLETime?	
Parameter	<x>	It can be 1 or 2, indicating decoding one or decoding two.
	<NR3>	Set decode idle time, unit is s.

Example :BUS1:SPI:IDLETime 1
Set decode idle time to 1s

Set →
 → Query

:BUS<x>:SPI:SCLK:POLARity

Description Sets or queries the polarity of the SCLK line for the SPI bus.

Syntax :BUS<x>:SPI:SCLK:POLARity { FALL | RISE | ? }

Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	FALL	Sets the polarity to falling edge.
	RISE	Sets the polarity to rising edge.

Example :BUS1:SPI:SCLK:POLARity FALL
 Sets the polarity to falling edge.

Set →
 → Query

:BUS<x>:SPI:SCLK:SOURce

Description Sets or queries which channel is used for the SPI SCLK source.

Syntax :BUS<x>:SPI:SCLK:SOURce {CH1|CH2|CH3|CH4| ? }

Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	CH1 to CH4	Analog channels CH1 to CH4

Example :BUS1:SPI:SCLK:SOURce CH1
 Sets channel 1 as the SPI SCLK source.

Set →
 → Query

:BUS<x>:SPI:SCLK:THReshold

Description Set or query SPI decode idle time.

Syntax :BUS<x>:SPI:SCLK:THReshold <NR3>
 :BUS<x>:SPI:SCLK:THReshold?

Parameter	<x>	It can be 1 or 2, indicating decoding one or decoding two.
	<NR3>	Thresholds for each logic decoding channel (in Volts). Settings are rounded to the nearest allowable value.

Example :BUS<x>:SPI:SCLK:THReshold 1.0
 Set threshold of the SCL selected source for SPI decode 1 to 1V

Set →

:BUS<x>:SPI:SS:POLARity

→ Query

Description Sets or queries the polarity of the SS line for the SPI bus.

Syntax :BUS<x>:SPI:SS:POLARity { LOW | HIGH | ? }

Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	LOW	Active low polarity
	HIGH	Active high polarity

Example :BUS1:SPI:SS:POLARity LOW
 Sets the SS line to active low.

Set →

:BUS<x>:SPI:SS:SOURce

→ Query

Description Sets or queries which channel is used for the SPI SS source.

Syntax :BUS<x>:SPI:SS:SOURce {CH1 | CH2 | CH3 | CH4 | ? }

Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	CH1 to CH4	Analog channels CH1 to CH4

Example :BUS1:SPI:SS:SOURce CH1
 Sets channel 1 as the SPI SS source.

Set →

:BUS<x>:SPI:SS:THReshold

→ Query

Description Set or query SPI decode chip select mode CS threshold.

Syntax :BUS<x>:SPI:SS:THReshold <NR3>
 :BUS<x>:SPI:SS:THReshold?

Parameter/Return parameter	<x>	It can be 1 or 2, indicating decoding one or decoding two.
	<NR3>	Thresholds for each logic decoding channel (in Volts). Settings are rounded to the nearest allowable value.

Example :BUS1:SPI:SS:THReshold 1.0
 Set SPI decode 1 chip select mode CS threshold to 1V.


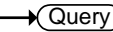
:BUS<x>:SPI:DATA{:OUT|:MOSI}:THReshold  

Description Set or query SPI decode chip select mode MOSI threshold.

Syntax :BUS<x>:SPI:DATA{:OUT|:MOSI}:THReshold <NR3>
 :BUS<x>:SPI:DATA{:OUT|:MOSI}:THReshold?

Parameter/Return parameter	<x>	It can be 1 or 2, indicating decoding one or decoding two.
	<NR3>	Thresholds for each logic decoding channel (in Volts). Settings are rounded to the nearest allowable value.

Example :BUS1:SPI:DATA{:OUT|:MOSI}:THReshold 1.0
 Set SPI decode 1 chip select mode MOSI threshold to 1V

:BUS<x>:SPI:DATA{:IN|:MOSI}:THReshold  

Description Set or query SPI decode chip select mode MOSI threshold.

Syntax :BUS<x>:SPI:DATA{:IN|:MOSI}:THReshold <NR3>
 :BUS<x>:SPI:DATA{:IN|:MOSI}:THReshold?

Parameter/Return parameter	<x>	It can be 1 or 2, indicating decoding one or decoding two.
----------------------------	-----	------------------------------------------------------------

<NR3> Thresholds for each logic decoding channel (in Volts). Settings are rounded to the nearest allowable value.

Example :BUS1:SPI:DATAa{:IN|:MOSI}:THReshold 1.0
 Set SPI decode 1 chip select mode MOSI threshold to 1V

Set →

→ Query

:BUS<x>:SPI:WORDSize

Description Sets the number of bits per word for the SPI bus.

Syntax :BUS<x>:SPI:WORDSize {<NR1> | ? }

Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	<NR1>	Bits per word (4~32)

Example :BUS1:SPI:WORDSize 4
 Sets the word size to 4 bits per word.

Set →

→ Query

:BUS<x>:SPI:BITORder

Description Sets or queries the bit order for the SPI bus.

Syntax :BUS<x>:SPI:BITORder {<NR1> | ? }

Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	<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

:BUS<x>:SPI:MOSI:SOURce

Description Sets or queries which channel is used for the SPI MOSI source.

Syntax :BUS<x>:SPI:MOSI:SOURce {OFF | CH1 |CH2 |CH3| CH4 |? }

Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	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.

:BUS<x>:SPI:MISO:SOURce (Set) →
→ (Query)

Description Sets or queries which channel is used for the SPI MISO source.

Syntax :BUS<x>:SPI:MISO:SOURce{OFF|CH1|CH2|CH3|CH4|?}

Parameter/Return parameter	<x>	1 or 2, indicating decoding 1 or 2
	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.

Label Commands

:CHANnel<X>:LABel



Description Sets or returns the file label for the selected channel.

Syntax :CHANnel<X>:LABel {<string> | ?}

Related commands :CHANnel<X>:LABel:DISPlay

Parameter	<X> <string>	Channel 1, 2, 3, 4 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".
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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.
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Example1 :CHANnel1:LABel "CH1_lab"
Sets the channel 1 label as "CH1_lab".

Example2 :CHANnel1:LABel?
CH1_lab

:CHANnel<X>:LABel:DISPlay



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

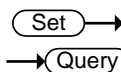
Parameter	<X>	Channel 1, 2, 3, 4
	OFF	Turns the file label off for the selected channel.
	ON	Turns the file label on for the selected channel.

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

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.

:BUS<x>:LABel Set →
← Query

Description Sets or returns the file label for the bus.

Syntax :BUS<x>:LABel {<string> | ?}

Related commands :BUS<x>:LABel:DISPlay

Parameter	<x>	1 or 2, indicating decoding 1 or 2
	<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

:BUS<x>:LABel:DISPlay  

Description Turns the label on/off for the bus or returns its status.

Syntax :BUS1:LABel:DISPlay { OFF | ON | ? }

Related commands :BUS<x>:LABel

Parameter	<x>	1 or 2, indicating decoding 1 or 2
	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).

:REF<x>:SAVe:SOURce  

Description Set or query reference waveform channels to save.

Syntax :REF<x>:SAVe:SOURce { CH1 | CH2 | CH3 | CH4 | MATH | FFT | ? }

Related commands	:BUS<x>:SAVE	
Parameter	<x>	Save to reference 1 ~ reference 99
	CH1~CH4	Set channel 1 ~ channel4 as source.
	MATH	Set MATH as source.
	FFT	Set FFT as source
Return parameter	Returns the status of the saved source.	
Example1	:REF<1>:SAVe:SOURce CH1 Save channel one as source to reference 1	

:REF<x>:SAVe



Description	Set save waveform data to specific reference set.	
Syntax	:REF<x>:SAVe	
Related commands	:REF<x>:SAVe:SOURce	
Parameter	<x>	Save to reference 1 ~ reference 99
Example1	:REF1:SAVe Set save waveform data to reference 1	

DVM Commands

:DVM:STATE




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




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




Description	Sets or queries the DVM mode.	
Syntax	:DVM:MODE { ACRMS ACDCRMS DC ?}	
Related commands	:DVM:SOURce :DVM:STATE	

Parameter/ Return parameter	OFF	Disable DVM function.
	Other Parameters	Sets the mode to DC Turn on DVM function and set the corresponding mode.

Example :DVM:MODE ACRMS
Sets the DVM mode to ACRMS.

:DVM{RESET}

Set →

Description	Set DVM to initialization state.
Syntax	:DVM {RESET}
Example	:DVM RESET Set DVM to initialization state.

:DVM:STATistics RESet

Set →

Description	Reset DVM statistics function.162
Syntax	:DVM:STATistics RESet
Example	:DVM:STATistics RESet Reset DVM statistics function.

:DVM:STATistics:MAXimum

→ **Query**

Description	Query statistics maximum.
Syntax	:DVM:STATistics:MAXimum?
Example	:DVM:STATistics:MAXimum? :DVM:STATISTICS:MAXIMUM 243.0222E+9 Query statistics maximum.

:DVM:STATistics:MINimum

→ **Query**

Description	Query statistics minimum.
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Syntax :DVM:STATistics:MINImum?

Example :DVM:STATistics:MINImum?
:DVM:STATISTICS:MINIMUM 204.5778E+9
Query statistics minimum.

:DVM:STATistics:{AVG|AVErage} → Query

Description Query statistics average.

Syntax :DVM:STATistics:{AVG|AVErage}?

Example :DVM:STATistics:AVErage ?
:DVM:STATISTICS:AVERAGE 234.1950E+9
Query statistics average

Set →

:DVM:ALARm:MODE → Query

Description Query or set the alarm mode of DVM function.

Syntax :DVM:ALARm:MODE {OFF|ON|BEEP}
:DVM:ALARm:MODE?

Parameter/ Return parameter	OFF	Disable alarm.
	ON	Enable alarm.
	BEEP	Turn on the alarm and activate the buzzer.

Example :DVM:ALARm:MODE ON
Set DVM alarm mode to ON

Set →

:DVM:ALARm:HIGHLimit → Query

Description Query or set the alarm upper limit value of DVM function.

Syntax :DVM:ALARm:HIGHLimit <NR3>
:DVM:ALARm:HIGHLimit?

Parameter/ Return parameter <NR3> Default unit is V.

Example 1 :DVM:ALARm:HIGHLimit 1
Set alarm upper limit value to 1V.

Example 2 :DVM:ALARm:HIGHLimit?
> 1.0000
Query alarm upper limit value.

Set →

→ Query

:DVM:ALARm:LOWLimit

Description Query or set the alarm lower limit value of DVM function.

Syntax :DVM:ALARm:LOWLimit <NR3>
:DVM:ALARm:LOWLimit?

Parameter/ Return parameter <NR3> Default unit is V.

Example 1 :DVM:ALARm:LOWLimit 1
Set alarm lower limit value to 1V.

Example 2 :DVM:ALARm:HIGHLimit?
> 1.0000
Query alarm lower limit value.

Set →

→ Query

:DVM:ALARm:WHEN

Description Query or set the alarm limit conditions of DVM function.

Syntax :DVM:ALARm:WHEN {INSLimit|OUTLimit}
:DVM:ALARm:WHEN?

Parameter INSLimit Inside Limit.
OUTLimit Outside Limit.

Example :DVM:ALARm:WHEN OUTLimit
Set alarm limit condition to outlimit.

: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.

AWG Commands

: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> <NRf>	Channel number 1~2. 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> <NRf>	Channel number 1~2. Frequency in Hertz.
Example	:AWG1:FREQ 2000	

Set →

→ Query

:AWG<x>:FUNction

Description	Sets or returns the type of waveform.	
Syntax	:AWG<x>:FUNction {ARBitrary SINE SQUAre PULSe RAMP DC NOISe BUTTERWorth COMBin CPulse ROUNDShalf BANDLImited BLASEIWave CHEBYSHEV1 CHEBYSHEV2 DAMPEDOsc DUALTone BESSEL BESSELY LOG X2 X3 LFPulse TENS1 EOG COSH COT COTH COTHCon CSC CSCCon CSCPro CSCH CSCHCon ?}	
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
	BUTTERWorth	BUTTERWorth waveform
	COMBin	COMBin waveform
	CPulse	CPulse waveform
	ROUNDShalf	ROUNDShalf waveform
	BANDLImited	BANDLImited waveform
	BLASEIWave	BLASEIWave waveform
	CHEBYSHEV1	CHEBYSHEV1 waveform
	CHEBYSHEV2	CHEBYSHEV2 waveform
	DAMPEDOsc	DAMPEDOsc waveform
	DUALTone BESSEL	DUALTone BESSEL waveform
	BESSELY	BESSELY aveform
	LOG	LOG waveform

X2	X2 waveform
X3	X3 waveform
LFPulse	LFPulse waveform
TENS1	TENS1 waveform
EOG	EOG waveform
COSH	COSH waveform
COT	COT waveform
COTH	COTH waveform
COTHCon	COTHCon waveform
CSC	CSC waveform
CSCCon	CSCCon waveform
CSCPro	CSCPro waveform
CSCH	CSCH waveform
CSCHCon	CSCHCon waveform
NOISe	Noise 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

Set →

→ Query

Description Sets or returns the output termination

Syntax :AWG<x>:OUTPut:LOAd:IMPEDance {FIFty | HIGHZ | ?}

Parameter/	<x>	Channel number 1~2
Return parameter	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/	<x>	Channel number 1~2
Return parameter	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/	<x>	Channel number 1~2.
Return parameter	<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/	<x>	Channel number 1~2.
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Return parameter <Nrf> Duty cycle in percentage 0.2~99.8%

Example :AWG1:PULS:DUTY 50
Sets the channel 1 pulse duty cycle to 50%.

Set →

:AWG<x>:RAMP:SYMmetry → 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%.

Set →

:AWG<x>:MODulation:STATE → Query

Description Sets or returns the modulation state.

Syntax :AWG<x>:MODulation:STATE {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.

Set →

:AWG<x>:MODulation:TYPE → 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 | RAMP | NOISe | ?}

Parameter/ Return parameter <x> Channel number 1~2.
SINE Sine wave shape.
SQUare Square 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.

Set →

:AWG<x>:MODulation:FM:DEV → 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

Set →

:AWG<x>:MODulation:FM:FREQ → 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.

Set →

:AWG<x>:MODulation:FM:SHApe → Query

Description Sets or returns the shape of the FM modulation.

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

Parameter/Return parameter <x> Channel number 1~2.
SINE Sine wave shape.

SQUare	Square 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: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>	Channel number 1~2.
	<NRF>	Frequency in Hertz.

Example :AWG1:MOD:FSK:RATE 100000
Sets the FSK rate to 100kHz.

: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.

Set →

:AWG<x>:SWEep:START → Query

Description Sets or returns the start frequency of the sweep mode.

Syntax :AWG<x>:SWEep:START {<NRf> | ?}

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

Example :AWG1:SWE:START 1000
Sets the sweep mode start frequency to 1kHz.

Set →

:AWG<x>:SWEep:STOP → Query

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 →

:AWG<x>:SWEep:TIME → Query

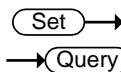
Description Sets or returns the sweep time.

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.

:AWG<x>:SWEep:SPAN



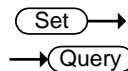
Description Alternatively to setting the start and stop frequencies, the span and center frequency can be set.

Syntax :AWG<x>:SWEep:SPAN {<NRf> | ?}

Parameter/	<x>	Channel number 1~2.
Return parameter	<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



Description Alternatively to setting the start and stop frequencies, the span and center frequency can be set.

Syntax :AWG<x>:SWEep:CENTer {<NRf> | ?}

Parameter/	<x>	Channel number 1~2.
Return parameter	<NRf>	Center frequency of the sweep in Hertz.

Example :AWG1:SWE:CENT 550
Sets the center frequency of the sweep to 550Hz.

FRA Commands


:FRA:RUN



Description Runs the FRA function or returns the FRA state.

Syntax :FRA:RUN
:FRA:RUN?

Example :FRA:RUN
FRA starts.

:FRA:STOP



Description Stops the FRA function or returns the FRA state.

Syntax :FRA:STOP
:FRA:STOP?

Example :FRA:STOP
FRA stops.

:FRA:FREQuency:STARt



Description Sets or returns the start frequency for FRA.

Syntax :FRA:FREQuency:STARt {<Nrf>}
:FRA:FREQuency:STARt?


Parameter <Nrf> Sets the frequency to use.
(Range:20Hz~25MHz)

Example :FRA:FREQuency:STARt 100
Sets the start frequency as 100Hz.

:FRA:FREQuency:STOP




Description	Sets or returns the stop frequency for FRA.	
Syntax	:FRA:FREQuency:STOP {<NRf>} :FRA:FREQuency:STOP?	
Parameter	<NRf>	Sets the frequency to use. (Range:20Hz~25MHz)
Example	:FRA:FREQuency:STOP 500 Sets the start frequency as 500Hz.	

:FRA:POINt




Description	Sets or returns the number of processing points in a decade.	
Syntax	:FRA:POINt {<NR1>} :FRA:POINt?	
Parameter	<NR1>	The number of points in a decade. (Range:10, 15, 30, 45, 90)
Example	:FRA:POINt 15 Sets the number of processing points as 15 in a decade.	

:FRA:DATA 

Description	Shows the detailed information of FRA settings and results.	
Syntax	:FRA:DATA?	
Example	:FRA:DATA? Shows the FRA result's detail.	

:FRA:SAVETOCsv

Set →

Description	Saves the FRA result as a CSV file.
Syntax	:FRA:SAVETOCsv
Example	:FRA: SAVETOCsv Saves results as CSV file.

:FRA:STATe

→ Query

Description	Query or turn on/ off the FRA function.
Syntax	:FRA:STATe {ON OFF} :FRA:STATe?
Parameter	ON Turn on the FRA. (No work when PWR function running) OFF Turn off the FRA.
Example	:FRA:STATe ON :FRA:STATe? ON

Time Command

:DATE

Set →

Description	Set the time
Syntax	:DATE {string}
Parameter	:DATE "YYYYMMDDhhmmss."
Example	:DATE "20260515103020" Set the oscilloscope time to May 15, 2026, 10:30:20 AM

Single Command

:SINGle



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).
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Syntax	:SINGle
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Hardcopy Commands

:HARDcopy:START

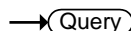
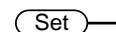


Description Executing the HARDcopy:START command is the equivalent of pressing the Hardcopy key on the front panel.

Syntax :HARDcopy:START

Related Commands :HARDcopy:ASSIGN

:HARDcopy:ASSIGN



Description Sets or queries what file type the hardcopy key has been assigned to save.

Syntax :HARDcopy:ASSIGN
{IMAGe | WAVEform | SETUp | ? }

Related Commands :HARDcopy:START

Parameter	IMAGe	Save image files.
	WAVEform	Save waveforms.
	SETUp	Save the panel setup.

Return parameter Returns the file type.
(IMAGE/WAVEFORM/SETUP)

Example :HARDcopy:ASSIGN IMAGE.
Set the hardcopy key to save image files.

Segment Commands

		Set →
		← Query
:SEGMents:STATE		
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.	

		Set →
		← Query
:SEGMents:CURRent		
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



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:FASTACQquisition



Description Turns the segmented fast acquisition mode on/off or queries its state.

Syntax :SEGMents:FASTACQquisition { OFF | ON | ? }

Parameter/ Return parameter	OFF	Turns the fast acquisition mode off.
	ON	Turns the fast acquisition mode on.

Example1 :SEGMents:FASTACQquisition ON
Turns the fast acquisition mode on.